USING A COMMUNICATION APPROACH TO UNDERSTAND THE ANTECEDENTS OF MEDICAL MISTRUST: TESTING THE ECOLOGICAL MEDICAL MISTRUST ANTECEDENTS (EMMA) MODEL

BY

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DISSERTATION

Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Communication in the Graduate College of the University of Illinois at Urbana-Champaign, 2019

Urbana, Illinois

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ABSTRACT

Medical mistrust, distrust in the motives of medical personnel and institutions, has been cited as a barrier to engagement in several positive health behaviors. It has been associated with decreased likelihood of engaging in routine health check-ups (Hammond, Matthews, Mohottige, Agyemang, & Corbie-Smith, 2010), undergoing cancer screenings (e.g., Thompson, Valdimarsdottir, Winkel, Jandorf, & Redd, 2004), adhering to treatment (e.g., Kalichman, Eaton, Kalichman, & Cherry, 2017) and becoming a registered organ donor (Morgan, Stephenson, Harrison, Afifi, & Long, 2008). As a result, medical mistrust is a pervasive barrier that cuts across health contexts and topics; this makes addressing medical mistrust a critical step towards improving health outcomes.

Despite calls for investigation into medical mistrust (e.g., Adams & Simoni, 2016; Scharff et al., 2010), little work has been done, including within the field of communication, that explicitly examines medical mistrust as a phenomenon of interest. More specifically, there is a dearth of work examining the antecedents of medical mistrust. There is a single model in quantitative medical mistrust work that conceptualizes medical mistrust antecedents; however, this model neglects communication and was only designed to examine medical mistrust among Black men. A recent review of medical mistrust noted the lack of work in medical mistrust that examines antecedents and uses modeling techniques that allow for mediation to be investigated (Benkert, Cuevas, Thompson, Dove-Meadows, & Knuckles, 2019). To address these gaps, the current dissertation proposed a new model of medical mistrust – the Ecological Medical Mistrust Antecedents (EMMA) model, which posited that negative health-care socialization, negative health-care experiences, and racial discrimination experiences influence medical mistrust and that these relationships are mediated by perceived racism in health care and perceived financial...
corruption in health care. In doing so, this dissertation extends the literature on medical mistrust by: a) placing communication into the study of medical mistrust, particularly by looking at its role in antecedents; b) examining the role of mediated communication in medical mistrust; c) exploring the nuances of racial differences in medical mistrust; and d) examining the nuances of medical mistrust measures.

Study 1 sought to test the measurement and structural components of the hypothesized EMMA model; a multigroup model was used in order to test EMMA across racial groups. In Study 1, Black (n = 204) and White (n = 232) participants completed a survey that assessed the constructs associated with the EMMA model. Results revealed partial support for EMMA. There was no support for negative health-care socialization (NHS), negative health-care experiences (NHE), or racial discrimination experiences (RDE) as latent constructs. Additionally, there was no support for the inclusion of negative health-care socialization variables (i.e., interpersonal socialization and media socialization) in the model. There was, however, support for other portions of the model. For instance, for both Black and White participants, there was an indirect effect of personal NHE on medical mistrust via perceived racism. For White participants, there were indirect effects for vicarious interpersonal NHE, personal RDE, and vicarious interpersonal RDE through perceived racism. Additionally, for both Black and White participants, both personal NHE and vicarious media NHE exerted indirect effects on medical mistrust via perceived financial corruption. Most notably, vicarious media RDE exerted an indirect effect on medical mistrust via perceived corruption for White participants, and an indirect effect via both perceived racism in health care and perceived financial corruption in health care for Black participants.
Study 2 built upon Study 1 by utilizing an experimental design to examine the effects of news story content (i.e., mediated communication) on medical mistrust. In Study 2, Black participants ($N = 410$) were randomly assigned to view one of four news stories using a 2 (health care, non-health care) x 2 (racial discrimination, non-racial discrimination) between-subjects posttest only design, where health care content was depicted as lack of access (i.e., negative health care content). Study 2 focused on the role of mediated communication in medical mistrust and medical mistrust’s relationship to health intention outcomes. The results revealed that negative health content and racial discrimination content increased race-based medical mistrust but had no significant impact on general medical mistrust. Additionally, exposure to health-related racial discrimination stories resulted in higher levels of race-based medical mistrust than non-health, non-racial discrimination stories. Finally, only general medical mistrust was related to any health intention outcomes. Broadly, these findings point to: a) the feasibility of EMMA as a method of examining medical mistrust antecedents, b) differences in racial experiences that may translate to differences in the antecedents of medical mistrust, c) the importance of vicarious media racial discrimination experiences, and d) the need to further disentangle the relationship between general medical mistrust and race-based medical mistrust. Additional implications of these findings, as well as limitations and future research, are discussed.
To Resa, Uncle Lynell, and Granny:

Though I lost you in body, I never lost you in spirit

I can feel you cheering me on from Heaven
ACKNOWLEDGMENTS

I am blessed to have an incredible support system full of nurturers, cheerleaders, and all-around inspiring individuals. On this journey, I have been fortunate to be surrounded by supportive members of the Department of Communication; faculty, staff, and graduate students provided immeasurable resources and support throughout this process – from general advice to helping with my analyses. I found community both within and outside the department, as well as within and outside the university. To all who were a part of this journey – I am indebted to you.

I am particularly grateful to my dissertation committee for the conversations, guidance, and support you provided that have made me a better scholar. To my advisor, Cabral Bigman – thank you for the heart-to-hearts, believing in my work, and helping me navigate trying to carve out this research niche for myself. To Travis Dixon – thank you for conversations about experimental designs, as well as what it means to be a Black scholar; these conversations have helped more than you may ever know. To Brian Quick – thank you for trusting me with the opportunity that led to my research program – who knew running focus groups in Chicago would lead to this? To Shardé McNeil Smith – thank you for being willing to join me on this journey. I am grateful for the structural equation modeling conversations, general life check-ins, being my North Carolina person, and listening to me vent about all the insecurities that dissertating brings.

I would also like to thank my colleagues and friends who helped me survive this process, as well as graduate school more generally. Andrea Martinez Gonzalez, Tobias Reynolds-Tylus, and Kaylee Lukacena – thank you for being my first academic siblings, amazing colleagues, and my first research playmates. Anita Mixon, thank you for setting an example, being a sister, and preparing me for what would lie ahead. I also want to thank those who spent numerous, and sometimes long days and nights, in coffee shops, in living rooms, and at libraries with me as I
thought, wrote, and pushed through – Nikki Weickum, Dawn Brown, Lonna Edwards, and especially -- Marisa Smith and Patrese Anderson, who not only worked with me, but made sure I was fed and in good spirits. Additionally, I would like to thank Francena Turner (for her role in facilitating my dissertation data collection) and Anthony Sullers (for numerous conversations that allowed me to think aloud and figure out what was happening with my dissertation data). Finally, thank you to my BFF weekly check-in group (Marie, Elena, Rasheda, and Rocío) – thank you for holding me accountable for writing deadlines, reminding me to be kind to myself, rooting for me, and for being such inspirational women.

Next, I would like to thank my family. I have no doubt that my decision to pursue a doctorate was fueled in part by my family’s support and encouragement. To my Daddy, thank you for always believing in me and being proud and supportive. To my Mommy, thank you for instilling in me, from a very early age, a love for learning and a strong work ethic; that carried through and made this process so much easier. You have always reminded me who I was and what I am capable of. Although I laughed, the “what’s your name?” pep talks helped tremendously. To my amazing cousin, Sharon, thank you for your support – from your texts, to shipping me tea so I would not get sick during this process, to making sure I had a way to be connected to family and not need to worry – you are amazing!

Last, but not least, a huge thank you to Theopolies J. Moton, III. I am forever grateful for your love and support. You have been here for every step of process – reminding me to eat and take care of myself, helping brainstorm acronyms and names for my model, blasting your networks with my survey, generally calming my anxieties, and believing in me. Thanks for joining me on this ride.
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CHAPTER 1: INTRODUCTION

Beginning in 1932, U.S. Public Health Service (PHS) physicians in Macon County, Alabama promised free medical care to approximately 600 hundred Black\(^1\) men. About 400 of these men had syphilis and were selected as subjects to be observed as part of a study. PHS officials told these men they were being treated for their “bad blood” (Washington, 2006). Instead of treating these men, PHS scientists withheld treatment from these men in order to document the progression of the disease, including charting the symptoms and disorders. Treatment was withheld from these men even after 1945 when penicillin was a known cure for syphilis. This study, widely known at the Tuskegee Syphilis Study, was not hidden from the medical community; the autopsies of men who died were published in medical journals and shared at American Medical Association meetings (Centers for Disease Control and Prevention, 2016; Washington, 2006). In 1972, there was public outcry regarding the cruel and unethical nature of the study in response to an Associated Press story exposing the experiment to those outside the medical community. This outcry triggered an investigation by a government-appointed panel and ultimately the end of the study (Washington, 2006). For many people, fraught relations with the health-care\(^2\) system, particularly between the health-care system and Black Americans, conjure thoughts of the Tuskegee Syphilis Study. For this reason, the effects of the Tuskegee Syphilis Study have received a good deal of attention (Jaiswal & Halkitis, \(^{\ldots}\)

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\(^1\) Black is used in this dissertation to refer to those who identify as African American/Black, as it applies to both African American and others of African descent (i.e., Afro-Caribbean). The term African American appears only in cases in which the items or samples were explicitly African American, and this distinction is important. White is used to refer to those who identify as Caucasian or White.

\(^2\) The American Psychological Association recommends using Merriam-Webster as the guideline for the standard spelling of non-psychological terms (American Psychological Association, 2019). As a result, this dissertation utilizes “health care” as a noun and “health-care” as an adjective (“Health care,” n.d.). “Healthcare” only appears in reference to measure items; this was done to preserve the original wording of these measures and use a consistent term throughout the study.
The Tuskegee Syphilis Study, however, simply stands as one incident among many; a salient example in a panoply of other incidents (Reverby, 2008).

In 1989, 9800 bodies were found in the basement of the Medical College of Georgia; seventy-five percent of those bodies were those of Black individuals (Blakely & Harrington, 1997) giving credence to folklore about “night doctors” on the hunt for Black bodies (Turner, 1993). More recently, a 2016 study found that about a quarter of medical students believed that Black people have thicker skin and experience pain differently (Hoffman, Trawalter, Axt, & Oliver, 2016). The same year, a patient secretly recorded her own surgery and found that the doctors in the room insulted her during the surgery (Wang, 2016). In April 2018, the removal of J. Marion Sims’ statue from Central Park called public attention to the fact that the “father of gynecology” perfected his techniques on unanesthetized Black female slaves, like Anarcha, Lucy, and Betsy (Neuman, 2018; Washington, 2006). In December 2018, six doctors in Detroit, Michigan were charged in a $500M opioid scheme. The doctors were accused of both getting patients hooked on pain pills and forcing them to undergo painful injections in order to receive more of the addictive pills, as well as submitting fraudulent claims to Medicare, Medicaid, and Blue Cross for services that were either medically unnecessary, ineligible for reimbursement, or not provided as presented (Snell, 2019).

These incidents are but a few of the cases that exemplify strained relationships between the health-care system and the public. The array of incidents raises questions about individuals’ relationships with and perceptions of the health-care system. Scholars have argued that we have an abundance of everyday conversations about health; in other words, that we talk to our family, friends, and coworkers about health-related topics (Cline, 2003; Head & Bute, 2017). Additionally, scholarship has shown that news coverage of these incidents, as well as mediated
depictions of health-care interactions, can shape the public’s attitudes (Dutta, 2017; Quick, 2009). Thus, these incidents call into question the ways in which the retelling of these stories or exposure to associated stories (both fiction and non-fiction) may impact individuals and their perceptions about the health-care system. More specifically, how do these communicative acts (i.e., interpersonal communication and mediated communication) influence distrust of the health-care system and its actors? Answering this question is of particular importance when this distrust is thought to contribute to racial health disparities (e.g., Kinlock et al., 2017; Nelson, Stith, & Smedley, 2002; Penner et al., 2009).

Medical mistrust, distrust of the motives of medical institutions and personnel (Omodei & McLennan, 2000), has been cited as a deterrent to engagement in a variety of positive health behaviors. Higher levels of medical mistrust have been associated with a decreased likelihood to engage in health behaviors spanning the health-care spectrum: from preventive behaviors, like routine check-ups (Hammond, Matthews, Mohottige, et al., 2010) and cancer screening (Bynum, Davis, Green, & Katz, 2012; Shelton et al., 2010) to treatment adherence (Kalichman et al., 2016) and satisfaction (LaVeist, Nickerson, & Bowie, 2000), to behaviors that impact the population health more broadly (e.g., participation in clinical trials and registering as an organ donor; Ma et al., 2013; Morgan, 2004). As such, medical mistrust is a barrier to individuals’ participation in the very health behaviors that lead to better health outcomes.

As health communication scholars seek to improve health outcomes, tackling medical mistrust becomes a critical step in this endeavor. Understanding the antecedents of medical mistrust would allow for more focused intervention strategies. Unfortunately, to date, there appears to be little quantitative work focused on understanding the antecedents of medical mistrust. A recent review of medical mistrust studies found that most studies do not even address
the causes of medical mistrust (Benkert, Cuevas, et al., 2019). When studies do address causes, it is often a description of the historical atrocities (e.g., Tuskegee Syphilis Study) or discrimination that may contribute to medical mistrust, but rarely an explicit examination of those antecedents. A single model has been produced in quantitative investigations of medical mistrust that explicitly addresses antecedents of medical mistrust (Hammond, 2010). This model, however, only accounted for about a third of the variance in medical mistrust. Furthermore, it neglected the role of communication in medical mistrust. As medical mistrust is the result of exposure to messages about how to think about the medical system (i.e., communication), communication should be considered when thinking about the antecedents of medical mistrust. Up until now, little work has explicitly included communication in approaching medical mistrust.

Beyond a greater focus on the role of communication on medical mistrust, cultural factors such as race are also important to consider when theorizing about medical mistrust. Minority groups report higher levels of medical mistrust than their White counterparts (Brandon, Isaac, & LaVeist, 2005; Guadagnolo et al., 2009; Thompson, Valdimarsdottir, Jandorf, & Redd, 2003). The relationship between race and medical mistrust exists when controlling for comorbidities, trust in physician, knowledge of the Tuskegee Syphilis Study, and other demographic variables (Brandon et al., 2005; Durant, Legedza, Marcantonio, Freeman, & Landon, 2011; Guadagnolo et al., 2009; Thrasher, Earp, Golin, & Zimmer, 2008), suggesting that race may play a critical role in our understanding of medical mistrust. Despite this, little scholarship has examined the nuances of these racial differences or how race and racial experiences affect antecedents of medical mistrust.

The purpose of the current dissertation is to fill these gaps and advance a communication approach to medical mistrust. In this dissertation, a new model of medical mistrust, the
Ecological Medical Mistrust Antecedents (EMMA) model is proposed. The EMMA model utilizes the antecedents provided by Hammond’s (2010) model as a base, while incorporating aspects of Street’s (2003) ecological model of medical encounters to provide context and reconceptualize these antecedents. The resulting EMMA model centers the antecedents of medical mistrust while incorporating the role of communication. This dissertation is comprised of two studies based on the EMMA model. The first study utilized a cross-sectional survey research design to test the hypothesized EMMA model in a sample of Black and White adults. Using data from a separate sample of Black adults, the second study employed an experimental design to investigate the effects of mediated messages on medical mistrust and health intentions.

In doing so, this dissertation moves the literature forward in four important ways. First, it tests the role of communication in medical mistrust. Medical mistrust is the result of communicative events. More specifically, it is the result of exposure to messages (whether interpersonal or mediated) that are related to the medical system. As such, medical mistrust is a communication phenomenon. Thus, this construct should be examined in light of communication frameworks and theories. This dissertation takes the first steps in that direction by proposing a theoretical model that includes communication in medical mistrust and testing how this model holds in a sample of Black and Whites adults.

Secondly, this dissertation focuses attention on the antecedents of medical mistrust. Scholars have called for investigations into medical mistrust (Adams & Simoni, 2016; Scharff et al., 2010). Unfortunately, few studies have explicitly explored medical mistrust as the primary phenomenon of interest. Much of the current work on medical mistrust examines it as a predictor of health outcomes (e.g., Bickell, Weidmann, Fei, Lin, & Leventhal, 2009; Bynum et al., 2012; Guadagnolo et al., 2009; Hammond, Matthews, Mohottige, et al., 2010; Kolar et al., 2015;
Shelton et al., 2010). Although a few studies have included antecedents (e.g., Davis, Bynum, Katz, Buchanan, & Green, 2012), antecedents were not the primary focus of these studies nor did they provide information about medical system-related messages that may contribute to medical mistrust. The proposed Ecological Medical Mistrust Antecedents (EMMA) model attempts to remedy this by focusing on the role of communication in the antecedents of medical mistrust. In doing so, this dissertation answers recent calls for studies on medical mistrust to specifically measure possible precursors to medical mistrust and use modeling that allows for the examination of mediation effects (Benkert, Cuevas, et al., 2019).

In examining the role of communication, specific attention is paid to the role of mediated communication in the antecedents of medical mistrust. Mediated communication, especially news media, is often overlooked in examinations of medical mistrust. Benkert, Cuevas, et al. (2019) describes vicarious experiences that result in medical mistrust as primarily being intergenerational (i.e., interpersonal). This is an incomplete view of vicarious experiences as it is imperative for scholars to know how mediated messages in the environment may also be contributing to medical mistrust (Randolph & Viswanath, 2004). In Study 1, mediated communication, of both negative health-care experiences and racial discrimination experiences, is hypothesized to a predictor of medical mistrust in the EMMA model. Furthermore, Study 2 tests the effects of mediated communication on medical mistrust in experimental designs; this allows for empirical evidence regarding the types of messages that may influence medical mistrust to be produced.

The third contribution of this dissertation involves the examination of the cultural context of medical mistrust, specifically race. An abundance of scholarship has shown that racial differences in medical mistrust exist, but little has been done to empirically explore these
differences. Based on posited explanations of these differences (e.g., discrimination), it is possible that race affects the way the antecedents of medical mistrust are experienced. It has been noted that despite an abundance of evidence regarding the association between race and medical mistrust, there is little scholarship examining, in detail, the experiences causing these racial differences (Benkert, Cuevas, et al., 2019). In Study 1, the antecedents of medical mistrust are examined by race; in other words, a comparative examination of medical mistrust is undertaken. Additionally, both Study 1 and Study 2 shed light on the antecedents of medical mistrust for Black participants. Given the importance of medical mistrust for health disparities for Black Americans (King, 2003; Nelson et al., 2002; Office of Disease Prevention and Health Promotion, 2017), it is important to have a better understanding of medical mistrust for this demographic.

Finally, a fourth, ancillary contribution of this dissertation is to conduct a closer examination of medical mistrust measures. Williamson and Bigman (2018) found that there are two widely used measures of medical mistrust: the Medical Mistrust Index (MMI; LaVeist, Isaac, & Williams, 2009) and the Group-Based Medical Mistrust Scale (GBMMS; Thompson et al., 2004). The MMI assesses general medical mistrust, whereas the GBMMS assesses race-based medical mistrust (i.e., asks whether people of participants' race/ethnicity should be mistrustful). Given that racial experiences may influence the experiences related to medical mistrust, these measures may differ in their relationship to health outcomes, as well as how mediated messages impact these types of medical mistrust. However, to date, there is little work done to ascertain which type of medical mistrust predicts specific health intentions or the nuances of these measures.

This dissertation provides an opportunity to broach investigation into these issues. The following chapters elaborate on the background, theory, and results of this dissertation. Chapter 2
describes the state of medical mistrust scholarship, including conceptual issues surrounding medical mistrust, the role of race and medical mistrust, and medical mistrust’s relationship to health outcomes. Chapter 3 describes an existing conceptual model of medical mistrust antecedents (Hammond, 2010), the ecological model of medical encounters (Street, 2003), and then proposes the Ecological Model of Medical Mistrust Antecedents (EMMA). Chapter 4 describes the method, results, and limitations for Study 1. Chapter 5 reports on the method, results, and limitations for Study 2, including a description of the creation and pre-testing of stimuli. Finally, Chapter 6 presents a general discussion of the implications and limitations of these studies, as well as addresses future directions for medical mistrust scholarship.
CHAPTER 2: LITERATURE REVIEW

Medical mistrust, distrust of medical personnel and organizations (Omodei & McLennan, 2000), has been recognized as a recurrent barrier to engagement in positive health behaviors. A vast amount of empirical work shows that medical mistrust is associated with a decreased likelihood of individuals’ engagement in behaviors ranging from organ donation to routine health check-ups. The more distrustful individuals are of medical personnel and institutions, the less likely these individuals are to utilize health services (Hammond, Matthews, Mohottige, et al., 2010), undergo cancer screening (Thompson et al., 2004), receive vaccines (Kolar et al., 2015), adhere to antiretroviral therapy (ART) for the treatment of HIV/AIDS (Kalichman et al., 2017), and become registered organ donors (Morgan et al., 2008).

Given the pervasiveness of medical mistrust, scholars have called for investigations into this phenomenon (e.g., Adams & Simoni, 2016; Scharff et al., 2010). One of the few aspects of medical mistrust that has garnered significant attention, is the racial differences in medical mistrust. Racial differences in reported levels of medical mistrust are pervasive in extant literature. In fact, medical mistrust has been posited as contributing to racial health disparities in the United States (e.g., Office of Disease Prevention and Health Promotion, 2017). Unfortunately, few studies have explicitly examined medical mistrust as the primary outcome of interest; instead, medical mistrust has received a cursory glance as a mediator or moderator within studies. The connection to health disparities and the prevalence of medical mistrust as a barrier point towards its importance for health communication scholars hoping to influence health outcomes and reduce racial health disparities.

The current state of the literature suggests antecedents of medical mistrust, outside of demographics, are an understudied facet of medical mistrust scholarship (Benkert, Cuevas, et al.,
Need for Clarity within the Medical Mistrust Literature

Medical mistrust acts as an impediment to engagement in positive health behaviors, particularly for Black Americans. Although it is clear medical mistrust acts as a barrier, there remains a need for clarity regarding the construct. An abundance of scholarship discusses medical mistrust (Williamson & Bigman, 2018); however, there is little consistency in the use of the construct. The current state of the literature makes it difficult to ascertain what is being referred to by the term “medical mistrust.” “Medical mistrust” is used to refer to a wide range of objects and levels of the medical system which an individual could feel mistrustful towards. To date, little attention has been paid to the nuances and complexities of what appears in the literature in relation to this construct. To fully understand the impact of medical mistrust on health outcomes, an understanding of the ways in which the term “medical mistrust” has been used is necessary. Below, the differences between trust, mistrust, and distrust are discussed, as well as the objects, referents, and prominent measures of medical mistrust.
Mistrust, Distrust, and Trust

Medical mistrust has been defined and conceptualized in a variety of ways by scholars. As discussed in Rose, Peters, Shea, and Armstrong (2004), scholars most often utilize one of two definitions of medical mistrust. The first group of scholars defines medical mistrust as low levels of trust in actors in the medical system (e.g., physician, nurses). Trust, here, entails a willingness to be vulnerable with the expectation that one’s needs will be taken care of (Farmer, Jackson, Camacho, & Hall, 2007; Hall, Dugan, Zheng, & Mishra, 2001). The second group of scholars defines medical mistrust as the belief that medical institutions and personnel will act against the best interests of individuals (Rose et al., 2004). Scholarship on medical mistrust reflects the use of both of these definitions.

Several studies have conceptualized medical mistrust as low levels of trust. In assessing children’s trust in care provided to a dying parent, Bylund Grenklo et al. (2013) utilized a single item measure that asked, “Could you trust the health care provided to your parent during the final week of his or her life” (p. 2889). Responses to the item were on a Likert-type scale from “no, not at all” to “yes, very much.” The authors categorized those answering “no, not at all” and “yes, a little” as being distrustful (Bylund Grenklo et al., 2013). Schroeder et al. (2001) created a similar single item asking participants whether they trust the doctors prescribing them HIV/AIDS medication and asserted that lack of trust equates to distrust. Similarly, Corbie-Smith et al. (2002) intentionally defined “mistrust” as “lack of agreement with a statement of trust” (p. 2459). These conceptualizations of medical mistrust place mistrust and trust on different ends of the same continuum. The use of mistrust as being at the low end of a trust scale has resulted in some scholars referring to variables as “trust/mistrust” (e.g., LaVeist et al., 2009).
The conceptualization of medical mistrust as low levels of trust may have contributed to this confusion in the literature regarding the terms trust and mistrust. At this point, the distinction between mistrust and trust appears to have been blurred. Scholars discussing and measuring trust are citing evidence from studies that explicitly utilized measures of medical mistrust. For example, in a review of measures of trust, Hall et al. (2001) cite LaVeist and colleagues’ (2000) Medical Mistrust Index. Farmer et al. (2007) does something similar by citing the results of both LaVeist et al. (2000) and Corbie-Smith et al. (2002), two studies explicitly measuring medical mistrust, as evidence about trends in research regarding trust in the medical system.

Similarly, this lack of distinction has also resulted in several scholars failing to make distinctions between trust and mistrust altogether. Goodin et al. (2013) assert they are measuring “mistrust of medical researchers” but use a scale entitled “Trust in Medical Researchers Scale.” Scholars also slide between the use of the terms trust and distrust. For example, Johnson et al. (2008) measured a construct using Rose and colleagues’ (2004) Health Care System Distrust Scale yet referred to it as measuring trust in the health-care system. These uses of trust and mistrust suggest that there is a lack of clarity amongst scholars as to what is medical trust versus medical mistrust.

The second definition of medical mistrust often used by scholars conceptualizes medical mistrust as negative beliefs about motives of medical personnel and institutions (Omodei & McLennan, 2000). For example, Thompson et al. (2004) define medical mistrust as a “tendency to distrust medical systems and personnel…” (p. 210). Scholarship utilizing this definition tends to ask items like “Doctors and health care workers treat people of my ethnic group like ‘guinea pigs’” (Thompson et al., 2004, p. 213) and “Research is part of a conspiracy to harm minority
groups” (Barakat et al., 2013, p. 223). Additionally, scholars have also equated medical mistrust to the belief in conspiracy beliefs, which also reflects negative beliefs regarding motives. Bogart and colleagues conceptualize conspiracy beliefs related to HIV and Ebola as specific types of medical mistrust (Bogart, Klompas, & Katz, 2016; Bogart, Wagner, Galva, & Banks, 2010; Bogart et al., 2016). Instead of being about lack of trust, this definition points to perceptions of the motives and intentions of medical personnel and institutions.

Though scholars have used both definitions and blurred the lines between trust and mistrust, trust and mistrust are distinctly different concepts. The definition of medical mistrust as the belief that medical institutions and personnel will act against the best interests of individuals provides a more helpful definition for thinking about medical mistrust. Trust and distrust are not two sides of the same coin. An individual can believe his or her needs will not be met (i.e., low levels of trust), without believing that an actor will actively act against one’s best interests (i.e., high levels of distrust). In other words, an individual can simultaneously be trustful and distrustful. Conceptually, these are not two concepts on the same spectrum. Medical mistrust is not the opposite of trust, but instead should be thought of as a complement of trust (e.g., Hall et al., 2001). Perhaps low trust is a facet or precursor to medical mistrust; low trust may be a necessary, but not sufficient factor in experiencing medical mistrust. As such, it is problematic to automatically consider mistrust to be low levels of trust.

Making this distinction helps clarify what it means for individuals to be mistrustful of the medical system. It conceptually creates a distinction between not being trusting and being mistrustful. By taking medical mistrust to be related to the perceived harmful motives of medical personnel and institutions, it is possible to determine whether issues are related to trust or mistrust. For example, Christie-Mizell, Laster, Dagadu, and Blount (2014) measured variables
entitled “generalized mistrust,” “mistrust in physicians,” and “mistrust in psychiatric medicine.”

A closer examination of the measures shows that these items are primarily measuring low levels of trust (e.g., “I trust my doctor’s judgments about my medical care”, p. 231). Here, low scores on these items would not reflect an individual who believes medical personnel will actively do something counter to their needs, a necessary requirement for mistrust. Thus, it is possible that what scholars are referring to as mistrust, may, in fact, be a measure of trust.

In other fields, more work has been done to define and disentangle trust, mistrust, and distrust. Most scholars agree that trust and mistrust/distrust do not belong on the same continuum (Marsh & Dibben, 2005; McKnight & Chervany, 2001). For trust theorists, mistrust/distrust differs from trust in that it involves negative expectations about an individuals’ actions (McKnight & Chervany, 2001). McKnight and Chervany (2001) note that trust theorists have reached a consensus that trust and distrust are separate constructs. They do not belong on the same continuum; instead, they are related but distinct constructs which can each have high and low levels.

There is, however, less consensus on the distinction between distrust and mistrust. One view is that of Marsh and Dibben (2005). They argue that mistrust and distrust are different constructs. According to Marsh and Dibben (2005), mistrust is misplaced trust, while distrust is a measure of how much the truster will actively work against someone. Based on their conceptualization, medical mistrust can only happen after an interaction. It can only be that someone “mistrusted” a medical professional during a previous experience (i.e., I thought I could trust this doctor, but the doctor let me down). Distrust, on the other hand, reflects the expectation that someone will actively attempt to give you negative outcomes. As health scholars, we would measure the latter; we are interested in individuals’ expectations when the need to interact with
health-care providers arises. Under Marsh and Dibben’s (2005) definition, it is not possible to be “mistrustful” as the event has not occurred yet; one can only have “mistrusted.” However, in the health and medical domains, we are less likely to be trying to measure “mistrust,” as defined by Marsh and Dibben (2005), unless examining willingness to return to a primary care provider.

Alternatively, like most dictionaries, McKnight and Chervany (2001) asserts that mistrust and distrust are synonymous terms. Furthermore, when scholars use the term “medical mistrust,” and are not defining it as lack of trust, they define it using terms like “tendency to distrust medical systems and personnel” (Thompson et al., 2004, p. 210) and “negative beliefs that the trustee will act in ways against the best interests of the truster” (Rose et al., 2004, p. 57). This would suggest that medical mistrust and medical distrust are synonymous terms. For the purposes of this dissertation, the term “medical mistrust” will be used so as to not separate this literature from the body of work these studies are in discussion with. However, it will be defined as distrust regarding the negative motives of medical personnel and institutions.

**Objects of Mistrust**

Medical mistrust encapsulates beliefs that some actor in the medical system will actively work against one’s best interests, but this actor could refer to individual(s) at varying levels and positions in the medical system. In other words, the object of the mistrust could be one of several entities. Hall et al. (2001) proposed two dimensions on which the object of the trust could exist: a) personal versus institutional objects and b) individual or system level objects. This results in four categories of objects of trust: personal, individual (e.g., my doctor); institutional, individual (e.g., my hospital); personal, system (e.g., doctors in general); institutional, system (e.g., hospitals, clinics, or health plans in general, medical system as a whole; Hall et al., 2001). These categories were applied to medical mistrust by Williamson and Bigman (2018).
Studies have looked at mistrust in physicians and health care providers generally (Thompson et al., 2004), one’s own physician or health care provider (Christie-Mizell et al., 2014; Safran et al., 1998), hospitals generally (LaVeist et al., 2000), and the health care system generally (Rose et al., 2004; Shea et al., 2008). Studies also examine the mistrust of a combination of objects. For example, Corbie-Smith et al. (2002) asked items about both an individual’s own physician, as well as physicians more generally. Occasionally, studies focus on other objects, such as insurance companies (Haas, Phillips, Baker, Sonneborn, & McCulloch, 2003). Medical mistrust has also been used in the broader sense to address mistrust of other objects associated with the medical system including the government (Allen et al., 2005; Lantz, Evans, Mead, Alvarez, & Stewart, 2016), and medications (Gonzalez et al., 2007).

Ultimately, the object of medical mistrust being referred to can be broad, but most often refers to objects at the system level (Williamson & Bigman, 2018). In other words, many studies are not asking about participants’ mistrust of their own physician. This is appropriate as many of the studies are not examining outcomes associated with an individual’s primary care physician. Issues such as cancer screening, registering to be an organ donor, and participating in clinical trials often involve interacting with health-care workers that individuals have had no previous interaction with.

**Referent Group for Medical Mistrust**

Medical mistrust measures can not only vary by object, but also by the referent group for the measure. Williamson and Bigman (2018) examined the referent in medical mistrust measures. They examined whether measures asked items about individuals’ beliefs on behalf of themselves (e.g., do you trust your doctor), beliefs held by people in general (e.g., patients should be mistrustful), or those of their sociodemographic group (e.g., people of your
race/ethnicity). Williamson and Bigman (2018) found that the referent varied across the most widely used measures of medical mistrust. The Medical Mistrust Index (MMI; LaVeist et al., 2000) and Group-Based Medical Mistrust Scale (GBMMS; Thompson et al., 2004) accounted for approximately 42% of studies examining medical mistrust. The MMI asks about a general referent, whereas the GBMMS asks about beliefs on behalf of individuals’ sociodemographic group; for the GBMMS, racial/ethnic group is often the sociodemographic group being examined.

Given the complexities of medical mistrust, scholars must be attuned to these differences and how they may differentially impact health outcomes. In light of historical relationships between Black Americans and the medical system, it is possible that measuring medical mistrust with items such as, “Patients have sometimes been deceived or misled by healthcare providers” (LaVeist et al., 2009, p. 2100) is very different than asking items about whether individuals believe their group is more likely to be misled (e.g., “Healthcare providers sometimes hide information from people of my race/ethnicity;” Thompson et al., 2004, p. 213). Recent work has suggested that the measures these items are a part of, the two most widely used measures of medical mistrust (Williamson & Bigman, 2018), account for health outcomes in different ways (e.g., Pellowski et al., 2017). Yet, there remains a need to continue to tease apart the differences in these measures.

**Summary**

Ultimately, although medical mistrust is a prominent barrier, what is meant by the term “medical mistrust” varies greatly. The term medical mistrust has been used to refer to a plethora of situations; medical mistrust can refer to a wide range of objects as well as either low levels of trust or believing medical personnel will actively work against patients’ best interests. To create
clarity in the meaning of medical mistrust, it is most appropriate to think of medical mistrust as reflecting beliefs that medical institutions and personnel will actively work against individuals’ best interests. This mistrust can happen at various levels of the medical system (e.g., physician versus health-care system) and be aimed at known or general objects (e.g., my physician versus physicians in general). Furthermore, medical mistrust can be used to refer to how individuals perceive the treatment not only of themselves, but also their entire societal group. In all, medical mistrust encompasses a wide range of beliefs regarding anticipated interactions with medical institutions and personnel. It is this anticipation of negative interactions with the medical system that has the potential to create a reluctance to engage with the medical system or health-care workers and, in turn, impact health outcomes. For the purposes of this dissertation “medical mistrust” will be used to refer to distrust in motives of those at the system level (i.e., health-care providers).

**Importance of Medical Mistrust for Health Communication Scholars**

The pervasiveness of medical mistrust as a barrier to engagement in positive health behavior makes it a critical to health communication scholars seeking to improve health outcomes. The extant literature makes clear that medical mistrust has an impact on health outcomes. Generally, medical mistrust has a negative impact on both physical and mental health (Moore et al., 2013). More specifically, medical mistrust is related to lower engagement in a variety of health behaviors, which may lead to negative health outcomes. Across populations and scales, medical mistrust is associated with decreased likelihood of engaging in a variety of health behaviors from prostate cancer screenings (Shelton et al., 2010) to antiretroviral treatment adherence (Bogart et al., 2016). There are various points at which an individual could interact with the health-care system, from getting routine check-ups to being diagnosed with a condition.
and receiving treatment. Medical mistrust appears as a barrier to health behaviors at various points along this spectrum of possible health-care interactions.

**Preventive Health Behaviors**

The first point along this spectrum where distrust of medical institutions and personnel is present is in accessing health care and using routine health services. Shelton et al. (2010) examined the associations between Black men and health care access variables (e.g., avoidance of health care, perceived access to health care). Medical mistrust was moderately, negatively correlated with health care access and moderately, positively associated with avoidance of health care. In other words, increased medical mistrust was associated with decreases in health care access and increases in avoidance of health care. Like Shelton et al. (2010), Hammond, Matthews, Mohottige, et al. (2010) found that Black men who reported higher medical mistrust had significantly higher odds of reporting delays in routine check-ups, blood pressure screening, and cholesterol screening. Similar patterns have been found for Black men who had sex with men. Among these men, medical mistrust was associated with more time having passed since last physical examination (Eaton et al., 2015). These trends are also present for U.S. adults more broadly. In a national sample of individuals, LaVeist et al. (2009) found that medical mistrust was related to failure to keep follow-up appointments and failure to fill a prescription. Thus, even before the diagnosis of a condition, individuals are hesitant to interact with the medical system.

