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The Moralization of Health: Measurement, Correlates, and Predictive Validity

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The Moralization of Health: Measurement, Correlates, and Predictive Validity

DISSERTATION

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for the degree of

DOCTOR OF PHILOSOPHY

in Psychological Science

by

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Dissertation Committee:
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Abstract of the Dissertation

The Moralization of Health: Measurement, Correlates, and Predictive Validity

By

Megan M. Ringel

Doctor of Philosophy in Psychological Science

University of California, Irvine, 2020

Professor Peter H. Ditto, Chair

The present research argues that common messages and beliefs about the controllability of health problems, individual responsibility for health, and the societal harm caused by preventable health conditions, have left many health behaviors and chronic conditions susceptible to moral judgment. Although individual health behaviors are important for well-being and chronic disease prevention, there may be unintended consequences of an ideology of individual responsibility for health, particularly when moralized health attitudes develop. Just as research has found individual differences in related constructs, such as obesity moralization and protestant work ethic values, the present studies examined health moralization as an individual difference. An instrument was developed to measure health moralization and, separately, the personal importance a person places on health, so that the moral component of health attitudes was isolated as a predictor. The instrument was validated across four studies. Studies 1 and 2 focused on scale development and establishing discriminant and convergent validity. Study 2 confirmed that health moralization is associated with a conservative worldview characterized by a strong endorsement of the Protestant work ethic and belief in a just world. Correlations across the four studies suggest that, compared to low moralizers, high moralizers are more likely to be

politically conservative and religious, and they report having slightly better self-rated health and engagement in healthy behaviors. The predictive validity of health moralization was demonstrated through the confirmation of multiple hypotheses across Studies 2 – 4. The more a person endorses a moral view of health, the more they perceive common health conditions to be preventable (Study 2), assign greater personal responsibility for common health conditions (Study 3), expect individuals with preventable conditions or poor health behavior to pay more than others for their healthcare (Study 3), and attribute greater control, negligence, and blame to an individual described as failing to prevent heart disease or skin cancer (Study 4). The results suggest that health moralization has important motivational and interpersonal implications, and that future research should investigate its causes and continue to evaluate its consequences in a number of domains, including employment and healthcare contexts.

Introduction

As the public has grown more knowledgeable about the role of health behaviors in preventing disease, *healthism*, or the obsession with pursuing and achieving health, has become pervasive in American society (Crawford, 1980; 2006). The present research proposes that another way of thinking about healthism is that health itself, and particularly the effort people put into achieving it, has become moralized. In other words, effortful health behaviors are viewed as a moral virtue, preventive health behaviors a moral obligation, and poor health behaviors a moral failing, rather than these being viewed as a matter of individual preference.

Throughout history, health and morality have been linked in a myriad of ways (Brandt & Rozin, 1997). For example, behaviors such as masturbation and excessive consumption of alcohol were viewed for centuries in Europe and elsewhere as signs of moral depravity (Thomas, 1997). In the present day, evidence suggests that cigarette smoking has become moralized (Rozin & Singh, 1999). It may seem obvious that certain behaviors such as alcoholism or cigarette smoking attract negative moral judgments, but what about other health behaviors? As studies increasingly find that a variety of behaviors such as physical activity, diet, and high levels of stress affect health outcomes (Baum & Posluszny, 1999), the public is bombarded with messages about what they should be doing to improve their health (Brownell, 1991; Jesus, 2013; Johnson, 1998). Common messages also emphasize the harm (in terms of costs) that "lifestyle diseases" cause in the U.S. (Mulder, Rupp, & Dijkstra, 2015). These messages suggest that people have a great deal of control over their health and are capable of preventing disease through lifestyle changes (Brownell, 1991; Lyons, 2000). Nationally representative surveys confirm that many people believe individual behavior is the principal determinant of health outcomes, even more important than social or structural causes (Gollust & Lynch, 2011; Robert & Booske, 2011).

The present research argues that common messages and beliefs about the controllability of health problems, individual responsibility for health, and the societal harm caused by preventable health conditions, have led to what could be termed the moralization of health. As Rozin (1999) explains, "Moralization is the process through which preferences are converted into values, both in individual lives and at the level of culture" (p. 248). If disease is thought to be preventable through individual behavior and as causing harm not only to the individual but to society (Rozin, 1999), this creates the opportunity to judge individuals as morally culpable for health conditions they develop and morally obligated to strive for good health (Galvin, 2002; Täuber, 2018). It is particularly crucial that the health behavior or condition in question is considered controllable through individual behavior, as an individual is only held responsible or blamed for a negative outcome when it is perceived as being within their control (Alicke, 2000; Martin & Cushman, 2016). Given the emphasis on controllable behaviors, and conditions linked to controllable behaviors, the present research defines the moralization of health in terms of health behavior.

Individual health behaviors, particularly alcohol consumption, cigarette smoking, physical activity, and diet are strongly linked to overall health and well-being and the development of many chronic diseases (Lim et al., 2012; Sagner et al., 2014; World Health Organization, 2002). Media messages and public opinion thus reflect an important truth about the influence of these behaviors on health. Moreover, belief in the controllability of health and a sense of self-efficacy for health behaviors positively influence the adoption of health-promoting practices (Ajzen, 1991; Burnette, 2010; Bunda & Busseri, 2017). While the present research acknowledges that improving people's knowledge of and engagement in health behaviors are

important societal goals, it also asks whether there are unintended consequences of an ideology of individual responsibility for health.

In this dissertation, the literature review begins with an overview of relevant research pertaining to healthism, followed by perceptions of health problems and (un)healthy behaviors, and stigmatization of health conditions with causal connections to individual behavior. This is followed by an overview of relevant literature in moral psychology, focusing particularly on judgments of control, culpability and blame for negative outcomes, and moral attitudes. Finally, research connecting health behavior and morality is discussed, and a foundation is laid for the present research.

The present studies examined health moralization as an individual difference. Although the links between morality and different aspects of health have been explored by scholars of psychology, sociology, and philosophy, rigorous empirical evidence for health moralization as an attitude that differs between individuals is lacking. Psychologists such as Täuber (2018) and the present author's work on obesity moralization (Ringel & Ditto, 2019) have begun to examine health moralization empirically, but much more research is needed to understand moralized health attitudes and the implications of moralization. Given what is known about the effects of moralized attitudes more generally, health moralization was hypothesized to predict individual health behavior and attitudes, policy views, and interpersonal judgments. The present research explored the measurement of health moralization, its correlates, and its predictive validity through four studies, using correlational (Studies 1 – 3) and experimental (Study 4) designs. Limitations, broader implications, and suggestions for future research are considered in the general discussion.

Literature Review

Morality and the Emergence of Healthism

Throughout history and spanning many cultures and societies, people have linked morality to notions of health and disease (Brandt & Rozin, 1997). For example, in early modern England, sickness was viewed as either a punishment for sin or a test of faith (Thomas, 1997). Expanding on the link between religion and health, Protestantism went beyond attributions for disease by teaching that the human body is a gift from God and man has a moral duty to care for it. Protestantism emphasized that neglect of the body was itself a sin, and gluttony the cause of much disease. In the post-Reformation period, Catholicism likewise shifted from treating bodily neglect as a sign of piety to emphasizing self-care as a moral duty. Although biological explanations for disease became more prevalent after the sixteenth century, the post-Reformation period introduced significant shifts in views of personal responsibility for health that are still evident today (Thomas, 1997).

The shift from the predominance of infectious diseases in the early twentieth century to more chronic, systemic diseases in the mid and late twentieth century revitalized the concept of health as an individual obligation in the U.S. (Brandt, 1997; Leichter, 2003). In the 1970's, critics such as John Knowles, President of the Rockefeller Foundation, asserted that American society had reached the limits of medical innovation (Brandt, 1997). He contended that the chronic diseases of the time should be addressed with self-restraint, and that individuals should view health not as a right but as a moral obligation. Reports from the U.S. Department of Health and Human Services in 1979 echoed this emphasis on health as an individual responsibility (Brandt, 1997). The connection between individual behavior (e.g., smoking, alcohol misuse, drug abuse, unprotected sexual activity, dietary habits, physical inactivity) and chronic diseases

continues to be strongly supported empirically (Lim et al., 2012; Mokdad et al., 2001; World Health Organization, 2002).

Crawford (1980) famously coined the term "healthism" as a way to describe what he perceived as a growing national obsession with health. He defined healthism as

> …the preoccupation with personal health as a primary—often the primary—focus for the definition and achievement of well-being; a goal which is to be attained primarily through the modification of lifestyles, with or without therapeutic help. The etiology of disease may be seen as complex, but healthism treats individual behavior, attitudes, and emotions as the relevant symptoms needing attention. (p. 368)

This growing healthism, in which health essentially becomes the definition of well-being, supported by an ideology of self-determinism and self-control, is central to understanding how people interact with health information currently. In other words, healthism influences how people think about both their own and others' health, and the behaviors people pursue as a result. Crawford (2006) suggests that healthism is particularly common among the U.S. middle-class, who have the means (education, income) to pursue many preventive health behaviors and hold higher expectations for their health and life expectancy. Healthism may not be as prominent among those with lower socioeconomic status, because low-income individuals not only have fewer resources to achieve better health, but also feel less control over their health and have lower expectations about their health and longevity (Pepper & Nettle, 2014; Wardle & Steptoe, 2003).

Survey data confirm that many people believe individual behavior is the principle determinant of health outcomes, even more important than social or structural causes. A nationally representative survey of U.S. adults found that the majority of people (86%) rated

ostensibly controllable factors, particularly a person's smoking status and "personal health practices," as having the strongest effect on a person's health (Robert & Booske, 2011). These factors were rated even higher than other health factors such as access to affordable health care, genetics, education, and income, among others. Qualitative research has found a similar emphasis on individual responsibility as the main explanation for health outcomes and disparities (Lundell, Niederdeppe, & Clarke, 2013).

The way people interact with health information has also changed dramatically in the last few decades, as has the role of patients. In the mid-twentieth century, sociologists such as Talcott Parsons (1951) concluded that the patient was expected to fulfill a "sick role" by following doctor's orders and being a passive receiver of health advice. This was perhaps more appropriate during a period in which health information was held mainly by medical doctors and not readily accessible to the masses, nor did social norms support taking an active role in self-diagnosis and care. In the twenty-first century, this model has shifted to one in which patients take a more active role, and social scientists have embraced models that emphasize individual autonomy in health and wellness (Burnham, 2014). Health information is readily accessible through the mass media, internet, and social media (Anker, Reinhart, & Feeley, 2011; Moorhead et al., 2013). Moreover, a norm emphasizing patient empowerment has developed, leading people to feel a greater sense of power over their health decisions (Neuhauser, 2003). All of these changes support a view of health as an individual endeavor that all people are capable of pursuing.

Healthism has mainly been the province of sociologists and other social scientists who have evaluated healthism from a philosophical or socially critical viewpoint (e.g., Broom, 2008; Cheek, 2002; Galvin, 2002; Greenhalgh & Wessely, 2004). Little empirical, psychological research has examined the nature of healthism and its implications for how people think about

health in the twenty-first century. As the rest of this dissertation will argue, a useful approach to examining healthism empirically is to explore the ways in which attitudes toward health have become moralized.

Perceptions of Health-Related Behaviors

Smoking, drug and alcohol abuse. Stigma and negative moral judgments have been documented most commonly for behaviors such as cigarette smoking, illicit drug use, and alcohol abuse. Stigma is defined as any characteristic that conveys a negative social identity, and it can derive from factors such as physical appearance, group membership, and behavior (Goffman, 1963; Major & O'Brien, 2005). Cigarette smoking and drug and alcohol abuse all have serious health implications and contribute greatly to rates of preventable disease (World Health Organization, 2002). For decades, social campaigns against cigarettes have succeeded in reducing smoking rates (Kim & Shanahan, 2003), but have also created a moral aversion to cigarette smoking among the nonsmoking public (Rozin & Singh, 1999). Public opinion polls reveal strong negative attitudes overall toward smoking and demonstrate that people who smoke likewise report experiencing shame and stigma for their smoking behavior. Furthermore, 68% of the U.S. public in a nationally representative survey report that smokers are mostly or completely to blame for their health problems, while only 26% attributed the same degree of blame to tobacco companies (Pacheco, 2011). Similarly, a review of representative surveys of public perceptions of alcohol dependence and mental illness stigma in multiple countries and cultures found that personal responsibility attributions were far higher for alcohol dependence and other substance use disorders than for other mental illnesses (Schomerus et al., 2011). The review also found that people with alcohol dependence were rated as similarly unpredictable and dangerous

as people with schizophrenia, and evoked more anger and disgust, and less empathy and desire to help, than people with other mental illnesses.

Physical activity. Past research on perceptions of physical activity habits and the types of food people eat suggest that people attend to information about others' health choices and form global impressions of individuals based on these everyday health habits, not just traditionally stigmatized habits such as cigarette smoking and alcohol consumption. For example, a great deal of experimental research shows that conveying a target as physically active improves perceptions of the target across a wide range of appearance and personality traits (Ginis, Latimer, & Jung, 2003; Greenlees, Webb, Hall, & Manley, 2007; Mack, 2003; Martin, Sinden, & Fleming, 2000; Rodgers, Hall, Wilson, & Berry, 2009). The studies all used a similar between-subjects design, originated by Martin et al. (2000), in which a target was described in a brief vignette and portrayed as physically active (exerciser), inactive (nonexerciser), or no physical activity information was provided. Participants then rated the target on a variety of appearance dimensions and personality traits. Martin et al. found that the exerciser was rated more favorably than the nonexerciser (and the neutral target on most traits) on 11 of 12 personality traits (e.g., confidence, self-control, "works hard," intelligence, sociability), with the only exception being the "mean/kind" dimension. Mack (2003) found virtually identical results, and other studies with slight modifications to the paradigm likewise replicated these findings. Physical activity information has such a powerful effect on impression formation that, in a similar vignette study, portraying an older individual as physically active greatly improved participants' perceptions of them across a range of traits, suggesting that physical activity combats negative stereotypes of older adults (Greenlees et al., 2007). Moreover, even people who are nonexercisers and report no intention to start exercising positively stereotype exercisers, and they do so to the same degree as

exercisers (Rodgers et al., 2009). Interestingly, these studies show no difference for target gender, which indicates that men and women benefit equally from being perceived as physically active. In sum, all of these studies suggest that in the U.S., physical activity is viewed highly positively and makes a person seem more hard-working, confident, sociable and successful in life.

Dietary habits. Perceptions of others' dietary choices, although an understudied phenomenon (Vartanian, Herman, & Polivy, 2007), appear to affect impression formation and even moral judgments of others. Steim and Nemeroff (1995) presented participants with a vignette description of a target (either male or female) and varied whether the target was described as regularly eating healthy or unhealthy food. The target was described as being physically fit and a regular exerciser so that participants would not assume that the target with the poor diet was overweight. They found that the healthy eater, regardless of gender, was rated higher on a measure of morality (e.g., tolerant, ethical, kind-hearted) than the unhealthy eater. The effect of diet information on moral judgment was only partially explained by a halo effect. A path model showed that endorsement of the protestant work ethic and belief in a principle of "you are what you eat" (i.e., through the law of magical contagion, food purifies or contaminates the body) had stronger effects on morality ratings than the halo effect. These results make sense in light of research showing that, compared to other countries such as Japan, Belgium and France, Americans are most likely to associate food with health, and least likely to associate food with pleasure (Rozin, Fischler, Imada, Sarubin, & Wrzesniewski, 1999). As reported in Vartanian et al.'s (2007) review of food consumption stereotypes, Mooney and Amico (2000) similarly found that a target described as eating a healthy lunch was rated as more moral compared to the unhealthy-lunch target. Oakes and Slotterback (2004-2005) found that a person

described as eating a regular breakfast of oatmeal was judged more positively overall compared to a person described as regularly eating pie for breakfast, though s/he was also rated as less humorous and more boring. The female target was judged particularly harshly for poor eating, receiving lower scores on likability, healthiness, and athleticism compared to her pie-eating male counterpart. Interestingly, Barker, Tandy, and Stookey (1999) found that healthy eaters (low-fat dieters) were more likely to make positive judgments of fellow healthy eaters compared to the unhealthy-diet participants (classified as high-fat dieters). Compared to healthy-diet participants, unhealthy-diet participants made more positive judgments of unhealthy-diet targets, rating them higher on the traits of "happy" and "fun-loving." This suggests that research should consider the role of participants' own diets when examining their judgments of others, even though this was not the case in studies of perceptions of exercisers. Overall, the literature indicates that people do tend to attribute positive personality traits and even moral virtue to those perceived as healthy eaters, but healthy eating may also make the person seem less fun or socially desirable in certain situations (Vartanian et al., 2007).

Inferences about health effort, psychological well-being, and attractiveness. Health behaviors may convey information to others about a person's psychological well-being (Hodgins, 1992), and conversely, desirable characteristics such as attractiveness and future orientation may convey information about health (Bertoldo, Guignard, Dany, & Apostolidis, 2017). Hodgins (1992) found that a target described as physically fit was perceived to be much higher on traits indicating psychological well-being (e.g., "feels good about life," "feels they are accepted by others") compared to an unfit target. The relationship also appears to work in reverse. A recent study found that a physically attractive target was judged as being healthier and engaging in more positive health behaviors compared to an unattractive target (Bertoldo et al.,

2017). Additionally, a target ostensibly high on future time perspective (a socially desirable trait suggesting an ability to plan and exhibit self-control to achieve goals) was judged as being healthier and engaging in more positive health behaviors compared to a target perceived as low on future time perspective (Bertoldo et al., 2017). Even describing an average-weight individual as making a high effort to live a healthy lifestyle through exercise and diet, with no mention of weight loss, can have a strong effect on a variety of traits, including competence (Beames et al., 2016). Taken together, person perception studies indicate that physical activity and diet information can profoundly affect the impressions we form of others. In some cases, these behaviors may even affect perceptions of an individual's moral character (e.g., Stein & Nemeroff, 1995).

Perceptions of Health Conditions

Diseases linked to smoking, drugs and alcohol. Stemming from the stigmatization of certain health-related behaviors, some diseases are stigmatized by lay people and health professionals alike. Lung cancer, for example, is highly stigmatized due to its association with cigarette smoking (Bresnahan, Silk, & Zhuang, 2013; Gulyn & Youssef, 2010; Lebel & Devins, 2008). Experimental research confirms that people make negative attributions about smokers diagnosed with lung cancer (Bresnahan et al., 2013). Health professionals similarly hold negative attitudes toward patients who engaged in behavior that contributed to their disease, especially in the case of lung cancer (Marteau & Riordan, 1992; Wassenaar et al., 2007). In hypothetical scenarios, people allocate fewer organ transplants (a scarce resource) to individuals described as having a current or former history of a negative health behavior (e.g., alcohol misuse, illicit drug use), even when those individuals are described as having a higher chance of transplant success than another eligible recipient (Rodrigue, Hoffman, Park, & Sears, 1998; Ubel, Baron, & Asch,

1999). A nationally representative survey conducted in Great Britain found that, when forced to select individual recipients from a group of hypothetical cases, the general public prioritizes patient age and prospective outcomes, and largely disapproves of providing organ transplants to people who contributed to their liver failure (Neuberger, Adams, MacMaster, Maidment, & Speed, 1998). Only a small percentage (17%) of the public, for example, included a former drug user, whose behavior led to liver disease but has since been sober for nearly two decades, in their list of preferred liver transplant recipients.

Weight stigma. Overweight and obesity likewise rank highly among stigmatized health conditions that are connected to individual behavior. Recent nationally representative surveys in the U.S., U.K., and Germany confirm that in the general public, personal responsibility attributions for obesity rival those for alcohol and tobacco dependence, and attributing greater personal responsibility predicts the extent to which people desire to have obese individuals bear the costs of their own weight-related treatment (Mata & Hertwig, 2018). Weight is often perceived as a controllable attribute that many people perceive to be caused primarily by factors such as dietary and physical activity habits and lack of willpower/self-control (Allison, Basile, & Yuker, 1991; Joslyn & Haider-Markel, 2019). The belief that obesity is controllable is strongly linked to negative judgments and stereotyping of obese people (e.g., Allison, Basile, & Yuker, 1991; Crandall, 1994; Luck-Sikorski, Riedel-Heller, & Phelan, 2017). In contrast, genetic attributions for obesity are strongly linked to sympathy and lack of anger toward obese individuals as well as opposition to discriminatory policies (Joslyn & Haider-Markel, 2019). Perceived effort to lose weight appears to be central to both holding and easing negative judgments of obese individuals, as experimental research demonstrates that obese individuals are judged more favorably when they are described as engaging in effortful diet and exercise

(Beames, Black, & Vartanian, 2016). As long as effort is apparent, negative impressions are mitigated regardless of whether the individual is successful in losing weight (Beames et al., 2016; Black, Sokol, & Vartanian, 2014).

Individuals with obesity contend with stigma, and its detrimental consequences, in a number of domains. Obese individuals are more likely to experience greater stress and disordered eating (Tomiyama, 2014), depression (Luppino et al., 2010), bullying (Puhl & Latner, 2007), interpersonal discrimination (Carr & Friedman, 2005), and discrimination in areas such as employment (Rudolph, Wells, Weller, & Baltes, 2009) and healthcare (Hebl & Xu, 2001; Puhl & Brownell, 2006). Weight stigma in healthcare settings is particularly important to highlight in the context of the present research on moralized health attitudes. Physicians' perceptions of obese patients tend to be more negative across many health and personal character attributes, and physicians report lower expectations that obese patients would comply with medical advice (Bertakis & Azari, 2005; Hebl & Xu, 2001). Negative implicit and explicit attitudes are frequently found even among obesity specialists who presumably have a high degree of knowledge about obesity and work with obese patients on a regular basis (Tomiyama et al., 2015). Physicians may also diverge from patients in their perceptions of the causes of obesity, as research suggests that physicians consider eating habits to be the primary cause of (and solution to) obesity, while patients are more likely to see external causes such as hormones, metabolism, stress, and financial problems as causes of obesity (Ogden et al., 2003). Other groups are also vulnerable to stigma from healthcare providers. Van Ryn and Burke (2000) found that, when responding to hypothetical descriptions of patients, physicians perceived African Americans and low SES patients more negatively, and expected them to adhere less to medical advice, than White and higher SES patients. Findings like that raise concerns that patients may face even

greater stigma and lower quality care when they possess multiple stigmatized identities in the form of race and obesity.

Overweight and obese adults in the U.S. report that family members and physicians are the most frequent source of weight bias experiences (Puhl & Brownell, 2006). Anticipation and perception of worse care from providers (in addition to actual differences in quality of care) could lead to many negative outcomes, such as delay or avoidance of important medical care for fear of experiencing stigma (Mensinger, Tylka, & Calamari, 2017; Olson, Schumaker, & Yawn, 1994), and feeling less trust in physicians and subsequently less motivation to follow their advice.

Belief in a just world. Studies on the just world hypothesis shed light on responsibility and blame attributions in health contexts. The just world hypothesis (Lerner, 1965) states that people have a need to believe that the world is a fair place, which motivates people to believe that individuals deserve their life outcomes, such that good people (or good behavior) are rewarded and bad people (bad behavior) are punished. In this way, a just world ideology serves a protective effect by making an individual feel like nothing bad will happen to them if they refrain from any wrongdoing. People vary in the degree to which they subscribe to this ideology. For instance, religious individuals and political conservatives are more likely to believe in a just world than their liberal counterparts (Rubin & Peplau, 1975). A just world ideology often leads to victim derogation due to the belief that victims of bad events are blameworthy for those outcomes. Hence, research has found that belief in a just world is associated with greater blame of gay AIDS victims (Anderson, 1992; Connors & Heave, 1990) and people with obesity and eating disorders (Ebneter, Latner, & O'Brien, 2011).

Overall, there is a long track record in the U.S. of people attributing responsibility and blame to individuals who engage in poor health behaviors or who develop a preventable disease (Leichter, 2003; Lundell, Niederdeppe, & Clarke, 2013; Mata & Hertwig, 2018). As more becomes understood and communicated to the public about the causes of different diseases, might health-supporting behaviors, from physical activity and diet to preventive and genetic testing, become moralized? Will chronic diseases connected to ostensibly controllable behaviors become more stigmatized over time? These are some of the important questions for future research as people's increasing knowledge, control, and concern over health may lead to increased stigma and the many social and health consequences that can stem from health-related stigma.

Morality

Moral culpability and blame. How do people make moral judgment such as responsibility and blame? Some research suggests that the process flows from evaluations of causal controllability to responsibility and finally to assignment of blame (Mantler, Schellenberg, & Page, 2003; Shaver, 1985). First, the perceiver determines whether an agent had control over and caused the action in question. Assignment of responsibility can be more complex, involving judgments of the agent's intentions, the foreseeability of the outcome, the agent's free will and capacity to understand right from wrong, as well as the circumstances involved. For example, if a person kills an intruder out of self-defense, they would likely be judged as intentionally causing a harmful outcome, but the circumstances may mitigate perceivers' judgments of the person's responsibility (and by extension, blame). After the determination of controllability and responsibility, blame is assigned, and is often influenced by the perceiver's personal values and their beliefs about what the agent ought to have done under the circumstances (Alicke et al.,

2011). Blame can be decreased depending on whether excuses or justifications are taken into account. For example, a woman guilty of killing her husband could be found responsible for the action, but the perceiver may assign less blame if they were to learn that the woman had been previously abused by her husband (Mantler et al., 2003).