This distrust of medical institutions and personnel not only appears regarding routine health check-ups but also when it comes to other preventive behaviors. Kolar et al. (2015) found that women reporting higher medical mistrust scores were less likely to have engaged in human papillomavirus (HPV) vaccination and STI testing. Recent work surrounding pre-exposure
prophylaxis (PrEP), a biomedical HIV prevention method, has found that medical mistrust is associated with lower comfort discussing the option with a provider (Holloway et al., 2017) and decreased willingness to take PrEP (Tekeste et al., 2018). Additionally, a large bulk of the medical mistrust literature has examined the relationship between medical mistrust and cancer screening (Williamson & Bigman, 2018). For instance, medical mistrust is associated with more negative attitudes towards prostate cancer screening (Shelton et al., 2010), as well as negative attitudes and unwillingness to be screened for colorectal cancer (Bynum et al., 2012; Purnell et al., 2010). Levels of medical mistrust have also been used to distinguish between individuals who have and have not undergone cancer screening. For example, Thompson et al. (2004) found that women who had not gotten a mammogram or had gone more than five years since their last mammogram reported higher medical mistrust scores than women who had gotten mammograms. These studies suggest that medical mistrust exists for health behaviors early in the range of possible health-care experiences (i.e., before diagnosis). This barrier presenting so early in the spectrum of possible health-care interactions may mean that it inhibits individuals from knowing they possess a health condition.

**Treatment**

The extant literature suggests that even at points after diagnosis, individuals harbor mistrust regarding their treatment resulting in treatment nonadherence or a decreased desire to receive medical treatment. Bickell et al. (2009) found higher medical mistrust scores among women who had not used adjuvant therapy in comparison to those who had used adjuvant therapy. Furthermore, when they conducted logistic regression, they found that medical mistrust was a significant predictor for underuse of adjuvant therapy (Bickell et al., 2009). Similarly, Kalichman et al. (2016) determined that medical mistrust was associated with poor antiretroviral
therapy (ART) adherence. The relationship between medical mistrust and health applies not only to physical health but also to mental health as well. Owens, Riggle, and Rostosky (2007) found that individuals with higher levels of mistrust were less likely to seek mental health counseling. This reduced desire to receive or continue treatment can lead to negative health outcomes. Overall, nonadherence can result in complications with subsequent diagnoses, treatment, and even death (Loghman-Adham, 2003; Paterson et al., 2000).

**Satisfaction**

Medical mistrust has also been found to be associated with patient satisfaction (Benkert, Peters, Clark, & Keves-Foster, 2006; Guadagnolo et al., 2009; Terrell, Moseley, Mosley, Terrell, & Nickerson, 2004). In examining determinants of satisfaction with medical care, LaVeist et al. (2000) found that medical mistrust was negatively related to patient satisfaction. A number of studies have found negative correlations between medical mistrust and health care satisfaction generally (Shelton et al., 2010), as well as patient satisfaction related to mammography services (Molina, Kim, Berrios, & Calhoun, 2015) and to a physician’s cultural appropriateness (Brener et al., 2016). Finally, medical mistrust not only appears as a correlated construct but also as a predictor of satisfaction. López-Cevallos, Harvey, and Warren (2014) found that medical mistrust was a significant predictor of satisfaction even when controlling for other factors (e.g., perceived discrimination, age, and health insurance); there was a negative association between medical mistrust and satisfaction with care. This is problematic as less satisfied patients are less likely to adhere to treatment plans (Street, Makoul, Arora, & Epstein, 2009) and less likely to utilize health services (Fenton, Jerant, Bertakis, & Franks, 2012; LaVeist et al., 2000).
Other Health-Related Behaviors

Outside of these possible points of interaction with the medical system, medical mistrust also has an impact on health-related behaviors that may not have direct effects on the health of the individual engaging in the behavior. For instance, medical mistrust is related to health-related behaviors like organ donation registration (Morgan, 2004; Quick, Morgan, LaVoie, & Bosch, 2014). Morgan (2004) found a negative relationship between organ donation attitudes and medical mistrust. Similarly, structural models tested by Quick et al. (2014) found that medical mistrust was negatively associated with organ donation attitudes.

Additionally, medical mistrust influences participation in medical research and trials (Braunstein, Sherber, Schulman, Ding, & Powe, 2008; Ma et al., 2013; Meng, McLaughlin, Pariera, & Murphy, 2016; Rajakumar, Thomas, Musa, Almario, & Garza, 2009). Rajakumar et al. (2009) found that parents reporting higher medical mistrust scores were less likely to have favorable attitudes towards their children participating in research. Similarly, Ma et al. (2013) found that not only was there a negative association between mistrust and willingness to participate in microbicide research among Black participants, but also that mistrust was significant as an independent predictor of willingness to participate. These trends also hold for those studies framed as clinical trials. For example, Braunstein et al. (2008) found that distrust toward medical researchers predicted willingness to participate in cardiovascular prevention trials. In a nationally representative sample, Meng et al. (2016) found that distrust was negatively correlated with willingness to participate in clinical trials for both Black and White participants. Thus, medical mistrust also exists for health behaviors on the periphery of the health-care spectrum, but that are nevertheless health related.
Lack of Scholarship Examining Medical Mistrust Antecedents

Despite the importance of understanding medical mistrust, empirical work up until this point provides little insight into medical mistrust, itself. The bulk of scholarship’s interest in medical mistrust has been as a predictor of health outcomes (Benkert, Cuevas, et al., 2019), whether that be in examining health services use, prevention behaviors, treatment adherence, or other health-related behaviors. Due to the overwhelming attention to medical mistrust as a predictor, scholars have also attended to the processes between medical mistrust and health outcomes and what may attenuate this relationship. For example, self-efficacy (Molina et al., 2015) and medication beliefs (Kalichman et al., 2017; Kalichman et al., 2016) attenuate the relationship between medical mistrust and satisfaction with mammography and ART adherence, respectively. Additionally, in line with the integrated behavioral model (Fishbein, 2000), Yoo and Tian (2011) found that organ donation attitudes mediated the relationship between medical mistrust and organ donation intentions. Medical mistrust attitudes influenced attitudes about the behavior and, in turn, intentions.

While examining these aspects of medical mistrust is important, there is a significant gap in the literature: antecedents of medical mistrust. Essentially, many studies take medical mistrust as the starting point and focus on mitigating its effects without full consideration as to what may be contributing to medical mistrust. There is some evidence pointing to the demographic factors associated with medical mistrust (e.g., race, Armstrong et al., 2012; age, Durant et al., 2011; socioeconomic status, Halbert et al., 2009). Beyond this, however, there have been few studies that explicitly examined predictors or antecedents of medical mistrust. In other words, few studies treat medical mistrust as the phenomenon of interest or the primary outcome. In fact,
Benkert, Cuevas, et al. (2019) notes a need for more studies that test antecedents of medical mistrust.

Some of the work providing insight into antecedents of medical mistrust has examined medical mistrust as a mediator or moderator of health outcomes. Medical mistrust has been examined as a mediating variable in the relationship between other psychosocial variables, such as perceived stigma, and health outcomes (e.g., Eaton et al., 2015). Additionally, Ding, Powe, Manson, Sherber, and Braunstein (2007) examined whether medical mistrust, along with perceived chance of harm, would explain the previously found sex differences in willingness to participate in cardiovascular prevention trials. Abraído-Lanza, Céspedes, Daya, Flórez, and White (2011) also found that medical mistrust partially mediated the effect of waiting time on dissatisfaction with care. Moreover, the effects of campaign messages on medical mistrust has also been examined (Morgan, Harrison, Chewning, DiCorcia, & Davis, 2010), as well as testing medical mistrust as a moderator of the relationship between campaign messages and engagement with the message (Thompson, Kalesan, Wells, Williams, & Caito, 2010).

These works however, do not center medical mistrust as a phenomenon of interest, nor are their goals to systematically investigate the antecedents of medical mistrust. Prior to 2017, only one quantitative study had attempted to illuminate the antecedents of medical mistrust (Hammond, 2010). The lack of work explicitly examining the antecedents of medical mistrust is problematic given the amount of work solidifying medical mistrust as a phenomenon of concern for health scholars. At this point, there is enough empirical support to warrant more systematic examinations of the antecedents of medical mistrust, yet few scholars have done so. Most surprising is the lack of the communication scholarship devoted to this. Given that communicative events (i.e., exposure to messages about the health-care system) would impact
medical mistrust, it is problematic that there is little communication work investigating medical mistrust as a phenomenon of interest and examining its antecedents. Recently, work conducted by Williamson and colleagues has begun to examine medical mistrust as a phenomenon of interest (Williamson, Bigman, & Quick, 2018; Williamson, Smith, & Bigman, 2019); however, this work only begins to scratch the surface and the need for further investigation remains.

Summary

Ultimately, medical mistrust is a pervasive barrier to several health and health-related behaviors. Medical mistrust can interfere at many points of possible interaction with the healthcare system. It is associated with unwillingness to engage in routine health behaviors, screenings, treatment adherence, and other activities that would impact the health of populations more broadly (e.g., participating in clinical trials and becoming an organ donor). In other words, medical mistrust appears to lead to less engagement in the very behaviors that lead to better health outcomes. For example, preventive care like routine check-ups and screenings are associated with lower mortality and the prevention of disease (Starfield, Shi, & Macinko, 2005; U. S. Department of Health and Human Services, 2018). Thus, understanding medical mistrust is imperative to improving health. It provides an avenue for intervening and improving a myriad of health behaviors. While some barriers to engaging in health behaviors may be context or behavior specific, medical mistrust is one barrier that exists across a variety of contexts. Unfortunately, little work has been done to examine the antecedents of medical mistrust. Many of the studies in which antecedents were addressed were not explicitly seeking to investigate predictors of medical mistrust. Thus, there remains a need for studies that place medical mistrust, and its nuances, as the focal point of investigation.
The Role of Race in Medical Mistrust

Race is the one area that has received extensive attention in medical mistrust literature (Benkert, Cuevas, et al., 2019). When race has been included in studies of medical mistrust, it has been found to be significantly correlated with medical mistrust (Halbert et al., 2009; Maly, Stein, Umezawa, Leake, & Anglin, 2008). These relationships exist not only for self-reported race, but also measures of racial identity (e.g., racial centrality; Shelton et al., 2010). Additionally, the relationship between race and medical mistrust has been found when controlling for other variables in regression analyses, such as comorbidities, trust in physician, and knowledge of the Tuskegee Syphilis Study (e.g., Brandon et al., 2005; Corbie-Smith, Thomas, & George, 2002; Durant et al., 2011; Thrasher et al., 2008). The relationship between race and medical mistrust also remains after accounting for other sociodemographic variables. For instance, Guadagnolo et al. (2009) found that Native Americans had higher mistrust than White Americans even after accounting for age, gender, employment status, annual income, education level, and distance from a cancer center. Brandon et al. (2005) found similar results when comparing Black participants’ and White participants’ levels of medical mistrust. Even after accounting for sex, education, age, income, and insurance status, race remained a significant predictor of medical mistrust.

Comparative studies show a clear influence of race on medical mistrust. Generally, minority populations harbor higher levels of medical mistrust than their White counterparts. This trend applies to Native American (Guadagnolo et al., 2009), Black (Halbert et al., 2009; Tekeste et al., 2018; Thompson et al., 2003), and Hispanic/Latinx (Thompson et al., 2003) populations. Given the consistency of these findings, particularly among studies utilizing U.S. populations, there appears to be something about the ways in which race operates in this country that
influences medical mistrust. These racial differences have led some scholars to specifically examine medical mistrust through a group-based perspective. For instance, Thompson and colleagues’ (2004) piece defines medical mistrust as being the result of medical institutions and personnel representing the dominant culture. If medical mistrust is founded on the belief that medical institutions and personnel are representative of the dominant culture, those belonging to the dominant culture (e.g., White Americans) are less likely to be mistrustful while all others (e.g., minority populations) would be more likely to be mistrustful.

**Differences in Medical Mistrust for Black and White Americans**

Studies explicitly comparing Black participants to White participants have overwhelmingly found that Black participants harbor higher levels of medical mistrust (Brandon et al., 2005; e.g., Corbie-Smith et al., 2002). Given the variety of medical mistrust measures (Williamson & Bigman, 2018), it is noteworthy that this trend (i.e., Black individuals reporting higher levels of medical mistrust) is present across both scales and health topics. In this section, studies comparing reported levels of medical mistrust for Black and White individuals are reviewed, with attention paid to the scale and topic used for the studies.

**Scales.** Williamson and Bigman (2018) found that there are several different measures of medical mistrust. There are not only differences in the items themselves, but also in the orientations and definitions of medical mistrust these measures represent. Below, measures based on Williamson and Bigman’s (2018) systematic review of medical mistrust measures are used to illustrate the consistency of this finding (i.e., Black individuals reporting higher levels of medical mistrust) regardless of measure.

**Group-Based Medical Mistrust Scale.** Black participants have been found to have higher levels of medical mistrust than their White counterparts when scholars have been interested in
medical mistrust from a group-based perspective. Studies using the Group-Based Medical Mistrust Scale (GBMMS; Thompson et al., 2004) have found that Black participants report higher levels of medical mistrust than White participants on this measure (Fields, Abraham, Gaughan, Haines, & Hoehn, 2016; Halbert et al., 2009; Sheppard et al., 2016; Thompson et al., 2003). This measure asks whether individuals believe that members of their racial/ethnic group should be distrustful of doctors and health-care workers. All studies compared mean scores for GBMMS and found that Black participants reported higher mean levels of medical mistrust than did White participants.

**Medical Mistrust Index.** One might expect group differences to appear for a measure that may explicitly prime race, like the GBMMS; however, Black participants have reported higher levels of mistrust on measures that do not allude to race as well. This trend has been found for general mistrust of medical institutions (Arnett, Thorpe, Gaskin, Bowie, & LaVeist, 2016; Brandon et al., 2005; Casagrande, Gary, LaVeist, Gaskin, & Cooper, 2007; Kinlock et al., 2016; LaVeist et al., 2000). These studies utilized versions of the Medical Mistrust Index (MMI; LaVeist et al., 2009; LaVeist et al., 2000), which is thought to be a general measure of mistrust of medical institutions (Pellowski, Price, Allen, Eaton, & Kalichman, 2017). Arnett et al. (2016) and Kinlock et al. (2016) tested differences in group means and found that Black participants reported significantly more medical mistrust than their White counterparts. Alternatively, LaVeist et al. (2000) and Casagrande et al. (2007) tested the percentages of each group agreeing with statements in the index. Again, there were significant differences in reported levels of medical mistrust between Black and White participants.

**Health Care System Distrust Scale.** Similar patterns are also found when examining mistrust of the health-care system more broadly, as opposed to providers or hospitals (Armstrong
et al., 2012; Johnson, Kuchibhatla, & Tulsky, 2008). Armstrong et al. (2012) found that when looking at willingness to undergo genetic testing, there were significant differences in mean levels of reported medical mistrust such that Black participants reported higher levels than White participants. Johnson et al. (2008) found similar results when they compared mean levels of medical mistrust in the context of end-of-life care. These authors again found that Black participants reported significantly higher levels of medical mistrust than White participants.

**Corbie-Smith Distrust Scale.** The Corbie-Smith Distrust Scale (Corbie-Smith et al., 2002), which measures distrust as low levels of trust, also produced similar trends (Braunstein et al., 2008; Corbie-Smith et al., 2002; Meng et al., 2016). Meng et al. (2016) compared mean levels of medical mistrust among Black and White Americans in a nationally representative sample and found that Black participants reported higher levels of medical mistrust than their White counterparts. Braunstein et al. (2008) and Corbie-Smith et al. (2002) both tested differences in the percentages of participants giving responses. They also found that Black participants reported higher levels of medical mistrust than their White counterparts. These findings are unsurprising as there have been several studies showing that Black participants held lower levels of trust than White counterparts (Boulware, Cooper, Ratner, LaVeist, & Powe, 2003; Guerrero, de Leon, Carlos, Evans, & Jacobs, 2015; Musa, Schulz, Harris, Silverman, & Thomas, 2009; Saha, Jacobs, Moore, & Beach, 2010; Talcott et al., 2007).

**Single items.** Additionally, when single items have been used that equate low levels of trust with mistrust, Black participants still reported more medical mistrust than their White counterparts. Wasserman, Clair, and Ritchey (2006) conceptualized medical mistrust as perceived capacity for discrimination. Among undergraduates, Black participants were more likely to agree that the medical profession is discriminatory (and thus, likely to have negative
motives; i.e., distrust). Henderson et al. (2015) found similar findings for mental health. When asked if they generally could trust mental health staff and services, Black participants gave lower scores than White participants (Henderson et al., 2015). Additionally, Byrne, Tannenbaum, Glück, Hurley, and Antoni (2014) found that significantly more Black participants than White participants agreed that not wanting to be a guinea pig was a barrier to participating in clinical trials.

**Health topic.** Given the lack of information regarding the possibility of order effects on results, it is important to note the wide range of contexts in which these trends have been found. As there is a chance that medical mistrust was measured after exposure to the context, it is important to note that this trend is evident not only for topics often thought of as racialized in medicine (e.g., participation in clinical trials), but also for “benign” topics (e.g., primary care, diabetes, and satisfaction with care). These trends also hold across studies examining a number of contexts including emergency department use (Fields et al., 2016), prostate cancer (Halbert et al., 2009), primary care (Arnett et al., 2016), breast cancer (Sheppard et al., 2016), adherence to medical care (Casagrande et al., 2007), diabetes (Egede & Michel, 2006), genetic testing (Armstrong et al., 2012; Thompson et al., 2003), satisfaction with care (LaVeist et al., 2000), and participation in clinical trials (Braunstein et al., 2008; Meng et al., 2016).

The range of research conditions in which Black Americans consistently report higher levels of medical mistrust than their White counterparts point to the enduring existence of these racial differences in medical mistrust. This is not a function of a specific scale/measure being used or a particular health topic being examined. The ubiquitous nature of this trend suggests that there are underlying factors driving these differences that we must examine.
Historical Explanations for Race and Medical Mistrust

Scholars have argued that interventions focused on mitigating medical mistrust must be mindful of the root cause, which many scholars assert is the history of racism in the United States (e.g., Adams & Simoni, 2016). In other words, the histories of Black Americans in this country contribute to Black Americans harboring more mistrust than their White counterparts. For some, this distrust is a direct consequence of racist practices that were perpetrated or condoned by the state (McGary, 1999). Washington (2006) argues that the history endured by Black Americans has created “iatrophobia,” or fear of medicine. Although the Tuskegee Syphilis Study is thought to be a salient example of this maltreatment (Reverby, 2008), the abuses faced by Black Americans at the hands of medical personnel and institutions extend far beyond that of the Tuskegee Syphilis Study.

There is an abundance of other historical events that might foster medical mistrust. For instance, many slave owners were physicians who bought slaves for the explicit purpose of experimenting on them. Black slaves were preferentially used to pioneer and perfect eye surgeries, cesarean sections, and surgery for bladder stones (Washington, 2006). Post-slavery, Black women were unknowingly sterilized by obstetricians during childbirth, a phenomenon commonly known as “Mississippi appendectomies” (Roberts, 2000; Washington, 2006). In the 1940s, radiation experiments were conducted on unknowing, hospitalized Black patients. Additionally, prisoners, who are disproportionately Black, have also suffered from unwanted or coercive medical experimentation (Washington, 2006).

These examples are not relegated to the past as there are more contemporary examples of racism in medicine. The Institute of Medicine’s 2002 report found there were variations in routine medical procedures and referrals for treatment by race, even when other
sociodemographic factors were accounted for (Nelson et al., 2002). Empirical evidence has also shown that racism and bias, including implicit racial bias, impacts the rates at which treatment is recommended for Black patients (Green et al., 2007; Schulman et al., 1999). Schulman et al. (1999) had primary care physicians at a national conference view tapes of simulated patients complaining of chest pain in which they systematically varied the gender and race of the patient. Schulman et al. (1999) concluded that Black patients were significantly less likely to be referred for further testing. Green et al. (2007) found similar results; when presented with hypothetical patients in need of cardiology treatment, physicians who had negative implicit biases against Black people were less likely to recommend the necessary drugs for the patient. More recently, Hoffman et al. (2016) found that approximately 58% of medical students endorsed the belief that “Blacks’ skin is thicker than white” (p. 4298). Medical students who endorsed these types of beliefs were less likely to recommend pain medications for Black patients (Hoffman et al., 2016).

The combination of past abuses along with current evidence of racism in health care are thought to contribute to racial differences in medical mistrust. In general, many White individuals were shielded from these abuses through the use of Black bodies for experimentation. For example, J. Marion Sims, the “father of gynecology,” used Black women to perfect the gynecological procedures later used to help White women (Washington, 2006). Ultimately, due to these divergent histories, racial differences in how medical mistrust operates may exist. While both Black and White individuals can be mistrustful, this does not mean that their mistrust is the result of the same factors. Individuals can have the same attitude (i.e., medical mistrust), but have different beliefs contributing to that attitude (see Fishbein & Cappella, 2006).
There is some evidence that various aspects of medical mistrust may contribute to these racial differences. Shoff and Yang (2012) found that racial differences in medical mistrust appeared in relation to the values distrust subscale of the Revised Health Care System Distrust Scale but not the competence distrust subscale. This divergence shows that differences do not appear in Black and White views on physicians’ ability to deliver adequate care. Instead, the divergence occurs in views regarding honesty, caring, and dependability. Empirical evidence has yet to delve much further into these differences and whether medical mistrust operates differently for Black and White samples.

Empirical Explanations for Race and Medical Mistrust

While scholarship is clear that racial differences in medical mistrust exist, there has been little work done on what is contributing to these racial differences (Benkert, Cuevas, et al., 2019). From a health communication standpoint, it is not enough to know that these differences exist. To combat this pervasive barrier, researchers must also know what is contributing to these differences. Brandon et al. (2005) sought to determine whether knowledge of the Tuskegee Syphilis Study accounted for racial differences in medical mistrust. The authors found that race was still a significant predictor of medical mistrust after knowledge and awareness of the Tuskegee Syphilis Study, as well as sex, education, age, income, insurance status, and knowledge of the Tuskegee Syphilis Study were taken into account. Additionally, Shoff and Yang (2012) examined whether neighborhood factors helped explain racial differences in medical mistrust. The authors found that even when neighborhood variables like residential stability, neighborhood disadvantage, and social affluence were accounted for, the relationship between race and values medical distrust still existed (Shoff & Yang, 2012). To my knowledge,
these are the only studies to date that have tried to empirically account for racial differences in medical mistrust.

The importance of understanding these racial differences lies in the connection between medical mistrust and health disparities. Scholars assert that medical mistrust contributes to the existence of racial health disparities (King, 2003; Nelson et al., 2002; Office of Disease Prevention and Health Promotion, 2017). As Black Americans are more likely to be mistrustful of medical institutions and personnel, they may in turn be less likely to engage in a range of health behaviors. If one group, in this case, Black Americans, is less likely to engage in positive health behaviors, they may, in turn, be more likely to have worse health outcomes. Thus, racial differences in medical mistrust can contribute to health disparities.

Support for this notion lies in scholars who have posited and tested medical mistrust as an explanation for racial differences in health outcomes. Studies have examined medical mistrust as a mediator and investigated whether medical mistrust mediates the relationship between race and health outcomes. For instance, Johnson et al. (2008) took racial differences in attitudes towards hospice care and examined whether accounting for medical mistrust eliminated the relationship between race and attitudes towards hospice. The authors found that medical mistrust helped reduce but did not eliminate racial differences in beliefs about hospice, suggesting that medical mistrust plays some role in these differences.

Summary

Race, specifically membership in a minority group, predicts higher levels of medical mistrust (Guadagnolo et al., 2009; Halbert et al., 2009; Thompson et al., 2003). More specifically, there are racial differences such that Black Americans consistently report higher levels of medical mistrust than White Americans (e.g., Armstrong et al., 2012; Casagrande et al.,
These racial differences in medical mistrust are thought to be due to the history of racism both in medicine and in society (e.g., McGary, 1999). These differences in historical interaction with medical personnel and institutions for Black Americans and White Americans should result in differences in medical mistrust for these groups. Despite apparent differences in medical mistrust by race, and preliminary evidence that certain factors are driving mistrust for Black Americans, little scholarship has delved into whether medical mistrust, in fact, operates differently for Black Americans and White Americans.

**Conclusion**

Although medical mistrust is widely studied (Williamson & Bigman, 2018), there is little consistency as to what “medical mistrust” means. The term “medical mistrust” can be used to refer to anything from harboring low levels of trust in one’s own physician to believing that hospitals and other institutions will actively work against your best interests. These are radically different things; as Benkert, Cuevas, et al. (2019) note, there is much confusion in the literature. Williamson and Bigman (2018) argue for attention to be paid to which measures are being used to assess medical mistrust. Without acknowledging these nuances, it is difficult to ascertain where and how interventions should occur.

It is clear that race plays an important role in understanding medical mistrust. However, little is known about these racial differences. At times, scholars have examined medical mistrust to determine whether it attenuates racial differences in willingness to engage in various health outcomes (e.g., LaVeist et al., 2000). This, however, does not provide an explanation as to why these racial differences in medical mistrust exist or whether the same constructs are influencing medical mistrust for different racial groups. A recent review by Benkert, Cuevas, et al. (2019) noted that while racial differences in medical mistrust have been established, there is little known
about what different experiences underlie these differences. Understanding the racial differences in medical mistrust is vital as this barrier is particularly important in mitigating racial health disparities; minority groups, particularly Black Americans, harbor higher levels of medical mistrust than their White counterparts.

The presence of medical mistrust has important implications as medical mistrust is a barrier to a wide range of health and health-related behaviors. Its prevalence as a barrier points to its importance as a point of interest for improving health outcomes. Despite this, little scholarship has centered medical mistrust as the primary phenomenon of interest. In fact, much of what can be known regarding the relationship between medical mistrust and other variables is buried in the descriptive tables of studies. For example, Thompson and colleagues’ (2003) study was concerned more broadly about barriers to genetic testing for cancer risk. Medical mistrust happened to be one of those barriers, but their goal was not to examine medical mistrust itself.

Overall, it appears that little work has been conducted to explicate how medical mistrust operates. When a theoretical lens is used, medical mistrust often appears as one of many barriers in the health belief model (e.g., Blocker et al., 2017). This, however, does not isolate and account for what influences mistrust of medical institutions and personnel. As most studies are not using medical mistrust as a central concept, there are few attempts to theorize about the processes leading to medical mistrust. The one exception to this is Hammond’s (2010) model of psychosocial correlates to medical mistrust. This model, however, was designed for Black men; given the inclusion of masculinity as a variable, the intent of this model was not to create a widely applicable model that could be applied outside Black men. As such, it does not explain how medical mistrust operates more generally or whether racial differences exist in this process.
When examining the state of the literature, arguably, the most concerning feature of medical mistrust scholarship for health communication scholars is the glaring omission of communication. Medical mistrust is the result of communicative acts. Medical mistrust exists because of the belief that medical personnel or institutions will purposefully act counter to one’s best interests. Scholars have noted the ability of media and public opinion to formulate these types of beliefs (Mechanic, 1998; Pearson & Raeke, 2000; Rowe & Calnan, 2006). Furthermore, the primary explanation for racial differences in medical mistrust is knowledge of the historical injustices suffered by Black Americans at the hands of medical personnel and institutions. The knowledge of these histories would have been passed down via stories, a communicative act.

Although medical mistrust is the result of communicative processes, until recently it has failed to receive much explicit attention in communication; very few studies examine medical mistrust as the phenomenon of interest. There has been some work suggesting patient-provider communication influences trust (e.g., Fiscella et al., 2004; Gordon, Street, Sharf, Kelly, & Soucek, 2006), and perhaps mistrust (White et al., 2016); however, this neglects the vast amount of health communication that occurs outside of the doctor’s office. Recently, Bogart et al. (2016) examined whether medical mistrust among members of individuals’ social networks impacted antiretroviral (ART) nonadherence among Black participants. Their results suggested that when network members who participants viewed as similar to themselves expressed HIV conspiracy beliefs, participants exhibited lower treatment adherence. This suggests that network members may be passing along information about conspiracy beliefs, and by extension, medical mistrust.

More recently, Williamson and colleagues have conducted studies aimed at explicitly investigating medical mistrust and have begun to illuminate the role communication plays in
medical mistrust. Williamson et al. (2018) found that Black participants tied their organ donation-related medical mistrust beliefs to not only personal experiences, but also both interpersonal and mediated communication. Additionally, Williamson et al. (2019) examined the impact exposure to news stories about racial discrimination influenced reported medical mistrust. In their study, Black participants in the implicit racial discrimination condition reported significantly higher levels of medical mistrust than those exposed to the control.

Given the work of Bogart et al. (2016), as well as Williamson and colleagues (Williamson & Bigman, 2018; Williamson et al., 2018), there is not only a need for models of medical mistrust, but also models that incorporate work from communication scholarship. As the formation of these medical mistrust beliefs is the result of communicative events, media and interpersonal discussions, communication theory should be used to conceptualize and model medical mistrust. Communication scholars are uniquely poised to investigate what contributes to medical mistrust, and thus how best to tackle this barrier. Ultimately, despite the abundance of work on medical mistrust there still exists a need for medical mistrust, and its relationship to race, to be examined from a communication perspective.

Understanding medical mistrust is imperative to improving health; it provides an avenue for intervening and improving a myriad of health behaviors. While some barriers to engaging in health behaviors may be context or behavior specific, medical mistrust is one barrier that exists across a variety of contexts. The importance of this barrier suggests that it is a construct warranting its own focus. In other words, medical mistrust should be examined in and of itself, and not as a byproduct of other investigations.
CHAPTER 3: ECOLOGICAL MEDICAL MISTRUST ANTECEDENTS (EMMA) MODEL

Despite the abundance of evidence that medical mistrust is a prominent barrier to engagement in positive health behaviors, the extant literature shows a failure on the part of scholarship to address medical mistrust theoretically. Much of the work examining medical mistrust has primarily examined the construct as a predictor of health outcomes (e.g., Bickell et al., 2009; Bynum et al., 2012; Guadagnolo et al., 2009; Hammond, Matthews, Mohottige, et al., 2010; Kolar et al., 2015; Shelton et al., 2010). Given 40 years of work on medical mistrust (Williamson & Bigman, 2018), the absence of theoretical and conceptual models of medical mistrust is problematic; there appears to be only one attempt to explicitly examine possible antecedents of medical mistrust.

At its core, medical mistrust is the result of communicative events; it is the result of individuals’ communication about health – messages about how to think about the medical system, discussions about one’s own health experiences, as well as the health experiences of others. In other words, medical mistrust is formed by the telling of stories related to health care (i.e., interpersonal communication), as well as receiving messages regarding the current state of health care and portrayals of individuals’ interactions with the medical system (i.e., mediated communication). Thus, as a communication phenomenon related to health care and health promotion, medical mistrust should be placed within health communication frameworks.

Furthermore, the work on medical mistrust has highlighted the importance of race in understanding medical mistrust. Minority groups, particularly Black Americans, consistently report higher levels of medical mistrust than their White counterparts (e.g., Brandon et al., 2005; Guadagnolo et al., 2009; e.g., Thompson et al., 2003). Scholarship has not only suggested that
race is a consistent predictor of medical mistrust (Brandon et al., 2005; Corbie-Smith et al., 2002; Durant et al., 2011; Thrasher et al., 2008), but also that the relationship between race and medical mistrust is partially responsible for racial health disparities (King, 2003; Nelson et al., 2002; Office of Disease Prevention and Health Promotion, 2017). Yet, little work has examined whether medical mistrust operates differently for Black and White Americans. Thus, models of medical mistrust are needed that also allow for these racial differences to be examined.

Extant literature provides few models of medical mistrust within quantitative studies of medical mistrust. Most often, medical mistrust is relegated to the position of a barrier and not examined as a central construct. To date, there is a single attempt to model medical mistrust and its antecedents; it appears in Hammond’s (2010) examination of the psychosocial correlates of medical mistrust. The model provides possible antecedents, but overwhelmingly neglects communication and only accounts for a little over a third of the variance in medical mistrust (Hammond, 2010). By combining elements of Hammond’s (2010) model with elements of Street’s (2003) ecological model of medical encounters, a health communication model, a new model is proposed – the Ecological Medical Mistrust Antecedents (EMMA) model. This model not only situates medical mistrust in health communication but also may provide a more thorough understanding of medical mistrust. Below, Hammond’s (2010) model is reviewed, followed by a discussion of the application of Street’s (2003) model to medical mistrust. Finally, the proposed model, the EMMA model is introduced.

Hammond’s (2010) Model of Medical Mistrust

Hammond (2010) provides a conceptual model of medical mistrust for Black men. The model hypothesizes that health-care system outcome expectations (i.e., perceived racism in health care) mediate the relationship between several psychosocial factors (i.e., health care
socialization, health-care experiences, and discrimination experiences) and medical mistrust. Below, Hammond’s (2010) model is discussed. A visual depiction of the model appears in Figure 3.1 below.

**Background Factors and Control Variables**

Hammond (2010) hypothesized that background factors such as age, personality, level of education, and health status would be related to medical mistrust. Out of these background factors, only age produced a significant bivariate relationship with medical mistrust. Age was positively associated with medical mistrust (Hammond, 2010). In other words, increases in age were associated with increases in reported levels of medical mistrust.

Additionally, a personality trait, neuroticism, and recruitment site were included as control variables. Neuroticism was assessed using the neuroticism factor of the NEO-PI-R (Costa & McCrae, 2008). Recruitment site referred to the differing locations from which the sample was
recruited. Hammond (2010) recruited from barbershops and education sites; thus, variables may have differed by recruitment site. In bivariate analysis, recruitment site, but not neuroticism was significantly associated with medical mistrust; those recruited from educational institutions reported higher levels of medical mistrust than those recruited at barbershops (Hammond, 2010).

Identity/Socialization Factors

Hammond (2010) was also concerned with identity/socialization factors. She hypothesized that masculine role identity and health-care system socialization would be related to medical mistrust. Hammond’s (2010) incorporation of masculine role identity reflects her focus on Black men as the population of interest. Thus, this part of her conceptualization of health-care system socialization was not designed to apply to other populations more broadly. Masculine role identity was assessed by asking participants how important various characteristics were to their identity as a man. In bivariate analysis, masculine role identity was positively associated with medical mistrust (Hammond, 2010).

The second portion of Hammond’s (2010) examination into identity/socialization factors was parental socialization about health care. For instance, items used to measure health-care system socialization asked, “my mother/father encouraged routine check-ups” (Hammond, 2010, p. 96). Hammond posited that because health socialization, particularly from mothers, shapes children’s attitudes about health service utilization it should influence medical mistrust. Although Hammond (2010) asserts that health-care socialization and medical mistrust were positively associated, it did not actually reach significance by conventional standards; there was no indication that p < .10 was being used as the criteria to determine statistical significance.
**Recent Health Care Experiences**

Hammond (2010) also posited a direct relationship between recent health-care experiences and medical mistrust. Recent health-care experiences were taken into account by examining patient-provider communication. This variable was conceptualized as the quality of patient-physician interactions. More specifically, Hammond (2010) operationalized quality of the patient-physician interaction as patient-centeredness. Patient-centeredness refers to the extent to which a provider addresses the patient’s perspectives, involves the patient in care, understands the patient from a biopsychosocial approach, reaches a shared understanding of the problem and plan treatment, and makes decisions consistent with patient preferences (Epstein & Street, 2007). Quality of recent patient-provider interactions was negatively correlated with medical mistrust (Hammond, 2010). Thus, participants who reported more positive interactions with physicians also reported lower levels of medical mistrust.

**Recent Socioenvironmental Experiences**

Next, Hammond (2010) also hypothesized that recent socioenvironmental experiences would be directly related to medical mistrust. More specifically, the relationship between racial discrimination and medical mistrust was examined. Hammond (2010) measured racial discrimination using the Daily Life Experience (DLE) scale of the Racism and Life Experiences Scales (e.g., Harrell, 2000; Harrell, Merchant, & Young, 1997). This is in line with work that suggests that among Black populations, discrimination is related to medical mistrust (Durant et al., 2011). Hammond (2010) found that discrimination experiences were positively correlated with medical mistrust. In other words, the more discrimination experiences participants reported, the higher reported levels of medical mistrust.
Health-care System Outcome Expectations

Hammond’s (2010) conceptual model suggests that these factors (i.e., background factors, health-care socialization, recent health-care experiences, and recent socioenvironmental experiences) would result in a particular outcome expectation, perceived racism in health care. Although the conceptual model shows perceived racism in health care as mediating the relationship between medical mistrust and each of these variables, she only reported testing it as a mediator of the relationship between discrimination experiences and medical mistrust. She hypothesized that perceived racism would mediate the relationship between these factors and medical mistrust. Bivariate analyses found that perceived racism in health care was positively correlated with medical mistrust and discrimination experiences (Hammond, 2010).

Overall Results

Hammond (2010) conducted hierarchical regression analysis to examine the amount of variance in medical mistrust explained by these variables. According to Hammond (2010), the order in which variables were entered reflected how proximal the influences on medical mistrust were thought to be. In the first step, background factors were entered. In the second step, masculine role identity/socialization factors were entered. Step three included recent health-care experiences. In steps four and five, discrimination experiences, and perceived racism in health care were entered, respectively. In the full model, 35% of the variance in medical mistrust was explained. Significant effects were found for age, recruitment site, masculine role identity, quality of recent patient-physician interactions, and perceived racism in health care (Hammond, 2010). Additionally, Hammond (2010) conducted mediation analyses to determine whether perceived racism mediated the relationship between discrimination experiences and medical mistrust.
mistrust. The conditions of mediation were met; perceived racism in health care did mediate this relationship.

**Summary**

Hammond’s (2010) model provides a starting point for producing a model of medical mistrust: quality of medical interactions, racial discrimination experiences, and possibly health-care socialization appear to influence medical mistrust. This model, however, only accounted for 35% of the variance in medical mistrust. Given that medical mistrust is a communicative event, communication is a promising avenue for explaining more of the variance in medical mistrust. Hammond’s (2010) model is primarily based on the assumption that personal experience is the way in which these concepts influence medical mistrust. Apart from the inclusion of parental health-care socialization and examining patient-provider interactions, there is no recognition of communication as a learning mechanism. Communication regarding others’ experiences is another way in which individuals learn about the health-care system; thus, the absence of communication in this model is problematic and may be contributing to the unexplained variance in medical mistrust.

In addition to this, the model was only tested among Black men. Thus, while it may provide insight regarding medical mistrust for Black men, it remains to be seen whether the model can provide insight into medical mistrust for Black Americans broadly. As Hammond (2010) was focused on medical mistrust among Black men, the model was not tested across racial groups and was not intended to help explain the often-found racial differences in medical mistrust. To my knowledge, no subsequent studies have attempted to test, modify, or build upon this model. Ultimately, Hammond’s (2010) model points to two areas of improvement: a)
explaining more of the variance in medical mistrust, through communication and b) being able to test the model across racial groups.

**Situating Medical Mistrust in Health Communication**

Medical mistrust deserves to be situated within health communication scholarship. Health communication inquiry focuses on the influences of human communication on the provision of health care and promotion of public health (Kreps, Bonaguro, & Query, 2003). Medical mistrust is the result of communicative events that include messages about how to think of the medical system. As such, it sits firmly within the realm of health communication. Furthermore, Kreps et al. (2003) asserts that the goal of health communication inquiry is to focus on identifying, examining, and solving health care and health promotion problems. Given that medical mistrust is a barrier to individual’s engagement in positive health behaviors including interacting with the health care system, medical mistrust and how to tackle this barrier fall under the purview of health communication inquiry.

To situate medical mistrust within health communication scholarship, the complexities of medical mistrust must be acknowledged. Recent work conducted by Williamson, Reynolds-Tylus, Quick, and Shuck (2017) suggests that medical mistrust may have connections to broader social contexts (e.g., marginalized groups’ relationship to government). A secondary analysis of their data found that medical mistrust beliefs in the context of organ donation were not only topic-specific (e.g., premature declaration of death), but also related more generally to medical encounters, institutions, and society (Williamson et al., 2018). These findings suggest that medical mistrust should be contextualized. In other words, attention must be paid to the various contexts in which medical mistrust is situated.
Furthermore, Sharf (1993) argues that health communication research should acknowledge that the processes related to health care do not occur in a vacuum and thus, should not neglect contextualization. As medical mistrust is aligned with processes of health-care communication, it similarly does not exist in a vacuum and should be contextualized. Given the need to contextualize medical mistrust, Street’s (2003) ecology of medical encounters provides a useful framework for situating medical mistrust in the appropriate contexts and illuminating the role communication may play in medical mistrust.

**Ecological Model of Medical Encounters**

Street’s (2003) ecological model of communication in medical encounters was proposed as a framework for thinking about provider-patient communication. The model highlights factors that influence provider-patient communication within medical encounters. Congruent with the view advocated by Sharf (1993), Street (2003) posits that provider-patient interactions do not occur in isolation, but instead are influenced by various social contexts.

**Social contexts of the model.** The original formulation of Street’s (2003) ecological model of medical encounters asserts that patient-provider communication occurs within five social contexts. These contexts are interpersonal (e.g., goals providers and patients bring to the interaction), organizational (e.g., standards of care), political-legal (e.g., Medicaid/Medicare funding), media (e.g., access to medical information on the internet), and cultural (e.g., race/ethnicity). Recently, scholars have advocated for the original model to be extended to include the context of everyday interpersonal discussions (Head & Bute, 2017). Below, each context of Street’s (2003) ecological model is discussed. A visual depiction of the extended ecological model of medical encounters appears in Figure 2.2.
Figure 3.2. Visual depiction of the extended ecological model of medical encounters.
*Where medical mistrust resides in the model.

**Interpersonal.** The interpersonal context describes patient-provider communication itself. According to Street (2003), predispositional influences, cognitive-affective mediators, and adaptations to the partner’s communicative actions all influence patient-provider communication. These predispositional influences reflect the individual communication of self-presentation styles on the part of either the provider or the patient (Street, 2003). Examples of how the interpersonal context may influence provider-patient interactions are: a) the ways in which certain types of providers (e.g., male versus female) communicate differently with patients, and b) how patient level of involvement in these interactions differs by level of education. Cognitive-affective influences refer to goals and expectations of the encounter as well as perceptions of the partner in
the interaction. For instance, a provider’s focus on physical aspects of disease, as opposed to emotions, may influence interactions (Roter & Hall, 2006). In line with this, Scherr et al. (2017) found that urologists discussed medical factors related to having a prostatectomy, which can cause impotence, but did not discuss much in terms of preferences and importance of sexual function or its impact on relationships. Finally, the aspect of communication influences describes the ways in which partners adapt and exert influence on the behavior of the other. For example, evidence suggests that more active patients (e.g., those who ask more questions and express concerns) generally get more information during the interaction (Street & Millay, 2001). Each of these facets of the interpersonal context can influence provider-patient communication.

**Organizational.** Street (2003) described the organizational context as organizational features of the medical encounter. Due to the climate of health-care at the time of the writing, Street (2003) focused primarily on the way managed care may influence provider-patient communication. Managed care has received mixed support. Some individuals feel that managed care improves quality of care (e.g., Goold & Lipkin, 1999), while others argue that it restricts a patient’s choice in physician and leads to worse health outcomes (e.g., Feldman, Novack, & Gracely, 1998; Miller & Luft, 1997). Street (2003) argued that the policies and practices associated with managed care could create a situation in which the balance of power shifts more heavily in favor of the physician or creates an air suspicion of physician motives for recommending against tests, both of which could impact provider-patient interactions. Although Street (2003) focused primarily on managed care, other features in this context include size of facility, location, clientele, and types of services offered.

**Political-legal.** The third context discussed by Street (2003) is the political-legal context. This context represents the ways in which legislative and judicial actions influence delivery of
care. For example, laws such as the “patient bill of rights” require providers to give full disclosure, obtain informed consent, and provide timely services to those in need. These laws impact what and how providers communicate with patients. Street (2003) primarily discusses issues like malpractice litigation and the patient bill of rights; however, issues such as the funding of programs like Medicare and Medicaid would also fall within this context. As these structural factors can influence the delivery of care, it can also alter provider-patient communication.

**Media.** In Street’s (2003) conceptualization of the ecological model of medical encounters, the media context acknowledges that providers and patients do not exist outside of technology and mediated messages related to health. In fact, Street (2003) pointed to watching health news coverage as one way in which providers and patients rely on the media for health-related information. In discussing this context, Street (2003) primarily focused on the internet. The discussion surrounds the ways in which the internet can impact provider-patient communication through increasing patient participation (e.g., patients feel more efficacious with additional knowledge). Ultimately, media, including news, entertainment, and social media, can influence provider-patient communication.

**Cultural.** Street (2003) conceptualized the cultural context as beliefs and values pertaining to race/ethnicity, socioeconomic status, and religion. This includes intercultural communication, preferred styles of communication, and differing models of health. As Street (2003) described the cultural context, his discussion focused on race/ethnicity. For example, the fact that provider-patient communication can be impacted by the attitudes and stereotypes held by medical providers related to race/ethnicity. For example, Van Ryn and Burke (2000) found that physicians viewed Black patients as less likely to comply with medical advice. Furthermore,
Cooper et al. (2012) found that when physicians held implicit racial medical compliance bias (i.e., when they believed Black patients were less likely to comply with medical advice), those interactions had less patient-centered dialogue. Thus, these biases based on cultural factors like race/ethnicity can alter the interaction and communication that occurs between providers and patients.

**Everyday interpersonal contexts.** Recently, scholars have called for an extension of Street’s (2003) model. Head and Bute (2017) argue that the original framework neglects the impact of everyday interpersonal communication on the medical encounter. They argue that there are other interpersonal contexts, outside of the provider-patient interaction, that influence medical encounters (e.g., conversations with friends about health). Scholars should embrace this extension of Street’s (2003) model. It not only accounts for the fact that individuals are not devoid of interactions with family members, friends, and peers about health, but it also opens the door to include aspects of health communication that were not accounted for in the original model (e.g., caregivers; Head & Bute, 2017).

**Use of the Ecological Model of Medical Encounters.** Since its publication, Street’s (2003) model has received a great deal of attention. Many of the studies utilizing this model have focused on patient-provider communication; the model is considered by many to have shaped the way scholars approach patient-provider communication. For example, the model has been used to examine doctor-patient communication online (Jiang & Street, 2017), as well as to conceptualize the ways in which those with serious illnesses discuss outside information with their physicians (Garden & Seiler, 2017). The model has also been used to examine factors impacting patient participation in medical encounters (Cegala, 2011; Street Jr, Gordon, Ward, Krupat, & Kravitz, 2005; Street & Gordon, 2006); the influence of different health contexts on
patient-provider discussions (Feldman et al., 1998; Levy-Storms, Claver, Gutierrez, & Curry, 2011); and the impact of physician factors like communication style (Street, Gordon, & Haidet, 2007), affiliation (Kiesler & Auerbach, 2003), and stress (Passalacqua & Segrin, 2012).

Few scholars have examined the role of the contexts that appear in Street’s (2003) model outside of the interpersonal contexts. Exceptions to this include Quick’s (2009) and Jain’s (2017) examinations of the role of media on the perceptions of and attitudes towards physicians. Quick (2009) used the ecological model of medical encounters as a starting point to examine the impact of media representation on perceptions of physicians. By examining the influence of Grey’s Anatomy viewing on perceptions of physicians, Quick (2009) extends the argument that the media context influences the provider-patient relationship by providing a theoretical model to test the relationships between media and the provider-patient relationship. He found that Grey’s Anatomy viewing influenced patient satisfaction through the show’s credibility and perceptions of doctors’ courageousness. Quick’s (2009) work supports cultivation as one mechanism through which these connections between media exposure and perceptions of physicians occur. Similarly, Jain (2017) utilized Street’s (2003) model as the basis for examining portrayals of Asian Indian providers and attitude accessibility. Jain (2017) found that negative physician portrayals inhibited an approach response to other, similar physicians. These studies provide theoretical and experimental support for the proposition that media influences the provider-patient relationship.

Although the ecological model of medical encounters has primarily been used to describe provider-patient communication, it does have broader applications. At its core, this model seeks to describe factors that influence the dynamics of the patient-provider relationship. Medical mistrust appears indirectly in Street’s (2003) model. Street (2003) notes that patients enter medical encounters with perceptions of the relationship that influence communication between
providers and patients. As medical mistrust represents the belief that medical personnel, like physicians, will act against one’s interests, this could be considered a perception of the provider-patient relationship. Thus, medical mistrust is implicitly represented in Street’s (2003) ecological model of medical encounters. This suggests that the model is an appropriate framework for thinking about medical mistrust.

**Application of the Ecological Model of Medical Encounters to Medical Mistrust**

Street’s (2003) model is based on Bronfenbrenner’s (1979) ecological systems theory. As such, the theory assumes that all parts of the model interact with and influence one another (Bronfenbrenner, 1979). As a result, the conceptualization of the ecological model of medical encounters can be used as a framework to contextualize other pieces of the model. In other words, it should be possible to focus on a different aspect of the model (i.e., medical mistrust) and examine the influence of surrounding contexts. Thus, a conceptual framework is produced that contextualizes medical mistrust and provides guidance for realms of scholarship.

This reorientation of Street’s (2003) model depicts medical mistrust as being influenced by these various contexts. In the reorientation of the model, medical mistrust, which is represented cognitively as an object – health-care providers – and its associated attributes, is impacted by the interpersonal context (e.g., provider-patient communication), organizational context (e.g., policies and services provided), political-legal context (e.g., funding for health programs), media context (e.g., news media), cultural context (e.g., race), and everyday interpersonal context (e.g., discussions with family members about experiences with providers). For example, if there are news stories circulating in communities that local clinics only cater to and treat White and foreign patients (e.g., Diamond, 2018), these stories (i.e., mediated communication about the organizational context) would be expected to influence whether Black
Americans distrust the motives of health-care providers. Additionally, thinking about medical mistrust in this way sheds light on the fact that cultural factors, more specifically race, can influence these communication experiences (e.g., exposure to messages). The incorporation of this context assures that attention is paid to the racial context of medical mistrust.

Ultimately, the extension of Street’s (2003) ecological model of medical encounters provides a framework for thinking about medical mistrust that is rooted in health communication. Examining medical mistrust from this ecological perspective provides a basis for considering the ways in which communication, and more specifically, messages about health-care providers, may influence medical mistrust. Moreover, through its inclusion of the cultural context, it affords the ability to examine the racial nuances of medical mistrust.

**Ecological Medical Mistrust Antecedents (EMMA) Model**

Hammond’s (2010) model and Street’s (2003) ecological model of medical encounters are complementary models; they each provide important pieces to a more thorough examination of medical mistrust. Hammond’s (2010) model suggests potential antecedents but also points to two areas of improvement: a) the inclusion of communication and b) accounting for the role of race. The application of Street’s (2003) ecological model of medical encounters addresses both issues. Thus, merging communication-related variables from the ecological view of medical mistrust with Hammond’s (2010) proposed antecedents may be an important step in understanding medical mistrust. By combining elements of these two models, a more comprehensive model of medical mistrust may be produced. The resulting model deals with the antecedents of medical mistrust, includes the role of communication, and can be tested across racial groups. Below, the overarching EMMA model is discussed followed by a discussion of
the individual relationships within the model. A visual depiction of the EMMA model appears in Figure 3.3.

**Overarching Model**

**Overall structure.** The EMMA model proposes that negative health-care socialization, negative health-care experiences, and racial discrimination experiences influence medical mistrust and that these relationships are mediated by perceived racism in health care and perceived financial corruption in health care. The inclusion of negative health-care socialization reflects the assertion made by Hammond (2010) that attitudes about health occur through socialization. The inclusion of negative health-care experiences reflects Street’s (2003) interpersonal context; the interaction between a physician and a patient. Next, racial discrimination experiences reflect Street’s (2003) cultural context and that racial discrimination experiences impact health and health care. Furthermore, negative health-care socialization, negative health-care experiences, and racial discrimination are conceptualized as being latent variables whose indicators account for communication (e.g., vicarious interpersonal negative health-care experiences, vicarious media racial discrimination). These conceptualizations incorporate the everyday interpersonal and mediated contexts from the extended ecological model of medical encounters (Head & Bute, 2017; Street, 2003), which acknowledges that communication around these events occurs. Perceived racism and perceived financial corruption in health care serve as mediators between these constructs and medical mistrust; they represent possible reasons for the influence of these constructs on medical mistrust. The relationships between these constructs represent not only individual relationships, but also the EMMA model in its entirety. As a result, not only will individual relationships be considered, but also the fit of the model.
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**H1:** Negative health-care socialization, negative health-care experiences, and racial discrimination experiences will be positively related to medical mistrust; these relationships will be mediated by perceived racism in health care and perceived financial corruption in health care.

![Figure 3.3. Ecological medical mistrust antecedents (EMMA) model.](image)

**Racial differences in antecedents of medical mistrust.** Racial differences in medical mistrust have been well-documented (Benkert, Cuevas, et al., 2019). Scholarship has consistently found that Black Americans report higher levels of medical mistrust than do White Americans (e.g., Brandon et al., 2005; Fields et al., 2016). Few studies, however, have examined what is contributing to these differences. Exceptions include examinations of knowledge of the Tuskegee Syphilis Study (Brandon et al., 2005) and neighborhood factors (Shoff & Yang, 2012) as mediators of these relationships. If these racial differences are, as some scholars believe, due to the history of racism in medicine and society (e.g., McGary, 1999), these differences in historical
interactions with medical professionals for Black Americans and White Americans should result in medical mistrust manifesting differently for these groups. Furthermore, the cultural context of the EMMA model suggests health-care-related experiences differ between racial groups. Despite preliminary evidence that certain factors are driving mistrust for Black Americans, little scholarship has delved into whether medical mistrust, in fact, operates differently for Black and White individuals. In other words, do these same relationships (e.g., perceived racism mediating the relationship between negative health-care experiences and medical mistrust) exist for both Black and White individuals? Furthermore, as no literature has examined whether racial groups interpret these constructs in similar ways, it may be Black individuals and White individuals interpret these constructs differently. Thus,

**RQ1: Are there differences in this model for Black and White samples?**

**Exogenous Variables**

**Negative health-care socialization.** Negative health-care socialization reflects the ways individuals have been socialized to view interactions with the health-care system. The attitudinal structure of medical mistrust would include information about how to behave toward the object (i.e., socialization; Pratkanis, 1989). Individuals’ socialization regarding the health-care system should impact the attributes that are linked to the node for health-care providers and, in turn, be related to medical mistrust. Scholars have argued that socialization regarding the health-care system is related to medical mistrust. For instance, in her monumental piece, *Medical Apartheid*, Harriet Washington chronicles the relationship between historical injustices and medical mistrust. In doing so, she cites that orientation toward the medical system has informed individuals’ mistrust and fear of the medical system. Furthermore, scholars who have written
about the foundations of trust and distrust, have cited socialization towards entities as forming individuals’ perceptions of those organizations and entities (Kramer, 1999).

The socialization process is thought to be one way in which individuals acquire norms around health practices (Mechanic, 1964; Tinsley, 2003) and can occur throughout one’s life. Lau, Quadrel, and Hartman (1990) tested two competing models of how socialization occurs: the enduring family model and the lifelong openness model. The enduring family model suggests that the socialization that occurs from one’s family has a lasting effect on actions and behaviors. On the other hand, the lifelong openness model posits that individuals are always being influenced by socialization agents. The authors found that neither model was fully supported; instead, they asserted that family socialization occurs, but there are periods in life in which individuals may be influenced by other socialization agents (Lau et al., 1990). As such, socialization could occur through a variety of agents at various points in life. This suggests that socialization regarding the health-care system could occur through interpersonal means such as parental socialization, as well as through other agents.

Negative health-care socialization is conceptualized as being a latent construct comprised of negative interpersonal socialization and media socialization. The inclusion of media socialization recognizes the influence of mediated communication on medical mistrust and reflects the media context discussed in Street (2003). Hammond (2010) restricted this socialization to interpersonal socialization by only examining family agents, specifically parents. This, however, neglects the role media plays as a socializing force. Turow and Coe (1985) assert that the media, through television, provides lessons about health care and medicine. This assertion suggests that media provides a route to socialization about the medical system and health-care providers. Work in the area of social cognitive theory indicates that media is one way
in which socialization occurs. Social cognitive theory posits that individuals learn about the world through the experiences of others; media is one such avenue for this vicarious learning (Bandura, 2009). Through these observations, individuals determine what is and is not appropriate, abstract rules for future behavior, and ultimately may decide how to behave toward an object (e.g., the health-care system). If an individual has been socialized to believe interacting with health-care providers is a negative action, through either interpersonal or media socialization, one would expect them to have higher levels of medical mistrust. Thus,

**H2**: Negative health-care socialization, a latent construct comprised of interpersonal negative health-care socialization and media negative health-care socialization, will be positively associated with medical mistrust.

**Negative health-care experiences.** Furthermore, the knowledge generated from health-care experiences should produce beliefs and propositions about the medical system and its attributes. Empirical work suggests that health-care experiences, as conceptualized as quality of patient-physician interactions, are related to medical mistrust. Hammond (2010) found that health-care experiences were positively related to medical mistrust. Additionally, scholars have posited that of trust and distrust can stem from previous bad experiences (e.g., Goold & Klipp, 2002). Thus, it is reasonable to assume that negative health-care experiences may inform perceptions of whether one should be distrustful of health-care providers. In fact, in Jacobs, Rolle, Ferrans, Whitaker, and Warnecke’s (2006) piece, they conducted qualitative work to investigate how Black Americans discussed their trust and distrust (as defined as low levels of trust). They found that interpersonal competence (e.g., taking time to listen) was related to perceived trustworthiness. This suggests that a health-care provider not taking time to listen (e.g., a negative health-care experience) might contribute to perceptions of mistrust.
This knowledge of health-care providers’ interactions can not only come from one’s own experiences but also from the experiences of others. One way this can occur is through interpersonal communication. For instance, Williamson et al. (2018) found that while discussing medical mistrust beliefs pertaining to organ donation, Black participants cited information about others’ experiences (e.g., a participant’s mother’s experiences) in explaining their own mistrust. In other words, individuals are vicariously learning about the quality of health care through others.

In addition to interpersonal communication, media depictions of medical encounters can also produce beliefs regarding health-care providers and their attributes. Bandura (2009) asserts that media depictions are one way in which vicarious learning occurs. As a mode of vicarious learning, media depictions of health-care experiences should also contribute to medical mistrust. Quick, Anker, Feeley, and Morgan (2016) found that exposure to television drama was related to medical mistrust. This suggests that mediated depictions of others’ health-care experiences, from negative interactions to negative experiences seeking care, may influence medical mistrust. The formulation of experiences as a culmination of personal and vicarious experiences aligns with theorists who construct trust as the culmination of personal and vicarious experiences. According to Kramer (1999), it is interactional histories that provide individuals with information about how to assess others’ motives. Thus, it should be the culmination of personal and vicarious experiences related to health-care interactions that influence medical mistrust.

For the purposes of this study, health-care experiences is conceptualized as a latent construct comprised of negative personal, vicarious interpersonal, and vicarious media experiences. Information about the quality of both an individuals’ own experiences as well as others’ experiences with health-care could activate pathways between “health-care providers”
and attributes such as “discriminatory” or “corrupt.” If the quality of these experiences is low, one would expect higher levels of medical mistrust. Thus,

**H3**: Negative health-care experiences, a latent construct comprised of personal negative health-care experiences, vicarious interpersonal negative health-care experiences, and vicarious media negative health-care experiences, will be positively associated with medical mistrust.

**Racial discrimination experiences.** Scholars have posited that experiences of discrimination and racism are causes of the racial differences in reported medical mistrust (Adams & Simoni, 2016; Washington, 2006). If there is a relationship between discrimination experiences and medical mistrust, there may be a link associating “health-care providers” with the attribute “discriminatory.” Due to spreading activation, information related to instances of discrimination are expected to influence medical mistrust. If there is an association between “health-care providers” and “discriminatory” the activation of the “discriminatory” node after viewing a news report on police brutality, for instance, would also result in the “health-care provider” node being activated. Although the message may not have been about health-care providers, because the “discriminatory” node was activated it would spread to the associated node, “health-care provider,” reinforcing this relationship.

Previous work has suggested that there is, in fact, a relationship between racial discrimination experiences and medical mistrust. These constructs are so closely related that some scholars have equated medical mistrust with perceived discrimination (e.g., Wasserman et al., 2006). Those scholars who have conceptually distinguished racial discrimination from medical mistrust, have found significant effects. For example, Armstrong et al. (2013) found that racial discrimination was related to health-care system distrust for Black participants. Similarly,
in a sample of Black men, Hammond (2010) found there to be positive relationship between racial discrimination experiences and medical mistrust. In her study, Hammond (2010) utilizes the Daily Life Experiences scale, one of the Racism and Life Experiences Scales (RaLES; Harrell, 2000; Harrell et al., 1997), to assess exposure to every day experiences with discrimination. She found that not only was there a bivariate relationship between discrimination experiences and medical mistrust, but also that the relationship remained significant in hierarchical linear modeling.

Knowledge of discrimination experiences can come through one’s own experiences or vicariously through others’ experiences. As the issue is the activation of the “discriminatory” node, one would expect that node to be activated from one’s own experiences of racism and discrimination, as well as others’ experiences. Scholarship on vicarious racism supports this notion. Harrell (2000) argues that the vicarious experiences of others teach lessons about the places where racism is present. Furthermore, Truong, Museus, and McGuire (2016) argue that when individuals experience vicarious racism, they realize that they themselves are also vulnerable to racism. Recent work conducted by Williamson and colleagues has provided evidence that mediated exposure to discrimination influences medical mistrust. Williamson et al. (2019), found both that others’ discrimination experiences and exposure to news stories depicting discrimination were related to reported levels of medical mistrust. These works suggest vicarious discrimination through either interpersonal or mediated communication, along with personal experiences of discrimination, should result in learned information regarding discrimination. Thus,

\[ H4: \text{Racial discrimination experiences, a latent construct comprised of personal racial discrimination experiences, vicarious interpersonal racial discrimination experiences,} \]
and vicarious media racial discrimination experiences, will be positively related to medical mistrust.

Mediating Variables

**Perceived racism in health care.** The perception that the health-care system is a racist institution should have bearing on individuals’ belief that health-care providers will actively work against their best interest. Quite a bit of work has found a positive relationship between perceived racism in health care and trust, a closely related concept to mistrust (e.g., Adegbembo, Tomar, & Logan, 2006; Benkert et al., 2006; Hausmann, Kwoh, Hannon, & Ibrahim, 2013). This relationship has also been found when explicitly examining medical mistrust. For instance, Durant et al. (2011) found that perceived racial discrimination explained racial differences in medical mistrust. Furthermore, medical mistrust is based on the idea that health-care providers will actively work against patients’ interest; racism could be one reason for health-care providers having negative motives and working against patient interests. Thus,

*H5: Perceived racism in health care will be positively associated with medical mistrust.*

Not only is perceived racism likely to be associated with medical mistrust, but also with negative health-care socialization, negative health-care experiences, and racial discrimination experiences. Some scholars have suggested that other forms of socialization may lead to perceptions of racism in health care (e.g., racial socialization; Cort & Cort, 2008). Similarly, health-care socialization may result in perceived racism in health care; as part of the socialization process, if individuals are receiving negative information part of this information might foster perceived racism in health care. Work conducted by Hammond (2010) suggests that both negative health-care experiences and discrimination experiences are related to perceived racism. In bivariate relationships, Hammond (2010) found a negative relationship between quality of
provider-patient interactions and perceived racism and a positive relationship between discrimination experiences and perceived racism. This suggests that more negative health-care experiences and racial discrimination experiences should be positively related to medical mistrust. Thus,

\( H_6: \) **Negative health-care socialization will be positively associated with perceived racism in health care.**

\( H_7: \) **Negative health-care experiences will be positively associated with perceived racism in health care.**

\( H_8: \) **Racial discrimination experiences will be positively associated with perceived racism in health care.**

**Perceived financial corruption in health care.** Perceived racism in health care is not the only potential mediator of these antecedents’ effects on medical mistrust; perceived financial corruption in health care may also mediate these effects. The perception that health-care providers are financially corrupt should influence individuals’ belief that health-care providers will actively work against their best interests. In this vein, a Robert Wood Johnson-funded project found that low-income patients reported thinking they were treated poorly due to financial motivations; they believed provider’s decisions were driven by profit motives (Duke & Stanik, 2019). This echoes findings from Jacobs et al. (2006) who found that Black participants reported a focus on profit as a reason to distrust health-care providers. Additionally, participants interviewed by Lew, Arbauh, Banach, and Melkus (2015) questioned whether providers: “attempt to keep patients on medications for the purposes of making money or…just don’t think to take you off them?” (p. 1163). Additionally, a study examining perceptions of health-care
costs found that profit motives were linked to mistrust of the health-care system (Richmond et al., 2017).

It is hard to believe a health-care provider will work in one’s best interest if he or she is believed to be corrupt. For example, if individuals believe that health-care providers are in the pocket of pharmaceutical companies, they should be more likely to believe that health-care providers will actively work against their best interests (i.e., be mistrustful of health-care providers). Given evidence that some people believe that health-care providers are corrupt (e.g., Duke & Stanik, 2019), if an individual has heard negative things about the health-care provider this may have a part of that message. Next, negative health-care experiences, whether one’s own or knowledge about Henrietta Lacks’ cells being taken without her consent and being used to make a substantial profit (Skloot, 2010) or Detroit doctors recently being arrested for prescribing unnecessary medications to patients in order to make money (Snell, 2019). Ultimately, an individuals’ negative socialization regarding the health-care system or negative health-care experiences may contribute to the belief that providers are corrupt. Thus,

\[
H9: \text{Perceived financial corruption in health care will be positively associated with medical mistrust.}
\]

\[
H10: \text{Negative health-care socialization will be positively associated with perceived financial corruption in health care.}
\]

\[
H11: \text{Negative health-care experiences will be positively associated with perceived financial corruption in health care.}
\]

Additionally, experiences of discrimination may point to larger systemic issues which could include corruption. If an individual has experienced racial discrimination (either personally or vicariously) this may serve as a reminder of a broader set of unfair systems and practices,
which could include corruption in the health-care system. These experiences do not have to be health related; general racial discrimination experiences may also influence these perceptions. Although the relationship between racial discrimination experiences and perceived financial corruption in health care has not been previously examined, work in other areas has shown that non-health care related racial discrimination experiences have ramifications for perceptions of the health-care system (e.g., Williamson et al., 2019).

H12: Racial discrimination experiences will be positively associated with perceived financial corruption in health care.

Perceived racism in health care and perceived financial corruption in health care are not isolated constructs; perceptions of racism in health care (as opposed to experiencing instances of racial discrimination, perhaps outside of health care) may also impact perceived financial corruption in health care. In describing corruption in health-care settings, Vian (2008) points to not only bribes, kickbacks, and unethical drug promotion as part of this corruption, but also issues with informed consent that lead to violations of individual rights and biases in research. As a result, perceptions of corruption and racism in health care may be linked. If an individual believes that a health-care provider is corrupt (i.e., willing to take money), they may also believe that this may come at the expense of Black people. Similarly, it is possible that if an individual believes a health-care provider is racist (i.e., already partaking in immoral acts), he or she may be more likely to believe that health-care providers are also more likely to engage in corrupt acts. Historically, occurrences such as the Tuskegee Syphilis Study (Washington, 2006) and the cells of Henrietta Lacks (Skloot, 2010) serve as examples of cases in which the actions of health-care providers could be perceived as both racist and corrupt. Thus,
H13: Perceived racism in health care will be positively related to perceived financial corruption in health care.

Role of Mediated Communication

In examinations of medical mistrust, media is rarely empirically investigated as a source of medical mistrust. In the context of organ donation, research suggests that media contributes to medical mistrust. For example, Quick et al. (2016) and Quick et al. (2014) both found evidence that media contributed to organ donation barriers, which included medical mistrust. Furthermore, a secondary analysis of data conducted by Williamson et al. (2018) revealed that Black participants pointed to media as a source of their medical mistrust beliefs. However, to my knowledge, outside of a recent study conducted by Williamson et al. (2019), there has been little empirical work explicitly investigating how mediated messages influence medical mistrust. In fact, Benkert et al.’s (2019) review of the medical mistrust literature contains no mention of mediated messages and their role in medical mistrust.

Health Care Content and Racial Discrimination Content

Medical mistrust is the result of mental associations between health-care providers and negative attributes. The EMMA model suggests that mediated content related to health information (i.e., content providing information about negative health-care experiences) and racial discrimination content (i.e., content providing information related to discrimination and racism) are related to medical mistrust. As medical mistrust is the result of associations between the object (health-care providers) and negative attributes, any negative health-care experiences should activate those linkages. Based on the relationships in the EMMA model, negative health content should be related to medical mistrust.

H14: Negative health care content will be positively related to medical mistrust.
In addition to stories about negative health-care experiences, exposure to stories about discrimination in areas outside of health are expected to influence medical mistrust. For example, stories about police brutality may activate the node for racial discrimination. Through spreading activation, the activation of the discrimination node can also activate other associated nodes (e.g., health-care providers). As this association has been activated and primed, one would expect this to result in higher medical mistrust. Recent work conducted by Williamson et al. (2019) provide evidence that some racial discrimination content is related to medical mistrust. Williamson and colleagues (2019) found that Black participants exposed to news stories about implicit discrimination reported greater levels of medical mistrust than those exposed to a control news story, suggesting that there is a connection between exposure to racial discrimination on media and medical mistrust. Thus, the following hypothesis was posited:

\textit{H15: Racial discrimination content will be positively related to medical mistrust.}

It is also possible to consider how these two types of message content may interact to influence medical mistrust. Messages that do not contain either of these types of content should produce the lowest reported medical mistrust; whereas messages that contain both types of content should activate both nodes, resulting in the highest levels of medical mistrust. There is, however, no current indication of how other combinations of health care and discrimination content in messages may influence medical mistrust. Thus,

\textit{H16: Health care, discrimination (H/D) messages will result in higher reported medical mistrust than all other message types.}

\textit{H17: Non-health care, non-discrimination (NH/ND) messages will result in lower reported medical mistrust than all other message types.}
RQ2: Are there differences in medical mistrust for health care, non-discrimination (H/ND) and non-health care, discrimination messages (NH/ND)?

Message Content, Medical Mistrust, and Health Behavior Intentions

An abundance of literature has shown there to be a negative relationship between medical mistrust and willingness to engage in health behaviors (Bogart & Thorburn, 2005; Hoyt et al., 2012; Kolar et al., 2015; Morgan, 2004). Thus, it is possible that exposure to health and/or racial discrimination content may impact health behavior intentions through medical mistrust. In other words, exposure to news stories with health and/or racial discrimination content results in heightened medical mistrust, which in turn results in a decreased willingness to engage in health behaviors. These relationships have been understudied; for instance, there has only been one study examining the impact of vicarious media discrimination on medical mistrust (Williamson et al., 2019) and this study did not investigate whether that mistrust then influenced health behavior intentions.

To examine these relationships, four health behaviors were chosen: getting a DNA test to assess disease risk, participating in an HIV vaccine clinical trial, encouraging a family member to become an organ donor, and getting a flu shot. These behaviors were chosen as they span a variety of possible types of behaviors. DNA testing and HIV vaccine clinical trials both represent health topics that have been racialized. Organ donation, an altruistic behavior, has been an often-studied context in medical mistrust literature; however, encouraging a family member to become an organ donor has never been examined. Finally, getting a flu shot represents a behavior that is non-racialized and is often advertised to the public broadly. Below, each of these contexts is discussed.
**DNA testing.** DNA testing provides a context in which the relationship to medical institutions has been fraught with mistrust. Given recent advancements in precision medicine, there has been an increase in the desire to conduct DNA testing for medical purposes (Collins & Varmus, 2015; National Institutes of Health, 2019). The use of these techniques has sparked concerns about access, privacy, and ownership of genetic data (Chow-White & Duster, 2011). For instance, Suther and Kiros (2009) found that Black participants were more likely to distrust that doctors would keep their genetic information private. In fact, several studies have found that increased medical mistrust is related to a decreased willingness to engage in genetic testing, particularly in the context of genetic testing related to the BRCA1/2 gene (Sheppard, Mays, Tercyak, & LaVeist, 2013; Thompson et al., 2003; Williams et al., 2019).