Heuristics, motivations, and values can bias this seemingly rational process at any one of these stages (Alicke, 1992, 2000; Alicke, Rose, & Bloom, 2011; Ditto, Pizarro, & Tannenbaum, 2009; Weiner, 1995). Alicke's (1992, 2000; Alicke et al., 2011) Culpable Control Model of Blame (CCM) posits that spontaneous evaluations of the agent and the outcome can affect judgments of various elements that ultimately lead to increased or reduced blame. These include judgments of the controllability of the outcome, the agent's intentionality, whether the agent was negligent or should have foreseen the negative outcome, and the situational factors or personal incapacities that could potentially mitigate blame. When individuals have a preferred judgment (e.g., they like or dislike the person responsible for the outcome in question), they tend to act more like an attorney, interpreting evidence in ways that fit their preferred conclusion, as opposed to acting like an objective judge motivated to examine all the facts (Ditto et al., 2009). For example, when people view a behavior as morally wrong, they are more likely to state that the agent acted intentionally (Knobe, 2003). Similarly, when an outcome is viewed as morally wrong, people are more likely to believe that the agent foresaw the negative effects of their behavior (Ditto et al., 2009). Intentionality judgments can also be influenced by an agent's perceived control in a situation, with greater perceived control over a negative outcome leading to greater judgments of the agent's intention to cause harm and more negative judgments of the agent's moral character (Martin & Cushman, 2016). However, this research also demonstrates that when a harmful outcome occurs completely accidentally and in spite of the agent's best

intentions, an agent perceived as having greater control over their actions is not perceived as having stronger intentions to cause harm, but is perceived as being more causally responsible for the negative outcome, which results in people opting to punish the agent more compared to an agent with less control. Thus, blame and punishment do not require perceptions of an agent's harmful intent, but rather appear to be linked more to judgments of the agent's control (and by extension, causal responsibility), whereas moral character judgments are more strongly linked to intention (Martin & Cushman, 2016). Blame is also particularly likely to occur if the perceiver has a strong negative reaction to the agent or if the outcome is especially severe, such as involving significant harm to others (Alicke, 1992; 2000).

In the context of health-related stigmas, perceivers' impressions of onset and offset controllability for a stigmatized condition, as well as the agent's effort to improve the condition, strongly influence judgments of responsibility and affective reactions to the agent (Brickman et al., 1982; Karasawa, 1991; Weiner, 1993, 1995; Weiner et al., 1988). Onset controllability is the extent to which a condition is controllable and could have been prevented, whereas offset controllability refers to whether the agent has the ability to improve or solve the problem/condition. Weiner's (1993) theory of perceived responsibility and social motivation states that people with stigmas perceived as onset-controllable (e.g., obesity) elicit moral condemnation in the form of strong attributions of responsibility as well as negative affective reactions such as higher anger and lower sympathy. The perceived offset controllability of the condition and the amount of effort the individual expends also influence judgments of responsibility and affective reactions (Beames, Black, & Vartanian, 2016; Karasawa, 1991). Karasawa (1991) found that when an individual exerted effort to improve their situation or it was made clear that they had no ability to exert effort (due to illness), participants rated the individual

as being less responsible for their predicament, and felt less anger and more pity towards the person. Beames et al. (2016) found that an obese person described as exerting high effort to lose weight elicited more sympathy and less anger and disgust compared to the low effort person, regardless of the initial onset controllability. Some studies suggest that even nurses and physicians are vulnerable to negative judgments and decreased sympathy for patients perceived to have caused their condition and for those who do not exert effort to improve their health (Hill, 2010). It may be that, in the health domain, blame depends more on judgments of the patient's causal responsibility than on perceptions of intention. Although more research is needed, it is plausible that people recognize the role of control but do not infer that individuals *intend* to develop a chronic disease, for instance. Moral judgments in the form of blame and punishment could still occur in these cases, as demonstrated through research showing that judgments of punishment and blame are fundamentally tied to a person's perceived causal control over a harmful outcome rather than whether the person intended for the harmful outcome to occur (Martin & Cushman, 2016). Taken together, research demonstrates that attributions of responsibility and blame hinge on perceptions of an agent's control and effort, which are both highly relevant to evaluations of health behaviors and medical conditions.

There are also individual differences in the tendency to moralize behavior and blame others for negative outcomes, most notably the difference between political conservatives and liberals. Conservatives tend to moralize issues and behavior more than liberals, even issues or actions that would be considered nonpolitical (Everett, Clark et al., 2020). This research also finds that increased moralization explains why conservatives tend to report stronger free will beliefs than liberals. Free will attributions serve to justify blame of individuals for bad behavior, and thus a stronger tendency to blame, which is seen more often among conservatives than

liberals, inspires stronger free will attributions in these scenarios. Conservative thinking also emphasizes the importance of personal responsibility to a greater extent than liberal ideology (Carey & Paulhus, 2013; Skitka et al., 2002). These findings help to explain why conservatism is consistently associated with antifat attitudes (Crandall, 1994) and moralized attitudes toward obesity (Ringel & Ditto, 2019). Thus, conservatism could be expected to correlate positively with health moralization in the present research, as well as judgments of responsibility and blame for health conditions.

Work ethic ideology, perceived effort, and moral judgments. Max Weber (1958/1905) introduced the notion of the Protestant work ethic (PWE) to explain elements of Protestantism that may have contributed to the success of capitalism by imbuing economic pursuits with religion and morality. Researchers have since studied PWE not so much as a religious phenomenon but as a cultural ideology that effectively moralizes hard work and individualism, and promotes the belief that hard work leads to success (Christopher, Zabel, Jones, & Marek, 2008; Feather, 1984; Giorgi & Marsh, 1990; Joffe & Stearkle, 2007; Mirels & Garrett, 1971). Although the widely used PWE scale by Mirels and Garrett (1971) treats PWE as a unidimensional construct, more recent research suggests it is multidimensional (e.g., McHoskey, 1994). McHoskey's (1994) factor analysis indicates that PWE is composed of four factors: beliefs about success, benefits of asceticism (i.e., valuing seriousness and productivity), benefits of hard work, and anti-leisure (i.e., disliking or placing less value on leisure/relaxation). This has since been expanded to include other theorized aspects of PWE, namely, delay of gratification, self-reliance, and morality (Miller, Woehr, & Hudspeth, 2002). PWE has often been conceptualized as a personality variable, and has been found to be positively associated with constructs such as political conservatism (Feather, 1984), authoritarianism (Christopher et al.,

2008; Mirels & Garrett, 1971), just world beliefs and social dominance orientation (Christopher et al., 2008), and conscientiousness (Miller et al., 2002).

More importantly for the purposes of the present research, the ethos of PWE permeates Western culture and has significant implications for stereotypes and moral character judgments (Joffe & Stearkle, 2007). As Joffe and Stearkle (2007) argue, the value placed on self-control and self-restraint in the contemporary West helps to explain why so much stereotyping and prejudice concerns control over physical bodies, mental well-being, and destiny. For example, obese people are stigmatized as lacking self-control, and higher endorsement of PWE predicts greater stigmatization of obesity (Crandall, 1994). People on welfare are stigmatized for having a lack of control over their destiny and are stereotyped as having a weak work ethic (Cozzarelli, Wilkinson, & Tagler, 2001). The confluence of poverty and poor health (e.g., obesity) may exacerbate negative perceptions of such individuals (Joffee & Stearkle, 2007). Overall, the perceived lack of self-control and effort, particularly in a society that valorizes control and hard work, is a significant source of prejudice toward people belonging to certain groups or engaging in stigmatized behaviors.

Attitude moralization. People hold attitudes that vary in numerous ways, including strength and the degree to which they predict behavior (Krosnick & Petty, 1995). For example, a person may hold a negative attitude toward broccoli, but that kind of attitude is very different from a negative attitude toward abortion. Part of the difference lies in the strength of the attitude. Attitude strength encompasses many dimensions, including how extreme it is, the certainty with which it is held, its subjective importance to the individual, and its centrality to an individual's self-concept (Krosnick & Petty, 1995). Strong attitudes also show greater attitude-behavior correspondence than weak attitudes (Krosnick & Petty, 1995).

In the past two decades, there has been a growing interest among social psychologists in moral attitudes, as distinct from strong nonmoral attitudes. An attitude is a favorable or unfavorable evaluation of an attitude object (Eagly & Chaiken, 1993), whereas a moral attitude goes beyond a positive or negative evaluation by framing it in terms of right or wrong, moral or immoral (Rozin, 1999; Skitka, 2010). Moral attitudes have unique characteristics that distinguish them from nonmoral attitudes, making them important phenomena to study (Skitka, 2010). Other aspects of attitude strength, such as extremity and importance, cannot fully account for the effects of moral attitudes on behavior, suggesting that they are indeed distinct from other attitude characteristics (Skitka, Bauman, & Sargis, 2005; Skitka, 2010). A moralized attitude is experienced not as a subjective preference but as a self-evident, objective standard (i.e., perceived as factually true) and perceived to be applicable to everyone. Moralized attitudes are also associated with more intense emotions than nonmoral attitudes, such as disgust, anger, and guilt (Skitka, 2010). Furthermore, moral attitudes convey both motivation and justification for action. They imply what an individual ought or ought not to do, thereby motivating behavior in a particular direction, and justify behavior precisely because an action is deemed moral or immoral (Skitka, 2010).

How does an attitude become moralized? Multiple processes have been suggested and, thus far, the answer to this question is far from definitive (Skitka, Wisneski, & Brandt, 2018). Haidt's (2001) social intuitionist model of moral judgment posits that moralization stems from intuitive emotions and need not be a conscious process. In other words, people could moralize an issue based on the emotions they associate with it, even if they were unaware of the source of those emotions, and any conscious reasons they may give for their moral judgments are merely post hoc constructions. Although some research demonstrates that moral judgments are

strengthened by induction of incidental emotions (e.g., experiencing a disgusting smell unrelated to the moral issue at hand), there is little evidence to suggest that attitude moralization can arise from only incidental emotion (Landy & Goodwin, 2015; Skitka et al., 2018). Other theories posit that both strong emotional responses to an issue (i.e., integral emotions) and more deliberative reasoning about harm lead to moralization (e.g., Gray, Young, & Waytz, 2012; Horberg, Oveis, & Keltner, 2011). However, recent research suggests that discrete emotions tied to a particular attitude object are responsible for moralization, and perceived harm may not be necessary for this process to occur (Brandt, Wisneski, & Skitka, 2015; Wisneski & Skitka, 2017). The studies found that strong issue-relevant emotions were associated with increased moralization, but not perceptions of harm or incidental emotions. More research is needed, though, to confidently state that perceptions of harm are not necessary for moralization, or the stronger claim that harm perceptions are neither necessary nor sufficient for moralization to occur.

At the group level, Rozin (1999) contends that many societal factors serve to create and amplify the moralization of an issue. Smoking and other behaviors become ripe for moralization once they become associated with harm to society, as well as with devalued social groups such as racial minorities and low-income individuals (Rozin, 1999). Other events are also predicted to occur as a behavior becomes moralized, including increased disgust reactions to the behavior, widespread social condemnation and surveillance of the behavior, and government sanctions and institutional support for eradicating the moralized behavior. Disgust, for example, is strongly evident in attitudes toward cigarettes (Rozin & Singh, 1999) and obesity (Ringel & Ditto, 2019; Vartanian, 2010). Societal condemnation of smoking (Helweg-Larsen, 2014; Kim & Shanahan, 2003) and obesity (Puhl et al., 2015; Vartanian, Thomas, & Vanman, 2013) is widely evident. Government policies and medical and academic institutions have largely served to reduce and

condemn cigarette smoking, and advocate for personal responsibility in the form of changes to physical activity and dietary choices to combat obesity and many associated diseases (Alemanno & Garde, 2013; Leichter, 2003).

Moral attitudes have unique implications for behavior that distinguish them from nonmoral attitudes. Experimental studies show that construing an attitude as moral increases the speed and extremity of people's evaluations of others' behavior, as well as universal prescriptions for behavior (van Bavel, Packer, Haas, & Cunningham, 2012). For example, van Bavel et al. (2012) presented participants with questions about a variety of actions (e.g., whether the participant should study or not), and varied whether they were asked to make a moral or pragmatic judgment about the action. Compared to pragmatic judgments, moral judgments led to faster and more universal prescriptions for behavior. For example, in response to the question "how many other people should study" (with possible responses ranging from nobody to everybody), participants who first made moral judgments of the behavior were more likely to say that everybody should study. Other experimental work has demonstrated that moral attitudes are more resistant to persuasion and show stronger attitude-behavior correspondence than nonmoral attitudes (Luttrell, Petty, Briñol, & Wagner, 2016).

People who hold moral attitudes also show greater intolerance of those who disagree with them on a moralized issue and desire greater distance from attitudinally dissimilar others (Skitka et al., 2005). Relatedly, perceiving a high social consensus for one's moral view (i.e., feeling like everyone agrees with you) leads to a stronger perception of the moral attitude as objectively true, and perceived objectivity leads to more negative moral judgments of attitudinally dissimilar others (Goodwin & Darley, 2012).

Moralized attitudes can also have beneficial consequences, by motivating people to engage in a positive, moralized behavior. For example, research suggests that the theory of planned behavior (TPB; Ajzen, 1991), which is commonly used to predict health intentions and behaviors, would benefit from the addition of two constructs: anticipated affect and moral norms (Manstead, 2000; Rivis, Sheeran, & Armitage, 2009). Anticipated affect is usually operationalized in health studies as the degree to which a person anticipates feeling negative affect such as regret, shame or guilt, although some studies also measure anticipated positive affect such as pride (Rivis et al., 2009). A moral norm has been conceptualized in different studies as how morally right or wrong a behavior is perceived to be and/or a sense of moral obligation to perform a behavior. Although these constructs share similarities, given that certain types of affect may reflect moral norms, Rivis et al.'s (2009) meta-analysis found that they correlate only modestly (r = .31) and exert independent effects on behavioral intentions. The few health behavior studies that have included a moral norm measure have found that a moral norm predicts greater behavioral intentions after accounting for the effects of other TPB variables (Godin, Conner, & Sheeran, 2005; Jackson, Smith, & Conner, 2003; Lechner, de Vries, & Offermans, 1997). Although more research is needed, the studies to date suggest that some people may benefit from holding moralized attitudes towards their own health behaviors. In sum, as moralization has many consequences for cognition and behavior, the moralization of health attitudes can be expected to have important implications for judgments, attitudes, and behavior in a number of areas.

Morality and Health

A constellation of factors may combine to imbue everyday health behaviors, as well as chronic conditions connected to those behaviors, with moral significance. Physical activity and

diet, along with use of substances such as alcohol and tobacco, have clear connections to health outcomes (Sagner et al., 2014; World Health Organization, 2002), and public messages connecting individual behavior with health outcomes are widespread (Gupta & Sinha, 2010; Leichter, 2003). These messages, along with people's subjective experiences with health behavior choices and weight change (Geier, Schwartz, & Brownell, 2003), perpetually reinforce the sense that health protective behaviors are a matter of personal choice and chronic health conditions are avoidable outcomes. Taken together, it is no wonder that attributions of personal responsibility for health in general (Traina, Martinussen, & Feiring, 2019) as well as conditions such as obesity and alcohol and tobacco dependence (Mata & Hertwig, 2018; Robert & Booske, 2011) are consistently high.

People also tend to associate certain negative health behaviors (e.g., substance abuse, physical inactivity, overeating) with laziness or lack of self-control, which are associated with perceptions of low competence (Fiske, Cuddy, Glick, & Xu, 2002; Levine & Schweitzer, 2015). These associations are found in the other direction as well, such as the association of physical activity and healthy diet with a variety of positive personality traits that fall along warmth and competence dimensions (e.g., Martin et al., 2001; Stein & Nemeroff, 1995). Studies on perceptions of groups such as people with obesity (see Puhl & Heuer, 2009 for a review) indicate that perceptions of related traits such as laziness and lack of self-control create an overall negative impression—spanning warmth and competence dimensions of the Stereotype Content Model (Fiske et al., 2002)—and elicit strong negative emotions such as disgust and contempt (Levine & Schweitzer, 2015; Vartanian, 2010). It may follow that, given the negative overall impressions created by a perceived lack of effort, impressions of moral character also suffer,

particularly in domains in which traits indicative of conscientiousness are highly desired (Cohen & Morse, 2014).

As Rozin (1999) argues, factors such as a behavior's association with harm to society and prevalence among stigmatized groups also make moralization more likely to occur, and both of these factors are relevant in the health domain. The four most commonly cited individual behaviors connected to the most prevalent and costly chronic diseases are alcohol and tobacco use/dependence, physical inactivity, and poor diet (Lim et al., 2012; Sagner et al., 2014). Thus, these behaviors, and the many health conditions causally linked to them, contribute greatly to the overall disease burden in society, fulfilling the 'harm to society' component of moralization. In essence, moral attitudes toward health are strengthened and justified when health behaviors are viewed not only as impacting the individual but as harming innocent others (Täuber, 2018). Furthermore, the four major health behaviors are disproportionately prevalent among lower income individuals (Pepper & Nettle, 2017) and, with the exception of alcohol consumption in some groups, racial and ethnic minorities (Dressler, Oths, & Gravlee, 2005), who also face higher rates of associated diseases such as heart disease, diabetes, and obesity. In sum, perceived control over a negative outcome, association of certain behaviors with good or bad traits and moral character, association of individual outcomes with harm to the larger society, and association with devalued social identities, all increase the likelihood that a moralized view of health would develop among many individuals in the U.S. and other countries with similar factors present.

Moral attitudes have already been documented in the case of obesity (Ringel & Ditto, 2019). A measure of obesity attitude moralization was created, and across several studies there was considerable variation in the degree to which people endorse a moral view of obesity, with

over 30% of participants in each sample scoring above the neutral midpoint of the scale. High moralizers were more likely to be politically conservative, male, have a lower body weight, and endorse PWE values. The studies also revealed that people with moralized views of obesity reported stronger control attributions and disgust towards people with obesity, greater support for discrimination against people with obesity, exaggeration of the negative consequences of obesity, greater resistance to attitude change, and more negative judgments of individuals who choose bariatric surgery for weight loss (as this can be perceived as requiring insufficient personal effort). Moralized obesity attitudes were thus interpreted as having important interpersonal consequences. Given all the reasons that health more generally may come to be viewed as a moral issue rather than simply a matter of individual preference, as well as the evidence for moralized attitudes toward obesity, the present research investigates the moralization of health as a meaningful individual difference with unique motivational and interpersonal implications.

Overview of Studies

This dissertation argues that, although a generally individualistic view of health pervades American society, the extent to which people endorse a moral view of health is an important individual difference that is not adequately captured by existing measures of moral or health attitudes. In this research, a moral view of health is defined in terms of judgments of controllable behavior, including both the moral virtue of healthy behaviors and the moral vice of unhealthy behaviors, as the perceived controllability of health behavior is theorized to be crucial to moral judgments in this domain. The present studies investigate the extent to which individuals differ in their endorsement of a moral view of health, the extent to which a moral view differs from the personal importance people attach to their own health, correlates of moralized health attitudes,

and certain proposed consequences of health moralization. While there are numerous questions to pursue on this topic, both theoretical and applied, this dissertation focuses on the measurement of health moralization as an individual difference. I explore its associations with theoretically related measures and investigate health moralization as a predictor of perceived controllability of health conditions, interpersonal judgments, and healthcare policy views. The present research focuses on these particular consequences, as opposed to others, because many of the concerns surrounding the negative effects of health moralization stem from its proposed interpersonal consequences. However, to begin addressing the potential positive side of health moralization, this research explores its associations with self-reported health status and health behaviors.

Two scales were developed, which distinguish between a moral view of health and the personal importance people attach to health so that the moral component of health attitudes was isolated as a predictor. This analytical strategy was modeled on research by Ståhl, Zaal, and Skitka (2016), in which targeted measures were developed to distinguish a moralized attitude toward rationality from the personal importance of rationality. Studies 1 and 2 focused primarily on scale development. In Study 1, a large pool of items was developed to create the moralization of health (MH) and personal importance of health (PIH) scales, and exploratory and confirmatory factor analyses were conducted to verify the expected two-factor structure and reduce the number of scale items. The scales were also tested for discriminant validity based on correlations with certain moral foundations and the five-factor personality traits. The scales were further refined in Study 2, and expected correlates of the health scales were assessed, including various health and demographic variables, and attitudinal constructs such as the Protestant work ethic and belief in a just world. Study 2 also served to establish that people who moralize health

see a wide range of health conditions as more preventable compared to people who do not endorse a moral view of health.

Studies 3 and 4 continued to evaluate the scales but focused primarily on health moralization as a unique predictor. Study 3 investigated whether health moralization uniquely predicts a variety of healthcare policy views, including policies that penalize people for preventable chronic conditions by assigning them greater healthcare costs. Moral attitudes have been found to predict policy views (Graham et al., 2011; Skitka & Bauman, 2008) and support of punishing those who engage in an undesirable moralized behavior (Carlsmith, Darley, & Robinson, 2002; Delton, Nemirow, Robertson, Cimino, Cosmides, 2013; Täuber, 2018). Study 3 thereby sought to demonstrate that health moralization has broader implications for public policy, beyond the influence of other predictors such as political conservatism. Study 4 tested whether people who moralize health, compared to nonmoralizers, judge an individual who develops a chronic health condition (heart disease or skin cancer, as both tend to be viewed as moderately preventable through individual behavior) as more negligent and blameworthy for their condition. It also tested whether those judgments differed depending on whether the individual was described as having higher or lower resources (in the form of having a college education and health insurance). The individual's realistic ability (high vs. low) to engage in preventive behaviors was manipulated because little is known about the extent to which people who moralize health modify their judgments of others based on a person's situational constraints, such as having fewer means to take care of their health. Thus, this study represents an important first step toward understanding the degree to which moralization is associated with strong blame and other judgments of individuals with and without situational constraints on good health behavior.

Summary of Hypotheses

Study 1. Although several aspects of Study 1 were considered exploratory, certain outcomes were hypothesized. The moralization and personal importance items were predicted to load on separate factors, creating a clear two factor structure that distinguished between moralization and personal importance. Based on past correlations observed for obesity moralization, as well as theoretical reasons, MH was hypothesized to correlate significantly and positively with political conservatism and the binding moral foundations of the Moral Foundations Questionnaire (Graham et al., 2011), particularly the purity foundation. PIH was hypothesized to correlate significantly and positively with self-rated health and health effort. Other correlational analyses were regarded as exploratory, such as those between the MH and PIH scales and the big five personality traits.

Study 2. Study 2 featured a number of hypotheses about the correlations expected between MH, PIH, and theoretically related measures. Based on the correlations from Study 1, as well as prior research on moral norms for personal health behavior, it was hypothesized that small, positive correlations would emerge between MH and health effort, self-rated health, and measures of actual health behaviors, and a negative correlation with smoking. MH was expected to have a small to moderate negative association with endorsement of chance health Locus of Control (LOC), which measures the belief that one's health is mostly due to chance or fate, as people who moralize health more strongly would be expected to believe more strongly that health is controllable. MH was hypothesized to correlate positively and moderately with measures related to control over health and a belief in the value of hard work, thereby demonstrating convergent validity of MH. These included perceived preventability of health

problems, an internal health LOC, antifat attitudes, Protestant work ethic, and global belief in a just world.

Based on the results of Study 1, PIH was predicted to correlate positively and moderately with health effort and self-rated current health, and to correlate with self-reported healthy behaviors (diet quality, exercise, avoidance of smoking). Other hypothesized correlations with PIH included a positive association with internal health LOC, and negative association with chance LOC, reflecting the PIH scale's emphasis on personal engagement in and control over health behaviors. PIH was expected to have only weak or no correlations with some of the other attitudinal measures, however, as there was no theoretical reason to suspect that personal health importance is fundamentally related to these other attitudes.

Study 3. Study 3 focused largely on whether health moralization uniquely predicts a variety of healthcare policy views. The overarching hypothesis was that greater health moralization predicts greater endorsement of healthcare policies that penalize people who engage in poor health behavior (as measured with multiple criterion variables). More specifically, greater health moralization was hypothesized to predict assigning greater healthcare costs in the form of higher premiums and copays to people with poor health habits and giving lower priority on organ transplant lists to people who engaged in bad past health behavior. Health moralization was also hypothesized to be a stronger predictor of a favorable attitude toward a "stick" policy-approach to health insurance pricing (i.e., penalizing bad health behavior through premium increases) compared to a "carrot" policy approach (i.e., rewarding good health behavior through premium decreases). Study 3 also provided an opportunity to test the hypothesis that health moralization predicts stronger attributions of personal responsibility for common health conditions (as measured using the CDC's list of the top 12 leading causes of death in the U.S.).

Study 4. This study focused on health moralization as a predictor of interpersonal perceptions in the context of a vignette describing an individual who develops a preventable chronic health condition and possesses higher or lower resources to take care of their health. Greater moralization of health was hypothesized to predict attributing greater control, negligence, and blame to the vignette target. Health moralization was expected to demonstrate a small, or even no, relation to attributions of intention, as participants in general were expected to rate the individual low on intentionality. The individual was described as having relatively high or low resources, meaning that he either had a college education and a job that provided health insurance (high resources), or lacked a college education and did not have health insurance (low resources). It was hypothesized that the low resource individual would be rated lower on control, negligence, and blame compared to the high resource individual. Health moralization was also hypothesized to moderate the relation between resources and attributions of control, negligence, and blame, such that higher moralizers were expected to make strong attributions toward both the low and high resource individual (thus being relatively insensitive to the person's situational constraints) whereas low moralizers were expected to make much weaker attributions toward the low resource individual, and moderate attributions to the high resource individual.

Study 1

Overview

Study 1 was conducted to evaluate and refine two new measures created for the purposes of this research: the Moralization of Health (MH) and the Personal Importance of Health (PIH) scales. A pool of 33 face-valid items was created to capture moral views of health and personal importance of health, with the goal of using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to retain the items that most closely correspond to the underlying latent variables for the final versions of the scales. The moral items were intended to capture the moral virtues of putting effort into achieving good health and engagement in specific health behaviors, as well as the immorality of a lack of health effort and engagement in poor health behaviors. The personal importance items focused on the value participants place on their own health, health effort, and specific health behaviors, with four reverse-coded items representing the view that health and health effort are not personally important to the participant. As these are two constructs that are likely to overlap somewhat, separating a moralized view of health from the personal importance placed on health will allow future studies to better evaluate the unique influence of moralization on outcomes of interest.

As the main focus of this study was to refine the scales, analysis of their correlations with other constructs of interest was limited to demographic items, as well as moral foundations scores and the big five personality traits (for those participants who had already taken those questionnaires elsewhere on the website). Previous studies examining the correlations between a moralization of obesity measure and the Moral Foundations Questionnaire (MFQ; Graham et al., 2011) found positive, moderate correlations between obesity moralization and the binding foundations (authority, loyalty, purity), with the strongest association occurring for purity

(unpublished data; available upon request). Given those findings, as well as the expected correlation between health moralization and conservatism (which correlates strongly with the binding foundations), small-to-moderate, positive correlations between MH and the binding foundations were hypothesized. No hypotheses were formed about the relation between MH and the individualizing foundations, nor for PIH and the five moral foundations. Overall, however, the correlations between the MH and MFQ scales were expected to provide evidence that MH is a moral attitude that is sufficiently distinct from this prominent measure of moral values. Another measure of interest that visitors to YourMorals.org often complete is the Big Five Personality Inventory (John, Donahue, & Kentle, 1991). There was no theoretical reason to expect moderate or strong correlations between MH and the personality traits; nevertheless, this area is still exploratory, so no firm hypotheses were offered regarding MH and the five traits. It seemed more likely, based on inspection of the items comprising the health and personality scales, that MH would show discriminant validity with the big five personality traits but that PIH would correlate more strongly with conscientiousness, as health behavior and attitudes have been found in past research to correlate positively with conscientiousness (Bogg & Roberts, 2004). PIH was not expected to correlate strongly with the other four traits.

Method

Participants

Participants were visitors to YourMorals.org, a platform that hosts psychological surveys and studies that people can voluntarily take and then see how their results compare with other participants. The goals were to have a large enough sample to adequately test the scales, as a rule of thumb is to have at least 10 participants per item, and to have adequate power to detect small correlations ($r \geq .15$). A power analysis revealed that for a two-tailed test at the .05 significance

level and 80% power, a sample size of 343 participants was needed, slightly more than the 330 required for the scale. The intention was to recruit at least 400 participants, in anticipation of losing some participants in the analyses due to missing data, which tends to occur more often in YourMorals.org samples than in studies that use a survey platform (e.g., Qualtrics) equipped with features that decrease missing data. However, by the time recruitment was officially ended, a slightly larger sample size of $N = 480$ was achieved. The data were not examined prior to stopping data collection. The sample had a mean age of 39.51 years ($SD = 16.04$) after excluding 29 who did not provide their age. The sample consisted of 190 women, 266 men, 12 individuals who identified as gender non-binary, 6 who chose "decline to say," and 6 participants who were missing on gender. The majority of the sample identified as White (82%), with smaller percentages of participants identifying as Black (2%), Hispanic or Latinx (2%), Asian or Asian American (4%), multiracial (6%), or another race or ethnicity (3%), and 7 individuals missing on race/ethnicity. On a 10-point political orientation scale (with values 1 to 7 ranging from very liberal to very conservative), 54.8% of participants identified as liberal, 8.8% moderate, 14.5% conservative, 12.5% Libertarian, 8.6% as "not political" or "other," and 4 participants (0.8%) missing on this variable.

Procedure and Materials

Participants completed the Moralization of Health (MH) and Personal Importance of Health (PIH) scales, followed by some basic health and demographic items. The 17 MH items and 16 PIH items were mixed together with the order randomized (see the full item list in the Appendix, Table 1); they were measured on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Three MH items and four PIH items contained negative phrasing and were reverse-coded prior to analyses. Following the main scales, participants answered two items about effort and

current health status, which were derived from a national longitudinal health study (MIDUS II 2004-2006; Ryff et al., 2006). *Health effort* was measured as the self-reported effort put into being healthy, on a scale from 0 (no effort at all) to 10 (the maximum effort you could make). Participants were also asked to rate their *current health* on a scale from 0 (the worst possible) to 10 (the best possible). Participants generally reported being in good current health (M = 6.68, SD = 1.79) and exerting relatively strong effort to be healthy (M = 6.38, SD = 1.92). Although not contained within this study, the Moral Foundations Questionnaire (Graham et al., 2011) is completed by the majority of visitors to YourMorals.org; a subset of participants (n = 331) had moral foundation scores available that could be used to compute correlations with the MH and PIH scales. Similarly, the 44-item Big Five Inventory (John et al., 1991) is a popular survey on the website and 218 participants from the current study had personality scores available for analysis.

Results

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed on the MH and PIH scales. Although a CFA would not be truly "confirmatory" in a situation in which new scales are being tested, the scales were designed to have a clear two-factor structure, which means a CFA can provide further evidence in support of the two-factor structure and provide valuable information about model fit. For the EFA, given that some correlation between the scales was expected, Maximum Likelihood estimation with oblique rotation (direct oblimin) was used (see Appendix, Tables 2 and 3 for the full EFA results). After listwise deletion of cases that contained missing data on the MH and/or PIH scales, the EFA was

conducted on a reduced sample of $N = 417$.[1] Although four factors had eigenvalues greater than one, only the first 2 factors (representing MH and PIH, respectively) met all of the above requirements, and they accounted for 53.67% of the variance. As intended, the items that loaded on these two factors cleanly distinguished between moralization and personal importance of health. The two factors were moderately and positively correlated, $r = .33$. An EFA was then conducted with the model constrained to produce two factors, which resulted in all MH items loading together on one factor and all PIH items loading on the other factor. The criteria used for retaining items were that they had to load at .60 or above on the intended factor with no cross-loadings above .30 in order to be retained for the next study. Following the above criteria, 14 MH items and 11 PIH items qualified to be retained for further study; with only these items included, the MH and PIH scales had a correlation of $r = .35$.

A CFA with Maximum Likelihood estimation was used to fit the proposed two-factor model. CFA was first performed using all of the scale items, and then performed on the proposed 25-item version. Each model was then analyzed twice, so that Full-Information Maximum Likelihood estimation for missing data was used in one version ($N = 480$) and then analyzed again with cases that excluded cases with missing values ($N = 417$). The morality and personal importance items were loaded on separate factors (no cross-factor loadings were allowed), and the two factors were allowed to correlate. The error terms of reverse-coded items within the MH and PIH factors were allowed to correlate to correct for a method effect (Tomas & Oliver, 1999).

[1] To ensure that the reduced sample size did not disproportionately alter the results, another EFA was conducted following a multiple imputation method for handling missing data (UCLA Statistical Consulting Group). The EFA showed highly similar results to the original, with the only substantive difference being that under the multiple imputation method, MH item 7 (“a person’s morality is in no way related to their health behaviors”) would have been dropped due to falling slightly under the .60 loading criterion with a factor loading of .58.

To evaluate model fit, the following fit statistics were examined: Standardized Root Mean Square Residual (SRMR), Root Mean Squared Error of Approximation (RMSEA), Comparative Fit Index (CFI), and the Tucker-Lewis Index (TLI). Based on existing guidelines (Hu & Bentler, 1999), the proposed model is considered to fit the data well when SRMR ≤ .08, RMSEA ≤ .06, and CFI and TLI ≥ .95, and reasonably well when .08 > SRMR < .10, .06 < RMSEA < .08, and .90 < CFI and TLI < .95.

The CFA model with 33 items and missing values imputed fit the data reasonably well: χ^2 (485) = 1342.86, p < .001, RMSEA = 0.061, CFI = 0.919, and TLI = 0.911 (SRMR is not computed when missing values are estimated rather than excluded). The fit statistics were similar when this model was analyzed excluding cases with missing values: χ^2 (485) = 1250.46, p < .001, SRMR = 0.059, RMSEA = 0.062, CFI = 0.918, and TLI = 0.910.

The CFA model with 25 items and missing values imputed had an improved model fit: χ^2 (271) = 717.32, p < .001, RMSEA = 0.059, CFI = 0.952, and TLI = 0.947 (SRMR not computed). The fit statistics were similarly strong when this model was analyzed excluding cases with missing values: χ^2 (271) = 684.08, p < .001, SRMR = 0.047, RMSEA = 0.060, CFI = 0.951, and TLI = 0.946.

The 25-item model with missing values imputed was then analyzed separately for males and females to evaluate measurement invariance by gender. The criteria for measurement invariance ranges widely in the literature, but some report measuring it as the change in CFI and RMSEA values, with recommendations ranging from no more than .01 ΔCFI to no more than a .02 ΔCFI and .03 ΔRMSEA (Putnick & Bornstein, 2016). The model for men (n = 266) fit the data reasonably well: χ^2 (271) = 539.54, p < .001, RMSEA = 0.061, CFI = 0.952, and TLI = 0.946. The model for women (n = 200) fit the data reasonably well, though not quite as well as

the model for men: χ^2 (271) = 524.36, $p < .001$, RMSEA = 0.070, CFI = 0.927, and TLI = 0.919. Overall, the results suggest that men and women interpret the scales similarly, if using the ΔCFI $\leq$.02 and ΔRMSEA $\leq$.03 criteria.

Finally, the two-factor model was also compared to the most plausible alternative, a model in which all items (33) of the MH and PIH were explained by a single latent factor. Missing values were estimated in order to use the full dataset, and the error terms of the reverse-coded items were allowed to correlate. The single-factor model did not fit the data well: χ^2 (486) = 3808.38, $p < .001$, RMSEA = 0.119, CFI = 0.685, and TLI = 0.657. A Chi-square difference test comparing the two-factor model that was conducted initially to the single-factor model confirmed that the two-factor model fit the data significantly better, $\Delta\chi^2$ (1) = 2465.52, $p < .001$.

The 14-item MH and 11-item PIH scales had strong Cronbach's alpha reliability scores of .96 and .93, respectively. The MH scale was positively skewed with an adequate amount of variability and a mean of M = 3.10 (SD = 1.52). In contrast, the PIH scale was negatively skewed with somewhat less variability and a mean of M = 5.39 (SD = 1.17). Boxplots showing the variability of each scale are displayed below in Figure 1. Given this study's large sample size, which ensures that the sampling distribution of these variables will be normal, the skewed distributions are not considered problematic for subsequent analyses.

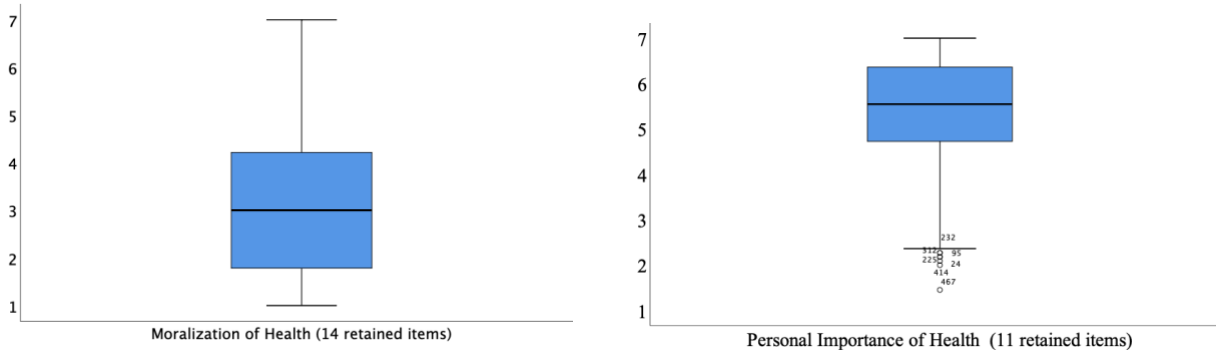

Figure 1. Boxplots displaying distributions of scores on MH and PIH scales (Study 1).

Next, the MH and PIH correlations with the other health and demographic variables were examined. MH correlated modestly with ratings of health effort (r = .18, p < .001) and current health (r = .17, p < .001), whereas PIH showed a strong correlation with health effort (r = .74, p < .001) and a moderate correlation with current health (r = .42, p < .001). These results suggest that scores on PIH are a better indicator of an individual's health than scores on MH. Among demographic items, MH correlated weakly with male gender identification (r = .13, p = .006), moderately with political conservatism (r = .40, p < .001), and did not correlate with age (r = -.03, p = .54). In contrast, PIH did not correlate with male gender (r = -.06, p = .20) or conservatism (r = .03, p = .52), but did correlate slightly with age (r = .14, p = .003).

Given the unique opportunity afforded by the YourMorals.org platform, the correlations among MH, PIH, and the Moral Foundations Questionnaire (MFQ) scales were explored. Interestingly, MH correlated positively and moderately with the binding foundations: ingroup loyalty (r = .40, p < .001), respect for authority (r = .44, p < .001), and purity (r = .46, p < .001). In contrast, MH correlated negatively and weakly with the individualizing foundations of concern for harm (r = -.11, p = .04) and fairness (r = -.17, p = .002). Correlations with MH were reduced when adjusted for political conservatism, which is related to MH and the moral foundations: ingroup loyalty (r = .15, p = .02), respect for authority (r = .20, p = .002), purity (r

= .26, $p < .001$), concern for harm ($r = .01$, $p = .89$), and fairness ($r = .03$, $p = .64$). Correlations between PIH and the MFQ (unadjusted for political orientation) were generally weaker than the MH correlations: ingroup loyalty ($r = .15$, $p = .008$), respect for authority ($r = .15$, $p = .007$), purity ($r = .14$, $p = .01$), concern for harm ($r = .03$, $p = .65$), and fairness ($r = -.02$, $p = .79$).

Finally, the correlations among MH, PIH, and the big five personality traits were explored. MH shared the following trait correlations: extraversion ($r = .04$, $p = .60$), agreeableness ($r = -.17$, $p = .012$), conscientiousness ($r = .08$, $p = .26$), openness ($r = -.04$, $p = .52$), and neuroticism ($r = -.01$, $p = .85$). PIH showed similarly weak correlations, with the exception of conscientiousness: extraversion ($r = .15$, $p = .03$), agreeableness ($r = -.04$, $p = .58$), conscientiousness ($r = .29$, $p < .001$), openness ($r = .09$, $p = .18$), and neuroticism ($r = -.14$, $p = .04$).

Discussion

The EFA results supported the desired two-factor structure, with a subset of items loading strongly (.60 and above) on their respective MH and PIH factors. Both scales were reliable, but with a total of 25 items retained, they were still longer than desirable. Additional items are expected to be removed after evaluating item performance in the next study. The MH scale was more skewed than originally expected, which will be something to evaluate again in Study 2. Although it had adequate variability, mean scores tended to fall below the midpoint of the scale, which may or may not be attributable to the unique and highly liberal sample of YM participants. The MH distribution means and skewness were evaluated in the remaining studies, allowing us to see if the pattern in the present study held in other samples. The PIH scale was also skewed, but this was expected due to the nature of the scale, as it is unlikely that many people would endorse the notion that the quality of their own health is unimportant to them. It is also not as

problematic given that the PIH will be used primarily as a control variable to allow analyses to distinguish between the personal importance and moral components of health attitudes.

MH correlated positively but only slightly with participants' subjective ratings of their health status and effort put into health, whereas PIH showed much stronger correlations with these measures, lending further support to the notion that moralization of health is a unique individual difference, and demonstrating convergent validity of the PIH scale. MH (but not PIH) also correlated moderately with conservatism, as well as the moral foundations associated with a conservative political orientation (Graham et al., 2011). This aligns with past work showing that negative attitudes toward obesity are associated with conservative ideology (e.g., Crandall, 1994; Ringel & Ditto, 2019). Since the correlations were only moderate in size, however, this provides evidence that MH represents a distinct moral attitude not adequately captured by the MFQ. Importantly, the results suggest that health moralization does not reduce simply to general moral concerns of care/harm, fairness, or purity. Moreover, the weak, negative correlations between MH and the individualizing foundations of harm and fairness are evidence of the discriminant validity of the MH scale, showing that MH is barely related to moral concerns of reducing harm and treating others fairly (at least in the ways that those concerns are represented in the MFQ items). These correlations also aid in answering the question of whether health moralization is driven by harm concerns. One plausible explanation of why some people moralize health is that they see bad health behavior as being harmful to the person engaging in it and harmful to others by extension, such as through rising healthcare costs. Although this question cannot be answered with the current design, the weak, negative correlation between health moralization and the MFQ harm foundation (even when controlling for political conservatism) suggests that harm concerns are not central to health moralization. Future research would benefit from using an experimental

design that tests the relevance of harm in moralized health attitudes while avoiding the pitfalls of post hoc explanations of harm (Haidt, 2001; Stahl et al., 2016).

The MH and PIH scales also showed discriminant validity with the big five personality inventory. Only one correlation (PIH and conscientiousness) reached a moderate size, which was expected given the well-known correlation between conscientiousness and health behaviors (Bogg & Roberts, 2004). A limitation of these correlational analyses, however, is that they were limited to subsets of the sample who completed the MFQ or big five scale. The samples were not so small or theoretically different from one another that the directions of the correlations would be expected to differ, as all of these samples consisted of people who volunteered to complete studies on YourMorals.org, but the magnitudes of the correlations may differ from what would otherwise be found in the full sample. Relations between MH, PIH, and other scales that were expected to be conceptually related yet distinct were explored in Study 2, along with the factor structure of the MH and PIH scales.

Study 2

Overview

The first purpose of Study 2 was to evaluate and refine the MH and PIH scales using confirmatory factor analysis (CFA). The MH items and PIH items were examined as comprising two different factors, and this model was compared to a single-factor model to confirm that the two-factor structure is the more appropriate interpretation of these constructs. Individual item performance and model fit statistics were also evaluated in the two-factor model with the goal of shortening the scales and retaining the items that best represent the underlying latent variables.

The second purpose of Study 2 was to demonstrate convergent validity of the scales. MH was expected to correlate with theoretically related constructs emphasizing the controllability of health and the value of hard work, including the perceived preventability of health conditions, internal and chance health LOC, antifat attitudes, Protestant work ethic, and belief in a just world. MH was expected to be related but sufficiently distinct from these measures, meaning the correlations were expected to be moderate but not so strong as to suggest that MH is redundant with existing measures. The convergent validity of the PIH scale was also tested by examining its correlations with personal health behavior and health status variables.

Hypotheses

In Study 1, MH correlated positively but weakly with health effort and self-rated current health. Based on this, it was hypothesized that similarly modest correlations would emerge between MH and these variables, as well as measures of actual health behaviors. MH was expected to have small to moderate negative correlations with endorsement of chance health LOC (the belief that one's health is mostly due to chance or fate) and smoking status, as people who moralize health more strongly would be expected to believe more strongly that health is

controllable and to oppose cigarette smoking, a moralized health behavior (Rozin & Singh, 1999). MH was hypothesized to correlate positively and moderately with perceived preventability of health problems, an internal health LOC, antifat attitudes, Protestant work ethic, and global belief in a just world.

Based on the results of Study 1, PIH was predicted to correlate positively and moderately with health effort and self-rated current health, and to have small to moderate positive correlations with healthy behaviors (diet quality, exercise), as well as correlate negatively with smoking. PIH was also hypothesized to correlate positively with an internal health LOC, and negatively with endorsement of chance health LOC as many PIH items focus on exerting personal control over health, which would be expected to align more with an internal locus of control rather than a belief in health being due to chance factors. Moderate correlations were expected, as past research on the Health Value scale (Lau, Hartman, & Ware, 1986), which shares some similarities to the PIH scale, was found to share moderate to strong correlations with the health LOC scales. PIH was expected to have only weak or no correlations with some of the other measures attitudinal measures, however, as there was no theoretical reason to suspect that personal health importance is fundamentally related to these other attitudes.

Method

Participants

Participants were recruited from Amazon's Mturk platform and paid $1.25 for participating in the approximately 10-minute study. A power analysis showed that a sample size of 343 participants was needed for a two-tailed test at the .05 significance level and 80% power. The intention was to recruit 350 participants, but an additional nine participants were in the final dataset, bringing the initial sample size to 359 individuals. The additional nine participants had

substantial amounts of missing data and did not complete the study to receive payment. Participants were asked to complete a simple attention check item early on in the study; 28 failed the attention check (including the nine additional participants) and were excluded from analyses, bringing the final sample size to $N = 331$. The sample had a mean age of 34.83 years ($SD = 10.47$) and consisted of 161 women, 166 men, and 4 individuals who identified as gender non-binary. The majority of the sample identified as White (74%), followed by Black (16%), Latinx (4%), Asian or Asian American (2%), multiracial (2%), or another race or ethnicity (2%). On a 7-point political orientation scale ranging from strongly liberal to strongly conservative, 45% of participants identified as liberal, 22% as moderate, and 33% as conservative. Participants also provided their education level: High School graduate or lower (9%), some college (20%), trade/technical school or 2-year college graduate (12%), Bachelor's degree (37%), Master's degree (20%), and Ph.D. or similar terminal degree (2%). Finally, 27% of the sample identified as not at all religious, whereas the rest of the sample (73%) identified between slightly and very religious.

Procedure and Materials

After giving informed consent to take part in the online survey, participants took the Moralization of Health (MH) and Personal Importance of Health (PIH) scales. Participants then answered the following measures (in order): a self-control moralization item and attention check, health LOC scales, and a brief measure of antifat attitudes. To minimize the length of the study, participants were then randomized to take either a Protestant work ethic scale ($n = 161$) or a global just world beliefs scale ($n = 170$). The order of items within each measure was randomized. Following one of those, participants were asked about how preventable they thought a list of chronic health conditions were, and then answered questions about their personal diet,

exercise, smoking status, current health, and health effort. Demographic items were presented last, followed by a debriefing statement.

Moralization of health (MH) and personal importance of health (PIH). The 13 MH items and 11 PIH items were mixed together, presented in random order, and measured on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). An additional MH item was unintentionally excluded from Study 2 and is discussed further in the results section The properties and reliabilities of the scales are discussed in greater detail in the results section.

Self-control moralization. This item (Mooijman et al., 2018) asked participants, "To what degree do you consider self-control and self-restraint morally relevant?," on a scale from 1 (*not morally relevant at all*) to 7 (*extremely morally relevant*). The mean was $M = 4.93$ ($SD = 1.52$).

Health locus of control (LOC). Two relevant health LOC subscales (Wallston et al., 1978, Form B) were presented, with six items per subscale, measured from 1 (*strongly disagree*) to 7 (*strongly agree*). The *chance* subscale ($M = 4.96$, $SD = 1.06$, $\alpha = .85$) measures the belief that one's personal health is a product of chance or fate. The *internal* subscale ($M = 4.07$, $SD = 1.23$, $\alpha = .81$) measures the belief that one's personal health is due mostly to factors within one's control.

Antifat attitudes scale (AFAS). The AFAS (Morrison & Connor, 1999) is a five-item measure of antifat attitudes measured on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). The scale showed good reliability in this sample ($M = 3.72$, $SD = 1.67$, $\alpha = .91$).

Protestant work ethic (PWE). A shorter, 8-item version of the original PWE scale (Mirels & Garrett, 1971) was used, as recommended by Heaven (1989). The items were measured on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The measure had

acceptable variability and reliability (M = 3.10, SD = 0.84, α = .85). The scale is intended to capture the degree to which people endorse common work ethic values and beliefs about success. These include the beliefs that hard work gives life meaning and leads to success, and that too much leisure time is dangerous or an indication of laziness.

Global belief in a just world scale (GBJWS). This 7-item scale developed by Lipkus (1991) measures the belief that people deserve their circumstances in life based on their behavior and that the world is generally a just, fair place. The items were measured on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*), and the internal consistency was high in this sample (M = 3.76, SD = 1.51, α = .95).