**HIV vaccine clinical trial.** HIV is a health context with a tendency to be racialized. There have been several conspiracy theories posited regarding the high prevalence of HIV/AIDS in Black communities. Turner (1993)’s discussion of African American folklore includes conspiracies related to HIV/AIDS. According to Turner (1993), the belief is that the HIV/AIDS virus was created for genocidal purposes. Given the racialization of the topic, this is a behavior that may be more influenced by medical mistrust than others. More specifically, this is not only related to HIV, but also participation in a clinical trial. Participation in clinical trials has often been examined in relation to medical mistrust (e.g., Corbie-Smith et al., 2002). Given the relationship of both HIV and clinical trials with medical mistrust, this outcome is expected to be negatively associated with medical mistrust.

**Organ donation.** A systematic review of medical mistrust measures indicated that blood and organ donation was among the top five health contexts in which medical mistrust is studied (Williamson & Bigman, 2018). Organ donation is a unique health topic as registering to become
an organ donor is considered an altruistic behavior; if an individual chooses to engage in this behavior, they do not reap the direct benefits of that behavior, another person (i.e., the recipient) receives those benefits. Several studies have found relationships between medical mistrust and both an individual’s attitude towards organ donation (e.g., Quick et al., 2016) and intention to register as an organ donor (e.g., Morgan et al., 2008). There has been less work however, on the relationship between medical mistrust and intention to discuss organ donation with a family member. The sole quantitative study examining this relationship, Morgan (2004), provides some evidence that medical mistrust is related to intentions to discuss organ donation with a family member; those who had high levels of medical mistrust were less likely to have those discussions. However, the conversations referenced in Morgan (2004) were conversations about participants’ own decisions to become an organ donor. Medical mistrust may not affect willingness to encourage a family member to become an organ donor as encouraging someone else to become a donor does not entail encountering health-care providers for oneself.

**Flu shot.** Vaccines, broadly, are a context in which medical mistrust has received a good deal of attention (see Williamson & Bigman, 2018). The flu shot is a context in which skepticism about the vaccine is arguably less racialized. Arguments about the safety concerns surrounding the vaccines are not racialized and tend to cut across demographics. There has been fear and mistrust surrounding vaccines for centuries (Poland & Jacobson, 2011). A national survey of Americans found that many individuals recognized and endorsed medical conspiracy beliefs and that the more conspiracy beliefs individuals agreed with the less likely they were to have gotten a flu shot (Oliver & Wood, 2014).

In addition to this, getting a flu shot is a behavior that everyone is encouraged to engage in, as opposed to the other behaviors where Black Americans may be encouraged to engage in
the behavior more often due to associated disparities. Often, flu vaccination campaigns are encouraging everyone to engage in the behavior. When groups are targeted for flu vaccination messages, it is often based on particular age groups who are at more risk to complications due to the flu (e.g., children under 2 and adults over the age of 65; Centers for Disease Control and Prevention, 2018), not race. Thus, examining intentions to get a flu shot provides a context in which individuals may be mistrustful but is not a racialized topic. Previous work has found that distrust of both the contents of the vaccine (Armstrong, Berlin, Schwartz, Propert, & Ubel, 2001; Chen, Fox, Cantrell, Stockdale, & Kagawa-Singer, 2007) as well as the medical establishment (Shavell, Moniz, Gonik, & Beigi, 2012) have been negatively related to getting a flu shot.

Ultimately, the extant literature suggests there are negative relationships between medical mistrust and these health behaviors. Given the current literature on medical mistrust and these health intentions, the following is posited:

**H18**: Medical mistrust will be negatively related to willingness to a) get a flu shot b) get DNA testing for risk of disease and c) participate in an HIV vaccine clinical trial.

**RQ3**: What is the effect of medical mistrust on willingness to encourage a family member to register as an organ donor?

**Indirect effects through medical mistrust.** Exposure to this content should trigger medical mistrust, which in turn would result in decreased willingness to engage in health behaviors (i.e., getting DNA test to assess disease risk, participating in an HIV clinical trial, getting a flu shot). As long as the relationships between: a) content and medical mistrust, and b) medical mistrust and health intention outcomes exist, there is reason to believe indirect effects may exist (Hayes, 2009). Given this, I pose the following hypotheses and research questions:
H19: Negative health care content will exert an indirect effect on willingness to a) get DNA testing for risk of disease and b) participate in an HIV vaccine clinical trial and c) get a flu shot.

RQ4: Does negative health care content exert an indirect effect on willingness to encourage a family member to become an organ donor through medical mistrust?

H20: Racial discrimination content will exert an indirect effect on willingness to a) get DNA testing for risk of disease and b) participate in an HIV vaccine clinical trial and c) get a flu shot.

RQ5: Does racial discrimination content exert an indirect effect on willingness to encourage a family member to become an organ donor through medical mistrust?

**General and Race-Based Medical Mistrust**

This dissertation also presents an opportunity to examine relationships yet to be teased apart within the medical mistrust literature. According to a recent review of medical mistrust measures (Williamson & Bigman, 2018), there are two prominent scales used to assess medical mistrust: Medical Mistrust Index (MMI; LaVeist et al., 2009; LaVeist et al., 2000) and the Group-Based Medical Mistrust Scale (GBMMS; Thompson et al., 2004). These two scales account for approximately 42% of studies measuring medical mistrust (Williamson & Bigman, 2018). These scales, however, have stark differences. The MMI is thought to measure what Pellowski et al. (2017) termed “general medical mistrust,” whereas the GBMMS examines “race-based medical mistrust.” This is because the MMI asks about mistrust generally, whereas the items comprising the GBMMS ask participants whether people of their race/ethnicity should be distrustful of medical mistrust. Given these differences, it is possible that the content of mediated
messages may not have the same impact on general medical mistrust and race-based medical mistrust.

*RQ6: Do a) negative health care content and b) racial discrimination content impact general and race-based medical mistrust differently?*

Furthermore, recent work conducted by Pellowski et al. (2017) suggests these types of medical mistrust predict different outcomes. Pellowski et al. (2017) examined both general medical mistrust and race-based medical mistrust in relation to medication beliefs about antiretroviral therapy (ART) medication adherence for Black Americans. They found that general medical mistrust predicted medication concern beliefs, but not beliefs about medication necessity. Race-based medical mistrust predicted both medication necessity beliefs and medication concern beliefs (Pellowski et al., 2017). Thus, there is a need to understand whether general medical mistrust or race-based medical mistrust predicts specific outcomes. To my knowledge, no studies have conducted tests of these measures to examine whether this applies to health intention outcomes. Thus,

*RQ7: Which medical mistrust measure, general medical mistrust or race-based medical mistrust, is a better predictor of health intention outcomes?*
CHAPTER 4: STUDY 1

The EMMA model is proposed as a possible approach to including communication into the study of medical mistrust, addressing antecedents of medical mistrust, and examining the nuances of racial differences in medical mistrust. Study 1 tests EMMA by conducting a cross-sectional survey. As the goal was to explore the relationships between variables proposed by the model, a cross-sectional survey was an appropriate research method (Sparks, 2013). These relationships were tested among Black and White participants recruited via convenience sampling. Study 1 addresses H1-H13, as well as RQ1.

Method

Participants and Recruitment

Following approval from the Institutional Review Board (IRB), Black ($n = 204$) and White ($n = 232$) participants were recruited via snowball sampling for participation in an online survey. As the goal was to test the proposed model for both Black and White Americans, a large number of participants belonging to each subgroup was necessary to have the power to test the model. Sample size is considered to be a function of the reliability of measures and degrees of freedom. Based on computations conducted by MacCallum, Browne, and Sugawara (1996) and calculations based on Kim (2005), it was determined that a sample size of at least 200 would provide adequate power for the model. As RQ1 asks about the model for both Black and White individuals, recruitment continued until at least 200 participants per racial group were obtained.

Given the difficulty recruiting Black participants, recruitment occurred via snowball sampling. This sampling method has been posited as an appropriate technique for the recruitment of hard to reach populations (Biernacki & Waldorf, 1981; Perez, Nie, Ardern, Radhu, & Ritvo, 2013). Snowball sampling is a type of convenience sampling in which participants help recruit
other individuals who may be eligible to participate (Biernacki & Waldorf, 1981). Thus, referral chains are created in which a participant, the “seed,” is encouraged to recruit other participants. These participants, in turn, are encouraged to also recruit individuals.

A combination of offline and online seeds were used for recruitment. Seeds were chosen based on individuals with large networks (e.g., embedded in community groups and sororities and fraternities); given the success of recruiting through Black churches (Levkoff & Sanchez, 2003), seeds with prominent roles in their churches were also targeted. Furthermore, in order to obtain a large number of participants, flyers were placed in local barbershops, coffee shops, and community spaces (Clay, Ellis, Amodeo, Fassler, & Griffin, 2003) and seeds were encouraged to do the same. Recruitment materials were also distributed within social media networks, including postings to social media groups (Sadler, Lee, Lim, & Fullerton, 2010). To bolster the number of Black participants, recruitment materials were also sent specifically to organizations with predominantly Black membership (e.g., Black graduate and professional student organizations; universities’ Black alumni networks).

In the Black sample, participants were primarily female (74.5%) and identified as heterosexual (82.8%). Black participants ranged in age from 19 to 75, with a mean age of 36.24 (SD = 13.15). A majority of Black participants reported having obtained a bachelor’s degree or higher (76%) and making more than $50,000 a year (56.7%). More than half of these participants identified themselves as liberal (59.2%) and residing in either the South (51%) or Midwest (31%). Demographics for White participants followed a similar pattern. White participants were primarily female (82.3%) and identified as heterosexual (78.9%). They ranged in age from 19 to 74, with a mean age of 36.27 (SD = 12.12). Most White participants reported having obtained a bachelor’s degree or higher (83.6%) and making more than $50,000 a year (69%). Finally, most
White participants identified themselves as liberal (66.8%) and residing in either the South (39.1%) or Midwest (34.8%). Full sample characteristics are shown in Table 4.1.
Table 4.1

*Demographic Characteristics of Study Sample*

<table>
<thead>
<tr>
<th></th>
<th>Black sample (n = 204)</th>
<th>White sample (n = 232)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>M = 36.24</td>
<td>M = 36.27</td>
</tr>
<tr>
<td>(SD = 13.15)</td>
<td></td>
<td>(SD = 12.12)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
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<td></td>
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<tr>
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<td>191</td>
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<td>41</td>
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<td>0</td>
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<td>183</td>
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<td>15</td>
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<tr>
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<td>19</td>
</tr>
<tr>
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<tr>
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<td>7</td>
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<tr>
<td><strong>Political Identity</strong></td>
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</tr>
<tr>
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<td>30</td>
<td>69</td>
</tr>
<tr>
<td>Liberal</td>
<td>89</td>
<td>86</td>
</tr>
<tr>
<td>Moderate</td>
<td>71</td>
<td>54</td>
</tr>
<tr>
<td>Conservative</td>
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<td>20</td>
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</tr>
<tr>
<td>Northeast</td>
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<td>Associate's degree</td>
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<td>14</td>
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<tr>
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<td>Doctoral degree</td>
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<tr>
<td>Professional degree</td>
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<td>6</td>
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<tr>
<td><strong>Income</strong></td>
<td>Mdn = $50,000-$59,999</td>
<td>Mdn = $70,000 to $79,999</td>
</tr>
<tr>
<td>Range = &lt;$20,000 to</td>
<td></td>
<td></td>
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<tr>
<td>&gt; $100,000</td>
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<td></td>
</tr>
</tbody>
</table>

*Income was measured in $10,000 increments between $20,000 up to $100,000 (e.g., $20,000 - $29,999). Income was treated as ordinal for subsequent analyses.*
Procedure

Participants completed an online survey via Qualtrics. Depending on the recruitment means, individuals interested in participating were either asked to contact a study email address (if approached offline through physical flyers) or directly provided with the survey link (if approached online through social media postings). The first page of the survey contained consent information, in which participants were asked to click “I agree” if they consented to participate in the study. To avoid priming medical mistrust, recruitment and consent information for the study was phrased as being about their health behaviors and health interests more generally.

After the consent screen, participants were presented with items related to the constructs of interest; these items were presented in blocks as an additional guard against priming medical mistrust. The first block contained questions about general health, including health-care socialization and questions about the quality of health care (i.e., negative health-care experiences). The next block had an introduction that informed participants that the next set of questions would ask about other aspects of their lives that may impact their health and well-being. This allowed for questions about racial discrimination experiences to be presented without seeming out of place in the context of the rest of the survey; these items were placed among other potential stressors (e.g., family resources). Finally, the third block contained questions about perceptions of the health-care system and included items regarding perceived racism in health care, perceived financial corruption in health care, and medical mistrust.

The constructs in this last block (i.e., the block about perceptions of the health-care system) were counterbalanced amongst themselves. Counterbalancing of these items occurred as a two-step process. First, there was a concern that if participants were presented with medical
mistrust items first, it would influence the way in which they answered questions about perceived racism in health care and perceived financial corruption in health care. To address this concern, the order in which participants received questions about medical mistrust (MM) questions and perceptions of the health-care system (i.e., perceived racism in health care [PR] and perceived financial corruption in health care [PC]) were counterbalanced. This step addressed the presentation of medical mistrust and its antecedents (i.e., it chunks the antecedents as a block that moves together). Second, there was also a possibility that whether a participant was presented with perceived racism in health care or perceived financial corruption in health care first may influence their answers to the other set of items. Thus, the presentation of items related to perceived racism in health care and perceived financial corruption in health care was also counterbalanced. In this step, attention was paid to whether items related to perceived racism in health care or perceived financial corruption in health care appeared first. This two-step process resulted in four possible presentations of these items: a) MM, PR, PC; b) MM, PC, PR; c) PR, PC, MM; and d) PC, PR, MM. Analyses revealed there were no order effects.

Once participants finished with these items they were presented with demographic questions. These demographics questions included items about age (to verify that participants were at least 18 years of age), race (to verify that participants are those that self-identify as African American/Black or White), socioeconomic status, biological sex, and sexual orientation. In exchange for participation, participants were entered into a drawing to win one of six $50 gift cards. The possibility of providing raffle entries for both participation and recruitment was considered; however, this may have heightened existing concerns regarding fraudulent entries (Mustanski, 2001) so participants were only given a raffle entry for their own participation. After completing demographics, participants were asked to click a link to enter the raffle. This link
took participants to a separate page where they were asked to enter their email address and encouraged to recruit other participants. By directing participants to a separate link, email addresses were kept separate from the rest of the data. This information was also stored separately. Once the raffle was completed, the list of email addresses was destroyed.

Measures

Below, measures are discussed for each of the constructs present in the model. A full list of each measure’s items appears in Appendix A.

Negative health-care socialization. Negative health-care socialization was assessed using a composite measure of frequency of exposure from various sources as well as the valence of the exposed content. Exposure frequency was measured by modifying Paek, Reber, and Lariscy’s (2011) measure of socialization sources. The modified measure asked individuals to rate how frequently they heard information about interactions with health-care providers from each of nine sources: a) parents or other guardians at home, b) friends, c) siblings, d) school (for example: teachers, counselors, coaches), e) broadcast news programs (for example: newscasts, 60 Minutes, Dateline, 20/20), f) broadcast entertainment (for example: Grey’s Anatomy, ER, The Good Doctor), g) broadcast advertising (for example: TV and radio), h) print news (for example: newspaper or magazine articles), i) print advertising, j) the Internet (for example: Google or specific websites like WebMD), and k) social medial (for example: Facebook posts, Twitter, YouTube). Parents, friends, siblings, and school were treated as interpersonal socialization sources while all other sources were treated as media socialization sources. Participants rated the frequency from 0 (not at all) to 4 (frequently). For those sources they indicated having some exposure to, participants were also asked how positive or negative the information was from
each source. Participants rated valence from 1 (completely positive) to 5 (completely negative). A similar procedure was used in Tan, Bigman, and Sanders-Jackson (2014).

To create the composite measure, the frequency with which an individual had heard information about a health-care provider was multiplied by the negativity of that content. In other words, if an individual rated the frequency with which they encountered information from news media as 1 (rarely) and the valence of that content as 4 (mostly negative), their composite score for news media would be 4 (1 rarely x 4 mostly negative). These composites were created for each socialization agent. Items related to interpersonal agents and mediated agents were averaged, respectively. Interpersonal socialization formed moderately reliable scales for both the entire group (α = .67) and for each racial group (Black: α = .68; White: α = .65). Media socialization formed reliable scales for both the entire group (α = .79) and for each racial group (Black: α = .80; White: α = .77).

**Negative health-care experiences.** Negative health-care experiences was operationalized as low patient-centeredness. The Institute of Medicine (2001) cites patient-centeredness as one measure of the quality of health care. Furthermore, scholars suggest that patient-centeredness is one factor of physician-patient communication that may contribute to health disparities (Saha, Beach, & Cooper, 2008; van Ryn, 2002). This conceptualization is congruent with others’ conceptualization of quality of health care (e.g., Hammond, 2010).

Thus, negative health-care experiences was measured using a 7-item scale patient-centeredness scale used by Jiang and Street (2017). This measure is based on Epstein and Street’s (2007) definition of patient-centeredness. According to Epstein and Street (2007), patient-centeredness reflects a physician’s ability to do six things: a) address the patient’s perspectives, b) involve the patient in care, c) understand the patient as an entire person (i.e.,
biopsychosocial approach), d) reach a shared understanding, e) plan treatment, and f) make decisions consistent with patient preferences. Jiang and Street (2017) provides items that allude to each of these concerns or aspects. The items ask participants to indicate how often their doctors do each of the following actions: gave them a chance to ask all the health-related questions, gave attention to their feelings and emotions, involved them in decisions about their health care as much as they wanted, made sure they understood the things they needed to do to take care of their health, explained things in a way they could understand, spent enough time with them, and helped deal with feelings of uncertainty about their health. Similar items have been widely used; many of these items appear on the Health Information National Trends Survey (HINTS). Participants rated the frequency of their doctor engaging in these activities on a 5-point scale from 1 (never) to 5 (always). Jiang and Street (2017) found the measure to be reliable ($\alpha = .93$).

To assess not only an individual’s personal experiences but also vicarious experiences, participants were exposed to these items under three different headings. The first, representing personal experiences asked “Please think back to your experiences with healthcare providers. How often did your doctor(s) do each of the following?” Prompts for the vicarious elements were prompted with “Please think back to conversations you’ve had with family and friends about their health. How often do you think their healthcare providers did each of the following?” and “Please think back to the healthcare providers you’ve seen or heard about on news/medical dramas/medical reality shows. How often did they do each of the following?” Items were recoded such that higher values indicated more negative experiences. Following Jiang and Street

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3 These were shown as three separate prompts. This was done to decrease the confusion or difficulty answering participants may have if asked about “media.”
items for each subcategory (i.e., personal, vicarious interpersonal, vicarious media) were averaged. Each indicator (i.e., personal, vicarious interpersonal, and vicarious media) formed a reliable scale. Personal negative health-care experiences formed a reliable scale for the full sample ($\alpha = .91$), as well as for both Black ($\alpha = .92$) and White ($\alpha = .91$) subsamples. A similar pattern was shown for vicarious interpersonal negative health-care experiences (full sample: $\alpha = .93$; Black: $\alpha = .94$; White: $\alpha = .92$). Finally, vicarious media negative health-care experiences formed a reliable scale across both the full sample ($\alpha = .95$) and individual racial groups (Black: $\alpha = .96$; White: $\alpha = .93$).

**Racial discrimination experiences.** Racial discrimination experiences was measured utilizing the racism experiences scale of the Racism and Life Experiences Scales (RaLES; Harrell, 2000; Harrell et al., 1997). The racism experiences scale is a sixteen-item measure that asks participations, “During the past year, how frequently have you had each of sixteen experiences?” The existing scale contains items related to personal experiences, vicarious experiences, and collective experiences of racial discrimination. The scale was modified to represent personal, vicarious interpersonal, and vicarious media experiences. To do so, the collective experiences were modified to specify that exposure to these collective experiences occurred through media exposure. Some of these items already reflected experiences individuals would often encounter through media exposure (e.g., “Observing legislative processes or political activities (national, local) that negatively affect people of your race/ethnicity”). Participants were asked to indicate their frequency of exposure from 0 (never) to 4 (almost always). Personal, interpersonal, and mediated discrimination experiences formed reliable scales for the full sample (personal: $\alpha = .89$, vicarious interpersonal: $\alpha = .70$; vicarious media: $\alpha = .92$), as well as for the Black sample (personal: $\alpha = .88$; vicarious interpersonal: $\alpha = .76$; vicarious
media: $\alpha = .81$). For the White sample, these items formed moderately reliable scales (personal: $\alpha = .82$; vicarious interpersonal: $\alpha = .62$; vicarious media: $\alpha = .80$).

**Perceived racism in health care.** Perceived racism in health care was assessed using the Racism Index, a 4-item measure created by LaVeist et al. (2000). This measure asks whether individuals believe that doctors and hospitals treat African Americans and Whites equally. The items include “Doctors treat African American and White people the same,” “Racial discrimination in a doctor’s office is common,” “In most hospitals, African Americans and Whites receive the same kind of care,” and “African Americans can receive the care they want as equally as white people can.” Each item was rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Previous studies have found this to be a reliable scale with Cronbach’s $\alpha$ ranging from .77 to .85 (Bickell et al., 2009; LaVeist et al., 2000; Song et al., 2014). Cronbach’s $\alpha$ for this study was .88 for the entire sample and .77 and .92 for Black participants and White participants, respectively.

**Perceived financial corruption in health care.** Perceived financial corruption in health care was measured utilizing three items. As no measures existed aimed at assessing this construct, items utilized were selected from reviews of corruption in the health sector (Pellegata & Memoli, 2016; Vian, 2008), measures of medical skepticism (Jensen et al., 2011), and distrust in corporations (Adams, Highhouse, & Zickar, 2010). These items reflect the perception that pharmaceutical companies pay physicians to prescribe their medications, that physicians prescribe medications for profit, and physicians are driven by greed. These items were selected as they made conceptual sense and hung together in pilot testing. Participants were asked their

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4 Participants ($N = 100$) recruited from Amazon Mechanical Turk conducted a short survey. The survey contained 12 items collated from previous reviews and measures and established scales that might represent perceived corruption
level of agreement for each item from 1 (strongly disagree) to 5 (strongly agree). These items formed a reliable scale both for the entire sample (α = .82) as well as for each racial group (Black: α = .82; White: α = .82).

**Medical mistrust.** Medical mistrust was measured using LaVeist, Isaac, and Williams’s (2009) Medical Mistrust Index (MMI). The MMI is the second most widely used measure to assess medical mistrust (Williamson & Bigman, 2018). The MMI refers to what many scholars have referred to as general medical mistrust. It asks participants how much they agree with statements about health care organizations. For example, “Patients have sometimes been deceived or misled by healthcare organizations” (LaVeist et al., 2009). Participants were asked to respond from 1 (strongly disagree) to 5 (strongly agree). The use of this measure represents an attempt to use a measure of medical mistrust that would be applicable to both Black and White Americans. Other measures of medical mistrust, like the Group-Based Medical Mistrust Scale (GBMMS; Thompson et al., 2004) include subscales that would overlap with a measure of perceived racism in health care. Previous studies have found the MMI items to form a reliable scale ranging from .76 to .84 (Brandon et al., 2005; Guadagnolo et al., 2009; Hammond, 2010; Selsky et al., 2012). For the current sample, items formed a reliable measure (α = .82). Items also formed a reliable measure among both Black (α = .79) and White (α = .81) participants.

**Demographics.** Demographic information on race, sex, age, and socioeconomic status, was collected. Scholarship has suggested that variables such as biological sex (Greer, Brondolo, & Brown, 2014; López-Cevallos et al., 2014), age (Abraído-Lanza et al., 2011; Hammond, 2010), and socioeconomic status (Maly et al., 2008) are associated with medical mistrust. Thus, in health care. Exploratory factor analysis (EFA) was conducted. The items chosen to represent perceived financial corruption loaded onto the same factor, had no cross loadings, and loadings were at least about .40.
these were included as possible covariates. Specifically, in terms of socioeconomic status, items concerning both income and education will be asked. Income and education have both been associated with medical mistrust (e.g., Halbert et al., 2009).

Additionally, information about sexual orientation was also collected. High levels of medical mistrust may exist for those marginalized in society on a variety of dimensions, including those aside from race. As another demographic that faces marginalization, sexual minorities may also have higher levels of medical mistrust. Qualitative work has suggested that individuals see their mistrust and wariness about the medical system as stemming from both their racial and sexual identities (Malebranche, Peterson, Fullilove, & Stackhouse, 2004).

Analysis

Prior to analysis, data was assessed to ensure the assumptions for multivariate normality were met (Tabachnick & Fidell, 2007). As a result, the amount of missing data, normality, linearity, homoscedasticity, homogeneity of variance, and multicollinearity were examined. According to Tabachnick and Fidell (2007), missing data is problematic if at or above 5%. Only 184 of 46,652 cells used for analysis were missing (.39% missing), which falls well below the threshold. Kline (2016) suggests that values above 3 and 10 indicate skew and kurtosis, respectively; values for all variables fell within normal ranges for skew and kurtosis. A normal probability plot found evidence of multivariate normality. The data also met the assumptions of homoscedasticity and homogeneity of variance. Furthermore, an examination of bivariate relationships found evidence of linearity and suggested multicollinearity was not an issue. Finally, univariate and multivariate outliers were identified. Univariate outliers were identified by examining the z-scores for each variable and found that two z-scores in the Black sample and four z-scores in the White sample had absolute values above 3.29 (Fields, 2009). Multivariate
outliers were then examined using Mahalanobis distance. Mahalanobis distance is used to detect cases that are inconsistent with the structure of the data set. Cases greater than a critical distance specified by $p < .001$ were considered outliers (Tabachnick & Fidell, 2007). There was one such case in each subsample. Outliers were identified, examined, and removed from the data set for analysis. Correlations, means, standard deviations, skew, and kurtosis for the Black and White samples appear in Table 4.2 and Table 4.3, respectively.
Table 4.2
Zero-order Correlation Matrix, Means, and Standard Deviations for Black Sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<th>9</th>
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<tbody>
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<td>1. Interpersonal NHS</td>
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<td>6. Vicarious Media NHE</td>
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<td>-.17*</td>
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<td>7. Personal RDE</td>
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<td>.27**</td>
<td>.14*</td>
<td>.11</td>
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<td>.33**</td>
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<td>.10</td>
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<td>.23**</td>
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<td>.29**</td>
<td>.34**</td>
<td>.38*</td>
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<td>1.37</td>
<td>2.10</td>
<td>2.30</td>
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<td>0.97</td>
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<td>1-5</td>
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<td>0.22</td>
<td>0.32</td>
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<td>-0.50</td>
<td>-0.24</td>
<td>-0.50</td>
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<td>-0.73</td>
<td>-0.22</td>
<td>0.16</td>
<td>0.50</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Note. *p < .05, **p < .01. NHS = negative health-care socialization; NHE = negative health-care experiences; RDE = racial discrimination experiences. All correlations presented are Pearson’s correlations.
Table 4.3
Zero-order Correlation Matrix, Means, and Standard Deviations for White Sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
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<tbody>
<tr>
<td>1. Interpersonal NHS</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2. Media NHS 1</td>
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<td>---</td>
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<td>.04</td>
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<td>-.05</td>
<td>-.17**</td>
<td>.01</td>
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<td>.18**</td>
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<td>.09</td>
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<td>-.07</td>
<td>-.06</td>
<td>.27**</td>
<td>.03</td>
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<tr>
<td>10. Perceived Racism in Health Care</td>
<td>.16*</td>
<td>.08</td>
<td>.16*</td>
<td>.33**</td>
<td>.35**</td>
<td>-.02</td>
<td>-.03</td>
<td>.43**</td>
<td>-.15*</td>
<td>---</td>
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<tr>
<td>11. Perceived Corruption in Health Care</td>
<td>.14*</td>
<td>.16*</td>
<td>.01</td>
<td>.17*</td>
<td>.07</td>
<td>-.17*</td>
<td>.11</td>
<td>.05</td>
<td>.09</td>
<td>.07</td>
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<td>12. Medical Mistrust</td>
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<td>.11</td>
<td>.19**</td>
<td>.37**</td>
<td>.23**</td>
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<td>.18**</td>
<td>.29**</td>
<td>.18*</td>
<td>.33**</td>
<td>.42**</td>
<td>---</td>
</tr>
</tbody>
</table>

Mean         | 5.22 | 4.31 | 6.06 | 1.46 | 1.98 | 2.34 | 0.52 | 2.09 | 0.60 | 3.64 | 3.57 | 3.35 |
SD           | 2.38 | 2.13 | 2.27 | 0.76 | 0.70 | 0.90 | 0.55 | 1.00 | 0.92 | 1.04 | 1.01 | 0.80 |
Range        | 0-20 | 0-20 | 0-20 | 0-4  | 0-4  | 0-4  | 0-4  | 0-4  | 0-4  | 1-5  | 1-5  | 1-5  |
Skew         | 0.45 | 0.41 | 0.27 | 0.07 | 0.03 | -0.02| 1.30 | -0.19| 1.70 | -0.61| -0.67| -0.22|
Kurtosis     | 0.19 | 0.84 | -0.13| -0.38| 0.82 | -0.66| 1.27 | -0.47| 2.35 | -0.18| 1.21 | -0.06|

Note. *p < .05, **p < .01. NHS = negative health-care socialization; NHE = negative health-care experiences; RDE = racial discrimination experiences. All correlations presented are Pearson’s correlations.
Analytic Procedures

To evaluate H1-H13 and RQ1, structural equation modeling multiple group analysis was performed using Mplus (Muthén & Muthén, 2017). SEM is an approach that allows for the simultaneous examination of multiple hypotheses related to manifest and latent variables (Lee, 2007). Unlike multiple regression, which would only test specific relationships individually, SEM allows for all regression hypotheses to be tested simultaneously, as well as assessing the model’s fit to data. Stephenson, Holbert, and Zimmerman (2006) argue that SEM provides advantages in that it allows for measurement error to be extracted from latent variables. In other words, it allows for a more accurate estimation of the true relationship between two variables. They argue that as health communication scholarship tends to include small effect sizes, if measurement error is included it may obscure these effects (Stephenson et al., 2006).

The two-step approach to SEM was employed (Kline, 2016). The two-step model first examines the measurement model, then the structural model. This process is advocated for over a one-shot testing of both measurement and structural modeling to find specification errors and issues with fit. If both the measurement and structural models are tested simultaneously, it is difficult to ascertain where issues of fit are arising.

A multiple group analysis seeks to examine the differences in parameters between groups, in this case – across racial groups. However, before differences in the models can be assessed, measurement invariance must be tested and found to exist between the two groups. Measurement invariance refers to whether the scores for a construct have the same meaning across groups (Kline, 2016). In other words, if aspects of the model are “invariant” this means that there are no differences between groups on this aspect, while “non-invariant” indicates that differences exist. There are three levels of invariance that must be met before comparisons can
be made on structural parameters (i.e., parameter coefficients), representing an increasingly restrictive level of invariance: configural invariance, metric invariance, and scalar invariance. (Kline, 2016; Wu, Li, & Zumbo, 2007). If the configural model indicates adequate fit, each successive model is then compared to its preceding, less-restrictive model (i.e., metric is compared to configural, scalar is compared to metric). Significant differences in the chi-square statistic between the more-restrictive and less-restrictive model indicate non-invariance. These levels of measurement invariance were tested, and chi-square differences examined.

Once measurement invariance was examined, structural invariance was tested to determine whether specific pathways were invariant across groups. This was done by sequentially constraining pathways. Once the appropriate pathways were constrained, indirect effects were examined. Indirect effects were calculated by assessing 95% confidence intervals based on 5,000 bootstrap samples. Bootstrapping is considered one of the more valid methods for testing mediating effects (MacKinnon, Lockwood, & Williams, 2004). If the confidence interval for the indirect effect does not contain zero, this is evidence of an indirect effect through the proposed mediator (Hayes, 2009).

A simultaneous estimation method, maximum likelihood estimation was used for all analyses. The following test statistic and approximate fit indices were used to assess model fit. The model chi-square, a test statistic, was evaluated. Unlike other test statistics, the chi-square is an accept-support test; in other words, the null hypothesis represents the hypothesis that the model is correct, and the hope is to accept, not reject, the null hypothesis. Thus, a $p$-value above .05 indicated the possibility of an acceptable model. The chi-square model statistic, however, can be problematic because in smaller samples significant differences may be missed, while in large samples trivial differences may trigger a significant test statistic (Holbert & Stephenson,
Due to this, it has been suggested that other fit indices be utilized alongside the chi-square statistic.

As such, approximate fit indices were utilized in addition to the chi-square test statistic for assessing model fit. Unlike the model chi-square statistic, which is a binary decision of whether to reject or not reject the null-hypothesis, approximate fit indices are measures of model-data correspondence (Kline, 2016). Hu and Bentler (1998) suggests using the Standardized Root Mean Square Residual (SRMR) in combination with the Steiger-Lind Root Mean Square Error of Approximation (RMSEA) or Bentler Comparative Fit Index (CFI). Furthermore, Kline (2016) recommends that at a minimum the model chi-square, RMSEA, CFI, and SRMR should be reported. Thus, all three approximate fit indices were examined along with the model chi-square. Table 4.4 shows the criteria for evaluating fit, which have been suggested by Holbert and Stephenson (2002) and Hu and Bentler (1999) as reasonable cutoffs.

### Table 4.4

*Fit Indices and Statistical Criteria*

<table>
<thead>
<tr>
<th>Fit Index</th>
<th>Criteria Indicating Good Fit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square ($\chi^2$)</td>
<td>Non-significant value ($p &gt; .05$) (Can be problematic with large samples)</td>
</tr>
<tr>
<td>Comparative Fit Index (CFI)</td>
<td>$\geq .90$ indicates acceptable fit; $\geq .95$ indicates good fit</td>
</tr>
<tr>
<td>Root Mean Square Error of Approximation (RMSEA)</td>
<td>$\leq .08$ indicates acceptable fit; $\leq .06$ indicates good fit</td>
</tr>
<tr>
<td>Standardized Root Mean Square Residual (SRMR)</td>
<td>$\leq .09$ indicates acceptable fit; $\leq .08$ indicates good fit</td>
</tr>
</tbody>
</table>

**Confirmatory Factor Analysis**

A confirmatory factor analysis (CFA) was conducted to assess the measurement model.

As the sample was comprised of two different racial groups and RQ1 involves differences...
between the groups, the subsamples were initially examined separately. This was particularly important as tests of measurement invariance cannot proceed until it is established that the same model fits both subsets of data (Van de Schoot, Lugtig, & Hox, 2012).

The hypothesized model, shown in Figure 4.1, contained six latent constructs: negative health-care socialization, negative health-care experiences, racial discrimination experiences, perceived racism in health care, perceived financial corruption in health care, and medical mistrust. Additionally, interpersonal socialization and media socialization were hypothesized to be indicators of negative health-care socialization; personal negative health-care experiences, vicarious interpersonal negative health-care experiences, and vicarious media negative health-care experiences were hypothesized to be indicators of negative health-care experiences; and personal racial discrimination experiences, vicarious interpersonal racial discrimination experiences, and vicarious media racial discrimination experiences were hypothesized to be indicators of racial discrimination experiences.

The hypothesized model did not converge in the Black sample (i.e., estimates were not computed). Recommended remedies for nonconvergence (i.e., increasing the number of iterations, changing start values) did not solve the issue of nonconvergence. According to Muthén (2001), this may indicate a mis-specified model. As a result, the model was broken down and exploratory factor analyses (EFAs) were run to ensure there were no issues with the measurement of the constructs. The analyses revealed that there was one item for socialization and four items for discrimination that should be removed. These items had primary factor loadings below .40 (Matsunaga, 2010); removed items are denoted in the measures in Appendix A. Additionally, the EFA revealed that the hypothesized three-factor solutions were appropriate
for negative health-care experiences and discrimination experiences, but that the hypothesized two-factor solution for health-care socialization was not appropriate.

Figure 4.1. Hypothesized structural model.

*Note.* NHS = negative health-care socialization, NHE = negative health-care experiences, RDE = racial discrimination experiences.