Preventability of health conditions. Participants were asked to rate the extent to which they perceived 11 chronic health conditions as "preventable through individual behavior," on a scale from 0 (not at all preventable) to 5 (completely preventable). The following conditions were included: heart disease, high blood pressure, type 2 diabetes, arthritis, obesity, Alzheimer's disease, skin cancer, breast cancer, lung cancer, colorectal cancer, and prostate cancer. These conditions were chosen because they are likely familiar to the general population and they represent some of the most common and costly chronic conditions in the U.S. (Centers for Disease Control, 2019) including the five most frequently diagnosed types of Cancer (National Institutes of Health, 2019). The internal consistency was high enough to justify averaging the items together, for ease of analysis, to form a combined *preventability* score (M = 2.52, SD = 0.99, α = .89).

Health status measures. *Health effort* was measured as the self-reported effort put into being healthy, on a scale from 0 (no effort at all) to 10 (the maximum effort you could make). Participants were also asked to rate their *current health* on a scale from 0 (the worst possible) to

10 (the best possible). Participants generally reported being in good current health (M = 6.97, SD = 1.70) and exerting relatively strong effort to be healthy (M = 6.95, SD = 1.95).

Exercise was measured as the number of days in the past week that a total of at least 30 minutes of moderate or vigorous physical activity was performed (adapted from Milton, Bull, & Bauman, 2011). It was specified that housework or physical activity as part of a job should not be included in the estimate. The response options ranged from 1 (*0 days*) to 8 (*7 days*), with a mean of M = 4.50 (SD = 2.00).

Participants' *diet quality* was assessed by computing a "healthy eating index" from the average of six items that appeared in the MIDUS survey (following the method used by Levine et al., 2016). Participants indicated how many times per week they ate fish, high fat meat, and non-meat protein such as nuts and beans (using 5-point frequency scales). They were also asked to report how many sugared beverages they drink, and how many servings of fruit and vegetables they eat, in a typical day (using 7-point frequency scales). Scores were approximately normally distributed with a mean of M = 2.40 (SD = 0.63).

Cigarette smoking was measured using an item from the National Health Interview Survey administered by the Centers for Disease Control and Prevention (CDC, 2016). Participants indicated whether they currently smoke "at least one cigarette (or e-cig, cigar or pipe) every day, some days, or not at all." Participants were coded as current smokers if they chose "every day" or "some days." Approximately 32% of the sample were coded as current smokers; the number was slightly higher than in past samples, which may be due to the fact that e-cigarettes were included in the list.

Results

Scale Analyses

The present study consisted of 13 MH items and 11 PIH items. An additional MH item was unintentionally excluded from Study 2, but was restored to the MH scale in Studies 3 and 4. The item's exclusion was not expected to substantially influence the results in the present study, however, as subsequent analyses in Study 1 confirmed that all CFA and correlational results were nearly identical, and no substantive differences were observed, when the 14th item was excluded from study 1 analyses.

Shorter scales would be more advantageous for future research, provided the revised versions still provided adequate measurement of the latent factors. With the goal of shortening the final scale, item correlations were examined to find highly correlated items with wording that could be interpreted as redundant with other items in the scale. Items 2 and 9 from the MH scale, and item 17r from the PIH scale, were found to be good candidates for removal, due to having correlations greater than .70 with other items as well as having phrasing that was highly similar to other scale items. A comparison of the structural equation models with and without the three items confirmed that removing the original items also improved model fit significantly [$\Delta\chi^2$ (60) = 106.31, $p < .001$], suggesting that the model benefitted from removing items that were highly correlated with others in the scale. This left 11 MH items and 10 PIH items for the CFA (see items in Appendix, Table 4).

When averaged together, the MH scale (M = 4.00, SD = 1.36) was slightly negatively skewed, but showed acceptable variability and greater normality than the distribution in Study 1, with about half of participants scoring above the neutral midpoint of the scale and half below (see Figure 2). The PIH scale (M = 5.57, SD = 0.98) had a stronger negative skew, with almost

all participants scoring at or above the neutral midpoint of the scale. This is not necessarily surprising, however, given the nature of the scale combined with possible social desirability pressures to agree with statements related to caring about one's health. Ultimately, given that the MH scale is the key measure in this research, it was viewed as more important to have greater variability and normality in MH scores than PIH scores.

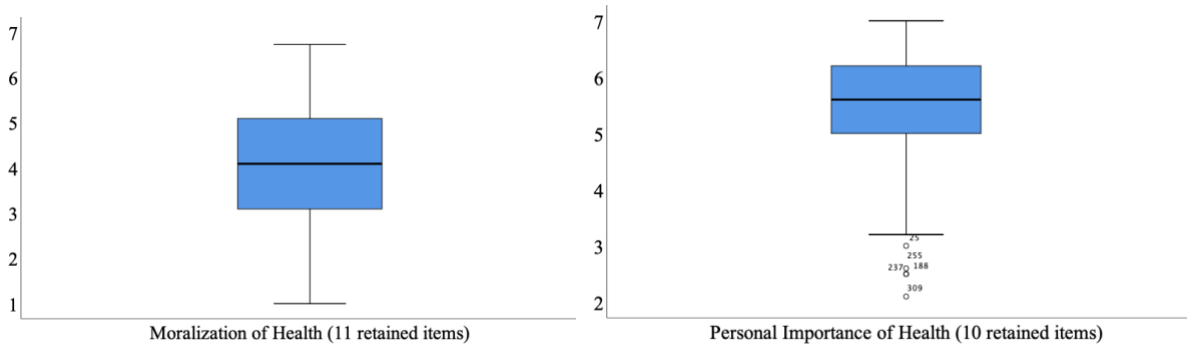

Figure 2. Boxplots displaying distributions of scores on MH and PIH scales (Study 2).

A CFA with Maximum Likelihood estimation was used to fit the proposed two-factor model. There were no missing values on these measures. The Morality and Personal Importance items were loaded on separate factors (no cross-factor loadings were allowed), and the two factors were allowed to correlate. The error terms of the three negatively phrased items were also allowed to correlate to correct for a method effect (Thomas & Oliver, 1999). The model fit the data reasonably well, although the SRMR did not reach the recommended range, which is more likely to happen in smaller samples such as this one (see Hu & Bentler, 1999). The fit statistics were as follows: χ_2 (185) = 555.76, $p < .001$, SRMR = 0.110, RMSEA = 0.08, CFI = 0.91, and TLI = 0.90. All items loaded significantly on their corresponding factor (all *p*s < .001), and the factors correlated slightly ($r = .18$, $p < .001$). The Cronbach's alpha reliability was acceptably

high for the MH (α = .92) and PIH (α = .87) scales. The modification indices suggested that correlated errors between items 1 and 5, and 22 and 24, were having a strong influence on the model. Accounting for these correlated errors in a subsequent CFA improved the model, though the fit statistics still fell short of the ideal ranges: χ^2 (183) = 473.77, $p < .001$, SRMR = 0.11, RMSEA = 0.07, CFI = 0.93, and TLI = 0.92.

Inspection of the equation-level goodness-of-fit statistics suggested that all three of the reverse-coded items performed poorly, with higher residual values than the non-reverse-coded items and *r*-squared values between .12 and .19; all other items had much higher *r*-squared values (between .40 and .75). This indicates that the latent factors explained much less of the variance of the reverse-coded items compared to the non-reverse-coded items. A CFA confirmed that the model fit statistics improved substantially, indicating the model fit the data well according to Hu and Bentler's guidelines, when the reverse-coded items were excluded: χ^2 (132) = 295.15, $p < .001$, SRMR = 0.05, RMSEA = 0.06, CFI = 0.96, and TLI = 0.95.

The model with reverse-coded items excluded was then analyzed separately for males and females to evaluate measurement invariance by gender. Reverse-coded items were excluded to ensure that measurement invariance was being evaluated using the model with the least residual error. The model for men (n = 166) fit the data reasonably well: χ^2 (132) = 244.01, $p <$ .001, SRMR = 0.061, RMSEA = 0.071, CFI = 0.939, and TLI = 0.929. The model for women (n = 161) fit the data well: χ^2 (132) = 204.25, $p < .001$, SRMR = 0.053, RMSEA = 0.058, CFI = 0.961, and TLI = 0.954. Overall, the results suggest that men and women respond to the scales in similar ways, if using the ΔCFI $\leq$.02 and ΔRMSEA $\leq$.03 criteria. Unlike what was found in Study 1, the model fit for women was superior to that for men. Measurement invariance by gender will be tested again in the third study.

Finally, the two-factor model was also compared to the most plausible alternative, a model in which all items of the MH and PIH were explained by a single latent factor. The error terms of the reverse-coded items were allowed to correlate. The single-factor model did not fit the data well: $\chi_2\,(186) = 1756.33$, $p < .001$, SRMR = 0.184, RMSEA = 0.16, CFI = 0.62, and TLI = 0.58. A Chi-square difference test comparing the two-factor model that was conducted initially to the single-factor model confirmed that the two-factor model fit the data significantly better, $\Delta\chi_2\,(1) = 1200.57$, $p < .001$.

Relations Between Health Scales and Other Measures

Correlations were computed between the MH and PIH scales and multiple constructs thought to be related but also sufficiently distinct, as well as correlations exploring their relations with individual difference and demographic variables of interest. Table 1 shows the pairwise Pearson correlations between MH, PIH, and the other measures of interest. Table 3 focuses on the pairwise correlations between MH, PIH, and individual difference and demographic variables.

As shown in Table 1, many of the correlations with MH confirmed the initial hypotheses. MH showed a strong, positive correlation with the single-item measure of self-control moralization, and moderate, positive correlations with overall perceived preventability of chronic health conditions, an internal health LOC, antifat attitudes, Protestant work ethic, and just-world beliefs. Overall ratings of the preventability of chronic health conditions are displayed in Figure 3, as these provide a clearer picture of the extent to which people more generally think about control over chronic health conditions. The correlations indicate convergent validity, such that MH is related to many attitudes that would be expected to coincide with a moral view of health,

but the correlations were not so high as to suggest that the MH scale is redundant with other established measures. However, the hypothesis that there would be a negative correlation between chance health LOC and MH was not confirmed; instead, the correlation between MH and chance health LOC was significant and slightly positive. PIH shared smaller correlations with many of the attitudinal measures, being only weakly, positively correlated with self-control moralization, overall perceived preventability of chronic health conditions, internal health LOC, and just-world beliefs. As hypothesized, PIH was moderately negatively correlated with chance health LOC. PIH showed small or nonsignificant negative correlations with antifat attitudes and endorsement of the Protestant work ethic.

As shown in Table 2, MH showed small, positive, statistically significant correlations with male gender identification, conservatism, education level, and current health quality. MH showed small-to-moderate, positive, statistically significant correlations with the composite measure of diet quality, number of exercise days in the last week, and self-reported health effort. Interestingly, MH correlated positively and moderately with greater religiosity. PIH showed a weak, positive correlation with male gender and did not correlate significantly with conservatism, education level, or religiosity. PIH correlated weakly to moderately and positively with diet quality, exercise, current health, and moderately negatively with smoking status. Finally, PIH demonstrated a strong, positive correlation with health effort.

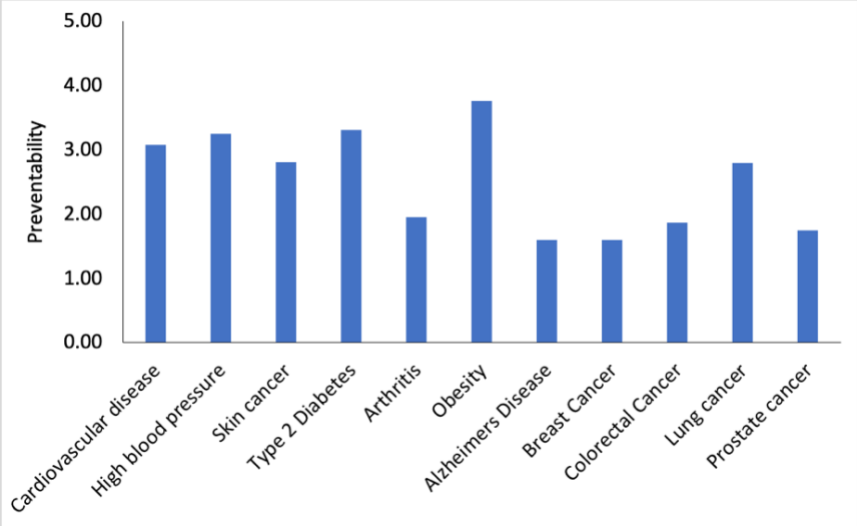

Figure 3. Mean preventability ratings for 11 health conditions, on a scale ranging from 0 (*not at all preventable*) to 5 (*completely preventable*).

Table 1
Pairwise Correlations Between Health Scales and Related Constructs (Study 2)

	1	2	3	4	5	6	7	8	9
1. MH	-								
2. PIH	.18***	-							
3. SC-Moral	.56***	.23***	-						
4. Preventability	.47***	.13*	.35***	-					
5. Internal LOC	.45***	.19**	.44***	.50***	-				
6. Chance LOC	.19**	-.32***	.04	.08	.05	-			
7. AFAS	.44***	-.08	.20***	.39***	.32***	.25***	-		
8. PWE[a]	.52***	-.16*	.33***	.42***	.47***	.29***	.55***	-	
9. GBJWS[a]	.48***	.12	.27***	.53***	.53***	.33***	.50***	NA	-

Note. SC-Moral = self-control moralization item.
[a]Participants were randomized to take either the PWE (n = 161) or GBJWS (n = 170) scale, so the correlation between these measures could not be computed.
*p < .05, **p < .01, ***p < .001

Table 2
Pairwise Correlations Between Health Scales and Health and Demographic Variables (Study 2)

	1	2	3	4	5	6	7	8	9	10	11
1. MH	-										
2. PIH	.18***	-									
3. Gender (M=1, W=0)	.19***	.14*	-								
4. Conservative	.17**	-.10	.16**	-							
5. Education	.19***	.06	.19**	< -.01	-						
6. Smoker	.07	-.35***	.19**	.10	.07	-					
7. Diet Quality	.32***	.37***	.04***	-.11*	.24***	-.01	-				
8. Exercise	.30***	.25***	.23***	.04	.24***	.12*	.48***	-			
9. Current Health	.23***	.22***	.11	.07	.30***	.14*	.31***	.35***	-		
10. Health Effort	.27***	.54***	.04	-.06	.21***	-.07	.48***	.52***	.38***	-	
11. Religiosity	.40***	-.07	.13*	.45***	.13*	.13*	.12*	.14*	.12*	.12*	-

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

Discussion

The results of the CFA indicate that the extent to which individuals moralize health can be distinguished from the personal importance they place on health. The acceptable model fit and high r-squared values of the individual (non-reverse-coded) items suggests that scores on these factors are driven by their corresponding single latent variable. However, post hoc adjustments to the CFA need to be tested in a new sample in order to have a fully confirmatory factor analysis. Given that the original model fit the data reasonably well, the alpha reliability remained high even when including the items, and these items had high factor loadings in Study 1, I decided to include the reverse-coded items in the next study and evaluate the CFA results in a new sample.

The MH and PIH scales were found to be highly reliable and thus suitable for examining their relations with other constructs of interest. As hypothesized, health moralization demonstrated convergent validity with most of the attitudinal scales, as greater moralization was associated with greater self-control moralization, perceived preventability of chronic health conditions, internal health LOC, antifat attitudes, Protestant work ethic, and global just world beliefs. Contrary to the hypothesized negative correlation between MH and chance health LOC,

a positive correlation was found. Although MH corresponds with belief in the controllability of health, and thus was expected to show a negative relation to chance health LOC, the discrepancy may be due to the different phrasing of the items in each scale. MH focuses on moral judgments about the general effort and health behaviors of other people, whereas the chance factor focuses on a person's belief that they themselves have little control over the illnesses that happen to them. Not only does the focus of judgment differ, but the wording of the chance scale may cause many people to think of common short-term illnesses such as colds and flus, and thus show little relation to a person's moral attitude toward health behaviors. In contrast, PIH was moderately and negatively correlated with chance health LOC and demonstrated a weak positive correlation with internal health LOC. Holding health as personally important may reflect a greater belief in personal control over health as well as better health status, which would explain the pattern of correlations with the health LOC measures. As expected, PIH showed only weak correlations with the other attitude measures, demonstrating its discriminant validity with these measures.

MH and PIH also corresponded with certain health and demographic variables. As in Study 1, MH showed a weak, positive correlation with male gender and conservatism; its correlation with conservatism was weaker in this study compared to Study 1. There was no prior hypothesis about the relation between MH and religiosity, but greater MH demonstrated a moderate, positive association with religiosity. Perhaps this is because religious identity is associated with certain health behaviors, such as avoidance of cigarettes, excessive alcohol consumption, and illegal substances, and improved coping with stress (Aukst-Margetić & Margetić, 2005; Oleckno & Blacconiere, 1991). Religions such as Protestant Christianity also commonly instruct adherents to care for their health and treat the body as a "temple" (Jacobson, Hall, Anderson, & Willingham, 2016). Hence, religious believers may be more likely to link

health with morality, which could increase their agreement with the MH items. In contrast, PIH did not correlate with religiosity, suggesting it is the moral component rather than the personal importance of performing health behaviors that is particularly associated with religiosity. Both MH and PIH demonstrated small to moderate positive correlations with health behaviors, as would be expected given the focus of the MH and PIH scales on common physical health behaviors. Importantly, greater PIH was associated with higher self-reported current health and strongly associated with greater health effort, demonstrating convergent validity of the PIH scale (as was also found in Study 1).

In sum, the MH and PIH scales demonstrated acceptable fit and reliability, as well as convergent validity with a number of related attitudinal measures, giving us more confidence in the construct validity of these measures. Health moralization demonstrated small correlations with multiple demographic variables (gender, education, political orientation) and a moderate correlation with religiosity, whereas personal importance of health shared weak or no correlations with these measures. The scales were further refined in Study 2, but confirmatory factor analyses were planned for the next study in order to replicate the current findings and evaluate the performance of the problematic reverse-coded items. However, as the scales were expected to remain largely intact for the remainder of the studies, Study 3 presented an opportunity to test additional hypotheses about the predictive validity of health moralization.

Study 3

Overview

The third study had multiple aims, the first of which was to factor analyze the MH and PIH scales to evaluate model fit and the performance of reverse-coded items that were found to be problematic in Study 2. The other aims were to examine health moralization as a predictor of attitudes toward personal responsibility for health, and as a predictor of healthcare policy attitudes. Evidence from research in a variety of areas, including attributions for preventable diseases (Mantler et al., 2003), the rigidity and universality of moral attitudes (Skitka, 2010), the inclination to blame people who violate a moral value (Carlsmith et al., 2002; Everett et al., 2020; Pizarro & Tannenbaum, 2012), and previous work on obesity moralization (Ringel & Ditto, 2019), together lend support for the hypotheses that health moralization predicts greater belief in the controllability/preventability of health problems and how much personal responsibility people have in preventing health problems, as well as greater blame of people with ostensibly preventable health problems. Health moralization was already shown in Study 2 to predict viewing a variety of health problems as preventable through individual behavior, or in other words, controllable. Thus, the present study went one step further, by testing whether greater moralization predicts viewing people as more personally responsible for health conditions. Furthermore, if people with a stronger moral view of health believe that others should take more personal responsibility for their health and should accept greater blame for preventable conditions, consequences of these views should be evident in healthcare policy preferences. Blame is associated with a desire to punish the transgressor (Carlsmith, Darley, & Robinson, 2002; Cushman, 2008). In the health domain, “punishment” may take the form of financial penalties or limitations on access to care for people who engage in unhealthy behaviors and thus

violate the moral value of caring for one's health. To test this proposal in the present study, multiple items were used to capture, in different ways, realistic scenarios in which a person's past health habits could be used as a determinant of either how much they pay for healthcare or how much access they are given to scarce resources, such as placement on an organ transplant list. Finally, additional items were included for exploratory analyses of health moralization's relation to general policy views about whether healthcare is a fundamental right and whether it is the US government's responsibility to provide health insurance.

Hypotheses

Although one purpose of Study 3 was to continue evaluating the MH and PIH scales, the other purpose was to test hypotheses about health moralization. To that end, this study, and the following hypotheses, were pre-registered through aspredicted.org. The first hypothesis was that greater health moralization predicts stronger attributions of personal responsibility for common health conditions (as measured using the CDC's list of the top 12 leading causes of death in the U.S.). The second hypothesis was that greater health moralization predicts greater endorsement of healthcare policies that penalize people who engage in poor health behavior (as measured with multiple criterion variables). More specifically, greater health moralization was hypothesized to predict assigning greater healthcare costs in the form of higher premiums and copays to people with poor health habits and giving lower priority on organ transplant lists to people who engaged in bad past health behavior. Health moralization was also hypothesized to be a stronger predictor of a favorable attitude toward a "stick" policy-approach to health insurance pricing (i.e., penalizing bad health behavior through premium increases) compared to its strength as a predictor of a "carrot" policy approach (i.e., rewarding good health behavior through premium decreases). Relatedly, health moralization was hypothesized to predict lower preference for the

carrot policy when participants are asked to indicate which policy they would prefer if they were in charge of this decision for an organization.

Method

Participants

Participants were recruited from Amazon's Mturk platform and paid $1.25 for participating in the approximately 15-minute study. Only individuals who had not completed any of the author's previous studies were eligible to participate. The intention was to recruit 550 participants, which served several purposes: (1) to have a sample with sufficient variation in moral and political views, (2) to increase the reliability of factor analyses on the health scales, and (3) to ensure the final sample size reaches approximately 500, in anticipation of losing some participants from the attention check or for any other reason. An additional four participants completed the study, bringing the initial sample size to 554. The sample consisted of 341 men, 210 women, and 3 gender non-binary individuals, with a mean age of 36.79 years (*SD* = 10.62). The majority of the sample identified as Caucasian (73.6%), followed by Black or African American (13.4%), Latinx (5.3%), Asian or Asian American (3.5%), multiracial (2.0%), or another race or ethnicity (1.4%), and 0.7% declined to answer. On a 7-point political orientation scale ranging from strongly liberal to strongly conservative, 48.2% of participants identified as liberal, 15.9% as moderate, and 35.9% as conservative. Participants also provided their education level: High School graduate or lower (9.4%), some college (17.5%), trade/technical school or 2-year college graduate (13.2%), Bachelor's degree (47.5%), Master's degree (11.6%), and Ph.D. or similar terminal degree (0.9%). Finally, 43.7% of the sample identified as not at all religious, whereas the rest of the sample (56.3%) identified between slightly and very religious.

Participants were given a simple attention check item which read, “Select the first option (0) to indicate that you are reading these questions carefully.” The attention check appeared on the individual health status page (positioned after the main study measures), and before the demographics survey page. Twenty-five participants failed the attention check and were excluded from analyses, bringing the final sample size to $N = 529$.

Procedure and Materials

After giving informed consent to take part in the online survey, participants were randomly assigned to take the MH and PIH scales either at the beginning of the study ($n = 274$) or towards the end ($n = 255$) after all the main study measures were completed, but prior to the individual health and demographic items. Participants then answered healthcare policy measures that were organized into three “blocks.” The blocks were presented in random order, but the order of questions within the blocks was fixed. Following those blocks, participants were asked about how much personal responsibility they thought people had in preventing each of the top 12 leading causes of death in the U.S. Next, participants answered questions about their current health status and health effort, diet, exercise, and smoking status. Demographic items were presented last, followed by a debriefing statement. The following section describes the study measures in greater detail.

Moralization of health (MH) and personal importance of health (PIH). The 12 MH items and 10 PIH items were mixed together, presented in random order, and measured on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). The included items are shown in Table 5 of the Appendix. The properties and reliabilities of the scales are discussed in the results section.

Healthcare coverage opinions. Participants answered three items about the provision of healthcare in the U.S. Two items were obtained from a Pew Research Center poll (Kiley, 2018):

(1) "Do you think it is the responsibility of the federal government to make sure all Americans have health care coverage, or is that not the responsibility of the federal government?" (2) "Should health insurance be provided through a single national health insurance system run by the government, OR should health insurance continue to be provided through a mix of private insurance companies and government programs?" Another item was created for exploratory purposes: “Should low-cost, high-quality healthcare be a right for all American citizens, OR should people have to meet certain criteria to receive low-cost, high-quality healthcare?” The term “American citizens” was used to reduce the chance that people would infer that “criteria” included citizenship. The response options for each item match the binary choices presented in the questions, and the order of these response options was randomized.

Individual behavior and healthcare costs. Two items asked participants about their views on whether people should pay more for healthcare if they have certain conditions or engage in certain negative health behaviors. The *premium* item asked participants to rate the extent to which health insurance premiums should be based on people’s health behaviors, on a scale from 1 (*completely unrelated to individual behavior*) to 7 (*completely based on individual behavior*). The *copays* item (adapted from Traina et al., 2019) asked participants to rate their agreement, on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*), with the following statement: “There should be higher co-payments for the treatment of self-inflicted diseases (for instance caused by smoking).”