Although a 2-factor solution was hypothesized for negative health-care socialization (see Figure 4.1), the results of the EFA indicated a 3-factor solution was more appropriate for both Black and White samples. The items were comprised of 3 factors: Factor 1 was comprised of family, friends, and siblings; Factor 2 was comprised of broadcast advertising, print advertising, and print news; and Factor 3 was comprised of broadcast news, broadcast entertainment, internet, and social media. Factor 1 corresponded to interpersonal socialization as originally conceptualized. These factor loadings ranged from .51 to .74 and .46 to .75 for Black participants and White participants, respectively. However, the originally conceptualized variable “media
socialization” was split into Factors 2 and 3. The factors loadings for Factor 2 ranged from .41 to .81 for Black participants and .45 to .71 for White participants. Finally, the factor loadings for Factor 3 ranged from .46 to .87 and .54 to 1.00 for the Black and White samples, respectively.

An examination of the items in the two media health-care socialization factors suggested that these factors represented media that primarily depicts physicians in a positive light (e.g., print news) versus negative light (e.g., broadcast entertainment; Chory-Assad & Tamborini, 2001). An examination of the valence items for these factors confirmed this; there was a significant effect of source on valence, for both Black participants, $F(1.94, 381.13) = 9.86, p < .001$ and White participants, $F(1.91, 428.62) = 25.73, p < .001$. The valence of Factor 3 was significantly more negative (Black: $M = 2.56, SD = .68$; White: $M = 2.50, SD = .65$) than that of Factor 2 (Black: $M = 2.29, SD = .81$; White: $M = 2.06, SD = .78$).

After taking these modifications into account, the model created a non-positive matrix making all estimates unreliable. Between both samples, there were issues with the latent constructs for negative health-care socialization, negative health-care experiences, and racial discrimination experiences. An examination of the negative health-care socialization, negative health-care experiences, and racial discrimination experiences as second order latent constructs revealed that while the items for the indicators worked, the indicators did not load onto their respective latent constructs. As a result, all exogenous indicators were treated as observed variables. Thus, hypotheses were extended to apply to the individual indicators. For instance, H3 was applied to personal, vicarious interpersonal, and vicarious media negative health-care experiences. The revised model appears in Figure 4.2.

---

5 Mauchly’s test of sphericity indicated that the assumption of sphericity had been violated, $\chi^2(2) = 19.19, p < .001$. As a result, a Huyhn-Feldt correction was used.
Using the indicators of the remaining latent constructs, CFAs were conducted for both the Black and White samples. The initial model for the Black sample did not provide adequate fit, $\chi^2(74, n = 198) = 121.38, p < .001$. CFI = .938, RMSEA = .057, SRMR = .055), but did provide adequate fit for the White sample, $\chi^2(74, n = 226) = 131.38, p < .001$, CFI = .962, RMSEA = .059, SRMR = .054). Modification indices revealed that among the medical mistrust items, the first (i.e., “you’d better be cautious when dealing with healthcare providers”) and second (i.e., “Patients have sometimes been deceived or misled by healthcare providers”) items should be correlated, as well as the sixth (i.e., “Sometimes I wonder if healthcare providers really know what they are doing”) and seventh (i.e., “Mistakes are common among healthcare providers”) items. Given the comparative nature of analyses, these items were correlated in the White sample...
as well. In addition to the adjustments made based on the Black sample, modification indices were examined to determine whether any items should be correlated in the White sample that aligned with conceptual and theoretical understandings of these items. This resulted in the correlating the fourth (i.e., “Healthcare providers have sometimes done harmful experiments on patients”) and fifth (i.e., “Healthcare providers don’t always keep your information totally private”) medical mistrust items. These modifications resulted in good fit for both the Black, $\chi^2(72, n = 198) = 92.23, p = .054, CFI = .974, RMSEA = .038, SRMR = .049,$ and White, $\chi^2(71, n = 226) = 80.01, p = .22, CFI = .994, RMSEA = .025, SRMR = .046$ models. Factor loadings for the latent variables appear in Table 4.5.

**Measurement Invariance**

Once adequately fitting models were found for each group separately, measurement invariance was tested. Configural invariance, or pattern invariance, which refers to whether the same items measure the same constructs across groups, was tested first. In other words, it assessed whether the items for the perceived racism in health care, perceived financial corruption in health care, and medical mistrust measured three constructs for both Black and White samples. The conditions for configural invariance were met, $\chi^2(143, N = 424) = 172.25, p = .048, CFI = .987, RMSEA = .031, SRMR = .047.$

As the conditions for configural invariance were met, metric invariance was assessed next. Metric invariance assesses whether the factor loadings for those items are equivalent across groups. This provides evidence that the construct has the same meaning to participants across groups (Gregorich, 2006). To assess metric variance, the fit of the metric model was compared to the fit of the configural model. The model for metric invariance produced a non-significant change in chi-square, $\chi^2(143, N = 424) = 183.49, p = .053, CFI = .988, RMSEA = .029, SRMR = 98$
.055. As there was no significant difference between these values and those of the configural model, there was evidence that the factor loadings are invariant.

After metric invariance was verified, scalar invariance was tested. Scalar invariance refers to the ability to justify mean comparisons; it requires that item intercepts be equivalent across groups. The model for scalar invariance produced a significant difference in the chi-square statistic, $\chi^2(165, N = 424) = 214.96, p = .005, CFI = .978, RMSEA = .038, SRMR = .06$. This indicated that there were intercepts that should not be constrained to be equal. One solution to this is to free intercepts and test for partial invariance (Byrne, Shavelson, & Muthén, 1989; Kühne, 2013). Modification indices suggested the freeing of the second corruption item. This modification still produced a significant difference in the chi-square statistic, $\chi^2(164, N = 424) = 202.87, p = .021, CFI = .983, RMSEA = .033, SRMR = .059$. Next, the first corruption item was freed, which produced a non-significant change in the model, $\chi^2(163, N = 424) = 198.84, p = .029, CFI = .984, RMSEA = .032, SRMR = .058$. This provided evidence of partial scalar invariance.

Some scholars suggest testing for a fourth level of invariance, strict factorial invariance; however, this level of invariance is unnecessary for testing structural parameters (Kühne, 2013). Furthermore, scholars have noted that it is unreasonable to expect error variances to be identical among groups (Kline, 2016). As such, this is often regarded as an unattainable level of invariance (Millsap & Meredith, 2007). As a result, strict factorial invariance is not tested here. All tests of invariance are shown in Table 4.6.
Table 4.5
*Factor Loadings for Latent Variables*

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<tr>
<th>Indicator</th>
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<th>Black Standardized Loading</th>
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Table 4.6
*Measurement Invariance*

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<th>Model Description</th>
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<th>df</th>
<th>$\Delta \chi^2$</th>
<th>$\Delta df$</th>
<th>CFI</th>
<th>RMSEA</th>
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<td>0.987</td>
<td>0.031</td>
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<td>Metric</td>
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<td>0.055</td>
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<td>0.038</td>
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<td>19.38*</td>
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<td>0.983</td>
<td>0.033</td>
<td>0.059</td>
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</tr>
<tr>
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<td>15.35</td>
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<td>0.984</td>
<td>0.032</td>
<td>0.058</td>
</tr>
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</table>

*Note.* *Significant at threshold for p < .05. ***Significant at p < .001.
Structural Invariance

The constraints determined while testing measurement invariance were then carried over to determine the baseline structural model. In determining the baseline structural model, the relationship between observed variables, latent variables, and potential covariates were tested; the model tested appears in Figure 4.3. In the model for each racial group, the three negative health-care socialization variables (i.e., interpersonal negative health-care socialization, and the two types of media negative health-care socialization) were not associated with any of the other variables in the model. This mirrors Hammond’s (2010) finding that socialization was not related to medical mistrust. As a result, to create a parsimonious model, the negative health-care socialization variables were dropped from the model. The tested structural model appears in Figure 4.3.

Figure 4.3. Tested structural model.

Note. NHE = negative health-care experiences, RDE = racial discrimination experiences. Factor loadings and error variances are not shown here for simplicity as that information is presented elsewhere.
The resulting baseline model showed adequate fit ($\chi^2 (336, N = 420) = 433.18, p < .001$, $CFI = .961, RMSEA = .038, SRMR = .071$) and that only one covariate, income, was related to medical mistrust. The test of the fully constrained model yielded a $\chi^2 (373, N = 420) = 553.642$. The chi-square difference between this model and the baseline model was 120.47, which was statistically significant at $\alpha = .001$. This indicated that there is at least one constrained pathway in the model that is non-invariant across the two groups. To determine which pathways should be freed, a series of invariance tests were conducted.

As seen in Table 4.7 there were six pathways that were significantly non-invariant. Therefore, the final model is Model V, in which all pathways are constrained to be equal except those between the following pathways: a) vicarious interpersonal negative health-care experiences and perceived racism in health care, b) personal racial discrimination experiences and perceived racism in health care, c) vicarious interpersonal racial discrimination experiences and perceived racism in health care, d) vicarious media racial discrimination experiences and perceived racism in health care, e) perceived financial corruption in health care and medical mistrust, and f) income and medical mistrust.
Table 4.7
Goodness-of-Fit Indices for Structural Invariance Tests

<table>
<thead>
<tr>
<th>Model Description</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$\Delta \chi^2$</th>
<th>$\Delta df$</th>
<th>CFI</th>
<th>RMSEA</th>
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<td>Model C: Model B with Personal NHE to Mistrust constrained</td>
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<td>Model D: Model C with Personal NHE to Corrupt constrained</td>
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<td>Model E: Model D with Vic. Interpersonal NHE to Racism constrained</td>
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<td>( \Delta df )</td>
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<td>RMSEA</td>
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<td>$\Delta$df</td>
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<td>0.075</td>
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<td>4.68*$^*$</td>
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<td>0.961</td>
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<td>0.076</td>
</tr>
</tbody>
</table>

*Note. NHE = negative health-care experiences, RDE = racial discrimination experiences. **Significant at p < .05. **Significant at p < .01. ***Significant at p<.001.
Main Analyses

The final structural model demonstrated good fit, $\chi^2 (352, N = 420) = 444.66, p < .001$, $CFI = .962$, $RMSEA = .035$, $SRMR = .078$. Figure 4.4 shows the standardized path coefficients of pathways and their significance among both Black and White samples. For visual simplicity, only significant pathways are shown in the figure. Parameter estimates, both unstandardized and standardized, and related information for all pathways appears in Table 4.8.

Figure 4.4. Final structural model.

Note. For visual simplicity, only significant pathways are shown. Standardized estimates are presented above or to the right of the pathway. For all pathways the coefficient for the Black sample is presented first followed by the White sample (which is bolded and italicized). Solid lines represent constrained pathways; dotted lines are unconstrained pathways. *$p < .05$, **$p < .01$, ***$p <.001$.  

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Below, specific hypotheses and research questions pertaining to the model fit, as well as direct and indirect effects, are addressed. As negative health-care socialization was removed from the final model, H2, H6, and H10 were not supported and are not discussed below.

**Overall model.** H1 addressed the overall model; it hypothesized that EMMA, as hypothesized, would fit the data. As the negative health-care socialization variables were removed from the model for parsimony, these aspects of the model were unsupported. Based on the model fit, the revised model did fit the data. Furthermore, as seen in Figure 4.4, there were some hypothesized relationships that existed, while others did not. Therefore, there was some evidence that portions of EMMA fit the data. Thus, H1 was partially supported.

**Racial differences in the EMMA model.** RQ1 asked whether models differed between Black and White participants. Given that some pathways needed to be freed; there are, in fact, differences in the model (i.e., pathways are non-invariant). These differences will be addressed below in relation to specific pathways. For invariant pathways, the unstandardized path coefficients are the same estimate, but due to differences between samples the standardized estimates may not be the same. As a result, for invariant pathways there is a single unstandardized path coefficient (UPC), but there are standardized path coefficients for both Black (SPC_B) and White (SPC_W) samples. For non-invariant pathways, Wald’s chi-square tests were conducted to determine whether these pathways were significantly different. A significant result rejects the null hypothesis that the pathways are equivalent.

**Medical mistrust.** H3 posited that negative health-care experiences (NHE) would be positively associated with medical mistrust. Pathways from personal NHE, vicarious interpersonal NHE, and vicarious media NHE to medical mistrust were equivalent between Black and White samples. Personal NHE was positively related to medical mistrust (UPC = .44,
SPC_B = .28, SPC_W = .23, p < .001); however, neither vicarious interpersonal NHE (UPC = -.17, SPC_B = -.12, SPC_W = -.08, p = .08) nor vicarious media NHE (UPC = -.12, SPC_B = -.08, SPC_W = -.07, p = .15) were positively related to medical mistrust. Thus, H3 was partially supported.

H4 posited that racial discrimination experiences (RDE) would be positively related to medical mistrust. Pathways from personal RDE, vicarious interpersonal RDE, and vicarious media RDE were all structurally invariant. Personal and vicarious interpersonal RDE were not significantly related to medical mistrust (UPC = .14, SPC_B = .09, SPC_W = .05, p = .24; UPC = .07, SPC_B = .06, SPC_W = .05 p = .41, respectively). Vicarious media RDE was positively related to medical mistrust (UPC = .25, SPC_B = .18, SPC_W = .15, p = .002). Thus, H4 was partially supported.

H5 posited that perceived racism in health care would be positively associated with medical mistrust. This pathway was found to be invariant and to have a significant positive relationship (UPC = .36, SPC_B = .29, SPC_W = .31, p < .001). H9 stated that perceived financial corruption in health care would also be positively associated with medical mistrust. This was true for both Black participants (UPC = .32, SPC_B = .25, p = .01) and White participants (UPC = .67, SPC = .47, p < .001). Thus, both H5 and H9 were supported. Wald’s chi-square test determined that these pathways were significantly different such that this pathway was stronger from White participants than Black participants, \( \chi^2(1, N = 422) = 6.34, p = .01 \).

**Perceived racism in health care.** H7 posited that NHE would be positively related to perceived racism in health care. The pathways from personal NHE and vicarious media NHE were found to be structurally invariant. There was significant positive relationship between personal NHE and perceived racism in health care (UPC = .22, SPC_B = .18, SPC_W = .14 p = .01). There was not a significant relationship between vicarious media NHE and perceived racism in
health care (UPC = -.02, SPCₐ = -.02, SPCₜₐ = -.02, p = .71). The pathway between vicarious interpersonal NHE and perceived racism in health care was non-invariant. For Black participants, there was no significant relationship between vicarious interpersonal NHE and perceived racism in health care (UPC = .01, SPC = .01, p = .95). There was, however, a significant positive relationship between these constructs for White participants (UPC = .35, SPC = .20, p = .01). These path coefficients are significantly different from one another, χ² (1, N = 422) = 6.43, p = .01. Therefore, H7 was partially supported.

H8 posited that RDE would be positively related to perceived racism in health care. All the pathways from personal RDE, vicarious interpersonal RDE, and vicarious media RDE were non-invariant. Wald’s test determined that each of these pathways were significantly different, personal: χ² (1, N = 424) = 12.40, p < .001; vicarious interpersonal: χ² (1, N = 424) = 13.34, p < .001; vicarious media: χ² (1, N = 424) = 6.73, p = .009. For Black participants, there was no significant relationship between personal RDE and perceived racism in health care (UPC = .16, SPC = .13, p = .06); for White participants, however, there was a negative association between these variables (UPC = -.47, SPC = -.20, p = .01). Similarly, there was not a significant relationship between vicarious interpersonal RDE for Black participants (UPC = .10, SPC = .10, p = .26), but a positive relationship for White participants (UPC = .55, SPC = .44, p < .001). Alternatively, for vicarious media RDE there was a significant relationship for Black participants (UPC = .20, SPC = .17, p = .01), but not for White participants (UPC = -.15, SPC = -.11, p = .23). Thus, H8 was partially supported.

**Perceived financial corruption in health care.** H11 posited NHE would be positively related with perceived financial corruption in health care. All three of these pathways (i.e., personal NHE, vicarious interpersonal NHE, vicarious media NHE) were invariant. Personal
NHE was positively associated with perceived financial corruption (UPC = .25, SPC_B = .21, SPC_W = .19, p = .004). There was no significant relationship between vicarious interpersonal NHE and perceived financial corruption (UPC = -.002, SPC_B = -.002, SPC_W = -.001, p = .98). Finally, vicarious media NHE was negatively related to perceived financial corruption (UPC = -.19, SPC_B = -.17, SPC_W = -.16 p = .003). Therefore, H11 was partially supported.

H12 posited that RDE would be positively related to perceived financial corruption in health care. Pathways from personal RDE, vicarious interpersonal RDE, and vicarious media RDE were structurally invariant. The relationships between both personal RDE and perceived financial corruption (UPC = .08, SPC_B = .06, SPC_W = .04, p = .34), as well as between vicarious interpersonal RDE and perceived financial corruption (UPC = .04, SPC_B = .04, SPC_W = .04, p = .51) were non-significant. There was, however, a significant positive relationship between vicarious media RDE and perceived financial corruption (UPC = .14, SPC_B = .12, SPC_W = .11, p = .04). Thus, H12 was partially supported.

**Perceived racism in health care and perceived financial corruption in health care as mediators.** H13 stated that there would be a positive relationship between perceived racism and perceived financial corruption in health care. This pathway was invariant. There was no significant relationship between perceived racism in health care and perceived financial corruption in health care (UPC = .04, SPC_B = .04, SPC_W = .04, p = .53). Thus, there was no support for H13.

As the first hypothesis encompassed not only model fit, but also the overarching relationships in EMMA, H1 posited that perceived racism in health care and perceived financial corruption in health care would mediate the relationships between medical mistrust and both negative health-care experiences and racial discrimination experiences, respectively. To examine
these hypotheses, indirect effects were tested. In respect to negative health-care experiences, there was evidence of indirect effects. Perceived racism in health care and perceived financial corruption in health care mediated the relationship between personal NHE and medical mistrust for both Black and White participants. Additionally, vicarious interpersonal NHE exerted an indirect effect on medical mistrust through perceived racism in health care, but only for White participants. Vicarious media NHE exerted an indirect effect on medical mistrust through perceived financial corruption in health care for both Black and White participants. There were also indirect effects for racial discrimination experiences. For White participants, there was evidence of personal RDE exerting an indirect effect on medical mistrust through perceived racism in health care. For Black participants, the lower bound of the confidence was zero, suggesting this indirect effect did not exist. There was also an indirect effect of vicarious interpersonal RDE on medical mistrust through perceived racism in health care for White participants. Finally, vicarious media RDE was mediated by perceived financial corruption in health care for White participants, and by both perceived racism in health care and perceived financial corruption in health care for Black participants. The specific indirect effects, total indirect effects, and confidence intervals are shown in Table 4.9.
### Table 4.8
Parameter Estimates

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<td>-0.01</td>
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<p>| Racism                   |      |      |     |      |           |      |      |     |      |           |
| Personal NHE             | 0.22 | 0.18 | 0.08| 0.01 | [.06, .37]| 0.22 | 0.14 | 0.08| 0.01 | [.06, .37]| |
| Vicarious Interpersonal  |      |      |     |      |           |      |      |     |      |           |
| NHE                      | 0.01 | 0.01 | 0.08| 0.95 | [-.16, .17]| 0.35 | 0.20 | 0.13| 0.01 | [.09, .62]| |
| Vicarious Media NHE      | -0.02| -0.02| 0.06| 0.71 | [-.14, .09]| -0.02| -0.02| 0.06| 0.71 | [-.14, .09]| |
| Personal RDE             | 0.16 | 0.13 | 0.09| 0.06 | [-.01, .33]| -0.47| -0.20| 0.18| 0.01 | [-.81, -.11]| |
| Vicarious Interpersonal  |      |      |     |      |           |      |      |     |      |           |
| RDE                      | 0.10 | 0.10 | 0.09| 0.26 | [-.08, .26]| 0.55 | 0.44 | 0.11| 0.00 | [.35, .77]| |
| Vicarious Media RDE      | 0.20 | 0.17 | 0.08| 0.01 | [.04, .35]| -0.15| -0.11| 0.12| 0.23 | [.39, .09]| |</p>
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<td>0.06</td>
<td>0.53</td>
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*Note.* Due to several invariant pathways, the unstandardized path coefficients are the same for both Black and White samples. However, due to differences between samples the standardized estimates may not be the same.
<table>
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<td>0.08</td>
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<td>[-.16, -.003]</td>
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<td>0.02</td>
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Table 4.9 (cont.)

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<td>[.000, .14]</td>
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<td>[-.02, .10]</td>
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<tr>
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<td>[.001, .18]</td>
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<td>Total</td>
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<td>[-.03, .13]</td>
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<tr>
<td>Total</td>
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<tr>
<td>Direct Effect on Mistrust</td>
<td>0.25   0.08 0.002</td>
<td>[.08, .39]</td>
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<tr>
<td>Indirect Effect via Racism</td>
<td>0.07   0.04 0.05</td>
<td>[.02, .16]</td>
</tr>
<tr>
<td>Indirect Effect via Corruption</td>
<td>0.04  0.03 0.12</td>
<td>[.01, .12]</td>
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<tr>
<td>Total Indirect Effect</td>
<td>0.11   0.05 0.01</td>
<td>[.04, .22]</td>
</tr>
<tr>
<td>Total</td>
<td>0.36   0.09 0.00</td>
<td>[.19, .53]</td>
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</table>

Note. Due to several invariant pathways, the unstandardized path coefficients are the same for both Black and White samples. However, due to differences between samples the standardized estimates may not be the same.
Discussion

The EMMA model hypothesized that negative health-care socialization (NHS), negative health-care experiences (NHE), and racial discrimination experiences (RDE) influenced medical mistrust, and that these relationships were mediated by perceived racism in health care and perceived financial corruption in health care. Furthermore, EMMA conceptualized negative health-care socialization, negative health-care experiences, and racial discrimination experiences as being comprised of communicative elements (e.g., negative health-care experiences would be a latent construct comprised of personal negative health-care experiences, vicarious interpersonal negative health-care experiences, and vicarious media negative health-care experiences).

The hypothesized latent variables of NHS, NHE, and RDE did not fit the data. Using the indicators (e.g., personal RDE, vicarious interpersonal RDE, and vicarious media RDE) as observed variables provided a better fit for the data. The negative health-care socialization variables, however, had no relationship with the other variables in the data and were removed for the sake of parsimony. For both racial groups, personal NHE and vicarious media RDE had direct effects on medical mistrust. Additionally, personal NHE exerted an indirect effect on medical mistrust through perceived racism in health care and perceived financial corruption in health care. Both vicarious media variables (i.e., vicarious media NHE and vicarious media RDE) exerted an indirect effect on medical mistrust through perceived financial corruption in health care. There were also differences in the model by racial group. For White participants, both vicarious interpersonal constructs (i.e., vicarious interpersonal NHE and vicarious interpersonal RDE) exerted indirect effects on medical mistrust through perceived racism. For Black participants, vicarious media RDE exerted an indirect effect on medical mistrust via
perceived racism in health care; a relationship that did not exist for White participants. Below, implications and limitations of Study 1 are discussed.

**Theoretical Implications**

**Ecological medical mistrust antecedents (EMMA) model.** EMMA builds upon the model and relationships found in Hammond (2010). Hammond (2010) examined the equivalent of negative health-care experiences and racial discrimination experiences and examined perceived racial discrimination in health care as a mediator of that relationship. Originally, Hammond’s (2010) model was only tested among Black men. Study 1 extends this work by putting forth a model that includes communication, introduces a new mediator (i.e., perceived financial corruption in health care), and extends the model to Black Americans, more broadly, as well as White Americans.

Although the model fit the data, there remains a substantial amount of variance in medical mistrust left unaccounted for. EMMA may provide a foundation for continuing to build a model of medical mistrust, but other antecedents may be necessary to fully explicate medical mistrust. In looking for additional antecedents, other aspects of Street’s (2003) model could be integrated into the model and tested. For instance, given the current national debates surrounding health care and the upcoming 2020 presidential election (Brownstein, 2019; Tavernise & Gebeloff, 2016), the inclusion of the political-legal context may be an important component to consider. Furthermore, Benkert, Cuevas, et al. (2019) recently argued for a social-ecological perspective for thinking about medical mistrust. They advocate using Williams and Mohammed’s (2013) Racism and Health framework, developed to explain the ways in which racism can impact health, to think about medical mistrust. It is possible that elements of this
model may provide other concepts that could be useful to incorporate into the EMMA model (e.g., threat of stressors, health literacy).

Finally, there remains a need to continue examining the role of negative health-care socialization in medical mistrust and its role in this model. The lack of a significant relationship between negative health-care socialization and medical mistrust in the current study as well as Hammond (2010) may be a function of the measures utilized. It may be the case that more adequate measures of health-care socialization are necessary to detect these relationships. In the current study, health-care socialization asked participants about where they had heard about visiting health-care providers. These items may have been too vaguely worded to adequately capture individuals’ socialization towards health-care providers. It may be necessary to either ask questions about health-care socialization in time-bound manner (e.g., “what did you hear growing up about visiting health-care providers”) or within specific contexts (e.g., “what have you heard regarding visiting a health-care provider to get a flu shot”). The latter will be particularly important in terms of whether negative health-care socialization increases medical mistrust, and in turn, decreases willingness to engage in particular health behaviors.

**Inclusion of perceived financial corruption.** Perceived financial corruption has not previously appeared in work investigating medical mistrust. The results of Study 1 suggest that perceived financial corruption in health care should be a part of investigations of medical mistrust. Not only were increased perceptions of financial corruption in health care associated with higher levels of medical mistrust, but personal NHE, vicarious media NHE, and vicarious media RDE exert indirect effects on medical mistrust through perceived financial corruption in health care. Perceived discrimination, perceived racism, and stigma have received some attention in medical mistrust literature (e.g., Durant et al., 2011; Eaton et al., 2015; Goodin et al., 2013);
but, to my knowledge, there has been no discussion of the role of perceived financial corruption in health care. Regardless of whether medical mistrust scholars choose to utilize the EMMA model, they should include perceived financial corruption in their work if considering the antecedents of medical mistrust. To do so, it would be useful to have a validated measure of perceived financial corruption. In the future, scale development should be undertaken to produce a validated measure of perceived financial corruption.

**Nuances in racial differences in medical mistrust.** It is well established that there are racial differences in medical mistrust (e.g., Brandon et al., 2005; Guadagnolo et al., 2009; Tekeste et al., 2018; Thompson et al., 2003). However, there has been little done to investigate the nuances of the differences (see Benkert, Cuevas, et al., 2019). Study 1 of this dissertation is a step in that direction by illuminating the ways in which there may be differences in medical mistrust across racial groups. For example, when examining the relationship between vicarious media racial discrimination experiences – only perceived financial corruption in health care mediated this relationship for White participants, while both perceived racism in health care and perceived financial corruption in health care mediated this relationship for Black participants. This suggests that the root of medical mistrust, may in fact, be different and act through different pathways. Scholarship has shown that compared to White Americans, Native Americans (Guadagnolo et al., 2009) and Hispanic/Latinx (Thompson et al., 2003) also harbor higher levels of medical mistrust. Future work should use EMMA to conduct comparative studies that examine medical mistrust among other racial/ethnic groups.

**Measurement.** Finally, tests of measurement invariance in Study 1 provide evidence that the LaVeist, Nickerson, and Bowie’s (2000) scales for perceived racism in health care and medical mistrust are, in fact, invariant. Several studies have used these measures and had
comparative discussions regarding differences on the measures between Black and White samples (e.g., Arnett et al., 2016; Casagrande et al., 2007; Kinlock et al., 2016; LaVeist et al., 2000). Yet, to my knowledge, there was previously no empirical evidence that these scales were invariant across racial groups. Without this, comparisons between racial groups were being made using these measures without any indication that these measures were being interpreted similarly across groups. Thus, the results of the measurement invariance testing in this study provide evidence that making these comparisons is reasonable and that these are measures that can be used when interested in making comparisons between Black and White Americans.

**Practical Implications**

The findings from the current investigation also hold several practical implications for examining and addressing medical mistrust. First, this study suggests that we must reexamine the ways in which we consider and discuss medical mistrust. Racial health disparities continue to be an issue in the United States (Centers for Disease Control and Prevention, 2013; Orgera & Artiga, 2018). Medical mistrust is one of the barriers scholars think contributes to these disparities; Black Americans consistently report higher levels of medical mistrust than their White counterparts (Halbert et al., 2009; Tekeste et al., 2018). This distrust in medical personnel and institutions is associated with a decreased likelihood of getting routine check-ups (Hammond, Matthews, Mohottige, et al., 2010); undergoing cancer screening (Bynum et al., 2012; Shelton et al., 2010); adhering to treatment (Kalichman et al., 2016; Tekeste et al., 2018); being satisfied with care (LaVeist et al., 2000), which leads to patient adherence (Street et al., 2009); and registering as an organ donor (Morgan et al., 2008). Given its ties to racial health disparities and the pervasiveness of this barrier, it is time for scholars to treat medical mistrust as a phenomenon of interest.
There has been an overwhelming emphasis on the role of the Tuskegee Syphilis Study in medical mistrust (Jaiswal & Halkitis, 2019); in fact, it stands as a salient example of injustices of the health-care system and medical research (Reverby, 2008). However, as Washington (2006) argues, the issue is not just the Tuskegee Syphilis Study; there have been a history of abuses, particularly towards Black Americans. The health-care system and health-care providers have historically been a part of marking citizenship (Baynton, 2016), marginalizing communities (e.g., Shah, 2001) and using marginalized populations for medical experimentation (Washington, 2006). Neither these types of incidents, nor their effects, are relegated to the past.

This study suggests that hearing these stories (vicarious interpersonal experiences) and exposure to news stories showing the relationship between members of the public and health-care personnel and institutions (vicarious media experiences), influences individuals’ mistrust; this may, in turn, influence health behaviors. This is particularly important against the background of the current national climate. In the beginning of 2019, a medical school yearbook photo showed the current governor of Virginia, Ralph Northam, dressed in blackface (Kelly, 2019). On the surface, it seems as though this sort of news story would influence medical mistrust; given the timing of Study 1 data collection, the effects of this event were salient to participants. A Study 1 participant remarked “I suspect, for Afro-Americans in general, the news set trust back a generation…” For those interested in tackling medical mistrust (e.g., health communication scholars, health-care providers), the possible impact of this type of exposure must be taken into account.

Additionally, it will be important for health scholars to acknowledge that there may be different processes occurring that can result in medical mistrust. Thus, it is not enough to know that a people are mistrustful. Instead, it is necessary to know whether perceived financial
corruption in health care, perceived racism in health care, or both may be driving that mistrust. It is important, however, to note that the onus does not lie on individuals to not think health-care personnel and institutions are racist or corrupt when, in fact, there is evidence to the contrary; nor should the goal be to persuade individuals the health-care system is not racist or corrupt. These perceptions are rooted in valid concerns and histories. Instead, these underlying antecedents point to areas for work; work must be done to make the necessary structural changes to assuage these concerns. Health communication scholars are uniquely poised to contribute to this work including examining how health-care institutions, as organizations, operate and communicate; how to publicize efforts and progress toward creating more equitable health-care experiences and spaces; and how health-care providers can best interact with patients given this societal context of their interactions.

Limitations

The findings of this study must be considered in the context of several limitations. For example, a cross-sectional study cannot establish causality (Babbie, 2013). Although claims about mediated communication causing medical mistrust cannot be made; there is evidence that these constructs are related. Despite this limitation, this study provided the ability to examine these relationships and produced initial support of the existence of these relationships. It will also be beneficial for longitudinal work to be done to provide evidence of causal order. Additionally, experimental work would be beneficial in establishing this causal relationship between mediated communication and medical mistrust.

Secondly, the data collected for this study was collected via snowball sampling. This convenience sample prevents broad generalizations of the findings. Replication of these relationships should be examined in more diverse samples (e.g., with a wider range of education
and income levels). Additionally, given that a majority of the recruitment originated from seeds in my own networks, it is possible that this sample of White participants were more likely to have family and friends who are Black or people of color. The existence of a positive relationship between vicarious interpersonal NHE and perceived racism in health care for White participants suggests that this may have been the case; these vicarious experiences may have been the personal experiences of people of color. The vicarious interpersonal NHE items asked whether family members’ and friends’ experiences with health-care providers; the items were not conditional upon those family members or friends being of a certain race. Future investigations should determine whether these negative health-care experiences are happening to minority or non-minority individuals. It may also be beneficial to examine the role perceived similarity may play in these vicarious experiences. Given that for White participants, vicarious interpersonal negative health-care experiences resulted in higher levels of perceived racism in health care, and in turn, higher levels of medical mistrust, it may be useful to know what other dimensions may be contributing to these effects, if not race.

**Summary**

Study 1 utilized a cross-sectional survey to test the EMMA model by examining both the model fit as well as the specific relationships posited by EMMA. The results suggested that the EMMA is a reasonable starting point for examining the antecedents of medical mistrust and allows for comparisons to be made across racial groups. Except for negative health-care socialization, many of the proposed antecedents either had direct or indirect (through perceived racism in health care or perceived corruption in health care) relationships with medical mistrust. In examining these relationships, this study highlighted the role of vicarious media experiences in medical mistrust. Despite limitations, such as the cross-sectional nature of the study and a
convenience sample recruited through snowball sampling, Study 1 provides a starting point for focusing on the antecedents of medical mistrust while accounting for the role communication places in these antecedents. By considering the role of communication, a model was produced that accounted for around half of the variance in medical mistrust for both Black and White samples.
CHAPTER 5: STUDY 2

Study 1 revealed that both negative health-care experiences and racial discrimination experiences may influence medical mistrust, particularly for Black participants. Study 1 found that for Black participants, negative health-care experiences exerted an indirect effect on medical mistrust through perceived financial corruption in health care, whereas racial discrimination exerted an indirect effect on medical mistrust through both perceived financial corruption in health care and perceived racism in health care. These findings suggest that media exposure to both negative health-care experiences and racial discrimination experiences have relationships with medical mistrust.

Not only is there support for a relationship between media messages and medical mistrust based on EMMA, but also additional theoretical backing for the notion that mediated messages play a role in medical mistrust. First, mediated messages, like news stories, can provide vicarious experiences for individuals. According to social cognitive theory, individuals learn about the world not only through direct experiences, but also through vicarious learning (Bandura, 2009). In other words, individuals can learn from actions of others, as well as the consequences of those actions, without having to go through it themselves. For instance, individuals need not experience negative health-care experiences themselves to realize that difficulties may arise when seeking treatment or in interactions with health-care providers. Similarly, an individual need not experience racial discrimination first-hand, to decide that racial discrimination exists in the world. Learning of others’ negative health-care experiences or racial discrimination experiences should also affect an individual’s own perceptions of the world. According to Bandura (2009), media is one avenue for this vicarious learning. Part of this process entails turning modeled events into rules and conceptions (Bandura, 2009). As a result, exposure to
negative health care content or racial discrimination content may influence participants’ perceptions of health-care personnel and institutions (i.e., medical mistrust), as well as whether they choose to interact with health care providers (i.e., willingness to engage in health behaviors). Scholars have suggested that vicarious learning is facilitated by similarity; race is one dimension along which similarity may occur (Bandura, 2001; Pajares, Prestin, Chen, & Nabi, 2009). Thus, exposure to negative health-care experiences and racial discrimination experiences faced by Black Americans should be influential for a Black sample.

The results of Study 1, as well as theoretical reasoning, suggest a relationship between media exposure to both negative health-care experiences and racial discrimination experiences and medical mistrust. While Study 1 provided support for these relationships, it did not provide evidence that exposure to this type of media content causes increased medical mistrust. Thus, Study 2 utilized a 2 (health care, non-health care) x 2 (racial discrimination, non-racial discrimination) between-subjects experimental design to examine the impact of media health care and discrimination content on medical mistrust and health behavior intentions. The aims of Study 2 were: a) to examine the relationship between mediated content, medical mistrust, and health outcomes, and b) understand the nuances of the two primary measures of medical mistrust. As a result, Study 2 tested H14-H20 and RQ2-RQ7 among a Black sample.

Method

Participants and Recruitment

Participants (N = 462) were recruited through a Qualtrics survey panel. All participants were adults over the age of 18 who self-identified as African American. Sample size was determined based on computations conducted by MacCallum et al. (1996). Sample size increases as degrees of freedom decrease, thus the model with the lowest degrees of freedom was utilized.
to estimate the minimum sample size. With 56 degrees of freedom, the required sample size was approximately 253 participants. More participants, however, were necessary to conduct the anticipated ANOVA analyses with adequate power. Using G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009), the necessary sample size for this portion of the analysis was estimated to be 344. This estimate was based on the following parameters: an effect size of .10, an alpha level of .05, power of .80, and four groups. As there is no literature to indicate a possible effect size, a small effect size was used in the calculation as a precautionary measure.