Organ donation. One item asked whether—for cases in which past behavior has no influence on a patient’s prognosis—a patient’s poor health behaviors (e.g., smoking) or conditions (e.g., obesity) should influence the priority they are given, or even placement on, an organ transplant list. Responses were made on a scale ranging from 1 (should be given equal

priority) to 7 (should be excluded from transplant lists), with another label provided for the value of 4 (given somewhat lower priority) in order to provide clarity on the meaning of the values between the endpoints. Transplant priority was reverse-coded for analyses so that higher values indicate endorsement of more equal priority for people regardless of past behavior, with lower values indicating less or no priority for people with poor health behavior.

Stick and carrot policies. Participants were given a brief introduction which explained that, as employers are seeking to reduce healthcare costs while still providing the same quality of health insurance plans, they are implementing policies that base premium costs in part on employees' own health status and behavior. Participants were then asked to consider two types of employer-sponsored healthcare plans, both of which incorporated the employee's current health behaviors and conditions as a way to decrease healthcare costs. The scenario and policy questions were adapted from Tannenbaum et al.'s (2013) research on people's perceptions of "stick" and "carrot" policies, which either penalize employees with poor health behaviors by adding an additional premium fee (stick policy), or reward employees with good health behaviors by providing a premium discount (carrot policy). The two policies were shown simultaneously, with the order of presentation randomized, and read

> **Policy X**: The basic annual healthcare cost is $2,000 per employee, with an additional $500 premium charged to unhealthy employees. An employee would be classified as unhealthy if they smoke cigarettes, have an alcohol or substance abuse problem (and are not seeking treatment for it), or are obese, as measured by a Body Mass Index (BMI) of 30 or higher.

Policy Y: The basic annual healthcare cost is $2,500 per employee, and healthy employees (no smoking, no substance or alcohol abuse, and a BMI of less than 30) are given a $500 reduction in their premium cost.

Policy X represents a "stick" policy, and policy Y represents a "carrot" policy. Following the scenario introduction and the two policies, five questions were presented, all on the same survey page as the policies, so that the answers were not dependent on participants' memories. The first set of items asked, "How do you feel about Policy X [Y]," and was measured on a scale from 1 (*completely oppose*) to 7 (*completely support*). The next set of items asked, "How fair or unfair is Policy X [Y]," and was measured on a scale from 1 (*completely unfair*) to 7 (*completely fair*). As expected, the support and fairness items for each policy type correlated strongly (policy X items, r = .80; policy Y items, r = .71), so they were averaged to create an overall measure of favorability toward each policy. The final question asked participants to imagine they were in the position of choosing a policy type for their company, and to rate which policy they would prefer, on a scale from 1 (*strongly prefer policy X*) to 7 (*strongly prefer policy Y*).

Personal responsibility. Participants were asked to read the top 12 leading causes of death in the US (e.g., heart disease, cancer, unintentional injuries) according to the CDC and then rate how much personal responsibility they think people should have in preventing each cause. Each item was rated on a scale from 0 (*no personal responsibility for preventing this outcome*) to 5 (*complete personal responsibility for preventing this outcome*). The internal consistency was high enough to justify averaging the items together, for ease of analysis, to form a combined *personal responsibility* score (M = 2.00, SD = 1.16, α = .93).

Health status measures. Many of the personal health status measures from Study 2 were included in the present study (see Study 2 methods for measurement details). Participants

generally reported being in good current health (*M* = 7.10, *SD* = 1.77) and exerting relatively strong effort to be healthy (*M* = 7.19, *SD* = 1.96), on scales ranging from 0 to 10 points. *Exercise* (*M* = 3.85, *SD* = 1.93) was measured as the number of days in the past week that a total of at least 30 minutes of moderate or vigorous physical activity was performed, on a response scale from 0 (*0 days*) to 7 (*7 days*). Participants' *diet quality* (*M* = 2.39, *SD* = 0.63) was assessed by computing a "healthy eating index," as described in Study 2. Participants were coded as current smokers if they indicated smoking cigarettes, e-cigarettes, or cigars "every day" or "some days;" approximately 30.4% of the sample were coded as current smokers. Participants were asked to provide their height and weight to calculate body mass index (BMI); the sample had a mean BMI of *M* = 26.36 (*SD* = 6.16). In addition to BMI, self-perceived weight status was measured on a scale from 1 to 6 (*very thin, thin, average, overweight, obese, very obese*). Self-perceived weight correlated strongly with BMI (*r* = .71) and was used in subsequent correlational and exploratory analyses because it was available for every participant. In contrast, 14 cases were coded as missing on BMI due to implausibly high (>70) or low (<15) values reported, due in some cases to a highly unlikely value in either the height or weight category, most likely indicating careless responding.

Results

Factor Analysis of MH and PIH Measures

A CFA with Maximum Likelihood estimation was used to fit the two-factor model. There were no missing values on these measures. The morality and personal importance items were loaded on separate factors (no cross-factor loadings were allowed), and the two factors were allowed to correlate. As in Study 2, the error terms of the three negatively phrased items were allowed to correlate to correct for a method effect (Thomas & Oliver, 1999), as were the error

terms for two pairs of variables that shared similar phrasing. The model fit the data reasonably well for most of the fit statistics, but the SRMR was problematically high. The fit statistics were as follows: χ^2 (203) = 731.351, $p < .001$, SRMR = .106, RMSEA = .070, CFI = .931, and TLI = .924. All items loaded significantly on their corresponding factor (all *p*s < .001). However, inspection of the equation-level goodness-of-fit statistics suggested that all three of the reverse-coded items performed poorly, having higher residual values (ranging from 2.86 – 3.00) than non-reverse-coded items (ranging from .52 – 1.77) and lower *r*-squared values (.16 – .27) compared to all other items (r^2 values from .44 - .75). This indicates that the latent factors explained much less of the variance of the reverse-coded items compared to the non-reverse-coded items.

Given that the reverse-coded items were found to decrease model fit in Study 2, the same model, but excluding the reverse-coded items, was tested for comparison. The model fit improved when the reverse-coded items were excluded, with a particularly important improvement in the SRMR value: χ^2 (149) = 483.75, $p < .001$, SRMR = .057, RMSEA = .065, CFI = .930, and TLI = .946. A Chi-square difference test comparing the model with reverse-coded items to this model confirmed that the model without reverse-coded items fit the data significantly better, χ^2 (54) = 247.60, $p < .001$.

The modification indices suggested that three additional correlated errors between items 1 and 3, 5 and 6, and 22 and 24, were having a strong influence on the model (with Chi-square values ranging from 36.88 to 49.75). Accounting for these pairs in a subsequent CFA yielded a statistically significant improvement in model fit: χ^2 (146) = 356.22, $p < .001$, SRMR = .055, RMSEA = .052, CFI = .970, and TLI = .650. Although controlling for these additional correlated

errors is not necessary to prove the value of the model, researchers may wish to account for these correlated errors a priori to achieve the best model fit.

Given the significant improvement of the two-factor model when reverse-coded items are removed, and that the improvement was demonstrated in studies 2 and 3, subsequent analyses in the present study (as well as Study 4) were conducted without those items. This brought the final version of the MH and PIH scales to 11 items and 8 items, respectively. Overall, MH and PIH correlated fairly weakly (r = .19, p < .001), and the Cronbach's alpha reliability was high for the MH (α = .95) and PIH (α= .92) scales. The skewness of the distributions was similar to the previous studies, with MH (M = 4.02, SD = 1.56) having a more normal distribution compared to the more extreme skewness of PIH (M = 5.74, SD = 1.02), as evident in the box plots shown in Figure 4.

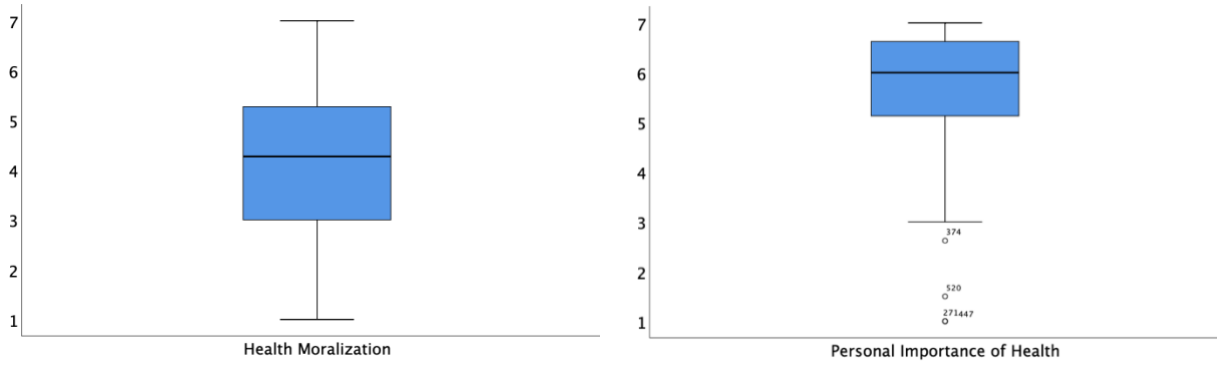

Figure 4. Box plots showing distributions of MH and PIH scores (Study 3).

Correlations Between Health Moralization and Individual Differences

Correlations between MH, PIH, and other health and demographic variables were comparable to those found in Study 2, suggesting that MH and PIH can be expected to correlate consistently with a number of health and demographic variables. As shown in Table 3, health

moralization correlates positively but weakly with current health and health effort compared to the stronger correlations seen with personal importance of health. Health moralization again has a, perhaps surprising, small positive correlation with smoking status, despite also being associated with other indicators of good health (diet quality, exercise, lower weight). Across the board, personal importance of health was more strongly associated with indicators of good health compared to moralization, including a negative association with smoking status.

As shown in Table 4, health moralization again showed a small positive association with male gender and education level. Health moralization also showed a small negative association with age, indicating that as age increases, people endorse a less moral view of health. Interestingly, health moralization again showed moderate to strong associations with political conservatism and religiosity. Thus, a moral view of health appears to be more prevalent among politically conservative and religious people.

Table 3
Pairwise Correlations Between Health Scales and Health Variables (Study 3)

	1	2	3	4	5	6	7	8
1. MH	-							
2. PIH	.19***	-						
3. Current Health	.18***	.40***	-					
4. Health Effort	.25***	.67***	.46***	-				
5. Perceived Weight	-.24***	-.20***	-.36***	-.19***	-			
6. Smoker	.17***	-.18***	.06	-.09*	-.13**	-		
7. Diet Quality	.22***	.36***	.35***	.43***	-.29***	.04	-	
8. Exercise	.23***	.39***	.36***	.45***	-.22***	.15***	.45***	-

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

Table 4
Pairwise Correlations Between Health Scales and Demographic Variables (Study 3)

	1	2	3	4	5	6	7
1. MH	-						
2. PIH	.19***	-					
3. Gender (M=1, W=0)	.16***	-.08	-				
4. Conservatism	.41***	.03	.06	-			
5. Education	.17***	.07	<-.01	.12**	-		
6. Age	-.13**	.16***	-.19***	.04	-.01	-	
7. Religiosity	.49***	.05	<-.01	.49***	.28***	.06	-

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

Moralization as a Predictor

Order effects. Prior to testing the hypotheses, *t* tests were conducted on the MH and PIH predictors and all outcome variables to test for potential order effects arising from the presentation of the MH and PIH scales before versus after the outcome measures. Three differences that were significant at the .05 level were found. The group who completed the MH and PIH scales at the beginning of the study had lower mean scores on health moralization [M_{first} = 3.76 vs. M_{last} = 4.30; $t(525.89) = 3.98$, $p < .001$] and two outcome variables, the organ transplant item [M_{first} = 3.62 vs. M_{last} = 3.95; $t(526.74) = 2.13$, $p = .03$] and favorability of the stick policy [M_{first} = 3.99 vs. M_{last} = 4.35; $t(527) = 2.19$, $p = .03$]. All other differences were small and not statistically significant. Given the differences that emerged between groups for health moralization in particular, order of presentation was included as a covariate in subsequent regression models. The present data cannot address why these differences emerged. For example, health moralization could be higher in the group who completed it after the outcome measures due to these items increasing belief in the connection between morality and health. However, another possibility is that greater response fatigue towards the end of the study led people to agree more with the items.

Hypothesis testing with linear regression models. OLS multiple regression analyses were conducted to test the hypothesis that health moralization uniquely predicts variation in views on personal responsibility for preventing disease. The personal responsibility outcome variable asked participants to rate, from 0 (no responsibility) to 5 (complete responsibility) how much personal responsibility people should have in preventing each of the top 12 leading causes of death. Mean scores for the 12 conditions are shown in Figure 5. Suicide, diabetes, heart disease, and liver disease received the highest personal responsibility ratings whereas some conditions, such as Alzheimer's and septicemia, received the lowest scores. No hypotheses were made concerning mean differences among the conditions, but the findings align with the perceived preventability of various health conditions measured in Study 2. It was hypothesized that health moralization would predict perceiving others as having greater personal responsibility in preventing negative health outcomes. As shown in Table 5, regression models with and without additional covariates both confirmed this hypothesis. In the first model, adjusting for the personal importance of health score, health moralization was a strong predictor of belief in personal responsibility for preventing health problems. When including additional covariates in the second model, health moralization remained a moderate-to-strong predictor of personal responsibility. Notably, gender and political conservatism were also positive, statistically significant predictors. Personal importance of health did not predict personal responsibility views in either model, suggesting that this construct is not associated with judgments about other others' health behaviors.

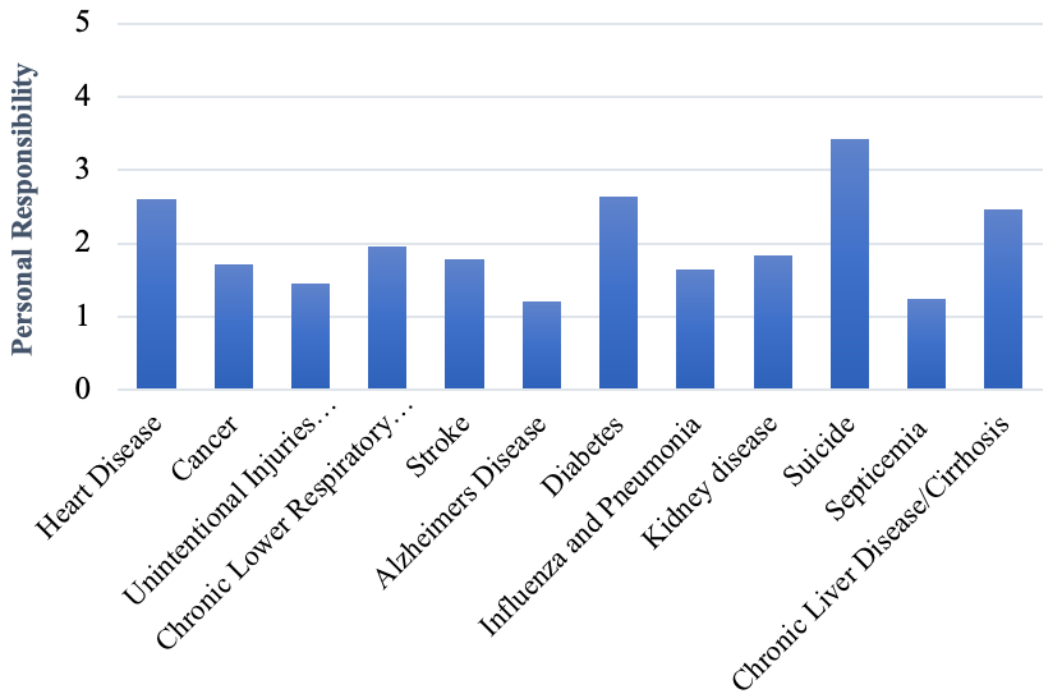

Figure 5. Mean personal responsibility scores for each leading cause of death.

Table 5
OLS Regression Models Predicting Personal Responsibility Criterion

	b (*SE*)	*95% CI*	β
Health Scales-Model			
MH	.40 (.03)***	[.35, .46]	.54
PIH	-.07 (.04)	[-.15, .02]	-.06
(Constant)	.78 (.25)		
Model Statistics		$F(2, 525) = 104.33$***	
$R^2_{Adjusted}$		.28	
Covariates Model			
Order	-.30 (.08)***	[-.46, -.14]	-.13
Gender	.28 (.09)**	[.11, .45]	.12
Conservatism	.14 (.02)***	[.09, .18]	.23
MH	.33 (.03)***	[.27, .39]	.45
PIH	-.05 (.04)	[-.13, .04]	-.04
(Constant)	.42 (.26)		
Model Statistics		$F(5, 519) = 56.05$***	
$R^2_{Adjusted}$		.35	

Note. Order was coded as 1 for completing MH and PIH scales at beginning of study and 0 for completing them at the end. Gender was coded 1 for males, 0 for females. Standard errors are shown in parentheses.
*$p < .05$; **$p < .01$; ***$p < .001$.

OLS multiple regression analyses were conducted to test the hypotheses about health moralization as a unique predictor of healthcare policy attitudes. Health moralization was hypothesized to predict greater support of charging higher premiums and copays to people with ostensibly preventable conditions or poor health behaviors, and stronger opposition to giving people with preventable conditions or poor health behaviors equal priority on organ transplant lists. Health moralization was also hypothesized to predict stronger favorability toward the stick policy-approach to health insurance pricing compared to the carrot policy. In other words, health moralization was hypothesized to be a stronger predictor of attitudes toward the stick policy than attitudes toward the carrot policy; this would be determined statistically by calculating whether the two coefficients differ significantly at the .05 level. Finally, on a bipolar scale with values ranging from 1 (indicating a strong preference for stick policy) to 7 (indicating a strong preference for carrot policy), health moralization was hypothesized to predict less preference for the carrot policy. Table 6 shows regression models with only the MH and PIH scales as predictors of the six outcome variables, and Table 7 displays regression models containing the additional covariates of order of presentation, gender, and political conservatism.

As evident in the models with and without additional covariates, health moralization was a statistically significant predictor of all outcomes except the 'preference for carrot policy' variable. When only adjusting for personal importance of health, health moralization strongly (r_2 = .24) predicted support for basing health insurance premiums on individual behavior. Health moralization was also a moderate-to-strong predictor (r_2 = .22) of support for charging higher copays for diseases linked to poor health behaviors and of giving people with poor health behaviors lower priority on organ transplant lists (r_2 = .16). In contrast, personal importance of health did not predict support for higher premiums or copays, and it predicted transplant priority

in the opposite direction, meaning it predicted support for equal priority being given to all people. Health moralization remained a moderate-strength predictor of these three outcomes even when adjusting for additional covariates.

The models also suggest that, as hypothesized, health moralization was a stronger predictor of holding a favorable attitude toward the stick policy (b = .47, SE = .05, β = .39) compared to the strength of health moralization as a predictor of support for the carrot policy (b = .19, SE = .04, β = .19). To confirm the hypothesis that these two slopes differ significantly, the coefficients and the corresponding standard errors were entered into a formula that tests the hypothesis that the difference between b_1 and b_2 is equal to zero; if the resulting Z value is greater than the critical value of +/- 1.96 that corresponds to the alpha level of .05, we can reject the null hypothesis and conclude that there is evidence that the two coefficients differ significantly (Cohen, Cohen, West, Aiken, 2003; Paternoster, Brame, Mazerolle, & Piquero, 1998). For the model containing only MH and PIH scores, the difference between the coefficients produces a Z score of z = 4.37. For the model containing additional covariates, there is still a statistically significant difference in strength (z = 2.97). Another indication that the coefficients differ comes from inspection of the 95% confidence intervals for the coefficients. In both models, the CI for each coefficient does not contain the value of the comparison coefficient, which indicates that the coefficients differ significantly at the .05 level.

Despite these findings, the hypothesis that health moralization would predict an explicit preference for the stick over the carrot policy when pitted against each other in a bipolar measure was not confirmed in either regression model, as moralization did not significantly predict a preference in either direction. In other words, although health moralization was a stronger predictor of support for the stick policy when it was evaluated in a single item compared to its

prediction of support for the carrot policy, health moralization did not predict a preference for one policy over another when asked to choose between them. Personal importance of health and conservatism were weak positive predictors of preference for the carrot policy, while male gender was a weak negative predictor of preference, indicating that men showed greater preference for the stick policy.

Table 6
OLS Regression Models of MH and PIH Scores Predicting Policy Outcome Measures

	Premiums	Copays	Transplant priority	Favor stick policy	Favor carrot policy	Prefer carrot over stick policy
	b (SE) [95% CI]	*b (SE)* [95% CI]	*b (SE)* [95% CI]	*b (SE)* [95% CI]	*b (SE)* [95% CI]	*b (SE)* [95% CI]
MH	.57 (.04)*** [.48, .66]	.59 (.05)*** [.49, .68]	-.46 (.05)*** [-.55, -.37]	.47 (.05)*** [.37, .56]	.19 (.04)*** [.11, .28]	-.02 (.05) [-.11, .08]
PIH	.001 (.07) [-.13, .14]	.09 (.07) [-.06, .23]	.23 (.07)** [.09, .37]	.002 (.08) [-.15, .15]	.26 (.07)*** [.13, .39]	.19 (.07)* [.05, .33]
(Constant)	1.87 (.41)	1.60 (.44)	4.74 (.43)	2.29 (.44)	2.83 (.40)	4.15 (.44)
F (2, 526)	85.95***	80.15***	49.51***	47.64***	20.94***	3.33*
$R^2_{Adjusted}$	.24	.23	.16	.15	.07	.01

Note. Standard errors are shown in parentheses. Higher values on transplant priority indicate more equal priority for people regardless of prior behavior, whereas lower values indicate lower priority.
*$p < .05$; **$p < .01$; ***$p < .001$.

Table 7

OLS Regression Models of MH and Covariates Predicting Policy Outcome Measures

	Premiums	Copays	Transplant priority	Favor stick policy	Favor carrot policy	Prefer carrot over stick policy
	b (SE) [95% CI]	*b (SE)* [95% CI]	*b (SE)* [95% CI]	*b (SE)* [95% CI]	*b (SE)* [95% CI]	*b (SE)* [95% CI]
Block 1						
Order	-.06 (.14) [-.34, .22]	.11 (.16) [-.20, .43]	-.21 (.15) [-.50, .08]	.22 (.15) [-.08, .52]	-.16 (.14) [-.43, .11]	-.16 (.15) [-.44, .13]
Gender	.41 (.15)** [.12, .70]	.25 (.16) [-.07, .58]	-.47 (.15)** [-.76, -.17]	.76 (.16)*** [.46, 1.07]	-.16 (.14) [-.43, .12]	.61 (.15)*** [-.90, -.32]
Conservatism	.38 (.04)*** [.30, .45]	.33 (.04)*** [.25, .41]	-.28 (.04)*** [-.35, -.20]	.24 (.04)*** [.17, .32]	.11 (.04)** [.04, .18]	.10 (.04)** [.03, .18]
$R^2_{Adjusted}$	.18	.11	.11	.11	.01	.04
Block 2						
Order	-.23 (.13)† [-.49, .03]	-.07 (.15) [-.37, .22]	-.08 (.14) [-.36, .21]	.09 (.15) [-.20, .38]	-.22 (.14) [-.49, .04]	-.14 (.15) [-.42, .15]
Gender	.23 (.14) [-.04, .50]	.07 (.15) [-.24, .37]	-.29 (.15)† [-.58, .00]	.63 (.15)*** [.33, .93]	-.18 (.14) [-.45, .09]	-.56 (.15)*** [-.86, -.26]
Conservatism	.24 (.04)*** [.16, .31]	.17 (.04)*** [.09, .25]	-.17 (.04)*** [-.25, -.10]	.13 (.04)** [.05, .21]	.05 (.04) [-.03, .12]	.12 (.04)** [.04, .20]
PIH	.03 (.07) [-.10, .16]	.10 (.07) [-.04, .25]	.20 (.07)** [.06, .34]	.05 (.07) [-.10, .19]	.27 (.07)*** [.14, .40]	.18 (.07)* [.04, .32]
MH	.45 (.05)*** [.35, .54]	.50 (.05)*** [.39, .60]	-.35 (.05)*** [-.46, -.25]	.36 (.05)*** [.25, .46]	.17 (.04)*** [.08, .27]	-.05 (.05) [-.15, .05]
(Constant)	1.32 (.41)	1.23 (.46)	5.34 (.44)	1.55 (.46)	2.92 (.42)	4.34 (.45)
F (5, 520)	45.70***	35.86***	25.35***	25.18***	9.50***	6.17***
$R^2_{Adjusted}$	.30	.25	.19	.19	.08	.05

Note. Gender was coded 1 for males, 0 for females. Order was coded as 1 for completing MH and PIH scales at beginning of study and 0 for completing them at the end. Standard errors are shown in parentheses. Constant and F values shown are for the full model.

†$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$.

Exploratory analyses: Interactions. Using multiple regression models, the interaction between moralization and political conservatism was explored for the personal responsibility and healthcare policy outcome variables. Given that seven exploratory regression analyses were conducted, the alpha level (.05) was divided by the number of tests to obtain the p-value that a test would have to exceed to still be considered statistically significant, which was determined to be .0072. To evaluate the moralization-conservatism interaction for the models predicting each

criterion variable, health moralization and conservatism were mean-centered, while conservatism was the moderator at which three conventional values (the sample average, one standard deviation above the sample average as "high conservatism", and one standard deviation below the sample average as "low conservatism") were chosen to probe the interaction. Only one interaction met the criteria to be considered statistically significant, which was in the model predicting attributions of personal responsibility for health. As shown in Table 8, the significant main effects of health moralization and conservatism were qualified by their significant interaction. As depicted in Figure 6, the interaction suggests that political conservatism moderates the strength of the relation between health moralization and endorsement of personal responsibility for health, such that the relation is stronger at higher levels of political conservatism.