Fifty-two participants were removed from the data set for providing irrelevant responses to open-ended items (e.g., “Avenger end game because I want a scam webs they all game…”) or for streamlining answers (i.e., answering “3” for every Likert-scale item) resulting in a final sample of 412 participants. Participants were primarily female (73.8%) and identified as heterosexual (83.7%). They ranged in age from 18 to 75 with a mean age of 36.04 (SD = 15.67). Most participants reported being from the South (59%). Finally, a majority of participants did not hold a bachelor’s degree (70.7%) and reported making less than $50,000 (63.7%).

**Procedure**

Following approval from the IRB, participants completed an online experimental survey. Participants were told they were taking part in two short, unrelated surveys: a “news study” and a “health study” about health and wellbeing. This was done to address the concern that letting participants assume exposure and subsequent items were related could be problematic for individuals in the non-health care, discrimination condition (NH/D). If this step had not been taken, individuals in the NH/D condition, for instance, would have been exposed to a discrimination news story and then subsequently have been presented with nothing but health items without any explanation or justification.
In the “news study,” participants were asked a few questions about their news media habits (e.g., where they got their news from). They were then exposed to a message that corresponded to the condition they were randomized into (e.g., non-health care, discrimination). After exposure to the message, they were presented with a thought listing screen and followed by items on the credibility of the news story. In the “health study,” participants were asked items about their current health, health behavior intentions, and medical mistrust. Health behavior intention items were presented first, followed by measures of medical mistrust. Medical mistrust was assessed last so that it did not prime participants as they answered questions about health behavior intentions. As two types of medical mistrust were presented (i.e., general medical mistrust and race-based medical mistrust), the order of presentation was counterbalanced.

**Stimuli**

**Construction.** Messages were created to resemble the type of news story individuals may encounter in everyday life. The messages were presented as a short news report on the findings of a recent study or institutional report. The use of this framing allowed for a more standardized message to be used in each scenario without sacrificing believability. A 2 (health care, non-health care) x 2 (racial discrimination, non-racial discrimination) design was employed creating four types of news stories: health care, racial discrimination (H/D); health care, non-racial discrimination (H/ND); non-health care, racial discrimination (NH/D); and non-health care, non-racial discrimination (NH/ND). Given the goal was to make claims about “health care, discrimination” messages and not the particular message used to represent this category, two stories were created for each message type. All stimuli are presented in Appendix B.

No topics from the health intention outcomes of interest were used in the messages. To be consistent with EMMA, health care content for this study depicted a negative health-care
experience (i.e., inability to access services). For health care news stories, difficulty accessing an oncologist and accessing a therapist were used. For the non-health care news stories, access to home internet and access to ride-sharing services (e.g., Lyft) was used. News stories depicting racial discrimination utilized racialized geographic regions and mentioned the difficulty Black residents had procuring the discussed service (i.e., home internet access, Lyft, oncologist, or therapist). For non-racial discrimination content new stories, the differences were ascribed to geographic region (i.e., residents of small rural towns had difficulty accessing services). These topics were chosen as they were topics that could be used for both racial discrimination and issues of region and had appeared in recent news stories (Krull, 2019; Neighmond, 2019; Turban, 2019; Valencia, 2019).

Messages were made as consistent as possible in terms of content, tone, and length while allowing messages to have ecological validity. Care was taken to ensure that the stories contained comparisons in the same direction (e.g., “having a significantly harder time”). In other words, all stories were framed as residents being less likely to be able to access the services than other residents in the state. The messages were presented as though the news report was discussing the findings from a recent report or study; this included a quote from a researcher involved in the study explaining the report and its recommendations. Constructing the message in this way provided an opportunity to provide additional evidence and explanation for the issue being discussed in the story. Sentiment analysis conducted in ConTEXT (Diesner et al., 2015) revealed that the stories did not vary in tone; all stories only contained negative words. Finally, story length was made as close as possible between stories.

**Pre-testing of messages.** Messages were pre-tested to determine whether: a) the desired manipulation was achieved, and b) whether the stimuli were believable as news stories. Two
rounds of pre-testing took place. In the first round \((N = 120)\), the initially crafted stories were tested. Based on open-ended feedback during this round of pre-testing, messages were altered to provide more information and include an expert; these updated messages were tested in the second round \((N = 100)\). In both rounds, Black participants were recruited via Amazon Mechanical Turk to read the messages and answer related items. Participants were randomized into one of four conditions (i.e., health-care, racial discrimination \([H/D]\), non-health care, racial discrimination \([NH/D]\), health care, non-racial discrimination \([H/ND]\), and non-health care, non-racial discrimination \([NH/ND]\)). After consenting on the first screen of the study, they were then asked about general news credibility, shown a news story for their given condition, and then asked specifically about the news story (e.g., thoughts on the news story, whether the news story was about discrimination). Below, key pre-test results for the experimental variables are reported.

**Health Care.** Stories designed to contain health care content resulted in participants reporting higher levels of agreement about whether the story was about health, \(t(118) = 11.04, p < .001\) and involved a health issue \(t(118) = 7.07, p < .001\). There were higher levels of agreement with the statement that the story was about health for those exposed to health-care news stories \((M = 4.17, SD = 1.13)\) than those exposed to non-health care news stories \((M = 1.77, SD = 1.24)\). Similarly, there were higher levels of agreement that the news story involved a health issue among those exposed to health-care stories \((M = 3.69, SD = 1.29)\) than those exposed to non-health care news stories \((M = 2.02, SD = 1.31)\).

After the stimuli were modified to address pre-test participants’ concerns about believability of the news stories, an additional round of pre-testing was done. These modifications did not change the effect of the health care manipulation. There remained
differences regarding whether the news story was about health \( t(89.17) = 18.61, p < .001 \) and involved a health topic, \( t(93.68) = 10.46, p < .001 \). There were higher levels of agreement that the news story was about health for those exposed to health care news stories (\( M = 4.33, SD = .92 \)) than those exposed to non-health care news stories (\( M = 1.29, SD = .70 \)). Similarly, there were higher levels of agreement about whether the news story involved a health issue in the stories for those exposed to health care news stories (\( M = 3.69, SD = 1.21 \)) than those exposed to non-health care news stories (\( M = 1.37, SD = 1.01 \)).

**Discrimination.** Racial discrimination conditions differed from non-racial discrimination conditions regarding whether racial discrimination was mentioned, \( t(118) = 5.59, p < .001 \) and experienced, \( t(118) = 4.80, p < .001 \). There were higher levels of agreement that racial discrimination was mentioned for those who were exposed to racial discrimination news stories (\( M = 4.13, SD = 1.06 \)) than those exposed to non-racial discrimination news stories (\( M = 2.93, SD = 1.28 \)). Similarly, there were higher levels of agreement regarding whether racial discrimination was experienced by the character in the story for those exposed to the racial discrimination news stories (\( M = 3.97, SD = 1.21 \)) than those exposed to non-racial discrimination news stories (\( M = 2.86, SD = 1.31 \)).

After the stimuli were modified to address pre-test participants’ concerns about believability of the news stories, an additional round of pre-testing was done. The addition of the story elements did not change the effect of the racial discrimination manipulation. There remained differences regarding whether racial discrimination was mentioned \( t(96.05) = 4.02, p < .001 \) and experienced by the character, \( t(99) = 4.20, p < .001 \). There were higher levels of agreement that racial discrimination was mentioned in the racial discrimination news stories (\( M = 4.10, SD = 1.15 \)) than the non-racial discrimination news stories (\( M = 3.07, SD = 1.40 \)).
Similarly, there were higher levels of agreement regarding whether racial discrimination was experienced by the character in the story for those exposed to racial discrimination news stories ($M = 3.88, SD = 1.41$) than those exposed to non-racial discrimination news stories ($M = 2.75, SD = 1.31$).

**Measures**

Below, measures are discussed for the variables of interest. A full list of each measure’s items appears in Appendix C.

**Health behavior intentions.** Willingness to engage in four different health behaviors was assessed. These behaviors were registering as an organ donor, discussing organ donation with a family member, getting tested for HIV, and getting a flu shot. These four behaviors were chosen for their connections to mistrust and the variety of health behaviors they represent. Willingness to engage in each behavior was measured using a single item; this item was similar to the willingness item suggested by Fishbein and Ajzen (2011) to measure intentions. Given the topics of interest, to ensure issues of cost or opportunity did not influence participants’ responses items were framed as “if free” or “if the opportunity arose.” Items were rated from 1 (strongly disagree) to 5 (strongly agree).

**Medical mistrust.** Medical mistrust was assessed in two ways – general medical mistrust and race-based medical mistrust. Scholars have previously used this delineation to describe the two most widely used measures of medical mistrust – the Medical Mistrust Index (MMI; LaVeist et al., 2009) and Group-Based Medical Mistrust Scale (GBMMS; Thompson et al., 2004). Pellowski et al. (2017) used this categorization when testing the impact of both types of medical mistrust on antiretroviral therapy (ART) adherence. A systematic review of medical mistrust measures has shown that these two measures account for over a third of all measures of medical mistrust.
mistrust (Williamson & Bigman, 2018). Measuring medical mistrust in both ways (i.e., general and race-based) may help pinpoint the locus of distrust (e.g., whether the distrust stems from issues related to marginalization and social positioning). Furthermore, it may allow for further understanding of the two most widely used measures of medical mistrust. Both general and race-based medical mistrust are discussed below.

**General medical mistrust.** General medical mistrust was assessed using the Medical Mistrust Index (MMI; LaVeist et al., 2009). The MMI is one of the most widely used measures to assess medical mistrust (Williamson & Bigman, 2018). The MMI refers to what many scholars have referred to as general medical mistrust. It asks participants how much they agree with statements about health-care organizations. For example, “Patients have sometimes been deceived or misled by healthcare organizations” (LaVeist et al., 2009). Participants were asked to respond from 1 (strongly disagree) to 5 (strongly agree). The MMI has been found to be a reliable scale among Black populations with a Cronbach’s alpha around .77 (Brandon et al., 2005; Hammond, 2010). For the current study, general medical mistrust formed a reliable scale (α = .86).

**Race-based medical mistrust.** Race-based medical mistrust was assessed using the Group-Based Medical Mistrust Scale (GBMMS; Thompson et al., 2004). The GBMMS was created to reflect the possibility that for Black Americans, medical mistrust may be rooted in the belief that the medical system is reflective of the dominant culture (Thompson et al., 2004). The GBMMS asks participants whether individuals of their race/ethnicity should be distrusting of medical personnel. In other words, as opposed to asking about medical mistrust generally, it makes the referent group the participants’ own race/ethnic group. The GBMMS is a 12-item scale containing items such as “People of my race/ethnicity should be suspicious of modern
medicine.” Participants are asked to rate their level of agreement from 1 (strongly disagree) to 5 (strongly agree). For the current study, as all participants were African American, “people of my race/ethnicity” was replaced with “African Americans.”

The GBMMS has been found to be a valid measure of medical mistrust. The scale was originally validated using a group of Black and Latina women (Thompson et al., 2004). Thompson et al. (2004) found the internal reliability to be high with a Cronbach alpha of .83. Additionally, split-half reliability was fairly high at .75. The scale creators also examined construct validity by examining the scale’s associations with other variables (cancer screening cons and cancer screening pros; Thompson et al., 2004). They found the scale to be positively associated with cancer screening cons and negatively associated with cancer screening pros. Later, the study was also validated using a sample of urban Black men (Shelton et al., 2010). Shelton et al. (2010) found high internal reliability (Cronbach alpha = .87) as well as support for construct validity as evidenced by negative associations with health-care access, avoidance of health care, and satisfaction. Subsequent work has found GBMMS to be a reliable scale for other Black populations; Cronbach’s alphas have ranged from .79 to .87 (Benkert, Peters, Tate, & Dinardo, 2008; Fields et al., 2016; Greer et al., 2014; Valera et al., 2016). Furthermore, the scale has been found to be invariant across biological sex (Wheldon, Kolar, Hernandez, & Daley, 2017). For the current study, the items formed a reliable scale (α = .88).

**News credibility.** News credibility was measured using Flanagin and Metzger’s (2000) information credibility scale. Participants were asked to think about all the news they consume (i.e., read, listen to, watch) and rate how complete, accurate, unbiased, trustworthy, and credible they believe the information in news stories to be. Participants responded to each item on a scale from 0 (not at all) to 4 (extremely). The scale formed a reliable scale (α = .77).
Demographics. Demographic information on sex, age, and socioeconomic status were also collected. Scholarship has suggested that variables such as biological sex (Greer et al., 2014; López-Cevallos et al., 2014), age (Abraído-Lanza et al., 2011; Hammond, 2010), and socioeconomic status (Maly et al., 2008) are associated with medical mistrust. Thus, these were included as possible covariates. Additionally, sexual orientation was collected among demographic information. High levels of medical mistrust may also exist for those marginalized in society for aspects of their identity other than race. As another demographic that faces marginalization, sexual minorities may also have higher levels of medical mistrust. Qualitative work has suggested that individuals see their distrust and wariness about the medical system as stemming from both their racial and sexual identities (Malebranche et al., 2004).

Analysis

Prior to analysis, data was assessed to ensure data quality. First, missing data was assessed. Only 50 of 23,484 cells used for analysis were missing (.21% missing), which falls well below the threshold for concern (Tabachnick & Fidell, 2007). Next, normality was assessed. Both general medical mistrust and race-based medical mistrust were normally distributed and satisfied the homogeneity of variance assumption. The health intention outcomes, however, exhibited non-normal distributions. Univariate outliers were identified by examining the z-scores for each variable and found that two z-scores had absolute values above 3.29 (Fields, 2009). These cases were removed prior to main analyses. Correlations, means, standard deviations, skew, and kurtosis are presented in Table 5.1.

Given the non-normality of the health intentions, the anticipated linear regressions could not be performed. The distributions of these outcomes were primarily clustered at the ends and midpoints; thus, these items were recoded into three categories: yes willing (strongly agree and
somewhat agree), neutral (neither agree or disagree), and not willing (strongly disagree and somewhat disagree). As these variables could be considered ordinal, ordinal logistic regressions were conducted instead of linear regressions. The primary assumption for ordinal logistic regressions is that of proportional odds. The assumption of proportional odds says that the effect of a variable on the odds is invariant across the corresponding splits and thus one coefficient is sufficient to describe the relationship between a predictor and an ordinal response (O’Connell, 2006). The Brant Wald test was used to test this assumption; a non-significant chi-square means the assumption is met. All tests met the assumption except for the tests related to willingness to get a flu shot; this test produced a significant chi-square.

Table 5.1
Zero-order Correlation Matrix, Means, and Standard Deviations

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. General medical mistrust</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Race-based medical mistrust</td>
<td></td>
<td>0.43**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Flu shot intentions</td>
<td>0.03</td>
<td>-0.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. DNA test intentions</td>
<td>0.19**</td>
<td>-0.02</td>
<td>0.24**</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. HIV clinical trial intentions</td>
<td>-0.003</td>
<td>-0.02</td>
<td>0.21**</td>
<td>0.33**</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Encourage OTD intentions</td>
<td>0.05</td>
<td>-0.11**</td>
<td>0.19**</td>
<td>0.22**</td>
<td>0.25**</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>7. News credibility</td>
<td>0.004</td>
<td>-0.15**</td>
<td>0.16**</td>
<td>0.13**</td>
<td>0.11*</td>
<td>0.09</td>
<td>---</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
<th>Skew</th>
<th>Kurtosis</th>
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<tr>
<td></td>
<td>3.58</td>
<td>0.79</td>
<td>1-5</td>
<td>-0.17</td>
<td>-0.17</td>
</tr>
<tr>
<td></td>
<td>2.85</td>
<td>0.81</td>
<td>1-5</td>
<td>-0.20</td>
<td>-0.11</td>
</tr>
<tr>
<td></td>
<td>2.07</td>
<td>.90</td>
<td>1-3</td>
<td>-0.14</td>
<td>-1.74</td>
</tr>
<tr>
<td></td>
<td>2.41</td>
<td>.78</td>
<td>1-3</td>
<td>-0.87</td>
<td>-0.82</td>
</tr>
<tr>
<td></td>
<td>1.86</td>
<td>.85</td>
<td>1-3</td>
<td>0.27</td>
<td>-1.56</td>
</tr>
<tr>
<td></td>
<td>2.10</td>
<td>.83</td>
<td>1-3</td>
<td>-0.19</td>
<td>-1.53</td>
</tr>
<tr>
<td></td>
<td>2.16</td>
<td>0.71</td>
<td>0-4</td>
<td>0.03</td>
<td>0.78</td>
</tr>
</tbody>
</table>

Note. *p < .05, **p < .01. As health intention outcomes were ordinal, all correlations involving these variables were Spearman correlations; other correlations presented are Pearson correlations.
Manipulation Check

A manipulation check was conducted to ensure that participants perceived differences between the various message conditions. To examine the effects of the health care manipulation, independent samples t-tests were conducted for health care versus non-health care stories. Participants were asked two questions related to the health content of the article: “The story I read was about health” and “The story I read was about an individual with a health issue.” There were significantly higher levels of agreement with whether the story was about health for those in the health care condition ($M = 4.14, SD = 1.05$) than in the non-health care condition ($M = 2.34, SD = 1.36$), $t(381.26) = 14.94, p < .001$. Similarly, there were higher levels of agreement with whether the individual had a health issue for those in the health care condition ($M = 3.72, SD = 1.21$) than those in the non-health care condition ($M = 2.28, SD = 1.31$), $t(407.26) = 11.65, p < .001$.

To examine the effects of the racial discrimination manipulation, independent samples t-tests were conducted for racial discrimination versus non-racial discrimination conditions. Participants were asked two questions related to racial discrimination content of the article: “The story I read mentioned racial discrimination” and “The story I read was about an individual who experienced racial discrimination.” There were significantly higher levels of agreement with whether the story mentioned racial discrimination for those in the racial discrimination condition ($M = 3.88, SD = 1.22$) than in the non-racial discrimination condition ($M = 2.56, SD = 1.27$), $t(410) = 10.75, p < .001$. Similarly, there were higher levels of agreement with whether the individual in the story experienced racial discrimination for those in the racial discrimination condition ($M = 3.72, SD = 1.18$) than those in the non-racial discrimination condition ($M = 2.47, SD = 1.26$), $t(410) = 10.38, p < .001$. 137
Analytic Procedures

H14, H15, H18-H20, and RQ3-RQ7 were evaluated using Mplus (Muthén & Muthén, 2017). Given the structure of the data, ordinal logistic regressions were run to examine the relationships involving getting a DNA test, participating in an HIV vaccine clinical trial, and encouraging a family member to become an organ donor. To produce odd ratios, maximum likelihood was used as the estimator in the ordinal logistic regressions. As the assumption of proportional odds was not met for willingness to get a flu shot, the estimates for that outcome were invalid. As a result, subsequent multinomial regressions were used to evaluate the relationships with willingness to get a flu shot, creating a separate model for this outcome. This decision was made so that indirect effects of message content on the other three health intention outcomes could be examined. Mplus currently does not allow for indirect effects for multinomial regressions. In all models, general medical mistrust and race-based medical mistrust were treated as latent variables. As RQ6 and RQ7 ask about differences in the two types of medical mistrust, two different models were examined to help examine these relationships.

Structural equation modeling is not optimally suited to ascertain differences among all conditions (e.g., differences in medical mistrust for those in the H/ND condition versus those in the NH/D). Thus, ANOVAs and ANCOVAs were conducted in SPSS Version 25.0 to examine differences in medical mistrust based on condition (H16, H17, RQ2). Separate analyses were run for general medical mistrust and race-based medical mistrust. An ANOVA was run for general medical mistrust, while an ANCOVA was run for race-based medical mistrust with news credibility as a covariate. As two outcomes were examined for the purposes of later examining the comparatives effects on outcomes, the p-value was adjusted to provide a conservative estimate; thus, a significant value would be less than .025 (i.e., .05/2).
Main Analysis

**Structural equation model.** First, the structural equation models were tested. This was done in two steps. First, as medical mistrust was a latent variable, confirmatory factor analyses (CFAs) were conducted for both medical mistrust measures. Once this was done, the structural models were tested.

**Confirmatory factor analysis.** The items for general medical mistrust and race-based medical mistrust were examined to ensure that items accurately measured their respective constructs. To do so, CFAs were conducted for both general medical mistrust and race-based medical mistrust. The fit indices used to assess fit are the same as those appearing in Table 4.4. The initial model for general medical mistrust did not fit the data, $\chi^2(14, N = 410) = 94.96, p = .00, CFI = .923, RMSEA = .119, SRMR = .045$. Modification indices indicated that items 1 (i.e., “You’d better be cautious when dealing with healthcare providers”) and 2 (i.e., “Patients have sometimes been deceived or misled by healthcare providers”). This modification produced an adequate fitting model, $\chi^2(13, N = 410) = 40.19, CFI = .974, p < .001, RMSEA = .07, SRMR = .028$. Similarly, the initial model for race-based medical mistrust did not fit the data, $\chi^2(54, N = 410) = 887.907, p < .001, CFI = .668, RMSEA = .194, SRMR = .140$. An examination of item loadings revealed that four items loaded below a threshold of .40 (Matsunaga, 2010). These items were also the only items that were reverse coded in the original scale. Given concerns about reverse coded items (Weems & Onwuegbuzie, 2001) and their loadings (e.g., Zhang, Noor, & Savalei, 2016), these items were removed. The removal of these items bettered fit, but still produced an ill-fitting model, $\chi^2(20, N = 410) = 118.26, p < .001, CFI = .939, RMSEA = .109, SRMR = .042$. An examination of modification indices suggested that items 3 (i.e., “African Americans should not confide in doctors and healthcare workers because it will be used against
them”) and 4 (i.e., “African Americans should be suspicious of modern medicine”) should be correlated, as well as items 11 (i.e., “Doctors and healthcare workers sometimes hide information from African Americans”) and 12 (i.e., “I have personally been treated poorly or unfairly by doctors or healthcare workers because of my race/ethnicity”). These modifications resulted in an adequately fitting model \( \chi^2(18, N = 410) = 61.648, p = .00, CFI = .973, RMSEA = .077, SRMR = .026. \) Factor loadings appear in Table 5.2. The modified models appear in Figures 5.1 – 5.4.

Table 5.2

*Factor Loadings for Medical Mistrust Measures*

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Unstandardized Loading</th>
<th>Standardized Loading</th>
</tr>
</thead>
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<tr>
<td>General Medical Mistrust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 1</td>
<td>0.58</td>
<td>0.54</td>
</tr>
<tr>
<td>Item 2</td>
<td>0.67</td>
<td>0.66</td>
</tr>
<tr>
<td>Item 3</td>
<td>0.79</td>
<td>0.74</td>
</tr>
<tr>
<td>Item 4</td>
<td>0.69</td>
<td>0.66</td>
</tr>
<tr>
<td>Item 5</td>
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</tr>
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<td>Item 6</td>
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</tr>
<tr>
<td>Item 7</td>
<td>0.73</td>
<td>0.69</td>
</tr>
<tr>
<td>Race-Based Medical Mistrust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item 1</td>
<td>0.95</td>
<td>0.78</td>
</tr>
<tr>
<td>Item 2</td>
<td>0.99</td>
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</tr>
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<td>Item 3</td>
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<td>0.71</td>
</tr>
<tr>
<td>Item 4</td>
<td>0.93</td>
<td>0.73</td>
</tr>
<tr>
<td>Item 5</td>
<td>1.00</td>
<td>0.78</td>
</tr>
<tr>
<td>Item 6</td>
<td>1.01</td>
<td>0.77</td>
</tr>
<tr>
<td>Item 11</td>
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<td>0.56</td>
</tr>
<tr>
<td>Item 12</td>
<td>0.68</td>
<td>0.50</td>
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</table>
Figure 5.1. Tested general medical mistrust ordinal logistic regression model.

Figure 5.2. Tested race-based medical mistrust ordinal logistic regression model.
Figure 5.3. Tested general medical mistrust multinomial logistic regression model.

Figure 5.4. Tested race-based medical mistrust multinomial logistic regression model.
**Structural model.** To test the relationships suggested by Figures 5.1 and 5.2, ordinal logistic regressions were run in Mplus (Muthén & Muthén, 2017). Despite having a significant bivariate relationship with race-based medical mistrust, news credibility was found to be non-significant; as a result, it was removed from the race-based medical mistrust model for parsimony. The final structural models with coefficients are presented in Figure 5.5 (general medical mistrust) and Figure 5.6 (race-based medical mistrust). Additionally, multinomial logistic regressions were used to evaluate hypotheses and research questions related to willingness to get a flu shot. The final structural models are presented in Figure 5.7 (general medical mistrust) and Figure 5.8 (race-based medical mistrust). Due to the nature of the multinomial logistic regression, there are separate coefficients for unwillingness to get a flu shot (versus willingness to get a flu shot) and neutral feelings about getting a flu shot (versus willingness to get a flu shot). All structural model results are presented in Table 5.3 and Table 5.4.
Figure 5.5. Unstandardized path coefficients for general medical mistrust ordinal logistic regression.

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

Figure 5.6. Unstandardized path coefficients for race-based medical mistrust ordinal logistic regression.

Note. *p < .05, **p < .01, ***p < .001.
<table>
<thead>
<tr>
<th>Pathway</th>
<th>General Model</th>
<th>Race-Based Model</th>
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<tr>
<td></td>
<td>b</td>
<td>SE</td>
</tr>
<tr>
<td>Mistrust</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NHC → MM</td>
<td>0.09</td>
<td>0.06</td>
</tr>
<tr>
<td>RDC → MM</td>
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<td>0.06</td>
</tr>
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<tr>
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</tr>
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</tr>
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</tr>
<tr>
<td>HIV</td>
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<td></td>
</tr>
<tr>
<td>MM → HIV</td>
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<td>0.18</td>
</tr>
<tr>
<td>NHC → HIV</td>
<td>0.19</td>
<td>0.18</td>
</tr>
<tr>
<td>RDC → HIV</td>
<td>0.03</td>
<td>0.19</td>
</tr>
<tr>
<td>Organ Donation</td>
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<td></td>
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<tr>
<td>MM → OD</td>
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<td>0.18</td>
</tr>
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<td>NHC → OD</td>
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<td>0.18</td>
</tr>
<tr>
<td>RDC → OD</td>
<td>0.19</td>
<td>0.18</td>
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*Note. NHC = negative health care content. RDC = racial discrimination content.*
Figure 5.7. Unstandardized path coefficients for general medical mistrust multinomial logistic regression.

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

Figure 5.8. Unstandardized path coefficients for race-based medical mistrust multinomial logistic regression.

Note. *p < .05, **p < .01, ***p < .001.
<table>
<thead>
<tr>
<th>Pathway</th>
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<th>Race-Based Model</th>
<th>Race-Based Model</th>
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<tr>
<td>Mistrust</td>
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<td>NHC → MM</td>
<td>0.09</td>
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<td>RDC → MM</td>
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<td>Flu (Unwilling)</td>
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<tr>
<td>MM → Flu</td>
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<td>NHC → Flu</td>
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<td>RDC → Flu</td>
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<td>Flu (Neutral)</td>
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<td>NHC → Flu</td>
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</tr>
<tr>
<td>RDC → Flu</td>
<td>-0.32</td>
<td>0.28</td>
<td>0.25</td>
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</table>

Note. NHC = negative health care content. RDC = racial discrimination content.
Below, specific hypotheses related to these models are addressed. In doing so, unstandardized path coefficients are presented. For the flu shot health intention outcome, unstandardized coefficients for both unwillingness to get a flu shot (UPC_U) and neutral about getting a flu shot (UPC_N) are presented. For these analyses, willingness to get a flu shot is the comparison group, so these coefficients represent the likelihood of being in that given category (i.e., unwilling or neutral) versus being willing.

**Effects of content on medical mistrust.** H14 and H15 posited that negative health care content (H14) and racial discrimination content (H15) would be positively related to medical mistrust. RQ6 asked whether negative health care content and racial discrimination content had different effects on general and race-based medical mistrust. There was no significant relationship between negative health care content (UPC = .09, \( p = .15 \)) and general medical mistrust. Nor was there a significant relationship between racial discrimination content and general medical mistrust (UPC = .11, \( p = .07 \)). There was, however, a positive relationship between negative health care content and race-based medical mistrust (UPC = .22, \( p = .03 \)), as well as between racial discrimination content and race-based medical mistrust (UPC = .21, \( p = .03 \)). This would suggest that there is no effect of these types of content on negative health care content or racial discrimination content on general medical mistrust, but there is an effect on race-based medical mistrust. Thus, H14 and H15 were supported for race-based medical mistrust, but not general medical mistrust.

**Effects of medical mistrust on health intention outcomes.** H18 proposed that medical mistrust would be negatively related to willingness to a) get a flu shot, b) get a DNA test to assess disease risk, and c) participate in an HIV vaccine clinical trial. Results of the ordinal logistic regression revealed a positive relationship between general medical mistrust and
willingness to get a DNA test to assess disease risk (UPC = .68, \( p = .001 \)). There was no relationship between race-based medical mistrust and willingness to get a DNA test to assess disease risk (UPC = -.10, \( p = .38 \)). There were no significant relationships between either general medical mistrust (UPC = .03, \( p = .88 \)) or race-based medical mistrust (UPC = -.01, \( p = .94 \)) and willingness to participate in an HIV vaccine clinical trial. There was no significant relationship between general medical mistrust and being unwilling to get a flu shot (versus being willing to get a flu shot; UPC = -.07, \( p = .73 \)). There was, however, a difference in general medical mistrust for those who were neutral (compared to those who were willing to get a flu shot; UPC = -.67, \( p = .01 \)). For race-based medical mistrust, increases in medical mistrust did not change the odds of being unwilling or neutral about getting a flu shot (UPC\(_U\) = .05, \( p = .71 \); UPC\(_N\) = -.12, \( p = .44 \)). Thus, H18 was not supported; the expected relationships either did not exist or were in the opposite direction than expected. Finally, RQ3 asked about the relationship between medical mistrust and willingness to encourage a family member to become an organ donor. There were no significant relationships between either general medical mistrust (UPC = .06, \( p = .75 \)) or race-based medical mistrust (UPC = -.19, \( p = .08 \)) and willingness to encourage a family member to become an organ donor.

**Indirect effects.** It was posited that negative health care content (H19) and racial discrimination content (H20) would exert an indirect effect, through medical mistrust, on willingness to a) get a flu shot b) get a DNA test to assess disease risk c) participate in an HIV vaccine clinical trial. Additionally, research questions asked whether negative health care content (RQ4) and racial discrimination content (RQ5) also exerted indirect effects on willingness to encourage a family member to become an organ donor through medical mistrust. Based on the results above (i.e., effects of content on medical mistrust and effects medical mistrust on health
intention outcomes), there was no basis for conducting these analyses. For there to be an indirect effect, one would expect to see both portions of the pathway be significant. For instance, for racial discrimination content to exert an indirect effect on willingness to get a DNA test through race-based medical mistrust, one would expect for racial discrimination to have a significant relationship with race-based medical mistrust and for race-based medical mistrust to have a significant relationship with willingness to get a DNA test to assess disease risk. The two necessary relationships were not present in any of combination of medical mistrust type and health intention outcome.

**Differences in types of medical mistrust.** RQ7 asked whether general medical mistrust or race-based medical mistrust was a better predictor of health intention outcomes. The nature of the data did not allow for this to be assessed. There were no health intention outcomes for which both general medical mistrust and race-based medical mistrust had significant relationships. As a result, it is not possible to comparatively examine these types of medical mistrust in terms of their relationships to health intention outcomes.

**Analysis of variance.** While the models tested provided information about the type of content consistent with EMMA, it did not provide information about how specific conditions may influence medical mistrust. Thus, ANOVAs were conducted for general medical mistrust, while ANCOVAs were conducted for race-based medical mistrust. The positive correlation between race-based medical mistrust and news credibility suggested that news credibility should be included as a covariate for the analysis involving race-based medical mistrust. H16 posited that health-care related racial discrimination news stories would result in higher reported medical mistrust than all other message types (i.e., stories in the health care, racial discrimination [H/D] condition). H17 posited that news stories that are not about health care or racial discrimination
(i.e., non-health care, non-racial discrimination [NH/ND]) news stories would result in lower reported medical mistrust than all other message types. Finally, RQ2 asked whether there was a difference in reported medical mistrust between only health care-related (i.e., health care, non-racial discrimination [H/ND]) news stories and only racial discrimination-related (i.e., non-health care, racial discrimination [NH/D]) news stories.

The omnibus tests revealed that there were not significant effects of condition on reported general medical mistrust, $F(3, 406) = 1.69, p = .17$. There was however, a significant effect on race-based medical mistrust by condition, $F(3, 405) = 3.05, p = .03$, partial $\eta^2 = .023$. Mean plots are presented in Figures 5.9 and 5.10. Planned contrasts revealed that exposure to health care related racial discrimination (H/D) news stories resulted in higher levels of race-based medical mistrust ($M = 3.02, SD = .79$) than exposure to stories that are not about health care or racial discrimination (NH/ND), $M = 2.69, SD = .79$\textsuperscript{6}, $F(1, 407) = 9.14, p = .002$, partial $\eta^2 = .02$. There were no other significant differences in medical mistrust among conditions. Thus, there was only partial support for H16 and H17. Furthermore, there was no significant difference between reported levels of medical mistrust between news stories that were about health care but not racial discrimination (H/ND) and news stories that were not about health care but were about racial discrimination (NH/D). Full ANOVA and ANCOVA results can be found Table 5.5.

\textsuperscript{6} As news credibility was included as a covariate, means here are evaluated where news credibility = 3.16.
Figure 5.9. Means plot for general medical mistrust by condition.

Figure 5.10. Means plot for race-based medical mistrust by condition.
Table 5.5
*Planned Contrasts*

<table>
<thead>
<tr>
<th>Conditions Compared</th>
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<th>Race-Based Medical Mistrust*&lt;sup&gt;a&lt;/sup&gt;</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>p</td>
</tr>
<tr>
<td>H/D H/ND</td>
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<tr>
<td>H/D NH/D</td>
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</tr>
<tr>
<td>NH/D NH/ND</td>
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</tr>
<tr>
<td>H/ND NH/D</td>
<td>0.06</td>
<td>0.80</td>
</tr>
</tbody>
</table>

*Note.* H/D = Health Care, Racial Discrimination, H/ND = Health Care, Non-Racial Discrimination, NH/D = Non-Health Care, Racial Discrimination, NH/ND = Non-Health Care, Non-Racial Discrimination. As these are planned contrasts, df = 1 for all tests.

*The results for race-based medical mistrust reflect news credibility being used as a covariate.

**Discussion**

Study 2 built upon Study 1 by utilizing an experimental method to examine the effects of exposure to negative health care content and racial discrimination content, the relationship between medical mistrust and health intention outcomes, and differences in medical mistrust measures. It was posited that negative health care content (H14) and racial discrimination content (H15) in news stories would be positively related with medical mistrust. There was no evidence that negative health care content or racial discrimination content in news stories were related to general medical mistrust. For race-based medical mistrust, both negative health care content and racial discrimination content in news stories were positively related to race-based medical mistrust. Additionally, exposure to health care-related racial discrimination (H/D) news stories resulted in higher levels of race-based medical mistrust than non-health, non-racial discrimination news stories (NH/ND). RQ2 asked whether there was any difference in medical mistrust for those exposed to health care, non-racial discrimination news stories (H/ND) versus
those exposed to non-health care, racial discrimination (NH/D) stories. Planned contrasts revealed that there was no significant difference between medical mistrust for these news story types. In regard to the relationship between medical mistrust and health intention outcomes, there was also a positive relationship between general medical mistrust and willingness to get a DNA test to assess disease risk. Additionally, higher levels of general medical mistrust resulted in being less likely to be neutral about getting a flu shot, in comparison to being willing to get a flu shot. Below, implications and limitations of Study 2 are discussed.

**Theoretical Implications**

**Importance of media health-related racial discrimination content.** Study 2 continues the work of understanding the effects of racial discrimination news stories on medical mistrust. Williamson et al. (2019) found that news stories of implicit racial discrimination influenced medical mistrust; the authors, however, found no differences between the explicit racial discrimination condition and the control condition for African American college students. The current findings suggest that there may, in fact, be an effect of explicit racial discrimination news stories on medical mistrust. Racial discrimination content was related to race-based medical mistrust. Furthermore, ANCOVAs revealed that differences in race-based medical mistrust existed between the health care-related racial discrimination (H/D) news based and non-health care, non-racial discrimination (NH/ND) conditions.

It may be the case that for explicit racial discrimination stories, only those that have both negative health care and racial discrimination elements trigger medical mistrust; Williamson et al. (2019) may not have found differences because their explicit racial discrimination stories were akin to non-health care, racial discrimination (NH/D) stories in this study; the present study found no significant difference in medical mistrust between these types of news stories. It is
possible that the combination of negative health care content and racial discrimination content approximate perceived racism in health care, thus contributing to medical mistrust. For implicit racial discrimination stories (i.e., stories that omit racial adjectives or nouns allowing race to seem peripheral; Mendelberg, 2001), Williamson et al. (2019) may have found differences because hiding the role of race triggers other precursors to medical mistrust (e.g., corruption more generally), and in turn, medical mistrust. Additional experimental work will be necessary to help understand the findings from both this dissertation and Williamson et al. (2019).

**Differences in measures of medical mistrust.** Health content and discrimination content did not influence general medical mistrust but did influence race-based medical mistrust. Second, general medical mistrust increased willingness to get a DNA test to assess disease risk and get a flu shot. These results could be the result of inherent differences in the measures. Williamson and Bigman (2018) chronicle the differences in these, and other, medical mistrust scales; these differences may have resulted in the study results seen here. One difference is in that of the referent group. The general medical mistrust scale asks questions generally (i.e., “people should”), whereas the race-based medical mistrust scale asks about African Americans specifically. Another difference is in the object that is the target of distrust. The measure of general medical mistrust asks questions at both the system-institutional (e.g., a hospital) and system-personal level (e.g., a health-care provider); whereas the measure of race-based medical mistrust primarily asks about the system-personal object (e.g., a health-care provider).

Alternatively, as the news stories discussed difficulty getting a particular type of provider (i.e., oncologist, therapist), this may have resulted in more movement for items that specifically asked about a provider. Further investigation is needed to ascertain the reason for these differences. Ultimately, these results indicate that care should be taken in choosing a measure of medical
mistrust; these types of medical mistrust may be operating differently, and care should be taken when using one type of medical mistrust over another.

Practical Implications

Health scholars seeking to address mistrust. Study 2, in conjunction with Williamson et al. (2019), suggests that the presence of racial discrimination content may increase race-based medical mistrust. Given concerns about the possible rise of discriminatory acts and hate crimes (Center for the Study of Hate and Extremism, 2019; United States Department of Justice, 2018; Wilson, 2019), we must be attuned to the impact this could potentially have on medical mistrust, and in turn, health behaviors. Due to the pervasiveness of medical mistrust as a barrier, these news stories and events have the potential to impact a wide range of health behaviors. More specifically, the findings of this study suggest we would expect to see an effect on medical mistrust when the news stories reflect racial discrimination in health care settings. Thus, the findings also have implications for health scholars seeking to address mistrust. The current investigation is a reminder of the importance of understanding the other messages that may be present in the information environment (Randolph & Viswanath, 2004). For instance, these results suggest that it could be possible for the success of health campaign geared towards encouraging Black women to become organ donors or encourage their family members to become organ donors could be impacted by the number of news stories like that of Virginia’s governor and his medical school yearbook photograph in blackface (Kelly, 2019) or about the difficulty Black American women face during childbirth (e.g., Rabin, 2019).

Structural competency in medical care. The findings of this study also speak to the way in which health-care providers may deal with the role of negative health-care experiences and racial discrimination experiences is by keeping this in mind during interactions with patients.
Recently, there have been calls for structural competency in medical training (Metzl & Hansen, 2014). Metzl and Hansen (2014) distinguishes between cultural competency and structural competency. Cultural competency refers to the ability to identify expressions of illness and health across cultures. Structural competency, however, advocates for a recognition of the institutions and social conditions that impact health. Metzl and Hansen (2014) discuss this as thinking about how “such variables as race, class, gender, and ethnicity are shaped both by the interactions of the two persons in a room, but by the larger structural contexts in which their interactions take place” (p. 3). Thus, one action that health-care providers may take is to realize that patients’ hesitancy to come in for appointments, or perhaps see a new doctor, may be fueled by current news stories and societal events.

The current study examined mistrust at the system level (i.e., health-care providers generally, as opposed to an individual’s own provider). In this context, this hesitancy to go to a provider may be more likely to occur regarding an unfamiliar health-care provider. It may be more productive for a provider faced with a patient who has not gone to their appointment with a referred specialist to understand that a recent news cycle filled with an abundance of stories about discrimination in medicine may have played into that decision. If a provider realizes that this, along with other barriers, may have resulted in a patient not going to a new provider, these concerns can be a part of the conversation and decision-making process. Ultimately, recognition of exposure to news, in the context of structural competency, may be a useful avenue as it unreasonable to expect intervention on the media end; it is not feasible to limit exposure to these news stories.
Limitations

The findings of this study must be considered in the context of several limitations. For example, the exposure to a single news story reduces the external validity of these results. In everyday life, participants are inundated with various messages, sometimes within a short period of time (e.g., scrolling through social media, listening to the news). Thus, the presentation of a single message presents an artificial situation. It does, however provide a window into the impact of these messages. It would be beneficial for this study to be conducted under circumstances closer to that of Williamson et al. (2019). In their study, participants were shown a mock news feed with multiple stories and allowed to choose a story. This provided a more ecologically valid presentation of the news stories. Although steps were taken in the current work to ensure the stories looked like those they might have encountered, participants knew they were taking part of a study and were presented with a stand-alone article. This may have impacted their responses or made them question the credibility of the articles. Alternatively, a study in which participants read multiple stories, including stories containing the manipulation of interest, may provide a closer approximation of how individuals encounter these news stories in the world.

Next, by working with Qualtrics to obtain the sample, there were constraints imposed regarding the length of the survey. As a result, space for items was limited and prevented the inclusion of other items. Due to this constraint, single items were used to measure health intentions. Single item measures can be problematic for a few reasons. First, an idea like “willingness” may be too complex to capture with a single item; some scholars have argued that a greater number of measures makes it more likely to fully represent a construct of interest (e.g., Baumgartner & Homburg, 1996). There are several scenarios or circumstances under which an individual may be more, or less, willing to engage in a behavior. Caution was taken in the hopes
that the wording of the questions (e.g., “if the opportunity arose”) would help to avoid some of these issues. Despite this, there are still complexities a single item could not capture. For instance, perhaps individuals would have answered differently if asked about these behaviors in six months, perhaps a year seemed too far away to concretely decide if one would be willing to partake in these behaviors. Secondly, it is hard to have significant variation on a five-point Likert scale. Increasing the number of items measuring willingness to engage in behaviors may result in more variation and an ability to see effects.

Due to the survey length constraints it was also impossible to add items that would have aided in detecting the mechanisms through which medical mistrust may influence health outcomes. This is particularly true of the omission of attitude items and ethnic identity. The omission of items like attitudes towards toward the health behaviors prevented me from being able to determine why health intentions may or may not have been influenced by medical mistrust. Fishbein and Ajzen’s theories (Ajzen, 1985; Ajzen & Fishbein, 1975; Fishbein & Ajzen, 2011) suggest that there are antecedents to health intentions that help explain why individuals are and are not willing to perform a behavior.

According to these theories, there are antecedents (i.e., attitudes, norms, and perceived behavioral control) to health intentions; as intentions are considered the immediate determinants of behavior, these theories and their constructs help explain why behavior change does or does not happen. Although medical mistrust is an attitude, it is not an attitude regarding the behavior (e.g., getting a flu shot). Without having measured constructs like attitudes, norms, and perceived behavioral control related to the behavior, it is difficult to ascertain which of these constructs medical mistrust may or may not have impacted. The inclusion of these constructs may help determine why race-based medical mistrust was not related to these health intention outcomes.
Additionally, an attitude towards a behavior is composed of two parts: an instrumental (i.e., cognitive) and experiential (i.e., affective) component (Yzer, 2013). If medical mistrust influences experiential attitude, but instrumental attitude is more important for these behaviors, we may not see medical mistrust affecting these behaviors. Future work should include items representing these constructs to help determine the mechanisms through which medical mistrust may influence health behaviors. Elicitation studies may also be necessary to identify the salient beliefs (i.e., behavioral, normative, and control beliefs) for these behaviors (Fishbein, 2000), particularly for Black Americans. Once this has been done, the effect of medical mistrust on more specific beliefs can be examined.

Secondly, the inclusion of racial/ethnic identity measures in Study 2 may have added to the literature regarding its role in medical mistrust. There is evidence that racial/ethnic identity is related to medical mistrust. For instance, Williamson et al. (2019) found that ethnic identity was significantly positively correlated with race-based medical mistrust, but it did not fully explain racial differences in race-based medical mistrust. Furthermore, Shelton et al. (2010) found that racial identity, as operationalized as racial centrality (i.e., how central race is to one’s identity), was positively correlated with race-based medical mistrust. A recent study conducted by Cuevas and O’Brien (2017) also found a positive correlation between racial centrality and general medical mistrust. Thus, it is clear that a relationship exists between racial/ethnic identity and medical mistrust.

It is less clear, however, what role ethnic identity may play in the effects of vicarious media discrimination (via news stories) on medical mistrust. Due to a small sample size, Williamson et al. (2019) was unable to test whether ethnic identity moderated the relationship between the news stories and medical mistrust for Black participants. Cuevas and O’Brien
(2017) was able to test the relationships between racial centrality, perceived discrimination, and medical mistrust; they failed to find an indirect effect of racial centrality on medical mistrust via perceived discrimination. It may be that the order of these constructs is reversed; it could be the case that racial/ethnic identity acts as a moderator of the effects of vicarious media discrimination on medical mistrust. In the future, work should be conducted to further clarify where and how racial centrality operates in these processes.
CHAPTER 6: GENERAL DISCUSSION

Medical mistrust, distrust in the motives of medical institutions and personnel, has been a pervasive barrier to engagement in positive health behaviors (e.g., Hammond et al., 2010; Thompson et al., 2004; Morgan et al., 2008). Additionally, medical mistrust is thought to contribute to racial health disparities (e.g., Kinlock et al., 2017; Nelson, Stith, & Smedley, 2002; Penner et al., 2009); particularly for Black Americans who consistently report higher levels of medical mistrust than their White counterparts (e.g., Halbert et al., 2009; Tekeste et al., 2018; Thompson et al., 2003). As a result of its pervasiveness as a barrier and its role in racial health disparities, there have been calls to investigate medical mistrust (e.g., Scharff et al., 2010; Adams & Simoni, 2016). Despite the abundance of scholarship on medical mistrust (Williamson & Bigman, 2018), there has been little work explicitly examining medical mistrust as a phenomenon of interest. For health communication scholars, the most troubling aspect of this is the lack of work in communication focusing on medical mistrust as a phenomenon of interest and examining its antecedents. Our perceptions of the health care system and its actors (i.e., medical mistrust) are based on the messages we receive about the system and health-care providers from others and media, making it a communication phenomenon. Yet, the role of communication and its role in antecedents has been largely ignored in medical mistrust scholarship.

A recent review of medical mistrust noted the need for more investigations into the antecedents of medical mistrust, particularly those that use techniques like structural equation modeling that allow for mediation to be examined (Benkert, Cuevas, et al., 2019). Additionally, Benkert, Cuevas, et al. (2019) noted the lack of medical mistrust scholarship that examines the nuances of racial differences in medical mistrust. In other words, although there has been
recognition of racial differences in medical mistrust, there is little work on what differences in experiences lead to these differences. The current dissertation sought to fill these gaps. It was comprised of two studies, a survey and an experiment, that tested aspects of the model proposed to center the antecedents of medical mistrust and acknowledge the role of communication in medical mistrust – the ecological medical mistrust antecedents (EMMA) model. Through these studies, this dissertation sought to achieve four aims a) to test the role of communication in medical mistrust; b) to focus attention on the antecedents of medical mistrust, specifically mediated communication; c) to examine the nuances of racial differences in medical mistrust; and d) to examine differences in medical mistrust measures.

The results of this dissertation not only suggest that EMMA is a useful model, but also that mediated communication, particularly news stories, plays a role in medical mistrust. In fact, there is evidence that the content of news stories has an impact on medical mistrust. The results also indicate that there are racial differences in the antecedents of medical mistrust. Finally, there is some evidence that there may be differences in the types of medical mistrust and their relationship to health outcomes. Ultimately, this work shows that despite a focus on Tuskegee and historical events (Jaiswal & Halkitis, 2019) or what happens inside the doctor’s office (e.g., White et al., 2016), medical mistrust is also influenced by everyday conversations and mediated depictions of negative health-care encounters and racial discrimination experiences. Below, the discussion is organized in response to each of the aims of this dissertation. First, the role of communication in medical mistrust and antecedents of medical mistrust are addressed by discussing the feasibility of EMMA as a model of medical mistrust. Then, the nuances of racial differences in medical mistrust are considered by examining the racial differences in EMMA between the Black and White samples. Next, attention is turned to mediated communication as a
specific antecedent of medical mistrust. Finally, the differences in medical mistrust measures are addressed. In each section, implications and future directions are discussed where applicable.

**The Role of Communication in Antecedents of Medical Mistrust**

Study 1 of this dissertation tested the ecological medical mistrust antecedents (EMMA) model. The use of the indicators (e.g., personal RDE, vicarious interpersonal RDE, and vicarious media RDE) as observed variables provided a better fit for the data than using latent variables. Some work, like social representation theory, would suggest that personal thoughts and experiences, interpersonal communication, and mediated communication might intertwine to influence how people communicate about a phenomenon (for an example, see Morgan’s [2009] discussion of the social representation of organ donation). The current findings, however, suggest that this process may not occur for negative health-care socialization, negative health-care experiences, and racial discrimination experiences. Perhaps, this only occurs for novel phenomenon (e.g., organ donation; Morgan, 2009); the phenomenon explored in this dissertation may be too familiar to produce similar results.

When examining the revised EMMA model (see Figure 4.2), many of these relationships were supported. Of the proposed antecedents in the revised structural model, only the negative health-care socialization variables (NHS) were not related to perceived racism in health care, perceived financial corruption in health care, or medical mistrust. This may be the result of the measure not being time-bound or the use of a self-report measure (i.e., participants may not remember the sources, frequency, or valence of where they heard about health-care providers). It will be necessary for subsequent work to be conducted testing the role of negative health-care socialization that utilizes refined measures of health-care socialization.
The preponderance of relationships that were significant in EMMA suggests that this model is a reasonable starting point for examining these relationships. In other words, EMMA can serve as a basis for examining antecedents of medical mistrust, while incorporating communication elements. There were several relationships that existed, regardless of racial group. Personal negative health-care experiences (NHE) and vicarious media racial discrimination experiences (RDE) both had direct effects on medical mistrust. Perceived racism in health care and perceived financial corruption partially mediated the relationship between personal NHE and medical mistrust. Additionally, perceived financial corruption in health care partially mediated the relationship between vicarious media RDE and medical mistrust. Given that even after accounting for these indirect effects, both variables still exerted direct effects on medical mistrust, there may be other outcome expectations that were not included in the model, but that also help explain the relationship between these variables and medical mistrust.

Individuals may believe the health care system is corrupt for other reasons; it is possible for individuals to believe the system is corrupt for reasons that are not reflected in the items representing perceived racism or perceived financial profit for healthcare providers. For example, these items did not address beliefs related to manipulation of clinical trials (Jain, Nundy, & Abbasi, 2014), illegal charges for services not rendered or rendered differently than billed (Vian, 2008) or the idea that vaccines cause autism (Oliver & Wood, 2014). In other words, there could be some other outcome expectation tied to these types of beliefs that is not captured here.

Unexpectedly, vicarious media NHE was negatively related to perceived financial corruption in health care. This would suggest that exposure to negative health care experiences through media results in lower perceptions of perceived corruption in health care. This was
possibly the result of the operationalization of negative health-care experiences. In Study 1, negative health-care experiences was operationalized as low patient-centeredness. The items asked participants about the extent to which the healthcare providers they saw on news, entertainment media, and reality television did things like allowed the patient to ask questions or explained things in a way the patient could understand. Individuals may perceive a health-care provider who does not engage in these behaviors (i.e., a low-patient centered encounter) as a health-care provider simply being a bad health-care provider. This would align with work that has found that high patient-centeredness is associated with rating physicians as more competent and generally more favorably (Saha & Beach, 2011).

Previous work has suggested that there are two aspects of health care system distrust – values distrust and competence distrust (Shea et al., 2008). It may be the case that media depictions of health care interactions trigger competence distrust, but not values distrust. Outcome expectations like perceived corruption in health care and perceived racism in health care speak more directly to values distrust, than competence distrust. This negative relationship with perceived financial corruption existed for vicarious media NHE but not for personal NHE. That pattern of results suggests there is something about the depictions in media that only trigger competence distrust. It may also be that in media depictions of health care encounters, you do not have other context, whereas with personal encounters individuals may be aware of other things that may have happened in the interaction. For instance, if the same health care provider was not patient-centered and seemed to be ordering tests for profits, when asked about patient-centeredness it may also activate memories of the provider who was also perceived to be financially corrupt.
**Implications.** The model fit of EMMA and the role of antecedents speaks to the importance of addressing the antecedents of medical mistrust. Benkert, Cuevas, et al. (2019) called for investigations in the antecedents of medical mistrust with methods that allow for mediation to be examined. The current dissertation shows the importance of taking a closer look at the antecedents of medical mistrust. This study supports Hammond’s (2010) findings that negative health-care experiences and racial discrimination experiences are related to medical mistrust. More broadly, this dissertation extends the work of Hammond (2010) by demonstrating that many of these relationships exist for both Black and White individuals. It also goes a step further by providing an additional outcome expectation (i.e., mediator), perceived financial corruption in health care. This variable was significantly related to personal NHE, vicarious media NHE, and vicarious media RDE and was the route through which these variables impacted medical mistrust.

This dissertation is evidence of the importance of both antecedents of medical mistrust as well as the role of communication in these antecedents. While Benkert, Cuevas, et al.’s (2019) call for an examination into the antecedents is warranted, it does not go far enough by not also calling for the consideration of the role of communication in these antecedents. The purpose of EMMA was to create a model that included communication variables and could be applied to broader populations. The hope was that by doing so, the EMMA model would explain more of the variance in medical mistrust scores for Black participants and White participants than Hammond’s (2010) model did for Black men. Hammond’s (2010) model accounted for 35% of the variance in medical mistrust scores for Black men. EMMA accounted for 46% of the variance in medical mistrust scores for Black participants and 55% of the variance in medical mistrust scores for White participants. This suggests that the EMMA model does a promising job
of explaining the variance in medical mistrust for both Black and White populations. The inclusion of communication variables did increase the amount of variance explained in medical mistrust scores, suggests that as other antecedents to medical mistrust are considered, the role of communication must be acknowledged and incorporated.

**Future directions.** It will be necessary to continue testing the EMMA model. The EMMA model has demonstrated feasibility in understanding the antecedents of medical mistrust. It will be beneficial for work to be conducted that demonstrates the robustness of these findings. There are several aspects of this model that could be examined to determine whether these findings are replicated, as well as the conditions under which these relationships hold. For instance, in this dissertation perceived racism was operationalized using a measure that asks about perceived racism against Blacks. As the hope is to have a model that can be used across racial groups, to determine whether the antecedents and their relationships to medical mistrust differ by racial group, it will be necessary to have measures that speak to racism against participants’ own racial group. Particularly for studies aimed at examining specific racial groups, by using features like piping in survey software, it would be possible to display the race of the participant for those items.

Additionally, work should be conducted to determine whether these relationships hold for other types or measures of medical mistrust. Williamson and Bigman (2018) found that there were several measures of medical mistrust that have been used in medical mistrust scholarship; these measures differ in their referent (e.g., *I* should be mistrustful versus *people* should be mistrustful) as well as the object (e.g., health-care provider versus hospital). It may be the case that these relationships apply to certain types of medical mistrust, but not others. Furthermore, the two most widely used measures of medical are general medical mistrust and race-based...
medical mistrust. There was support for EMMA in Study 1, which measured medical mistrust as general medical mistrust. Study 1 found a positive, significant relationship between vicarious media racial discrimination experiences and general medical mistrust. However, in Study 2 of this dissertation, there was a significant relationship between vicarious media racial discrimination in news and race-based medical mistrust, but not general medical mistrust. Furthermore, the work conducted by Williamson, Smith, and Bigman (2019) suggest that some of these relationships may still hold when examining race-based medical mistrust. In that study, there was some evidence that vicarious media racial discrimination in news stories may have impacted race-based medical mistrust for both Black and White participants. These studies, along with previous work of Pellowski et al. (2017), suggest there may be differences in general medical and race-based medical mistrust. It will be necessary to determine ways to work around the possible collinearity issues with a measure of perceived racism and race-based medical mistrust to test EMMA with race-based medical mistrust as well.

Ultimately, it may be beneficial to delve into whether EMMA holds across types and measures of medical mistrust. If EMMA were to explain variance in some types of medical mistrust but not others, this may speak to the specificity or context of the content of the messages being communicated. For example, if individuals are discussing racial discrimination experiences in the context of institutional racism that exists across various domains (as opposed to interpersonal racism that could be contributed to an individual), this may be more likely to be associated with race-based medical mistrust, which reflects a group’s sociodemographic positioning.
**Nuances of Racial Differences in Medical Mistrust**

Another aim of this dissertation was to examine racial differences in the antecedents in medical mistrust in the hopes of shedding light on the nuances of medical mistrust. Using EMMA, the antecedents of medical mistrust were examined across two racial groups. While there were similarities, the results revealed that there were, in fact, differences in this model for Blacks and Whites. First, for Black participants, vicarious media RDE exerted an indirect effect on medical mistrust through both perceived racism in health care and perceived financial corruption in health care; for White participants, vicarious media RDE only exerted an indirect effect on medical mistrust through perceived financial corruption in health care. This suggests that both racial groups connect vicarious media RDE to perceived financial corruption, but only Blacks connect vicarious media RDE to perceived racism in health care.

This difference may be due to differences in prior experiences. Black participants are more likely to have experienced racism (Pew Research Center, 2016), including in health care contexts (e.g., Benjamins, 2012). Additionally, Black Americans are more likely to believe that institutional racism against Black Americans happens in several domains (Pew Research Center, 2016), of which the health care system may be one of those institutions. This would align with Williamson, Bigman, and Quick’s (2018) finding that when discussing their organ donation-related medical mistrust beliefs, Black participants pointed to racism in other institutions, like the government, as evidence of their distrust of the medical system. Furthermore, as Black Americans are more likely to experience racism, this frequency can result in “racism” and its contexts, associated, thoughts, ideas, and memories being chronically activated, and in turn, chronically accessible (Higgins, 2000; Shrum, 2009). As a result, when interpreting a situation,
they are more likely to use this and its associated concepts in interpreting events and making decisions.

Next, there were several relationships that were only present for White sample. There was a positive relationship between both vicarious interpersonal NHE and vicarious interpersonal RDE and medical mistrust. There was, however, a negative relationship between personal RDE and perceived racism in health care. An examination of the perceived racism in health care items revealed that the items ask about perceived racism in health care against Blacks. Thus, these relationships suggest two things. First, for there to be positive relationship with perceived racism in health care and the vicarious interpersonal variables, but a negative relationship with perceived racism in health care and the personal RDE variable, it is likely that when answering the vicarious interpersonal items individuals had people of color in mind. Particularly, given the sampling method, it is likely that White participants knew Black participants or other people of color. Thus, the experiences of friends of color, and perhaps specifically Black friends, resulted in an increased perception that there was racism in health care against Blacks.

Secondly, the negative relationship between personal RDE and perceived racism in health care indicates that for White participants, if they believed they had experienced racial discrimination they were less likely to believe there was racism in the health care system against Blacks. This suggests that instead of believing that if they were being discrimination against, things could be worse for Blacks, they believed that if they were being discriminated against, there must not be racism against Blacks occurring in health care. In other words, this was seen a zero-sum situation, as opposed to a situation where both groups may be being discriminated against. This aligns with the work of Norton and Sommers (2017) in which Whites’ view racism
as a zero-sum game. In a national sample, they found that White respondents were more likely to see decreases in bias against Blacks as related to increased bias against Whites (Norton & Sommers, 2017). The current study suggests this view also applies to experiences of racial discrimination in health care.

Finally, the relationship between income and medical mistrust only existed for the White sample. For White participants, as income increased so did medical mistrust. This is inconsistent with recent work by Benkert, Peters, and Templin (2019) in which White participants with lower income reported similar levels of medical mistrust to Black participants, who generally reported higher levels of medical mistrust. Benkert, Peters, and Templin’s (2019) findings would suggest that a negative relationship would have been seen between income and medical mistrust. The current findings may be inconsistent with that of Benkert and colleagues because of the generally high income and education level of the sample. Thus, there may not have been enough variation in income in this sample to see this effect.

Additionally, although perceived financial corruption in health care was positively associated with medical mistrust for both the Black and White samples, there was significant difference in the parameter estimates for the racial groups. There was a stronger relationship between perceived financial corruption and medical mistrust for White participants. Previous work has shown that a) White participants were more likely than Black participants to believe physicians received gifts from pharmaceutical companies and b) higher income, highly educated individuals are more likely to believe physicians receive gifts from pharmaceutical companies (Grande, Shea, & Armstrong, 2012). Thus, the positive relationship between income and medical mistrust may reflect a sample with highly educated, higher income individuals.
Implications. The results of this dissertation suggest that the nuances of racial differences in medical mistrust do, in fact, warrant attention. The differences in reported levels of medical mistrust between Blacks and Whites have been widely studied; yet, little has been done to examine the reasons for these differences (Benkert, Cuevas, et al., 2019). The current investigation shows that not only are there differences in these relationships, but that these differences may have implications for how medical mistrust is approached, as well as how racism is tackled in a broader range of domains.

First, the role of income in medical mistrust for Whites, suggests that in doing this work, scholars should pay attention to the heterogeneity within the racial demographic(s) of interest. In the current investigation, income was found to be significantly related to medical mistrust for White participants. Previous work has suggested that socioeconomic status variables (e.g., income and education) are related to medical mistrust (Maly et al., 2008). Work has also suggested that age (Abraido-Lanza et al., 2011; Hammond, 2010) and biological sex (Greer et al., 2014; López-Cevallos et al., 2014) are important facets to examine for Black Americans. This suggests that an intersectional approach may be necessary to truly understand the effects of these factors on medical mistrust.

Additionally, the possibility that White Americans believe that if they are being discriminated against this means that the health care system, and possibly other institutions, are not racist against Blacks has broader implications. A recent report found that approximately a third of White individuals surveyed reported having experienced discrimination due to their race or ethnicity (Pew Research Center, 2016). The results of this dissertation suggest that this third of White individuals would also be less likely to believe that institutional racism exists. This has ramifications for those seeking to institute policy change and to make institutions more equitable.
For these individuals, it would be harder to convince them that racism against other groups is happening if they believe they have experienced racial discrimination themselves.

**Future directions.** In addition to the examination of heterogeneity within racial groups of interest, this dissertation suggests there is also work needed on the effects of vicarious experiences among out-group members (i.e., Whites). Particularly as it pertains to vicarious interpersonal experiences, which based on the direction of the relationship, seems to have been the personal experiences of Black people or people of color. The data from Study 1 suggests that among White participants, increased perceptions of perceived racism in health care are associated with increased levels of reported medical mistrust. Future work should examine whether this relationship continues to exist when medical mistrust is measured as being against their own racial group. Work conducted by Williamson et al. (2019) suggests this may be the case. In their study, when planned contrasts were examined, White participants had higher race-based medical mistrust, when shown stories about discrimination against Black people. It suggests that exposure to discriminatory experiences of Black Americans can influence White Americans’ perceptions of the health-care system. For this to happen, the presumption is that there is some level of empathizing or perceived similarity. A closer examination of why this occurs may be necessary, particularly as the opposite result is found for personal racial discrimination experiences. It is possible that having a deeper understanding of what is causing this pattern of results could have implications for garnering policy support to combat racial inequities.

**Mediated Communication as an Antecedent of Interest**

The current investigation serves as a reminder that scholars should not only be addressing personal experiences, but also vicarious media experiences, particularly vicarious media racial
discrimination experiences. The findings support assertions made by Williamson et al. (2019) that work on medical mistrust must look beyond personal experiences of discrimination. Study 1 provides evidence that vicarious media experiences of both negative health-care experiences (indirectly) and racial discrimination experiences (directly and indirectly) have an impact on medical mistrust. Particularly for Black Americans, who harbor higher levels of medical mistrust, vicarious media racial discrimination experiences played a role in their distrust of the motives of health-care providers. Vicarious media racial discrimination resulted in higher levels of perceived racism in health care and perceived financial corruption in health care, which in turn, led to higher levels of medical mistrust. The fact the vicarious media racial discrimination operates through both perceived racism in health care and perceived financial corruption in health care may be an indication of how important this antecedent is for Black Americans’ medical mistrust.

Furthermore, vicarious media RDE, but not personal RDE or vicarious interpersonal RDE influenced medical mistrust. This may due to differences in individual (or personal) racism and institutional racism (Jones, 2000; Shavers et al., 2012). Individual racism refers to differential actions toward others based on their race (Jones, 2000), whereas institutionalized racism refers to structural practices codified in laws and customs that result in differential access to good or opportunities (Jones, 2000; Williams & Mohammed, 2013). An examination of the items that measured vicarious media RDE revealed that these items align with ideas of institutional racism, as opposed to individual racism; these items asked about “legislative processes” and “limited access to resources.” Alternatively, the items for personal RDE (e.g., “conflict between you and someone of a different race/ethnicity”) and vicarious interpersonal RDE (e.g., “witnessing discrimination or prejudice directed toward someone else”) are measures
of individual racism. Based on the work of Williamson, Bigman, and Quick (2018), even when thinking of health-care providers in the context of organ donation, Black Americans link mistrust of those providers to institutional issues. Thus, one might expect for those items related to institutional racism to be related to medical mistrust, while those related to individual racism would not be related to medical mistrust. Subsequent work should systematically examine the effects of different types of racial discrimination experiences on medical mistrust.

Additionally, the results of Study 2 indicated that both negative health care content (i.e., lack of access to health care services) and racial discrimination in news stories were associated with race-based medical mistrust. More specifically, analyzing the differences between news story conditions suggested that it was specifically health-related discrimination stories that resulted in increased levels of race-based medical mistrust. This may be indicative of how closely this approximates racism in health care, which Study 1 found was positively related to medical mistrust. It could also be the case that other messages in the environment may have had an effect. This data was collected during July 2019. In the preceding months, participants may have encountered stories about Black maternal mortality rates, including Senator Elizabeth Warren’s plan to make childbirth safer for Black women (Krieg, 2019), as well as her op-ed in *Essence*, a monthly magazine for Black women (Warren, 2019). They likely also saw the controversy of Governor Ralph Northam’s medical school yearbook photographs in blackface (Kelly, 2019), including the conversations about racism in medicine it sparked (e.g., Kelly & Gordon, 2019). Additionally, in July 2019, a Black man, who was a patient at an Illinois hospital, was accused of trying to steal medical equipment when he went for a walk outside with the permission of his doctors (Miettinen & Carter, 2019). In many instances, these stories discussed
these issues in regard to distrust of the medical system; this may have reinforced linkages between health-related discrimination and medical mistrust.

Study 2 also revealed an unexpected, positive relationship between the content of the news stories and health intention outcomes. Although no hypotheses were posited regarding these relationships, medical mistrust was expected to mediate the relationship between and health intentions. Thus, a negative relationship would have been expected between news story content and health intention outcomes. Study 2 analyses found a positive relationship between negative health content and both willingness to get a DNA tests to assess disease risk as well as willingness to encourage a family member to become an organ donor. In other words, exposure to news stories depicting difficulty accessing health care services resulted in individuals being more willing to get a DNA test to assess disease risk, more willing to encourage a family member to become an organ donor, and more likely to be willing to get a flu shot than to have a neutral stance on getting a flu shot.

This pattern of findings may be the result of the way negative health care content was operationalized. The news stories that contained negative health content depicted instances where individuals were having trouble accessing health care services. Exposure to these stories may have triggered concerns about their own access to health care services; a recent poll found that about 80% of respondents were worried about the affordability and availability of health care (Gallup, 2019). As a result, they were more likely to engage in behaviors themselves, while they do have access (e.g., getting a DNA test to assess disease risk and getting a flu shot). Thus, there was an increased willingness to engage in the behaviors that would impact themselves (i.e., getting a DNA test and getting a flu shot) or their family members (i.e., becoming a registered organ donor), but not an unknown other (i.e., participating in an HIV vaccine clinical trial).
Implications. The current work, along with that of Williamson et al. (2019), makes clear that as scholars work to understand medical mistrust or create interventions to address medical mistrust, we must keep in mind that it is not solely an individuals’ own experiences, but also those of others that can affect medical mistrust. Recently, Benkert, Cuevas, et al. (2019) noted that: a) only one quantitative study on medical mistrust explored the path from discrimination to medical mistrust in depth; and that b) when vicarious experiences related to medical mistrust are discussed in qualitative studies, it is primarily in the form of intergenerational (i.e., experiences of participants’ family and friends), which would be occur via interpersonal communication. However, the current study suggests that vicarious media racial discrimination experiences may be another area that while pertinent, is not receiving much attention.

Qualitative work conducted by Williamson et al. (2018) found that Black adults pointed to mediated communication as a source of their medical mistrust beliefs. Subsequent work by Williamson et al. (2019) extended this work by conducting an experiment examining the relationship between mediated communication and medical mistrust. They found that news stories about discrimination influenced medical mistrust among Black college students (Williamson et al., 2019). These studies suggest that an examination of vicarious media experiences must be accounted for in investigations of medical mistrust. The current investigation builds upon this work by examining the connections between mediated experiences and medical mistrust in a sample of Black adults.

Theoretically, this would indicate that investigations into medical mistrust may be missing part of the picture by not accounting for exposure to vicarious media racial discrimination (i.e., news stories about racial discrimination). Although previous work has examined discrimination as an antecedent to medical mistrust (e.g., Hammond, 2010; Durant et
al., 2011), these studies focused on individuals’ own experiences of discrimination. This dissertation shows that personal experiences are not the complete story; vicarious media racial discrimination experiences also play a role. This also suggests that as communication scholarship is used to more carefully examine medical mistrust, theories such as social cognitive theory (Bandura, 2009) that are designed to account for vicarious experiences, including through media, may be fruitful avenues for theoretically grounding these studies.

More practically, the results of this dissertation in conjunction with previous studies (e.g., Williamson, Smith, & Bigman, 2019), suggest that vicarious media racial discrimination, and perhaps even more specifically, health-related racial discrimination news stories influence on medical mistrust. Many Americans report getting their news via social media (Shearer & Matsa, 2018). Given the rates at which Black Americans are likely to encounter race-related content than their White counterparts (Anderson & Hitlin, 2016) which is likely to show Black disadvantage (Gandy & Li, 2005) and discussions of discrimination (Anderson & Hitlin, 2016), these findings have far ranging implications for the health of Black Americans. These findings suggest that exposure to this content may increase race-based medical mistrust, which has previously been found to be related to several health attitudes and behaviors (e.g., prostate cancer screening attitudes, Shelton et al., 2010; patient satisfaction, Benkert et al., 2009; mammography behaviors, Thompson et al., 2004; and colorectal cancer screening, Purnell, 2010). If this is the case, the impact of exposure to racial discrimination content extends beyond that of mental health (Paradies et al., 2015; Tynes, Willis, Stewart, & Hamilton, 2019), potentially to physical health outcomes as well. As scholars answer recent calls to further examine the antecedents of medical mistrust and use more sophisticated techniques, theorizing about medical mistrust must include vicarious media experiences.
**Future directions.** The results of this dissertation indicated that vicarious media NHE and vicarious media RDE influenced medical mistrust through perceived financial corruption and perceived racism in health care, respectively (Study 1). Additionally, there was evidence that news stories that explicitly discuss racial discrimination in health care contexts have an impact on medical mistrust (Study 2). These findings point to a continued need for further investigation into the role of mediated communication in medical mistrust.

First, there is a need for a more thorough investigation into the media messages that may influence medical mistrust. Experimental studies examining the effects of mediated messages on medical mistrust are impactful; however, parallel work is needed to know what messages are actually in the information environment. For instance, an experimental study examining the effects of discrimination messages or the content entertainment media is useful but does not provide much utility if these do not represent the types of messages individuals often encounter.