Table 8
Adding Interaction Term to Predict Personal Responsibility Criterion

	b (*SE*)	*95% CI*	*t*	*p*
(Constant)	2.18 (0.25)	[1.68, 2.68]	8.58	<.001
Order	-0.28 (0.08)	[-0.44, -0.12]	-3.37	<.001
Gender	0.30 (0.09)	[0.13, 0.47]	3.54	<.001
Conservatism	0.12 (0.02)	[0.08, 0.17]	5.34	<.001
PIH	-0.05 (0.04)	[-0.13, 0.03]	-1.26	.21
MH	0.34 (0.03)	[0.29, 0.40]	11.57	<.001
MH*Conservatism	0.05 (0.01)	[0.03, 0.08]	3.85	<.001
Model Statistics		$F(6, 518) = 50.42$ $R^2_{\text{Adjusted}} = .37$		

Note. P-values less than .0072 are significant at the .05 alpha level. Confidence intervals are presented for the unstandardized coefficients.

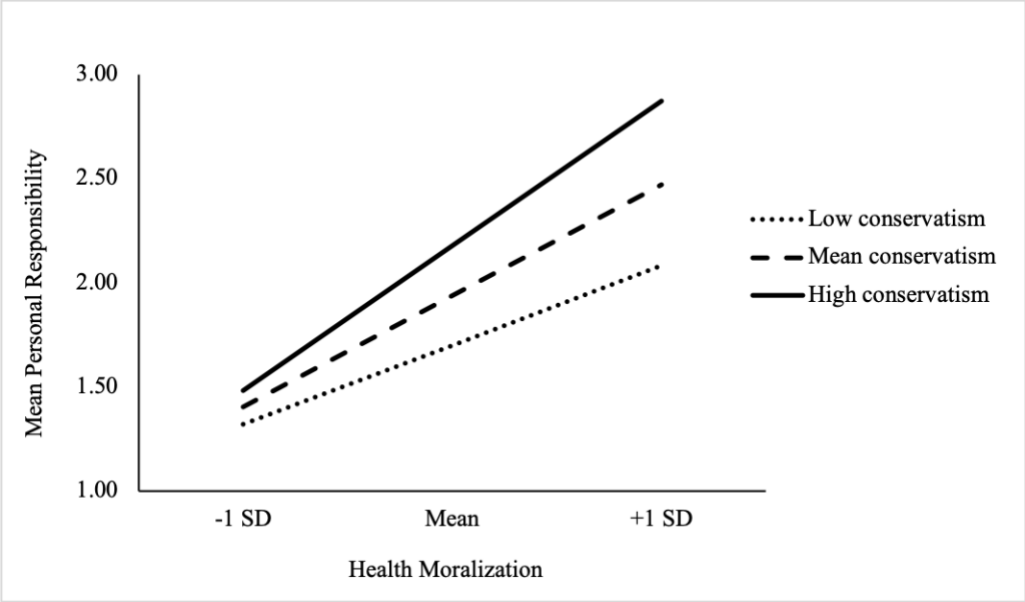

Figure 6. Conservatism moderates the relation between health moralization and personal responsibility attributions.

Exploratory analyses: Logistic regression models. Health moralization was explored as a predictor of attitudes toward government provision of healthcare, which were measured using opinion poll questions. The goal was to explore whether health moralization was a unique predictor of attitudes toward government-provided healthcare after accounting for the effect of political conservatism. The *government responsibility* variable asked whether or not the federal government should be responsible for making sure all Americans have healthcare coverage; the *single system* variable asked whether health insurance should be provided through a single national system or be provided through the current mix of private and government options, and the third variable, *healthcare as a right*, asked "should low-cost, high-quality healthcare be a right for all American citizens, or should people have to meet certain criteria." The three items had binary response options, which made logistic regression analysis the most appropriate statistical choice. For the *government responsibility* question, 77.5% agreed that it is the federal government's responsibility to ensure healthcare coverage for all Americans compared to 22.5%

of the sample who indicated that it should not be the government's responsibility. For the *single system* question, 54.4% preferred a single national health insurance system compared to 45.6% who chose that it should remain a mix of public and private options. Finally, for the question of whether affordable healthcare should be a right for all Americans, 77.5% agreed that it should be a right for all Americans whereas 22.5% agreed that people "should have to meet certain criteria."

Tables 9 – 11 display the three logistic regression models. To increase the interpretability of the output and decrease multicollinearity, all variables were mean-centered. To correct for conducting three exploratory analyses, *p*-values must be less than .0167 to be considered statistically significant at the .05 alpha level. The variables entered in each model, using a hierarchical entry method, were the mean MH and PIH scores, conservatism, and the interaction between MH and conservatism. Although health moralization by itself was not significantly associated with the belief that the federal government should be responsible for healthcare coverage, when conservatism was included in the model, health moralization positively predicted this belief, whereas greater conservatism was associated with a lower likelihood of endorsing a federal responsibility for healthcare coverage. In block 3, the main effects were qualified by a significant interaction between moralization and conservatism, indicating that as moralization and conservatism increased one unit, the change in the odds of agreeing that the federal government should be responsible for providing healthcare coverage to all people, compared to not agreeing, was 1.31 In other words, although conservatives were generally less likely to agree that the federal government should be responsible for providing healthcare coverage, conservatives who were higher in health moralization were more likely to agree with this position. A similar pattern was found for the other two criterion variables, with a significant

interaction between health moralization and conservatism predicting a greater likelihood of agreeing that there should be a national single-payer system and that affordable healthcare should be a right for all Americans. This interaction pattern is visualized in Figures 7 – 9, with each figure corresponding to the table that precedes it.

Table 9
Predictors of Agreement with 'Government Responsibility' Criterion

	b (*SE*)	95% CI for Odds Ratio		
		Lower	Odds	Upper
Block 1				
PIH	0.03 (0.10)	0.84	1.03	1.26
MH	0.05 (0.07)	0.92	1.05	1.20
Block 2				
PIH	-0.07 (0.13)	0.73	0.94	1.20
MH	0.51 (0.09)**	1.38	1.66	2.00
Conservatism	-0.77 (0.08)**	0.39	0.47	0.55
Block 3				
PIH	-0.13 (0.14)	0.67	0.88	1.14
MH	0.35 (0.10)*	1.16	1.42	1.73
Conservatism	-0.82 (0.09)**	0.37	0.44	0.52
MH*Conservatism	0.27 (0.06)**	1.17	1.31	1.48

Note. Model χ_2 (4) = 147.15, $p < .001$. R_2 = .26 (Hosmer & Lemeshow) .24 (Cox & Snell) .37 (Nagelkerke)
*$p < .0167$; **$p < .001$

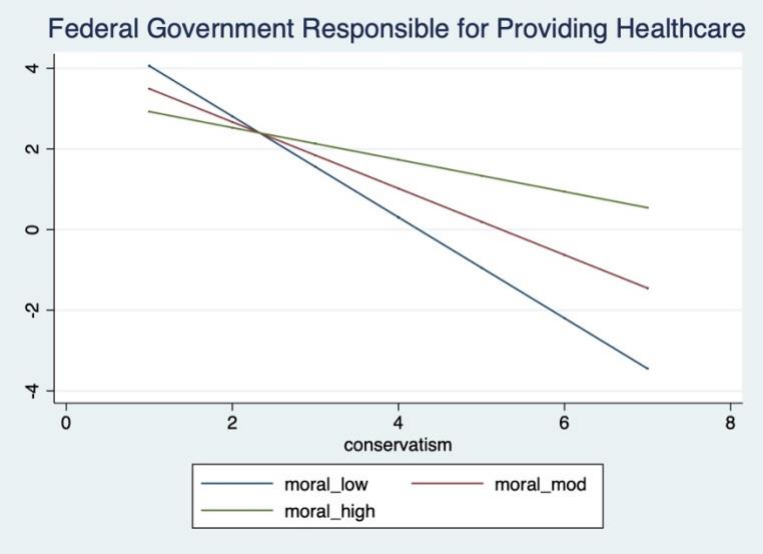

Figure 7. Health moralization moderates the relation between conservatism and agreement that the federal government should be responsible for providing healthcare. MH values shown for the mean ("moral_mod") and one standard deviation above ("moral_high") and below ("moral_low") the mean.

Table 10
Predictors of Agreement with 'Single System' Criterion

	b (*SE*)	95% CI for Odds Ratio		
		Lower	Odds	Upper
Block 1				
PIH	0.07 (0.09)	0.90	1.07	1.27
MH	-0.13 (0.06)	0.78	0.88	0.98
Block 2				
PIH	0.04 (0.09)	0.87	1.04	1.25
MH	0.06 (0.07)	0.93	1.06	1.21
Conservatism	-0.38 (0.06)**	0.61	0.68	0.76
Block 3				
PIH	<0.01 (0.10)	0.82	1.00	1.22
MH	0.12 (0.08)	0.97	1.12	1.30
Conservatism	-0.48 (0.06)**	0.55	0.62	0.70
MH*Conservatism	0.21 (0.04)**	1.14	1.23	1.33

Note. Model χ_2 (4) = 92.87, $p < .001$. R_2 = .13 (Hosmer & Lemeshow) .16 (Cox & Snell) .22 (Nagelkerke).
*$p < .0167$; **$p < .001$

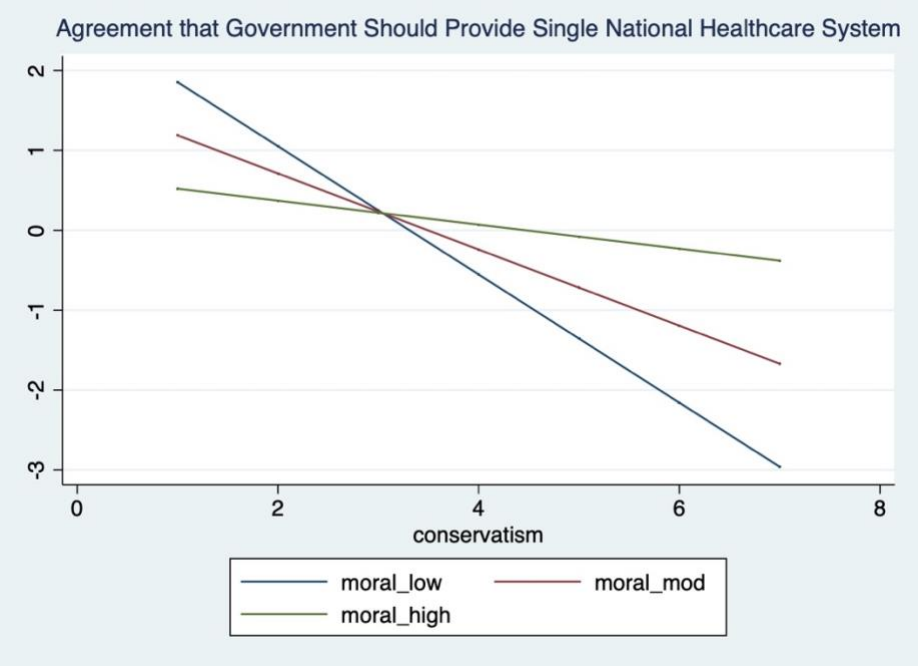

Figure 8. Health moralization moderates the relation between conservatism and agreement that the federal government should provide a national healthcare system.

Table 11
Predictors of Agreement with 'Healthcare as a Right' Criterion

	b (*SE*)	95% CI for Odds Ratio		
		Lower	Odds	Upper
Block 1				
PIH	0.21 (0.11)	1.00	1.23	1.52
MH	-0.30 (0.08)**	0.64	0.74	0.86
Block 2				
PIH	0.18 (0.12)	0.94	1.20	1.52
MH	-0.01 (0.09)	0.84	0.99	1.18
Conservatism	-0.60 (0.07)**	0.48	0.55	0.64
Block 3				
PIH	0.19 (0.13)	0.94	1.20	1.55
MH	-0.18 (0.11)	0.68	0.84	1.03
Conservatism	-0.66 (0.08)**	0.44	0.52	0.60
MH*Conservatism	0.18 (0.05)*	1.07	1.19	1.32

Note. Model χ_2 (4) = 113.45, $p < .001$. R_2 = .20 (Hosmer & Lemeshow) .19 (Cox & Snell) .29 (Nagelkerke).
*$p < .0167$; **$p < .001$

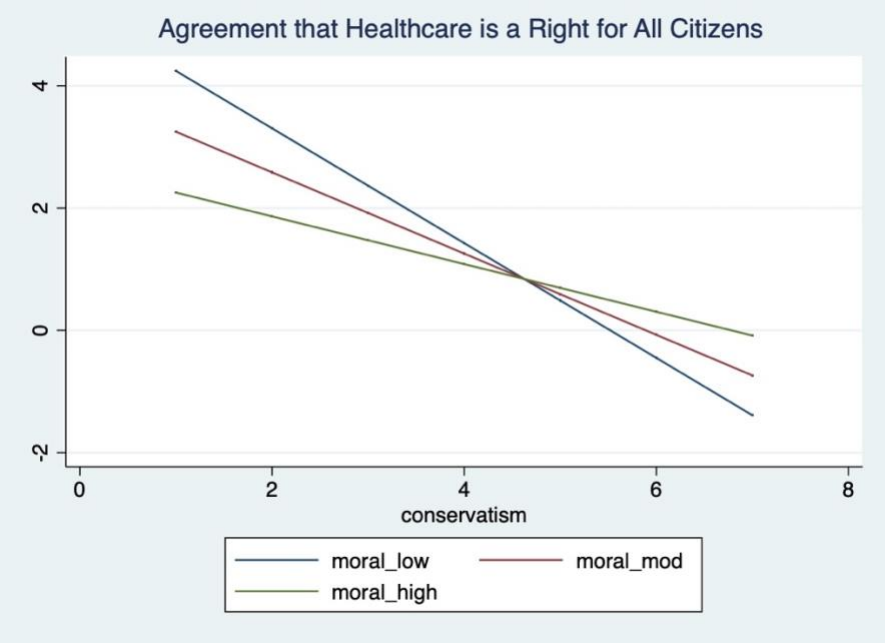

Figure 9. Health moralization moderates the relation between conservatism and agreement that affordable healthcare should be a right for all US citizens.

Discussion

The present study provided additional evidence for the structure and reliability of the MH and PIH scales. A confirmatory factor analysis revealed that, as was the case in Study 2, the reverse-coded scale items performed poorly and reduced the model fit significantly. Although this might be more likely to happen in the context of Mturk, where participant attention is a challenge, the accumulating evidence suggests that reverse-coded items should be avoided in future studies, at least in situations where participants may rush through the scales rather than reading each statement carefully. In light of this, these items were not represented in the present study's analyses involving mean scores on the MH and PIH and were not included in the scales for Study 4.

The MH and PIH scales demonstrated associations similar to those found in Study 2 with a variety of health and demographic variables. Among the notable trends, personal importance of health was more strongly associated with indicators of good physical health than health moralization. This suggests that personal devotion to healthy living is linked with actual behavior more than the belief in people's general moral obligation to be healthy. Health moralization again showed a moderate positive association with political conservatism and a strong positive association with general religiosity. Potential reasons for the consistent associations between health moralization and these constructs are discussed at length in the general discussion.

Many of the hypotheses about health moralization as a unique predictor of attitudes toward personal responsibility for health and healthcare policies were confirmed. As hypothesized, health moralization predicted perceiving others as having greater personal responsibility in preventing negative health outcomes and continued to be a unique predictor even when adjusting for gender and political conservatism. An exploratory analysis also revealed

that conservatism moderates the strength of the relation between health moralization and attributions of personal responsibility for health, such that the relation was stronger at higher levels of political conservatism. This aligns with the contention that health moralization is related to aspects of conservative ideology and suggests that conservative identity may amplify the personal responsibility attributions that high moralizers are inclined to make. As hypothesized, health moralization also uniquely predicted greater support of charging higher premiums and copays to people with ostensibly preventable conditions or poor health behaviors, and stronger opposition to giving people with preventable conditions or poor health behaviors equal priority on organ transplant lists. Even when adjusting for conservatism and gender, health moralization explained an additional 12 - 14% of the variance in support for penalizing people with higher premiums and copays, and an additional 8% of the variance (combined with a smaller effect of PIH) in the organ transplant criterion. These results demonstrate that health moralization is associated with greater support for punitive policies towards those who violate moral health values. This conclusion was further strengthened by the finding that health moralization was more predictive of support for a stick, or penalty-based health insurance policy than it was for a carrot, or reward-based policy. There was reason to expect that moralization would be associated with support for both policies, since both base healthcare costs on individual behavior. While the findings bear this out, they also demonstrate that higher moralizers have a more favorable opinion of the stick policy than lower moralizers, which supports the contention that moralization predicts more punitive reactions toward those who violate moral health values. As acknowledged, however, given the reasons to support both types of policies, health moralization showed no association with the type of policy individuals preferred when they were asked to compare both types in the same question. Therefore, the final hypothesis, which predicted that

high moralizers would indicate a preference for the stick policy when asked to choose between the two options, was not confirmed. The results overall suggest that both types of policies are acceptable to many people, including high moralizers, but that health moralization uniquely predicts viewing penalty-based policies favorably.

The policy measures shared an important limitation, however, which was that they applied to a variety of potentially moralized behaviors and conditions, rather than focusing participants' attention on penalizing just one behavior (e.g., smoking) or condition (e.g., obesity). This means, for example, that some people may have been thinking of smoking or illicit drug use rather than dietary and physical activity habits (or obesity) while responding to a particular item. While this limitation does not detract from the insights gained in the present study, future research may wish to narrow the policy items to capture support of or opposition to a policy aimed at an individual behavior or condition, so that more specific conclusions can be drawn about the extent to which health moralization predicts support of particular policies.

The exploratory logistic regression analyses of healthcare coverage opinions revealed another fascinating pattern. In each model, a significant interaction between health moralization and conservatism occurred. Although conservatives were less likely to agree with the propositions that the federal government should be responsible for providing healthcare coverage, a single national system should be made available to provide healthcare coverage, and healthcare should be a right for all American citizens, conservatives who were higher in health moralization were more likely to agree with these positions. The findings suggest that the relation between conservatism and moralization is complex, on the one hand potentially

amplifying attributions of responsibility and blame for health problems, but on the other hand increasing support among conservatives for universal healthcare coverage.[2]

Study 4 provides an opportunity to explore health moralizations' relations to responsibility and blame attributions in the context of an individual scenario. Up to this point, control (Study 2) and responsibility (Study 3) attributions were measured in the context of making these attributions for a list of health conditions, but not in the context of an individual person's situation. Blame attributions were also not measured in any study. Thus, rather than assessing participants' judgments of an abstract population of individuals with unknown health habits, the final study provided a better understanding of the relation between health moralization and these types of attributions in a more concrete, personalized context.

[2] Although not the focus of Study 4, the first two items (federal responsibility and single system) were included to bolster the cover story for the purpose of Study 4, and the same significant interaction between health moralization and conservatism emerged for both items.

Study 4

Overview

The present study was designed to evaluate health moralization as a predictor of negative judgments of an individual with an ostensibly preventable disease who failed to engage in preventive behaviors prior to their diagnosis. The study focused on judgments of a person described as having either heart disease or skin cancer, as these diseases are often preventable through individual behavior (Chiave, McCullough, Sacks, & Rimm, 2006; Coups, Manne, & Heckman, 2008) and were rated as moderately preventable in Study 2. The individual was also described as having fewer or greater resources in the form of having (or not having) a college education and health insurance, which in theory would communicate whether they have a higher or lower ability to engage in preventive behaviors. Prior research found that in a similar experimental scenario, an individual described as having a lower socioeconomic status received less blame and a lower allocation of treatment costs compared to a middle-class individual with identical poor health behavior (Gollust & Lynch, 2011), suggesting that an individual's life circumstances influence others' judgments about the person's blameworthiness for their bad health habits. People may also be particularly responsive to the plight of low SES individuals, as class differences, but not other group differences (e.g., race), are associated with less blame for health problems (Rigby, Soss, Booske, Rohan, & Robert, 2009).

Participants in the present study were randomly assigned to read about a person who did not engage in important preventive behaviors and was then diagnosed with either heart disease or skin cancer. The type of disease was varied to study whether the influence of health moralization generalizes across conditions associated with different types of preventive behaviors. Heart disease is associated with prevention behaviors such as diet, exercise, and smoking

avoidance/cessation (Chiave et al., 2006), whereas skin cancer is associated with prevention behaviors such as taking steps to avoid sun exposure, wearing protective clothing, and sunscreen use (Coups, Manne, & Heckman, 2008). The study vignette stated that the individual was not overweight, to prevent participants from inferring that the heart disease target is overweight (as overweight is a common risk factor for heart disease). Keeping weight constant across the conditions and eliminating the perception of overweight or obesity ensured that antifat attitudes were not responsible for negative judgments of the individual. If health moralization predicts attributions such as control, negligence, and blame, this would provide further evidence that moralized health attitudes are driven by more than simply antifat sentiment.

The other manipulated factor was the target's realistic ability (high vs. low) to engage in preventive behaviors. Little is known about the extent to which people who moralize health modify their judgments of others based on a person's situational constraints, such as having less means to take care of their health. Thus, this study was a first step toward understanding the degree to which moralization is associated with strong blame and other judgments of individuals with and without situational constraints on good health behavior. This was accomplished by describing the individual as having either fewer or greater resources in the form of a college education and possession of health insurance. It can be inferred that the individual with difficult circumstances (no health insurance, no college education) has fewer resources to practice good health habits compared to the high-resource individual. As such, this study focused on the influence of a person's perceived ability to engage in preventive behaviors, rather than in teasing apart the specific effects of factors such as education and health insurance.

Participants were asked to indicate their agreement or disagreement with statements about how much *control* the individual had over their health, how much the individual *intended*

to get their disease, how *negligent* they were in taking care of their health, and how much the individual was to *blame* for their condition. These items were chosen to provide a more nuanced understanding of how the individual was perceived. Research demonstrates that moral judgments are influenced heavily by whether the individual intended to cause a bad outcome (Malle, 1999). However, in certain domains, including purity violations, people's moral judgments may depend less on intention and more on the wrongness of the action itself (Cushman, 2015) or the severity of the negative outcome (Martin & Cushman, 2016), rather than perceptions of a person's intention to cause a bad outcome. For example, Young and Saxe (2011) found that accidental harm to another person and accidental incest were both judged equally on controllability and intentionality, but incest was deemed more blameworthy. Martin and Cushman (2016) found that in a situation in which accidental harm occurred, a person with clear benevolent intentions was still given a stronger punishment when they were perceived to have greater degree of control over their actions compared to an identical situation in which the person had less control. Another case in which intention is not required to assign blame is that of negligence (Cushman, 2015; Malle, Guglielmo, & Monroe, 2014). Cushman (2015) states that when a person is judged as negligent, "their moral failing consists in planning that is insufficient or misdirected: an inattention to the likely consequences of their action" (p. 100). More research is needed to clarify the role of negligence in moral judgment (Cushman, 2015), but an area that seems ripe for testing judgments of negligence vs. intentionality is health outcomes. Logically, judgments of whether a person intended to get skin cancer, for example, would be very low compared to judgments such as how much control the person had over preventing the skin cancer outcome, and how negligent the person was in failing to take more precautions. Thus, the present research evaluates the

distinctions between these judgments and the degree to which health moralization predicts each type of judgment.

Hypotheses

The following hypotheses were pre-registered through aspredicted.org. Greater moralization of health was hypothesized to predict attributing greater control, negligence, and blame to the vignette target. Health moralization was expected to demonstrate a small, or even no, relation to attributions of intention, as participants in general were expected to rate the target low on intentionality. The target was described as having relatively high or low resources, meaning that he either had a college education and a job that provided health insurance (high resources), or lacked a college education and did not have health insurance (low resources). It was hypothesized that the low resource target would be rated lower on control, negligence, and blame compared to the high resource target. Health moralization was also hypothesized to moderate the relation between resources and attributions of control, negligence, and blame, such that higher moralizers were expected to make strong attributions toward both the low and high resource target, whereas low moralizers were expected to make much weaker attributions toward the low resource target, and moderate attributions to the high resource target. In other words, higher moralizers were expected to be less sensitive to whether the individual had resources to care for their health, whereas lower moralizers were only expected to judge the high resource individual harshly. This interaction pattern was hypothesized because some of the hallmark features of moral attitudes include universality and rigidity, meaning that people who hold a moral attitude are more likely to believe that their view of the moralized issue applies to everyone, and people who hold a moral attitude are less likely to show flexibility in their stance on the moralized issue (Skitka, 2010). Thus, past research on moral attitudes would suggest that

high health moralizers are more likely to apply their values to any individual, regardless of the person's circumstances, meaning they would judge a low-resource target similarly to a high-resource target in the present study. Although this was the hypothesized interaction, it should be acknowledged that alternative outcomes are also plausible. Moral attitudes may operate differently in the health domain, such that instead of rigidly blaming all individuals for bad health outcomes, people with strong moral health attitudes recognize situational constraints and only attribute greater control, negligence, and blame to those who are judged as having a high ability to engage in good health habits. This would create a different type of interaction effect, wherein high and low moralizers attribute equally low amounts of control, negligence, and blame to a low resource target, and only diverge in their judgments of the high resource target. Alternatively, health moralization could continue to exert a strong main effect on attributions without interacting with resource level, meaning the slope for higher moralizers would have a higher intercept (indicating stronger attributions) but remain parallel with the slope for lower moralizers. Thus, an important goal was to better understand the degree to which people with different health attitudes attribute control, negligence, and blame towards people who have fewer resources (lack of college education, lack of health insurance) to prevent health problems.