To date, there has been little work done that speaks to the content of media that may be related to medical mistrust. Work in cultivation and social cognition (Morgan, Shanahan, & Signorielli, 2009; Shrum, 2009) suggests that the media can cultivate perceptions of the medical system and personnel. Despite this, there is little work that speaks to the messages in the media environment that may influence medical mistrust. Although there has been work examining depictions of health-care providers, specifically physicians (Chory-Assad & Tamborini, 2001; Jain & Slater, 2013; Pfau, Mullen, & Garrow, 1995), these depictions have not taken into account the race of the physician and patient. As a result, there is information related to the frequency with which patient-centered communication occurs, but no empirical work examining how this intersects with race. In other words, there is no information regarding whether non-patient-centered interactions occur more often with Black patients. In fact, Jain and Slater (2013) call for an
examination of patient race in content analysis of provider-patient interactions. In other areas, content analyses have been conducted and paired with experimental and survey data to provide a more thorough picture of exposure of content and its effects (e.g., Dixon, 2006; Dixon, 2008; Dixon & Linz, 2000). Future work on medical mistrust should include a content analysis of the portrayals Black Americans may be exposed to regarding medical encounters and the relationship between themselves and the medical system. Doing so would lead to a more nuanced examination and understanding of how exposure to particular messages influence medical mistrust.

Furthermore, Study 1 of this dissertation found an indirect effect of vicarious media NHE, but there is no way of knowing the type of content or portrayals participants were considering when responding to those items. For example, were these examples incidents that lie at the intersection of negative health-care experiences and racial discrimination experiences? In the Study 1 vicarious mediated NHE was operationalized as patient-centeredness and mediated RDE asked about contexts outside of the health-care environment; however, it is possible for these things to intersect. Qualitative work should be conducted to determine the types of messages and sources individuals attribute to their medical mistrust. Although Williamson et al. (2018) presents qualitative data related to medical mistrust, this was a secondary analysis. While that investigation provides an idea of how medical mistrust is discussed when brought up spontaneously, the original purpose of the study was not to investigate messages related to medical mistrust. Given the importance of mediated communication in medical mistrust demonstrated by the current dissertation, there is a need to examine Black adults’ exposure to messages related to medical mistrust. A focus group study that is explicitly aimed at uncovering
participants’ experiences that lead to medical mistrust would be beneficial, including an examination of the specific messages that are contributing to medical mistrust beliefs.

Alternatively, a study conducted under a memorable message framework may also provide information regarding these messages. According to the memorable message framework (Knapp, Stohl, & Reardon, 1981; Stohl, 1986), individuals hear messages that are both salient (i.e., “memorable) and have lasting influence on beliefs and behavior. These “memorable messages” are thought to provide rules and strategies for dealing various situations (Stohl, 1986). The memorable messages framework focuses on the content, sources, and context of transmission of these messages (Kellas, 2010; Stohl, 1986). Thus, the messages individuals receive about how to interact with medical institutions and personnel would shape their medical mistrust beliefs. Parrott et al. (2008) conducted an examination of messages related genetics and health utilizing a memorable messages framework. They used open-ended questions to prompt thought-listing about salient messages related to genetics, health, and family history. A similar approach could be taken in respect to the negative motives of health-care providers.

Another aspect that may be deserving of attention is the function of source in the news stories used. There is ample evidence to suggest that source factors (e.g., credibility of the source) influences attitudes (e.g., O'Keefe, 2012; Petty, Brinol, & Priester, 2009); thus, the source of the story may have influenced how individuals interpreted the news source, which could have in turn influenced their attitudes about health-care providers. The stories used as stimuli in Study 2 did not attribute the news stories to any particular source. Although news story credibility was moderate across condition type, it is possible that by having added a source, the news stories may have been seen as more credible and had a more robust effect. Perhaps, the presence of a source would have aided in assessing the credibility of the news story and
produced a larger effect. The effect size found in Williamson et al. (2019) was much larger and their news stories were attributed to the Associated Press.

Finally, future work should consider communicative acts that may lessen the impact of vicarious media racial discrimination experiences on medical mistrust. It has been well established that discrimination can impact mental health (Paradies et al., 2015; Tynes, Willis, Stewart, & Hamilton, 2019); this study suggests there are potential effects of vicarious discrimination, beyond that of mental health. Given that Black Americans may be inundated with exposure to vicarious discrimination (National Public Radio, Robert Wood Johnson Foundation, & Harvard T.H. Chan School of Public Health, 2017), particularly on social media (Anderson & Hitlin, 2016), it may be necessary to determine whether there are protective measures that mitigate these effects. Social support is one mechanism through which this may occur. Recent work conducted by McNeil Smith, Williamson, Branch, and Fincham (2019) examined the effects of racism-specific support. In other words, the effects of social support specifically aimed at dealing with experiences of racism and discrimination. They found that racism-specific support mitigated the effects of racial discrimination on health outcomes. As medical mistrust may mediate the relationship between racial discrimination experiences and health outcomes, it may be beneficial to understand whether racism-specific social support mitigates the effects of racial discrimination experiences on medical mistrust. By receiving racism-specific support, individuals may be less likely to be mistrustful after a racial discrimination experience. It is possible that there are important relationships to consider among exposure to vicarious media discrimination, medical mistrust, racism-specific support, and health outcomes.
Differences in Medical Mistrust Measures

There has been a lack of clarity in the medical mistrust literature about what “medical mistrust” means. In recent reviews of medical mistrust, scholars have noted the conflation of mistrust with trust, as well as the different conceptualizations of medical mistrust present in the two most often used measures (Benkert, Cuevas, et al., 2019; Williamson & Bigman, 2018). The current dissertation sought to understand the differences between these measures of medical mistrust. Recent work by Pellowski et al. (2017) suggested that there are differences in general medical mistrust, as measured by the Medical Mistrust Index (LaVeist et al., 2009), and race-based medical mistrust as measured by the group-based medical mistrust scale (Thompson et al., 2004). They found that general medical mistrust and race-based medical mistrust accounted for different HIV-related beliefs; race-based medical mistrust predicted medication necessity and concern beliefs, while general medical mistrust only predicted medication concerns. Despite the inability to directly test these differences, the current work supports the idea that there are consequential differences in general and race-based medical mistrust. Based on bivariate relationships, general and race-based medical mistrust were only moderately correlated (see Table 5.1); there was no evidence of collinearity or concern that these items were measuring identical constructs. This suggests that these are related, but distinct types of medical mistrust.

The news story content (i.e., negative health care content and racial discrimination content), had an impact on race-based medical mistrust, but not general medical mistrust. In other words, this content influences medical mistrust when asking participants to consider whether African Americans, specifically, should be mistrustful of health-care providers as opposed to asking whether people in general should be mistrustful. These findings could, in part, be due to the race-based medical mistrust measure containing aspects of perceived racism in
health care (e.g., “African Americans are treated the same as people of other groups by healthcare providers”). It should be noted, however, that many of these items were removed due to issues with being reverse coded. Despite this, they were still seen by participants and could have influenced their interpretation of other items. In other words, items like “Healthcare providers do not take the medical complaints of African Americans seriously” could have been interpreted as, how African Americans are treated in comparison to other racial groups. As a result, these items may be more closely aligned with race-based medical mistrust than general medical mistrust.

Not only were there differences in the impact of content on medical mistrust, but also differences in the measures’ relationships to health intention outcomes. Only general medical mistrust was related to the health intention outcomes; general medical mistrust was positively related to willingness to get a DNA test and resulted in individuals being more willing to get a flu shot, than be neutral about getting a flu shot. Given that the news stories did not appear to have much effect on general medical mistrust, it could be that general medical mistrust increases the likelihood that individuals engage in behaviors that will have a direct effect for the participant (i.e., benefits are not second-hand). It is possible that general medical mistrust was already present and would have had these effects on health outcomes even if there had been no news story exposure. Future work would benefit from the inclusion of a non-exposure condition when examining the effects of content on medical mistrust and health outcomes. This would provide evidence as to whether general medical mistrust was already present and influencing health intention outcomes irrespective of news story exposure.

Alternatively, there could be something different about this sample, in comparison to samples of previous studies, that resulted in a positive relationship between general medical mistrust.
mistrust and health intention outcomes. When given the chance to provide commentary, one participant cautioned that they might have lower levels of medical mistrust and that it was less likely to affect their behaviors because they purposefully sought health-care providers of color. While most health-care providers are White (Diversity in the Physician Workforce: Facts & Figures 2014, 2014), if the study’s participants were like this individual and seeking out and seeing Black providers, this may have made a difference. Considering this dissertation’s findings, recent events (e.g., Governor Northam’s blackface medical school yearbook photograph) may have increased medical mistrust and led to individuals seeking race-concordant medical interactions. If this is the case, individuals may be more likely to engage in behaviors that they can do with their race-concordant provider and avoid a situation in which they must engage with a new provider. For instance, if an individual gets a flu shot, which they may get from their primary care provider, they decrease the changes of getting the flu and engaging with health-care providers in other setting (e.g., hospitals, urgent care clinic). Similarly, by getting a DNA test to assess disease risk, it allows an individual to know whether they should engage in health-care providers for further care and gives them choice in finding a provider of their same race that treats that condition.

Implications. The current dissertation calls attention to the need to continue being critical and intentional about the use of general medical mistrust measures and race-based medical mistrust measures. Outside of the communication discipline, scholars so far have primarily chosen either the general medical mistrust or race-based medical mistrust scale (Williamson & Bigman, 2018). Scholars must carefully consider which scale matches their questions of interests – both from the standpoint of whether group membership is relevant, but also understanding that these are distinct, but related measures. Future work is necessary to fully
understand the relationship between general medical mistrust and race-based medical mistrust. To do so, there must be studies that include both measures in an attempt to understand how they may operate similarly or differently with other constructs of interest.

Within the communication discipline, much of the work on medical mistrust has been done in the area of organ donation. This work has primarily used Morgan et al.’s (2008) four-item measure (e.g., Morgan et al., 2008; O’Carroll, Foster, McGeechan, Sandford, & Ferguson, 2011; Quick, Anker, Feeley, & Morgan, 2016). The measure asks whether hospitals sometimes prescribe medications as a way of experimenting on people without their consent, whether sometimes procedures are done without consent, if participants feel like they cannot trust doctors, and uncertainty about whether a doctor would do everything to possible to save your life in an emergency (Morgan et al., 2008). Unfortunately, this measure does not adequately capture what health communication scholars need if they are attempting to assess medical mistrust. First, half of the items deal more with trust (“You don’t feel like you can trust your doctors” and “You are not sure doctors would do everything possible to save your life in the event of an emergency”). Trust and mistrust are related, but distinct concepts. Secondly, particularly when examining medical mistrust among Black Americans, the items in Morgan’s (2008) measure do not capture the complexity of medical mistrust; it does not deal with the fact medical mistrust is multi-leveled (Williamson, Bigman, & Quick, 2018) nor does it capture the links between perceived racism in health care and medical mistrust (Study 1).

Study 2 suggests that only general medical mistrust is associated with the health intention outcomes; however, it is unclear whether this was a function of these particular outcomes as previous work indicated a between race-based medical mistrust and similar health intention outcomes (Purnell, 2012; Thompson, Valdimarsdottir, Jandorf, & Redd, 2003). If subsequent
work were to show that general medical mistrust was a better predictor of health intentions, the links between perceived racism and medical mistrust (Study 1) and the complexities of medical mistrust would perhaps suggest measuring both general medical mistrust and race-based medical mistrust. Granted, due to participant fatigue, it may not always be possible to include, for instance, measures of both perceived racism in health care and medical mistrust. The race-based medical mistrust scale contains elements of perceived racism in health care, but its suitability as an alternative to assessing both general medical mistrust and perceived racism in health care would be dependent upon whether it was found to be related to the health intentions of interest. It may be beneficial to determine whether utilizing the race-based medical mistrust scale (GBMMS; Thompson, Valdimarsdottir, Winkel, Jandorf, & Redd, 2004) is similar to utilizing both perceived racism in health care and medical mistrust (MMI; LaVeist, Isaac, & Williams, 2009) and have a more thorough understanding of those trade-offs.

In doing this work, there may be a need to alter the items for the race-based medical mistrust measure, the Group-Based Medical Mistrust Scale (GBMMS; Thompson et al., 2004). In the current study, the reverse coded items were removed due to measurement issues. Although the GBMMS is a validated scale (e.g., Thompson et al., 2004; Shelton et al., 2010), some scholars have reported issues with some of these scale items (e.g., Wheldon, Kolar, Hernandez, & Daley, 2017). The assumption underlying the use of reverse coded items is that it prevents or identifies invalid responses (e.g., if a participant is not reading, but instead streamlining responses), but does not sacrifice the integrity of the scale (Dalal & Karter, 2014). There is evidence, however, the properties of the scale are disrupted. There has been work that suggests positively and negatively worded items may not be measuring the same underlying trait (Dalal & Karter, 2013; Weems & Onwuegbuzie, 2001) and may negatively affect score reliability and
validity (Stewart & Frye, 2004; Weems & Onwuegbuzie, 2001; Weems Onwuegbuzie, & Lustig, 2003). Weems, Onwuegbuzie, Schreiber, and Eggers (2003) found that differences between positively worded and negatively worded items was more pronounced for non-White participants. As a result, this issue may be of particular importance for the GBMMS as it often used among Black and other minority populations (Williamson & Bigman, 2018).

Dalal and Karter (2014) argue that the use of reverse coded items has become so ingrained and commonplace that scholars use reverse coded items to avoid response styles, without any thought or rationale for the use of these items. Perhaps, it is time for scholars interested in medical mistrust to stop and think more critically about this scale. Given the measurement issues associated with using reverse-coded items; it may be worth validating modifying the scale so that all items are worded in the same direction. Ultimately, it would be beneficial to have a measure of race-based medical mistrust that does not require a third of the items to be removed because they do not load onto the same factor. If scholars are concerned that without reverse coded items, they will face issues with participant response styles, Dalal and Karter (2014) offer several options for guarding against this including response time, consistency indices, outlier indices, and item response theory techniques.

**Future directions.** There is a clear need to tease apart of the relationships among general medical mistrust and race-based medical mistrust. As general and race-based medical mistrust appear to be related but not overlapping constructs, it will be beneficial to know whether general medical mistrust is a precursor to race-based medical mistrust. As the news stories had no impact on general medical mistrust, it could be that general medical mistrust operates more as a trait and is more stable. If so, general medical mistrust could be assessed before exposure and used as a moderator of the relationship between news stories and medical mistrust.
Additionally, work is necessary to determine the best measure of medical mistrust for particular health topics and contexts. To do so, it may be necessary to test general medical mistrust and race-based medical mistrust for other topics that have been found to be associate with both measures, but are age-specific (e.g., colorectal cancer screening). The findings of the current dissertation may have been a function of the particular topics chosen. As a result, attempts to understand the nuances of these measures of medical mistrust may require other topics. Ultimately, it may be the case that attempts to ascertain which measure is best indicate that the answer is neither scale is what scholars should be using. If so, future work may be necessary to create a measure of medical mistrust that is both related to a wide variety of health outcomes but also acknowledges the complex and multi-leveled nature of medical mistrust.

Finally, work focusing on the relationship between medical mistrust and health intention should account for participants’ previous attitudes regarding the health behaviors. In Study 2, the outcomes were partially selected for their relevance, as indicated by recent news coverage (Krull, 2019; Neighmond, 2019; Turban, 2019; Valencia, 2019). In doing so, these may be outcomes for which individuals already have strong attitudes. Some of these topics (e.g., HIV), appear in African American folklore (Turner, 1993), increasing the likelihood that individuals already have established attitudes regarding these behaviors. Future work should utilize a pre-post design approach to not only assess, but also control for pre-existing attitudes.

Conclusion

While medical mistrust has long been studied, it has rarely received explicit attention as a phenomenon of interest. As a result, there is a dearth of work examining the antecedents of medical mistrust. This dissertation answers recent calls to examine the antecedents of medical mistrust and use modeling techniques that allow for an examination of mediators of medical mistrust.
mistrust. It also addresses gaps in medical mistrust scholarship related to the role of communication and the nuances of racial differences in medical mistrust. In doing so, it sought to advance the literature on medical mistrust in four primary ways. First, by testing the role of communication in medical mistrust. Second, by focusing attention on the antecedents of medical mistrust, specifically the role of mediated communication. Third, by examining racial differences in medical mistrust antecedents. Finally, by examining differences in medical mistrust measures.

The findings suggest that by including the role of communication in medical mistrust a model is produced that explains more of the variance and can help explain medical mistrust across racial group. Additionally, the results show that exposure to mediated communication influences medical mistrust, particularly in relation to racial discrimination experiences. Furthermore, this dissertation illuminates the wide array of additional research necessary to understand the nuances of medical mistrust and its measures. There is enough empirical support on the importance of medical mistrust to warrant systematic examination of the nuances of medical mistrust. It is time to treat medical mistrust as a phenomenon worthy of its own explicit investigations. This dissertation demonstrates that the antecedents of medical mistrust extend far beyond that of historical events like the Tuskegee Syphilis Study. Individuals receive messages about negative health care experiences and racial discrimination experiences, both interpersonally and through media, that influence medical mistrust. Our specialty, as communications scholars, is messages. Thus, health communication scholars should be at the forefront of this work. This dissertation is a start, but it is hopefully only the beginning.
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APPENDIX A: STUDY 1 MEASURES

Negative Health-care Socialization

Frequency by Source: (Paek, Reber, & Lariscy (2011); 0 = not at all often to 4 = very often)

- Think back to all the information you have heard, read, or seen about visiting healthcare providers (e.g., physicians, nurses). How often have you heard messages related to visiting healthcare providers from each of the following sources:

1. Parents or other guardians at home [I]
2. Siblings [I]
3. Friends [I]
4. School (for example: teachers, counselors or coaches) [I]*
5. Broadcast news programs (for example: newscasts, 60 Minutes, Dates, 20/20) [M]
6. Broadcast entertainment (for example: Grey’s Anatomy, ER, CSI, Oprah) [M]
7. Broadcast advertising (for example: TV and radio) [M]
8. Print news (for example: newspaper or magazine articles) [M]
9. Print advertising [M]
10. The Internet (for example: Google or specific websites like WebMD) [M]
11. Social media (for example: Facebook posts, Twitter, YouTube) [M]

[I] = items for interpersonal factor

[M] = items for media factor

*Item deleted based on EFA.
Valence: (Tan, Bigman, & Sanders-Jackson, 2015; 1 = completely positive to 5 = completely negative)

- In your opinion, was the information you encountered about healthcare providers…?

Negative Health-care Experiences (Jiang & Street, 2017; 1 = never to 5 = always)

- Please think back on your experiences with healthcare providers. How often did your healthcare provider(s)…? [P]

- Please think back on conversations you’ve had with family and friends about their experiences with healthcare providers. How often did their healthcare provider(s)…? [I]

- Please think back on your experiences seeing or hearing about healthcare providers on news media (e.g., Fox News, MSNBC, local news, CNN). How often did they…? [M]

- Please think back on your experiences seeing or hearing about healthcare providers on medical dramas (e.g., Grey’s Anatomy, The Good Doctor, House, Nurse Jackie). How often did they…? [M]

- Please think back on your experiences seeing or hearing about healthcare providers on medical reality shows (e.g., Trauma Life in the ER, Dr. 90210). How often did they…? [M]

1. Give [you/them/patients] a chance to ask all the health-related questions

2. Give attention to [your/their/patients’] feelings and emotions

3. Involve [you/them/patients] in decisions about their health care as much as [you/they/patients] wanted
4. Made sure [you/they/patients] understood the things [you/they/patients] needed to do to take care of [your/their/their] health

5. Explained things in a way [you/they/patients] could understand

6. Spent enough time with [you/them/patients]

7. Helped deal with feelings of uncertainty about [your/their/patients’] health

[P] = personal experiences

[I] = vicarious interpersonal experiences

[M] = vicarious media experiences

**Racial Discrimination Experiences** (modified Harrell 1997, 2000; 0 = never to 4 = very often)

- Listed below are different types of racism-related experiences that some people have.

  Please think about any experiences you might have had involving racism, racial discrimination, or racial prejudice during the past year. Please indicate how often you have had the experience.

  1. Conflict between you and someone of a different race/ethnicity [P]

  2. Others expecting you to be like stereotypes of your racial/ethnic group [P]

  3. Hateful or mean-spirited behavior directed towards you [P]

  4. Violent or life-threatening personal experiences (i.e., assaults) [P]

  5. A racially hostile atmosphere at your job, school, or neighborhood [P]

  6. Ongoing conditions in your life that are in some way related to racism (i.e., your financial situation, being unemployed) [P]

  7. Violation of your civil rights (i.e., job or housing discrimination) [P]*
8. Other saying or inferring that you are oversensitive or paranoid about racism [P]*
9. Witnessing discrimination or prejudice directed toward someone else [I]
10. Hearing about someone else’s experiences of discrimination or prejudice [I]
11. Seeing negative or insulting stereotypes of your racial/ethnic group in the media (news, tv, movies, etc.) [M]*
12. Observing policies or practices at work, school, or in business that exclude or negatively affect people of your racial/ethnic group [I] *
13. Seeing limited participation in decision-making, opportunities, access to resources for people of your racial/ethnic group in the media (i.e., “ol’ boys network) [M]
14. Seeing examples in the media of legislative processes or political activities (national, local) that negatively affect people of your race/ethnicity [M]
15. Seeing problems or racial disparities in different areas of life for people of your race/ethnicity in the media (i.e., economic, health, employment) [M]
16. Significant racial tensions or conflicts in your community, city, or town*

[P] = personal experiences

[I] = vicarious interpersonal experiences

[M] = vicarious media experiences

*Items were deleted based on EFA.

*This item was not been categorized as it did not seem like a good fit for any of the categories. It is not expected to load with the others.
Perceived Racism in Health Care (LaVeist, Nickerson, & Bowie, 2000; 1 = strongly disagree to 5 = strongly agree)

1. Healthcare providers treat African American and White people the same
2. Racial discrimination in a healthcare provider’s office is common
3. In most hospitals, African Americans and Whites receive the same kind of care from healthcare providers
4. African Americans can receive the care they want as equally as White people can/White people can receive the care they want as equally as African Americans can
5. African Americans often face racial discrimination in a healthcare provider’s office

Perceived Financial Corruption in Health Care (items based on work from Pellegata & Memoli, 2016; Jensen et al., 2011; and Adams, Highhouse, & Zicker, 2010; 1 = strongly disagree to 5 = strongly agree)

1. Healthcare providers recommend unnecessary tests in order to make money
2. Pharmaceutical companies pay healthcare providers to prescribe their medication
3. Doctors prescribe meds more than they should in order to make more money

General Medical Mistrust (LaVeist, Isaac, & Williams, 2009; 1 = strongly disagree to 5 = strongly agree)

1. You’d better be cautious when dealing with health care organizations
2. Patients have sometimes been deceived or misled by health care organizations
3. When health care organizations make mistakes they usually cover it up
4. Health care organizations have sometimes done harmful experiments on patients without their knowledge

5. Health care organizations don’t always keep your information totally private

6. Sometimes I wonder if health care organizations really know what they are doing

7. Mistakes are common in health care organizations

Demographics

Age What is your age? (open-ended)

Sex What is your sex?
  o Male
  o Female
  o Other (please specify)

Sexual Orientation What is your sexual orientation?
  o Heterosexual
  o Homosexual
  o Bisexual
  o Other (please specify)
  o Not sure/Decline to answer

Education What is the highest level of school you have completed or the highest degree you have received?
  o Less than high school degree
o High school graduate (high school diploma or equivalent including GED)

o Some college but no degree

o Associate degree in college (2-year)

o Bachelor’s degree in college (4-year)

o Master’s degree

o Doctoral degree

o Professional degree (JD, MD)

**Income** Please indicate the answer that includes your entire household income in 2017 before taxes.

o Less than $10,000

o $10,000 to $19,999

o $20,000 to $29,999

o $30,000 to $39,999

o $40,000 to $49,999

o $50,000 to $59,999

o $60,000 to $69,999

o $70,000 to $79,999

o $80,000 to $89,999

o $90,000 to $99,999

o $100,000 to $149,999

o $150,000 or more
Political Ideology Which of the following best describes your political ideology?

- Very liberal
- Liberal
- Moderate
- Conservative
- Very conservative

State of Residence In which state do you currently reside?

- (Dropdown list of states)
Chicago Residents Have Tougher Time Seeing an Oncologist

Study findings raise concerns about unequal access to cancer treatment

Black residents in Chicago, Illinois have a significantly harder time getting an appointment with an oncologist than other Illinois residents.

Brandon Jones, a Black school teacher, has struggled to get an oncologist in Illinois. He thought he was alone, but it turns out many other Chicago residents like Jones are struggling to get appointments.

A recent study published in the Journal of the National Cancer Institute shows that Black residents in Chicago are less likely to get an appointment with an oncologist on their first attempt. The report finds that they may have to make multiple requests and wait much longer before getting an appointment.

The findings are raising concerns about unequal access to cancer treatment for Black residents in cities like Chicago.

“What we are seeing is that people living in Black areas are still not receiving the same levels of access,” said Steve Anderson, a researcher at the National Cancer Institute and co-author of the report.

The report recommends that the private and public sector work together to find solutions and increase access in historically underserved Black communities.

*Figure B.1. Stimuli for oncologist version of the health care, racial discrimination (H/D) condition.*
Baltimore Residents Have Tougher Time Seeing a Therapist

Study findings raise concerns about unequal access to mental health treatment

Black residents in Baltimore, Maryland have a significantly harder time getting an appointment with a therapist than other Maryland residents.

Courtney Wilson, a Black cashier, has struggled to get a therapist in Maryland for the past year. She thought she was alone, but it turns out many other Baltimore residents like Wilson are struggling to get appointments.

A recent Mental Health Association of Maryland report shows that Black residents in Baltimore are less likely to have nearby practices that are accepting new patients. The report finds that they can have a lot of difficulty securing an appointment with a therapist.

The findings are raising concerns about unequal access to mental health treatment for Black residents in cities like Baltimore.

“What we are seeing is that people living in Black areas are still not receiving the same levels of access,” said Steve Anderson, a researcher at the Mental Health Association of Maryland and co-author of the report.

The report recommends that the private and public sector work together to find solutions and increase access in historically underserved Black communities.

Figure B.2. Stimuli for therapist version of the health care, racial discrimination (H/D) condition.
Rural Residents Have Tougher Time Seeing an Oncologist

Resident in rural towns in Illinois have a significantly harder time getting an appointment with an oncologist than other Illinois residents.

Brandon Jones, a White school teacher, has struggled to get an oncologist in Illinois. He thought he was alone, but it turns out many other rural residents like Jones are struggling to get appointments.

A recent study published in the Journal of the National Cancer Institute shows that rural residents in Illinois are less likely to get an appointment with an oncologist on their first attempt. The report finds that they may have to make multiple requests and wait much longer before getting an appointment.

The findings are raising concerns about unequal access to cancer treatment for residents in rural towns.

“What we are seeing is that people living in rural areas are still not receiving the same levels of access,” said Steve Anderson, a researcher at the National Cancer Institute and co-author of the report.

The report recommends that the private and public sector work together to find solutions and increase access in historically underserved rural communities.

Figure B.3. Stimuli for oncologist version of health care, non-racial discrimination (H/ND) condition.
Rural Residents Have Tougher Time Seeing a Therapist

Study findings raise concerns about unequal access to mental health treatment

Residents in rural towns in Maryland have a significantly harder time getting an appointment with a therapist than other Maryland residents.

Courtney Wilson, a White cashier, has struggled to get a therapist in Maryland for the past year. She thought she was alone, but it turns out many other rural residents like Wilson are struggling to get appointments.

A recent Mental Health Association of Maryland report shows that rural residents in Maryland are less likely to have nearby practices that are accepting new patients. The report finds that they can have a lot of difficulty securing an appointment with a therapist.

The findings are raising concerns about unequal access to mental health treatment for residents in rural towns.

“What we are seeing is that people living in rural areas are still not receiving the same levels of access,” said Steve Anderson, a researcher at the Mental Health Association of Maryland and co-author of the report.

The report recommends that the private and public sector work together to find solutions and increase access in historically underserved rural communities.

Figure B.4. Stimuli for therapist version of health care, non-racial discrimination (H/ND) condition.
Ferguson Residents Have Tougher Time Getting Home Internet

Study findings raise concerns about unequal access to home internet services

Black residents in Ferguson, Missouri have a significantly harder time getting home internet access than other Missouri residents.

Brandon Jones, a Black postal worker, has struggled to get high-speed internet access in his home for the past year. He thought he was alone, but it turns out many other Ferguson residents like Jones are struggling to get home internet access.

A recent Brookings Institute report shows that Black residents in Ferguson are less likely to have internet access in their place of residence. The report finds that they can have a lot of difficulty securing high-speed internet access.

The findings are raising concerns about unequal access to internet services for Black residents in cities like Ferguson.

“What we are seeing is that people living in Black areas are still not receiving the same levels of access,” said Steve Anderson, a researcher at the Brookings Institute and co-author of the report.

The report recommends that the private and public sector work together to find solutions and increase access in historically underserved Black communities.

Figure B.5. Stimuli for internet version of non-health care, racial discrimination (NH/D) condition.
Milwaukee Residents Have Tougher Time Getting an Uber

Study findings raise concerns about unequal access to ride-sharing services

Black residents in Milwaukee, Wisconsin have a significantly harder time getting Uber rides than other Wisconsin residents.

Courtney Wilson, a Black store clerk, has struggled to get an Uber since the company started serving her area. She thought she was alone, but it turns out many other Milwaukee residents like Wilson are struggling to get rides.

A recent study published by the National Bureau of Economic Research shows that Black residents in Milwaukee are less likely to have their Uber ride request accepted on their first attempt. The report finds that they may have to make multiple requests and wait much longer before getting an Uber.

The findings are raising concerns about unequal access to ride sharing services for Black residents in cities like Milwaukee.

“What we are seeing is that people living in Black areas are still not receiving the same levels of access,” said Steve Anderson, a researcher at the National Bureau of Economic Research and co-author of the report.

The report recommends that the private and public sector work together to find solutions and increase access in historically underserved Black communities.

Figure B.6. Stimuli for Uber version of non-health care, racial discrimination (NH/D) condition.
Rural Residents Have Tougher Time Getting Home Internet

Study findings raise concerns about unequal access to home internet services

Residents in rural towns in Missouri have a significantly harder time getting home internet access than other Missouri residents.

Brandon Jones, a White postal worker, has struggled to get high-speed internet access in his home for the past year. He thought he was alone, but it turns out many other rural residents like Jones are struggling to get home internet access.

A recent Brookings Institute report shows that rural residents in Missouri are less likely to have internet access in their place of residence. The report finds that they can have to a lot of difficulty securing high-speed internet access.

The findings are raising concerns about unequal access to internet services for residents in rural towns.

“What we are seeing is that people living in rural areas are still not receiving the same levels of access,” said Steve Anderson, a researcher at the Brookings Institute and co-author of the report.

The report recommends that the private and public sector work together to find solutions and increase access in historically underserved rural communities.

Figure B.7. Stimuli for internet version of non-health care, non-racial (NH/ND) discrimination.
Rural Residents Have Tougher Time Getting an Uber

Study findings raise concerns about unequal access to ride-sharing services

Residents in rural towns in Wisconsin have a significantly harder time getting Uber rides than other Wisconsin residents.

Courtney Wilson, a White store clerk, has struggled to get an Uber since the company started serving her area. She thought she was alone, but it turns out many other rural residents like Wilson are struggling to get rides.

A recent study published by the National Bureau of Economic Research shows that rural residents in Wisconsin are less likely to have their Uber ride request accepted on their first attempt. The report finds that they may have to make multiple requests and wait much longer before getting an Uber.

The findings are raising concerns about unequal access to ride-sharing services for residents in rural towns.

"What we are seeing is that people living in rural areas are still not receiving the same levels of access," said Steve Anderson, a researcher at the National Bureau of Economic Research and co-author of the report.

The report recommends that the private and public sector work together to find solutions and increase access in historically underserved rural communities.

Figure B.8. Stimuli for Uber version of non-health care, non-racial discrimination (NH/ND) condition.
APPENDIX C: STUDY 2 MEASURES

**General News Credibility** (Flanagin & Metzger, 2000; $0 = not at all to 4 = extremely)

- How complete is the information presented in news stories?
- How accurate do you find the information to be?
- How unbiased do you find the information to be?
- How trustworthy do you find the information to be?
- How credible do you find the information to be?

**Health Behavior Intentions** (modified from Fishbein & Ajzen, 2011; $1 = strongly disagree to 5 = strongly agree)

- If it were available at no cost within the next 12 months, I would be willing to get a flu shot.
- If it were available at no cost within the next 12 months, I would be willing to have a DNA test to assess for disease risk.
- If the opportunity presented itself within the next 12 months, I would be willing to participate in an HIV vaccine clinical trial.
- If the opportunity presented itself within the next 12 months, I would be willing to talk to a family member about becoming an organ donor.

**General Medical Mistrust** (LaVeist, Isaac, & Williams, 2009; $1 = strongly disagree to 5 = strongly agree)

1. You’d better be cautious when dealing with health care organizations
2. Patients have sometimes been deceived or misled by health care organizations
3. When health care organizations make mistakes they usually cover it up
4. Health care organizations have sometimes done harmful experiments on patients without their knowledge
5. Health care organizations don’t always keep your information totally private
6. Sometimes I wonder if health care organizations really know what they are doing
7. Mistakes are common in health care organizations

**Race-Based Medical Mistrust** (Thompson et al., 2004; 1 = *strongly disagree* to 5 = *strongly agree*)

1. African Americans cannot trust healthcare providers
2. African Americans should be suspicious of information from healthcare providers
3. African Americans should not confide in healthcare providers because it will be used against them
4. African Americans should be suspicious of modern medicine
5. Healthcare providers treat African Americans like “guinea pigs”
6. Healthcare providers do not take the medical complaints of African Americans seriously
7. African Americans are treated the same as people of other groups by healthcare providers*
8. African Americans receive the same medical care from healthcare providers as people from other racial groups*
9. In most hospitals, people of different racial/ethnic groups receive the same kind of care from healthcare providers*
10. Healthcare providers have the best interests of African Americans in mind*
11. Healthcare providers sometimes hide information from African American patients

12. I have personally been treated poorly or unfairly by healthcare providers because of my race/ethnicity

*Items deleted based on CFAs.

**Manipulation Check and Characteristics of the News Stories**

- In the first study, you were asked to read a news story. Please rate your level of agreement with each of the following statements.

  - The story I read mentioned racial discrimination.
  - The story I read was about an individual who experienced racial discrimination.
  - The story I read was boring
  - The story I read was interesting
  - The story I read was about an important topic
  - The story I read was about health.
  - The story I read was about an individual with a health issue.
  - The story I read was informative
  - The story I read was easy to understand
  - The story I read was clear

**News Story Credibility** (Flanagin & Metzger, 2000; 0 = not at all to 4 = extremely)

- How complete is the information presented in this news story?
- How accurate do you find the information to be?
- How unbiased do you find the information to be?
- How trustworthy do you find the information to be?
• How credible do you find the information to be?

Demographics

Age What is your age? (open-ended)

Sex What is your sex?
  o Male
  o Female
  o Other (please specify)

Sexual Orientation What is your sexual orientation?
  o Heterosexual
  o Homosexual
  o Bisexual
  o Other (please specify)
  o Not sure/Decline to answer

Education What is the highest level of school you have completed or the highest degree you have received?
  o Less than high school degree
  o High school graduate (high school diploma or equivalent including GED)
  o Some college but no degree
  o Associate degree in college (2-year)
  o Bachelor’s degree in college (4-year)
- Master’s degree
- Doctoral degree
- Professional degree (JD, MD)

**Income** Please indicate the answer that includes your entire household income in 2017 before taxes.

- Less than $10,000
- $10,000 to $19,999
- $20,000 to $29,999
- $30,000 to $39,999
- $40,000 to $49,999
- $50,000 to $59,999
- $60,000 to $69,999
- $70,000 to $79,999
- $80,000 to $89,999
- $90,000 to $99,999
- $100,000 to $149,999
- $150,000 or more

**Political Ideology** Which of the following best describes your political ideology?

- Very liberal
- Liberal
- Moderate
○ Conservative

○ Very conservative

State of Residence  In what state do you currently reside?

○ Dropdown menu of all 50 states