Method

Participants

Participants were recruited from Amazon's Mturk platform and paid $1.00 for participating in the approximately 10-minute study. Only individuals who had not completed any of the author's previous studies were eligible to participate. A power analysis determined that, in order to detect a small interaction effect with an alpha level of .05 and 80% power, a sample of approximately 800 participants was needed. To ensure that approximately 800 participants were

retained for the final analyses, 850 participants were requested. An additional 13 participants completed the study, but one participant had too much missing data to be counted in any analyses, bringing the effective sample size to 862. The sample consisted of 453 women, 403 men, five gender non-binary individuals, and one individual who did not provide their gender identification. The sample had a mean age of 35.18 years (*SD* = 11.87). The majority of the sample identified as Caucasian (66.9%), followed by Black or African American (15.3%), Latinx (5.7%), Asian or Asian American (5.5%), multiracial (2.9%), or another race or ethnicity (3.1%), and 0.6% declined to answer. On a 7-point political orientation scale ranging from strongly liberal to strongly conservative, 41.3% of participants identified as liberal, 19.5% as moderate, and 39.2% as conservative. Participants also provided their education level: High School graduate or lower (7.8%), some college (18.0%), trade/technical school or 2-year college graduate (10.5%), Bachelor's degree (42.2%), Master's degree (19.4%), and Ph.D. or similar terminal degree (2.2%). Finally, 27.9% of the sample identified as not at all religious, whereas the rest of the sample (72.1%) identified between slightly and very religious.

Participants were given a simple attention check item which read, "Pick the first option (0) to indicate that you are reading these questions fully." The attention check appeared on the individual health status page (positioned after the main study measures), and before the demographics survey page. Eighty-two participants failed the attention check and were excluded from analyses, bringing the final sample size to *N* = 780. The demographics of this final sample were highly similar to those listed above. The remaining analyses and hypothesis tests presented in this paper were conducted with the participants who passed the attention check.

Procedure and Materials

After giving informed consent to take part in the online survey, participants were told that the study was about "attitudes toward health and different healthcare policies." For the purposes of reinforcing that perception, the first 2 items presented were two health insurance opinion poll questions that were used in Study 3. Participants were then randomly assigned to one of four conditions: heart disease and high resources (n = 193), heart disease and low resources (n = 195), skin cancer and high resources (n = 194), and skin cancer and low resources (n = 198). The condition vignette read as follows, with conditional information shown in brackets:

> "Please read the following story, taken from a recent blog series on the state of health and healthcare in the US:
>
> Mike, a 50-year-old man in the U.S., has recently been diagnosed with [heart disease/skin cancer]. He says the diagnosis took him by surprise because he did not have risk factors such as overweight or a family history of [heart disease/skin cancer]. However, he never [engaged in exercise and he ate an unhealthy diet of processed foods, sugary sodas, and few vegetables/used sunscreen or protective clothing to minimize his sun exposure]. [*High resources*: Fortunately, he has a college degree and a full-time job at a manufacturing company that provides him a health insurance plan.] [*Low resources*: Unfortunately, he has no college degree, and while he has a full-time job at a manufacturing company, it does not provide him a health insurance plan.]
>
> Mike's story is a relatively common one among people in the U.S., and we are interested in people's perceptions of individuals in this type of situation. Please read the following 12 statements carefully and indicate your agreement or disagreement with each one."

The vignette and its associated questions were followed by the MH and PIH scales. Participants then answered questions about their current health status, followed by demographic items and a debriefing statement. The following section describes the study measures in greater detail.

Target attribution items. Participants indicated the amount of *control, intention, negligence,* and *blame* they attributed to the target for the negative health outcome. Three statements were created to represent each of the four constructs and were measured on a scale from 1 (*completely disagree*) to 9 (*completely agree*). The control items included the following: "Mike could have prevented his disease," "Mike's health was under his personal control," and "Mike had no control over the cause of his disease" (reverse-coded). The intention items were written as, "Mike intentionally caused his disease," "Mike expected his behavior to lead to this disease," and "Mike did not want to get this disease" (reverse-coded). The negligence items included, "Mike was negligent in taking care of his health," "Mike's disease is the result of his carelessness," and "Mike did his best to take care of his health" (reverse-coded). The blame items included, "Mike is to blame for his disease," "It is Mike's own fault that he is ill," and "Mike should NOT be blamed for his disease" (reverse-coded). When combined into mean scores for each construct, the Cronbach's alpha reliabilities were acceptable: control (M = 5.62, SD = 1.65, α = .66), intention (M = 2.45, SD = 1.60, α = .73), negligence (M = 5.34, SD = 1.87, α = .78), and blame (M = 4.23, SD = 2.10, α = .86).

Moralization of health (MH) and personal importance of health (PIH). The final versions of these scales contained 11 MH items and 8 PIH items, with no reverse-coded items included due to their poor performance in Studies 2 and 3. As usual, items were mixed together

and presented in random order, and measured on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). The properties and reliabilities of the scales are discussed in the results section.

Healthcare coverage opinions. Participants answered two items about the provision of healthcare in the U.S., which were identical to the two Pew Research Center poll questions from Study 3.

Health status measures. Some of the personal health status measures from Studies 2 and 3 were included in the present study (see Study 2 methods for measurement details). To shorten the study length, the exercise and diet questions were excluded. Participants generally reported being in good current health (M = 7.04, SD = 1.59) and exerting relatively strong effort to be healthy (M = 7.01, SD = 1.82), on scales ranging from 0 to 10 points. Participants were coded as current smokers if they indicated smoking cigarettes, e-cigarettes, or cigars "every day" or "some days;" 24.2% of the sample were coded as current smokers. The sample had a mean BMI of M = 26.33 (SD = 6.29) after excluding implausibly low (< 15) and high (>70) BMI values. Mean self-perceived weight status was M = 3.22 (SD = 0.92), indicating that participants typically classified themselves as "average" weight.

Results

Factor Analysis of MH and PIH Measures

A CFA with Maximum Likelihood estimation was used to fit the two-factor model. There were no missing values on these measures. As with the previous studies, the morality and personal importance items were loaded on separate factors and the two factors were allowed to correlate. The model was first tested without controlling for any correlated errors among items. The model fit the data reasonably well: χ^2 (151) = 744.19, p < .001, SRMR = .047, RMSEA = .071, CFI = .940, and TLI = .932. A second model that controlled for correlated errors was also

tested. As recommended from the modification indices from Studies 2 and 3, the error terms for five pairs of variables that shared similar phrasing were allowed to correlate to correct for a method effect. The model fit the data well: χ_2 (146) = 451.18, $p < .001$, SRMR = .044, RMSEA = .052, CFI = .969, and TLI = .964. This finding confirms the improvement in model fit that was found in Study 3, suggesting that researchers may wish to account for these correlated errors a priori to achieve the best model fit.

There was a weak-to-moderate correlation between MH and PIH ($r = .26$, $p < .001$), and the Cronbach's alpha reliability was high for the MH ($\alpha = .95$) and PIH ($\alpha = .91$) scales. One case was an extreme, low outlier on PIH, most likely due to careless responding (as the participant selected "1" for every MH and PIH item). The outlier was coded as a missing value to prevent the score from having an undue influence on the remaining analyses. The skewness of the distributions was similar to the previous studies, with MH ($M = 3.91$, $SD = 1.50$) having a more normal distribution compared to the more extreme skewness of PIH ($M = 5.78$, $SD = 0.91$), as evident in the box plots shown in Figure 10. Histograms displaying the distributions of MH mean scores across the four studies, and separately for the studies conducted with Mturk samples, are shown in Figure 11. The histograms demonstrate that MH scores show sufficient variability and do not have a problematic amount of skewness. Although neither distribution is normal, overall the distributions are not skewed strongly, and the skewness decreases further when the YourMorals.org sample from Study 1 is excluded. Correlations between MH, PIH, and other health and demographic variables were comparable to those found in Studies 2 and 3, as shown in Tables 12 and 13.

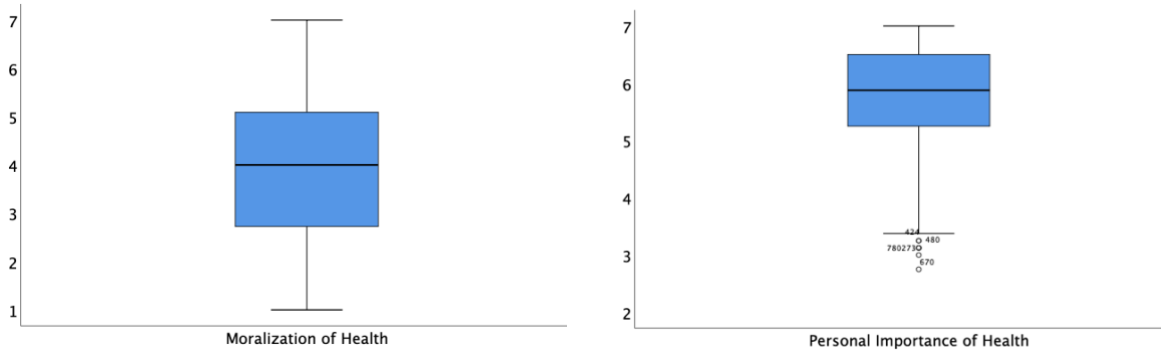

Figure 10. Box plots displaying distributions of MH and PIH scores (Study 4).

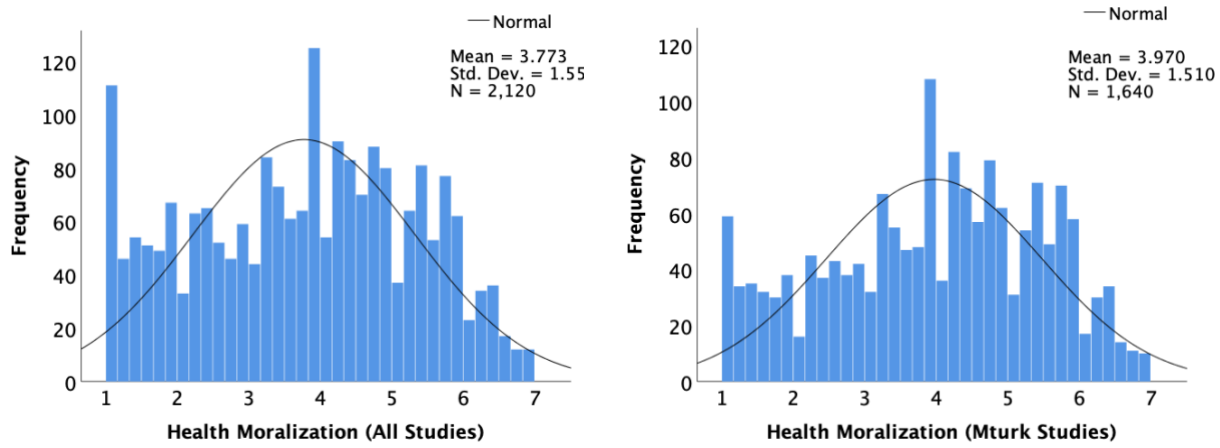

Figure 11. Histograms displaying distributions of mean MH scores. The histogram on the left displays the MH scores across all studies, and the histogram on the right displays MH scores for Mturk samples only (Studies 2 – 4).

Table 12
Pairwise Correlations Between Health Scales and Health Variables (Study 4)

	1	2	3	4	5	6
1. MH						
2. PIH	.26***					
3. Current health	.24***	.40***				
4. Health effort	.24***	.62***	.56***			
5. Perceived weight	-.15***	-.15***	-.26***	-.19***		
6. Smoker	.07	-.29***	-.07*	-.16*	-.04	

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

Table 13
Pairwise Correlations Between Health Scales and Demographic Variables (Study 4)

	1	2	3	4	5	6	7
1. MH							
2. PIH	.26***						
3. Male gender	.14***	-.03					
4. Conservatism	.36***	-.02	.17***				
5. Education	.07	.08*	.08*	.02			
6. Age	-.03	.09*	-.02	.16***	.06		
7. Religiosity	.33***	.07	.05	.46***	.12**	.07	

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

Vignette Analyses

Prior to examining moralization's role as a predictor, factorial analysis of variance (ANOVA) models were created to examine the differences between conditions and any potential interactions between disease type and resource level. The means and standard deviations for each construct, separated by disease type and resource level, are shown in Table 14. As expected, judgments of control, negligence, and blame were noticeably higher than for intention. The means suggest a clear pattern of stronger attributions for the heart disease individual compared to the individual described as having skin cancer. The pattern for the influence of resources is less clear and it appears to exert less influence on attributions than type of disease.

Tables 15 and 16 display the factorial ANOVA results. Disease type had a significant and moderate-to-large effect on attributions of control, negligence, and blame, and a small but significant effect on attributions of intention. This suggests that, contrary to predictions, heart disease and skin cancer were not judged equally, but rather that heart disease was perceived as more controllable and indicative of greater negligence and eligibility for blame. Compared to disease type, resource level had a much smaller influence, exerting a small, statistically significant effect on control and blame attributions, and nonsignificant effects on negligence and intention. Although the differences among means appeared to suggest an interaction between

disease type and resource level, the interaction was only marginally significant for control, negligence, and blame, and nonsignificant for intention.

Table 14
Means and Standard Deviations for DVs by Experimental Condition

		Control		Negligence		Intention		Blame	
Disease type	Resources	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
heart disease	high	6.17	1.46	6.05	1.66	2.72	1.65	5.01	1.91
	low	6.01	1.51	6.06	1.49	2.65	1.61	4.79	1.99
skin cancer	high	5.41	1.72	4.85	2.01	2.29	1.59	3.92	2.13
	low	4.89	1.56	4.43	1.72	2.14	1.49	3.21	1.88

Table 15
Factorial ANOVAs Predicting Control and Negligence Attributions

	Control			Negligence		
	F (df, df)	*p*	η_p^2	*F* (df, df)	*p*	η_p^2
Corrected Model	27.13 (3, 776)	<.001	.10	45.81 (3, 776)	<.001	.15
(Intercept)	9985.41 (1, 776)	<.001	.93	7446.11 (1, 776)	<.001	.91
Disease type	69.47 (1, 776)	<.001	.08	131.25 (1, 776)	<.001	.15
Resources	8.75 (1, 776)	.003	.01	2.78 (1, 776)	.096	.00
Dis_type * Resources	2.78 (1, 776)	.096	<.01	2.95 (1, 776)	.086	.00

Note. Disease type was coded as 1 = heart disease, 0 = skin cancer. Resources were coded as 1 = high, 0 = low.

Table 16
Factorial ANOVAs Predicting Intention and Blame Attributions

	Intention			Blame		
	F (df, df)	*p*	η_p^2	*F* (df, df)	*p*	η_p^2
Corrected Model	6.19 (3, 776)	<.001	.02	34.11 (3, 776)	<.001	.12
(Intercept)	1862.76 (1, 776)	<.001	.71	3565.43 (1, 776)	<.001	.82
Disease type	17.40 (1, 776)	<.001	.02	88.09 (1, 776)	<.001	.10
Resources	1.01 (1, 776)	.315	.00	10.86 (1, 776)	.001	.01
Dis_type * Resources	0.10 (1, 776)	.748	.00	2.90 (1, 776)	.089	.00

Note. Disease type was coded as 1 = heart disease, 0 = skin cancer. Resources were coded as 1 = high, 0 = low.

Hypothesis Testing with Linear Regression Models

OLS multiple regression analyses were conducted to test the hypotheses that health moralization uniquely predicts variation in judgments of control, negligence, and blame, as well as testing for a significant interaction between health moralization and resource level. Health moralization was also tested as a predictor of intention, but because ratings of intention were expected to be extremely low more generally, it was hypothesized that moralization would weakly and positively, or even fail to, predict variation in intention. The models predicting control and intention ratings are displayed in Table 17, and the models predicting negligence and blame are displayed in Table 18.

As was found in the ANOVA model, type of disease exerted a positive, moderate influence on ratings of control, negligence, and blame, such that the heart disease target was judged more harshly than the skin cancer target. It was hypothesized that the low resource target would be rated lower on control, negligence, and blame compared to the high resource target. As shown in Tables 17 and 18, this hypothesis was confirmed for ratings of control and blame even

when adjusting for health attitudes, but not for negligence and intention ratings (mirroring the results of the previous ANOVA tests).

As hypothesized, health moralization was a significant positive predictor of control, negligence, and blame, as well as a predictor of intention. The size of its influence varied across the four types of attributions, with health moralization demonstrating small associations with control and negligence, a moderate association with blame, and an unexpected strong association with intention. Contrary to hypotheses, health moralization did not interact with resource level to predict any of the outcomes, meaning that only the main effect of moralization, as shown in Block 2 of each model, should be interpreted. No hypotheses were offered for the potential influence of personal importance of health, as its role has been to serve as a covariate when health moralization is in the model. However, it emerged as a weak positive predictor of control and negligence, and a small negative predictor of intention.

Inclusion of gender and political conservatism in the regression models (not shown here) reduced the strength, but did not change the statistical significance of, the relations between health moralization and intention (reduced to a moderate association), negligence and blame (reduced to small associations). Political conservatism, but not gender, was a small positive predictor in those models. When predicting control attributions with conservatism in the model, health moralization became a nonsignificant predictor, which was not surprising given that moralization was only a weak predictor of control originally. Finally, it should be noted that other non-hypothesized interactions were tested in exploratory analyses. There were no significant two-way interactions between disease type and resources, or between health moralization and disease type, and no significant three-way interactions between disease type, resources, and health moralization. The lack of interaction between health moralization and

disease type suggests that, despite the heart disease target overall receiving stronger judgments than the skin cancer target, the strength of moralization as a predictor of these judgments did not depend significantly on type of disease.

Final exploratory analyses were conducted to examine the role of perceived intention in blame judgments. In a linear regression model regressing blame on disease type, resource level, and the remaining attributions, intention only explained 7% additional variance in blame, while control and negligence accounted for over 50% of the variance in blame. Furthermore, mediation models demonstrated that the stronger blame attributions observed for the individual with heart disease compared to the individual with skin cancer were explained fully by increased perceptions of negligence but were not explained by judgments of intention (nor fully mediated by perceived control). Thus, although intention was a significant predictor of blame, negligence was the most crucial predictor overall.

Table 17

Moralization and Experimental Conditions Predicting Control and Intention Attributions

	Control		Intention	
	b (SE) [95% CI]	β	*b (SE)* [95% CI]	β
Block 1				
Disease type	0.94 (0.11)*** [0.72, 1.16]	0.29	0.48 (0.11)*** [0.25, 0.70]	0.15
Resources	0.33 (0.11)** [0.11, 0.55]	0.10	0.12 (0.11) [-0.11, 0.34]	0.04
$R^2_{Adjusted}$	.09		.02	
Block 2				
Disease type	0.97 (0.11)*** [0.75, 1.19]	0.29	0.51 (0.10)*** [0.32, 0.70]	0.16
Resources	0.34 (0.11)** [0.12, 0.56]	0.10	0.05 (0.10) [-0.14, 0.24]	0.02
PIH	0.22 (0.06)** [0.09, 0.34]	0.12	-0.39 (0.06)*** [-0.50, -0.28]	-0.22
MH	0.11 (0.04)** [0.04, 0.19]	0.10	0.57 (0.03)*** [0.50, 0.63]	0.53
$R^2_{Adjusted}$	.12		.29	
Block 3				
Disease type	0.978(0.11)*** [0.76, 1.19]	0.30	0.52 (0.10)*** [0.32, 0.70]	0.16
Resources	0.34 (0.11)** [0.12, 0.56]	0.10	0.05 (0.10) [-0.14, 0.24]	0.02
PIH	0.21 (0.06)** [0.09, 0.34]	0.12	-0.39 (0.06)*** [-0.50, -0.28]	-0.22
MH	0.07 (0.05) [-0.03, 0.17]	0.06	0.57 (0.05)*** [0.48, 0.66]	0.53
MH*Resources	0.09 (0.07) [-0.06, 0.24]	0.06	0.01 (0.07) [-0.12, 0.13]	<0.01
(Constant)	4.96 (0.10)***		2.17 (0.08)***	
F (5, 773)	21.90***		64.28***	
$R^2_{Adjusted}$	.12		.29	

Note. Standard errors are shown in parentheses. Constant and *F* values shown are for the full model. MH and PIH scores are mean-centered. Disease type was coded as 1 = heart disease, 0 = skin cancer. Resources were coded as 1 = high, 0 = low.

*$p < .05$; **$p < .01$; ***$p < .001$.

Table 18

Moralization and Experimental Conditions Predicting Negligence and Blame Attributions

	Negligence		Blame	
	b (SE) [95% CI]	β	*b (SE)* [95% CI]	β
Block 1				
Disease type	1.42 (0.12)*** [1.18, 1.66]	0.38	1.33 (0.14)*** [1.05, 1.61]	0.32
Resources	0.21 (0.12) [-0.04, 0.45]	0.06	0.47 (0.14)** [0.19, 0.75]	0.11
$R^2_{Adjusted}$	.15		.11	
Block 2				
Disease type	1.46 (0.12)*** [1.23, 1.70]	0.38	1.39 (0.14)*** [1.13, 1.66]	0.33
Resources	0.21 (0.12) [-0.03, 0.45]	0.06	0.44 (0.14)** [0.18, 0.71]	0.11
PIH	0.20 (0.07)** [0.07, 0.34]	0.10	0.05 (0.08) [-0.10, 0.21]	0.02
MH	0.21 (0.04)*** [0.12, 0.29]	0.16	0.43 (0.05)*** [0.33, 0.52]	0.30
$R^2_{Adjusted}$	.19		.20	
Block 3				
Disease type	1.47 (0.12)*** [1.23, 1.70]	0.39	1.39 (0.14)*** [1.13, 1.66]	0.33
Resources	0.21 (0.12) [-0.03, 0.45]	0.06	0.44 (0.14)** [0.18, 0.71]	0.11
PIH	0.20 (0.07)** [0.06, 0.34]	0.10	0.05 (0.08) [-0.10, 0.21]	0.02
MH	0.19 (0.06)** [0.07, 0.30]	0.15	0.43 (0.05)*** [0.33, 0.52]	0.30
MH*Resources	0.04 (0.08) [-0.12, 0.20]	0.02	0.003 (0.09) [-0.12, 0.20]	<0.01
(Constant)	4.51 (0.11)***		3.32 (.12)***	
F (5, 520)	36.62***		40.71***	
$R^2_{Adjusted}$	.19		.20	

Note. Standard errors are shown in parentheses. Constant and *F* values shown are for the full model. MH and PIH scores are mean-centered. Disease type was coded as 1 = heart disease, 0 = skin cancer. Resources were coded as 1 = high, 0 = low.

*$p < .05$; **$p < .01$; ***$p < .001$.

Discussion

The present study provided additional evidence for the structure and reliability of the MH and PIH scales. A confirmatory factor analysis revealed that the model fit was high even without controlling for correlated errors among items, in part because reverse-coded items were not included in this study. As was the case in Studies 2 and 3, model fit was improved substantially and met all criterial for a well-fitting model when the item pairs with correlated errors that were detected in previous studies were adjusted for a priori, suggesting that future studies may also want to control for those correlated errors in advance. The MH and PIH scales demonstrated correlations with other health and demographic variables similar to the correlations found in Studies 2 and 3. Personal importance of health once again demonstrated moderate to strong positive associations with ratings of current health status and health effort, whereas health moralization demonstrated small correlations with these variables. Health moralization correlated moderately and positively with political conservatism and religiosity, suggesting that these are reliable associations that could be expected to occur in the general population.

In the experimental portion of the study, overall attributions differed depending on whether the individual in the vignette was described as having heart disease or skin cancer, and, to a lesser extent, depending on whether the individual was described as having a college education and access to health insurance. The heart disease individual received statistically significantly stronger attributions of control, negligence, intention, and blame compared to the individual with skin cancer. Thus, the results suggest that heart disease is perceived as more controllable and blameworthy than skin cancer. The individual's resource level had only a small, statistically significant effect on judgments of control and blame, and there were no significant interactions between disease type and resource level.

Greater moralization of health was hypothesized to predict attributing greater control, negligence, and blame to the vignette target. These hypothesized relations were confirmed, with moralization predicting statistically significant small increases in perceived control and negligence and a moderate increase in blame. Health moralization remained a small, positive predictor of negligence and blame when regression models included gender and political orientation. It is not essential to include conservatism in the model, however. In light of research showing that conservatives tend to attribute greater control and blame to others (Everett et al., 2020), and the consistent moderate association between health moralization and conservatism, its inclusion as an additional predictor may remove a conceptually essential component of health moralization, rather than serving to clarify the role of moralization in these judgments. Taken together, the results suggest that many participants, regardless of their health moralization score, judge the target as having control over the negative health outcome, but that moralization is an important determinant of the extent to which a participant is motivated to attribute negligence and blame to the target.

Health moralization was expected to demonstrate a small, or even no, relation to attributions of intention, as participants in general were expected to rate the target low on intentionality, meaning the variability of intention scores would be highly suppressed. The mean scores generally confirmed the expectation that an individual who develops a disease, while perhaps intentionally engaging in risky behavior, is not perceived as *intending* to get the disease itself. However, although mean intention scores were quite low regardless of experimental condition, health moralization emerged as a strong, positive predictor of intention attributions. One plausible explanation, albeit post hoc, is that the strong relation between moralization and intention attributions reveals participants' motivated reasoning at work. It may be that

participants did not actually believe that the person truly intended to get a disease, but rather that intention ratings reflected a desire to blame the individual for their bad behavior, a desire that would be expected to correlate strongly with moralization. The connection between health moralization and greater attributions of intentionality is reminiscent of what is referred to as the "side-effect effect," (Leslie, Knobe, & Cohen, 2006), in which people tend to infer that a person intended for a negative side effect to occur, but do not ascribe the same intentionality for a positive side effect. In that literature, for example, a common scenario described a CEO who professed awareness that an action they were taking for the benefit of their company would indirectly have a negative or positive effect on the environment. Participants were then asked to judge whether the CEO *intended* to harm or help the environment. The results revealed that people infer greater intention when the side effect was negative (harm to environment) compared to when the side effect was positive. Moreover, negative moral judgments of an individual have been shown to influence a variety of related judgments, including judging a person whose behavior caused a negative outcome as more knowledgeable about (Beebe & Buckwalter, 2010), and having a more favorable attitude toward (Pettit & Knobe, 2009), the negative outcome, and attributing greater responsibility and blame to the individual (Alicke, 1992). Similarly, in the present research, which only featured scenarios in which the target's health behavior led to a negative outcome, it may be that higher moralizers experienced a stronger, negative moral reaction to the target, which influenced subsequent judgments of the person's intention to develop a disease.

Exploratory analyses provided additional insight on the relation between intention and blame in the health domain. In a linear regression model, intention explained a relatively small amount of variance in blame, while control and negligence accounted for over 50% of the

variance in blame. Furthermore, a mediation model demonstrated that the stronger blame attributions observed for the heart disease target were explained fully by increased perceptions of negligence, but not by perceived intention. Thus, the results suggest that negligence is the most crucial predictor of blame for preventable health conditions, while intention is a far less important determinant of blame.

Health moralization was hypothesized to moderate the relation between resources and attributions of control, negligence, and blame, such that higher moralizers were expected to make strong attributions toward both the low and high resource target, whereas low moralizers were expected to make much weaker attributions toward the low resource target, and moderate attributions to the high resource target. Contrary to hypotheses, there were no significant interactions between moralization and resource level. Thus, moralization simply remained a main effect predicting stronger attributions overall, holding constant the influence of disease type and resource level. Additionally, resource level itself did not have as strong an influence as was expected. It appeared to make a small difference in judgments of control and blame, but mostly for the skin cancer target. It is unclear whether this weak effect was due to participants simply not believing that individual circumstances matter much to a person's ability to prevent disease, or whether it was the wording of the vignette itself. Perhaps the "resources" of a college education and health insurance are not seen as being relevant to a person's amount of control and negligence in preventing a disease, but other factors would be considered if provided. For example, perhaps participants would have weighed resources more heavily if the person had been described as more explicitly low income, or as having to work multiple jobs, which would signal a lack of time for taking care of their health. A study found that giving explicit information about a target's lower-class status, in the form of a low-paying blue-collar job

working for an employer that did not provide health insurance, led to less blame and a lower allocation of treatment costs to the target (Gollust & Lynch, 2011). In light of this previous finding and the remaining questions generated by the present study, further research is needed to determine whether particular resources, such as an explicit lack of income or free time, generally matter to judgments such as control, responsibility, and blame for health conditions. Moreover, of greater interest to the present research is the need to establish whether resource level interacts with health moralization attitudes.

General Discussion

Summary of Study Findings

Scale development. The moralization of health (MH) and personal importance of health (PIH) scales were developed for the purposes of having a reliable measure of health moralization and to separate the moral judgment component of health attitudes from how much people personally care about health. The scales were factor analyzed and refined across the four studies. The final model, which was utilized in Studies 3 and 4, achieved a good model fit with 11 MH and 8 PIH items, according to the CFA fit statistics.

The final version did not contain any reverse-coded items, as these performed poorly in the Mturk samples. Although the difficulties with the reverse-coded items may simply reflect more careless responding among Mturk participants, the fact that participants consistently distinguished between the moralization and personal importance items, which were mixed together in random order, suggests that most participants were attending carefully to the scale items. Therefore, another possibility is that the reverse-coded items were poorly worded, or simply did not make sense to participants, thereby creating additional error in the measurement model. If researchers are interested in using these measures in the future, they are advised to either keep the present scales intact, with no reverse-coded items, or create new negatively phrased items that may perform better than the ones tested in the present studies. Views on the benefits of including negatively-phrased items vary, however. Considerable research suggests that the drawbacks of this method, such as the reduction of a scale's alpha reliability and the need to create additional factors to accommodate reverse-coded items, outweigh any proposed benefits of including negatively phrased items (Barnette, 2000; Melnick & Gable, 1990; Schmitt & Stuits, 1985; Weems, Onwuegbuzie, & Collins, 2006). Instead, a scale that provides consistent

item phrasing and uses a bipolar response scale that allows respondents to use the full range disagreement and agreement options leads to a more reliable measurement instrument (Barnette, 2000). Thus, the present structure of the moralization and personal importance scales, which do utilize bipolar response options, may still be the optimal design for use in future studies.

The correlations between MH and PIH remained relatively low across the studies, ranging from small (.18) to moderate (.33). PIH scores were consistently and strongly negatively skewed across the four studies, which was not surprising given the scale's content. Many people care about having good personal health and, at any one time, are engaged in some type of health endeavor (e.g., dieting) or managing a chronic condition, leading to higher overall PIH scores. As PIH was not the focal predictor in this research, and the PIH scale still demonstrated the expected associations with other variables, the skewed PIH distributions were not considered problematic. Across four studies, the MH scale demonstrated that a substantial number of people endorse a moral view of health, with a median of 4.09 across studies 2 – 4 (Mturk samples), indicating that on average, half or more of respondents scored above the neutral midpoint of the scale. Although the MH scores were not normally distributed, there was not a problematic degree of skewness, and there was a sufficient amount of variation to make the MH scale a useful predictive tool (see Figure 11).

Discriminant and convergent validity. In addition to developing the scales themselves, Studies 1 and 2 provided evidence of discriminant and convergent validity, along with associations between the scales and many demographic variables. In doing so, the studies expanded our understanding of health moralization in particular.

In Study 1, the correlations between health moralization, the Moral Foundations Questionnaire (Graham et al., 2011), and the big five personality traits (John et al., 1991) were

examined. MH demonstrated moderate and positive associations with the binding foundations of authority, loyalty, and purity, with the highest moderate correlation being purity, and little to no association with the individualizing foundations of harm and fairness. The correlations with the binding foundations became small but remained significant when controlling for political conservatism. Thus, the correlations between MH and the binding foundations were due in part to their shared association with conservatism. The correlation between MH and purity was only reduced to .26, however, suggesting that MH itself may be linked to an enhanced concern for bodily purity. Nevertheless, these modest correlations provided assurance that MH is a distinct construct not adequately captured by an existing, prominent scale of moral values. MH (as well as PIH) demonstrated discriminant validity with the big five personality traits, as all observed correlations were either small or nonsignificant.

In Study 2, as predicted, health moralization demonstrated convergent validity through moderate to strong positive correlations with the Protestant work ethic (PWE), global belief in a just world, a single-item measure of self-control moralization, antifat attitudes, an internal locus of health control, and the perceived preventability of common chronic health conditions. The association between health moralization and PWE in part reflects a reverence of hard work. Crandall (1994) documented a similar association between antifat attitudes and PWE, noting that it was part of an overall conservative ideology in which people are blamed for not exerting sufficient effort to lose weight. Similarly, health moralization was strongly associated with belief in a just world, which reflects the belief that people tend to get the outcomes that they deserve in life, whether negative or positive, and are thus to blame if they experience a negative outcome; this type of association was likewise documented in Crandall's (1994) work. A similar self-control moralization item revealed the same pattern, with health moralization being strongly

correlated with self-control moralization. Health moralization was also related to holding an antifat attitude, which reflects a dislike of overweight people and a belief that weight is controllable; thus, this construct naturally coincides with health moralizers' tendency to see many different health conditions as controllable. Likewise, health moralization correlated moderately with an internal health LOC, again reflecting health moralizers' greater tendency to view health as controllable through individual behavior. Finally, health moralization correlated strongly with ratings of how preventable a variety of chronic conditions are (e.g., heart disease, certain cancers) through individual behavior. Hence, a picture emerged in which health moralization clearly reflects a preoccupation with hard work and self-control, a belief that health is controllable, and an overall tendency to blame others for negative outcomes they experience.

Associations between health moralization, conservatism, and religiosity. Across the four studies, health moralization was positively and moderately correlated with political conservatism (with the exception of the small correlation found in Study 2), indicating that conservatives are more likely to moralize health. This finding agrees with research showing that conservatives moralize more issues in general, including non-political issues (Carey & Paulhus, 2013; Everett et al., 2020). The consistent association also aligns with a great deal of research documenting conservatism's positive association with antifat attitudes (Crandall, 1994), obesity moralization (Ringel & Ditto, 2019), dispositional attributions for bad behavior (Weiner, 1993), and attributing greater personal responsibility and blame to people who engage in harmful health behaviors (Gollust & Lynch, 2011; Lundell et al., 2013).

Across Studies 2 – 4, health moralization also correlated positively and moderately with religiosity. The association was explained in part by their shared association with conservatism, but correlations adjusted for conservatism were small to moderate and remained statistically

significant, indicating that some true relation between health moralization and religiosity remains. Furthermore, PIH did not correlate with religiosity in any study, which suggests that it is the moral component rather than the personal importance of performing health behaviors that is particularly associated with religiosity. Perhaps this is because religious identity is associated with condemnation and avoidance of cigarettes, excessive alcohol consumption, and illicit drug use (Aukst-Margetić & Margetić, 2005; Oleckno & Blacconiere, 1991). Religions such as Protestant Christianity also emphasize caring for one's health and treating the body as a "temple" (Jacobson et al., 2016). Hence, religious believers may be more likely to link health with morality, which could increase their agreement with the MH items. Future research would benefit from recruiting a sample with diverse religious backgrounds so that different religious groups, including different sects of Christianity, can be compared on health moralization.

Associations between health attitudes, self-reported health status, and health behaviors. Health moralization and personal importance of health were both associated with a number of health variables, but to a different degree. Across the four studies, the correlations for PIH provided clear evidence of convergent validity, as personal importance of health consistently demonstrated a moderate and positive association with self-rated health, and a strong association with health effort. PIH also demonstrated moderate positive correlations with diet quality and physical activity, small to moderate negative correlations with smoking, and small negative correlations with self-perceived weight. In contrast, health moralization demonstrated small-to-moderate correlations with self-rated health quality and the amount of effort expended to be healthy, as well as small positive associations with diet quality and physical activity, and small negative correlations with self-perceived weight; an unexpected positive association with smoking also emerged. Furthermore, MH demonstrated an unexpected

positive correlation with chance health LOC. More research is needed to replicate and understand this association, but it may indicate that high moralizers see more of a role for chance in their own health outcomes than they do for others. The fact that health moralization was a weaker predictor of health quality overall compared to personal importance of health makes sense in light of research on the link between attitudes and behavior. An attitude that reflects a person's individual health beliefs (PIH) would be more likely to relate to that person's behavior compared to an attitude focused on what people in general should do for their health (MH), because the more specific an attitude is to the behavior being measured, the stronger the attitude-behavior link should be (Ajzen & Fishbein, 1977). The causal links between these variables cannot be discerned in the present research. It may be that naturally healthier individuals tend to moralize health more, because they have less experience with chronic health conditions, or that people who naturally enjoy engaging in certain health behaviors develop a stronger sense of the personal importance of health. For now, all that can be noted are associations, and future research would benefit from exploring whether health moralization confers any health benefits for high moralizers.

Health moralization as a predictor of healthcare policy views. Studies 3 and 4 demonstrated the predictive validity of health moralization. Much of Study 3 focused on the hypothesis that stronger health moralization predicts greater endorsement of healthcare policies that penalize people who engage in poor health behavior. If people with a stronger moral view of health believe that others should take more personal responsibility for their health and should accept greater blame for preventable conditions, the consequences of these views should be evident in healthcare policy preferences. As blame is associated with a desire to punish the transgressor (Carlsmith et al., 2002; Cushman, 2008), "punishment" in the health domain may

manifest as financial penalties and limitations on access to care for people who engage in unhealthy behaviors and thus violate the moral value of personal responsibility for health. This hypothesis was confirmed with a number of different outcome variables. Greater health moralization predicted assigning greater healthcare costs, in the form of higher premiums and copays, to people with poor health habits. Health moralizers also opted to give substantially lower priority on organ transplant lists to people with poor past behavior. The above associations also held when adjusting for gender and conservatism, with health moralization still explaining a significant, moderate amount of variance in the above criterions. As hypothesized, health moralization also had a significantly stronger association with a favorable attitude toward the stick policy-approach to health insurance pricing compared to the carrot policy, indicating that health moralization is uniquely associated with approval of a penalty-based approach to insurance premiums. However, the hypothesis that high moralizers would indicate less preference for the carrot policy (when asked to indicate which policy they would prefer if they were in charge of this decision for an organization), was not confirmed. Thus, while health moralization was a stronger predictor of stick-policy favorability, it did not predict a preference for a reward or punishment approach when participants were asked more directly to choose between the two types of approaches. It may be that because both approaches have a shared emphasis on individual behavior as a determinant of insurance premiums, high moralizers have little reason to prefer one over another. Instead, the results of Study 3 suggest that both types of policies are acceptable to many people, including higher moralizers, but that health moralization uniquely predicts viewing penalty-based policies favorably.

Overall, the aforementioned findings add to our understanding of health moralization as an individual difference that also fits with a more general worldview characterized by a greater

concern for personal responsibility, a tendency to make dispositional attributions for negative outcomes, and a desire to blame and penalize those who violate a moralized value. This worldview is more prevalent among political conservatives (Carey & Paulhus, 2013; Crandall, 1994; Everett et al., 2020; Weiner, 1993), which, as noted earlier, shows a consistent, moderate association with health moralization.

The finding in Study 3 that health moralization predicts endorsement of higher healthcare costs for certain individuals has important broader implications for U.S. healthcare policies. The present research suggests that health moralization may influence people's health policy opinions, which could ultimately influence the enactment of different policies. For example, health moralization, with its focus on personal responsibility for health, could cause some people to ignore, or reduce their motivation to care about, group-based health disparities that currently afflict U.S. society. Research has already documented this phenomenon among political conservatives, noting that conservatives are more likely to attribute these disparities (and thus the responsibility for improving them) to the individual choices of these group members (Robert & Booske, 2011; Gollust & Lynch, 2011; Lundell et al., 2013; Rigby et al., 2009). A moralized attitude itself already strengthens the inclination to blame others for their health problems, potentially exacerbating the tendency to ignore health disparities or oppose actions to reduce such disparities. This opposition may be especially apparent for policies that would involve greater costs to taxpayers because, as the reasoning goes, if health is a matter of personal responsibility, why should some people pay more to combat the poor health choices of others? Health moralization's impact on healthcare policies may also manifest as a greater willingness to support policies that could ultimately worsen health disparities, by charging disadvantaged

people, who are more likely to have poor health habits and chronic conditions (U.S. Department of Health and Human Services, 2000), more for healthcare.

The results of the cost-related policy measures in Study 3 paint a picture of health moralizers as viewing individual behavior as a valid determinant of how much people should pay for healthcare, or in some cases their eligibility for scarce resources (i.e., transplants). What is less clear, however, is whether health moralization has any relation to people's broader healthcare policy opinions, such as whether the federal government should provide healthcare to all people, and whether healthcare is a right for all people regardless of their situation or behavior. No hypotheses were offered, but three healthcare policy items about these issues were included in Study 3 to explore these unknown relations. From those analyses, an unexpected finding emerged in Study 3 that may also have broader implications for people's support of U.S. healthcare policies. Health moralization only demonstrated a main effect in the form of a negative association with the item capturing agreement that healthcare is a right for all people. However, for each of the three items, health moralization interacted significantly with conservatism, revealing that conservatives with a higher tendency to moralize health show stronger support for the arguably more "liberal" policies of the federal government having a responsibility to ensure that all people have access to healthcare, having the federal government provide a national health insurance system, and affordable health care being a right for all people. This interaction replicated for the two federal government variables in Study 4 (the "healthcare as a right" item was not included in Study 4). Thus, while health moralization and conservatism may interact to produce stronger judgments of personal responsibility and blame, health moralization could influence some conservatives to endorse policies that provide healthcare to all people. Further research is needed to understand why this interaction exists, but

one possibility is that because health moralization also reflects a general concern for everyone's ability to improve their health and prevent costly chronic conditions, this concern may motivate some people with a conservative political orientation to support policies that would ensure that everybody has access to the tools needed for good health, including access to quality healthcare.

Health moralization as a predictor of attributions of control, responsibility, and blame for health conditions. Studies 2 – 4 investigated health moralization as a unique predictor of judgments of control, responsibility, and blame for health conditions. In Study 2, health moralization was moderately-to-strongly associated with the overall perceived preventability of common diseases, an indication that high moralizers view chronic conditions as more controllable than low moralizers. Similarly, in Study 3, participants were asked to rate the amount of personal responsibility they thought people should have in preventing each of the 12 leading causes of death in the U.S. (a list that shared some, but not all, of the Study 2 items). Health moralization was likewise a significant predictor of personal responsibility attributions and remained a moderate-size predictor even when adjusting for other covariates.

As these studies only tested health moralization as a predictor of global attributions for health conditions, Study 4 was conducted to evaluate the role of health moralization in judgments of an individual with one particular health condition. The individual was described as failing to follow health protective behaviors prior to their diagnosis, being diagnosed with either heart disease or skin cancer, and either having a college education and health insurance (high resources) or not (low resources). As hypothesized, health moralization was a significant positive predictor of the degree to which participants perceived the individual as having control over his health, being negligent in caring for his health, and deserving of blame for getting the disease. The strength of these associations varied, with health moralization demonstrating small

associations with control and negligence attributions, and a moderate association with blame. The associations with negligence and blame remained significant when gender and conservatism were included in the model, suggesting that health moralization is particularly important for these uniquely moral judgments, but may not be as important for the more general assessment of a person's control over their health (as control was the weakest of the associations originally). Health moralization demonstrated an unexpected, strong association with intention. Although this finding was not hypothesized, in retrospect, this result may best be explained by research on morally motivated reasoning, which would predict that a negative moral appraisal of a target can influence subsequent judgments of the person's intention to cause a harmful outcome (e.g., Leslie et al., 2006). Thus, in the present research, it may be that higher moralizers experienced a stronger, negative moral reaction to the target compared to low moralizers, which influenced subsequent judgments of the person's intention to develop a disease.

Study 4 also demonstrated that, more generally, perceptions of a person's intention to cause their disease were far less important for predicting blame than perceptions of control and negligence. For example, intention only explained a small amount of additional variance in blame when control and negligence were included in a regression model. Furthermore, a mediation model demonstrated that the stronger blame attributions observed for the heart disease target were explained fully by increased perceptions of negligence and not explained by judgments of intention. Thus, while moralization may share a unique relation to intention due to the aforementioned reasons, blame for chronic health conditions appears to depend much more on perceived control and negligence than inferences of a person's intention to cause a bad outcome, which aligns with research showing that factors such as control can exert a separate,

and sometimes more important influence on blame and punishment than perceived intent to cause harm (Cushman, 2008; Martin & Cushman, 2016).

Contrary to hypotheses, health moralization did not interact with resource level to predict any of the outcomes. However, rather than interpreting this as evidence for the null hypothesis, the low effect in general observed for resource level suggests that the manipulation itself was not strong enough to adequately test this hypothesis, given that other research has found that people are inclined to assign less blame and punitive costs to low SES individuals (Gollust & Lynch, 2011). This previous research did not test for differences in blame by political orientation, but observed that overall, people blamed a low-income individual less for developing a chronic health condition compared to a middle-income individual. This difference in blame did not emerge (among White participants) when only race information indicating the individual was African American or White was provided, however (Gollust & Lynch, 2011). It is still an open question whether people who moralize health are inclined to lessen their judgments of control, negligence, and blame for individuals who are more explicitly described as having a low income. Cues to how hardworking an individual is in non-health-related areas of life may also influence blame; perhaps a low-income individual who works two jobs would be blamed less than a similar individual who works one job. Ultimately, additional research is needed to determine whether particular resources, such as an explicit lack of income or leisure time to pursue health-supporting behaviors, generally matter to judgments such as control, responsibility, and blame for health conditions, and more importantly for the present research, whether resource level interacts with health moralization.

Taken together, the increased control, responsibility, negligence, and blame attributions among high moralizers observed in Studies 2 – 4 have important broader implications in a

number of areas. As discussed earlier, responsibility and blame judgments feed into healthcare policy preferences, and thus could have a substantial impact on the enactment of policies in employment settings as well broader policies at the local or national levels. The tendency to emphasize individual behavior and deemphasize the importance of situational (or other) constraints on health could prevent meaningful progress on policies that would decrease health inequities (Gollust, Lantz, & Ubel, 2009; Robert & Booske, 2011). Additionally, previous research by Täuber (2018) complements the present findings, suggesting that health moralization has the potential to divide society through enhanced stigmatization of people who engage in a moralized behavior (e.g., cigarette smoking) and unequal treatment of those who violate the moral health norm through higher healthcare costs.

Increased stigmatization of others based on their actual or assumed health behaviors or health status could negatively influence a variety of interpersonal contexts, including hiring and promotion decisions in employment contexts. This has already been observed in the case of obesity. A meta-analysis of weight-based bias in the workplace found that obese individuals are disadvantaged at many stages, including hiring, promotions, and performance evaluations (Rudolph et al., 2009). As health knowledge grows, and thus the potential for judging people who exert insufficient health effort grows, moralized health attitudes may influence evaluations of others regardless of obesity. Unhealthy lifestyle habits more generally, as well as diagnosed health conditions, could be enough to trigger stigmatization and consequences stemming from health-related stigma.

Health moralization may also influence healthcare providers interactions with and treatment of patients, which in turn may influence patients' satisfaction with their care and even avoidance of healthcare providers. Research has already documented the effects of antifat

attitudes among healthcare providers, revealing that physicians' tend to have more negative perceptions of obese patients across many health and personal character attributes, and lower expectations that obese patients would comply with medical advice (Bertakis & Azari, 2005; Hebl & Xu, 2001; Tomiyama et al., 2015). Physicians may also diverge from patients in their perceptions of the causes of obesity, as research suggests that physicians consider eating habits to be the primary cause of (and solution to) obesity, while patients are more likely to blame external causes such as hormones, metabolism, stress, and financial problems (Ogden et al., 2003). Interestingly, some physicians also report avoiding discussion of weight-related or lifestyle issues with patients, even when it would seem beneficial for the patient's health, for fear of being perceived as blaming the patient or discouraging the patient from seeking care in the future (Blackburn & Stathi, 2019). Both moralization and a fear of communicating that moralization can affect a physician's treatment of their patients, suggesting that patients' sensitivity to perceived moral judgment from their physicians is also an important problem warranting further investigation.

While we already see the effects of obesity stigma in healthcare settings, a larger concern is that a moralized attitude toward health, particularly one that is inflexible in response to patient's situational constraints, may infiltrate treatment more generally for people who fail to engage in preventive behaviors and then develop a chronic condition. One issue that may arise is that, as suggested by Ogden et al. (2003), physicians view lifestyle as the primary cause of many chronic conditions, while patients see other issues as the cause and expect more assistance and counsel from a physician or other healthcare provider in order to make any lifestyle changes. Although more research is clearly needed, one consequence of a moralized health attitude may be the belief that health behaviors are simple, and mainly a matter of willpower. This belief

could lead some doctors to overestimate their patients' realistic ability to implement lifestyle changes and perpetuate divergent perceptions of both the causes of and solutions to health problems. The physician-patient relationship is also affected by how much they like each other, meaning that both parties sense each other's appraisals and develop good (or bad) working relationships based on sincere liking (Hall, Horgan, Stein, & Roter, 2002; Hill, 2010). If blame and other moral judgments seep into the relationship, that mutual liking and trust between physician and patient may be damaged. As Hill (2010) concluded, moral judgment in healthcare is a vastly neglected topic with important implications for patient care.

General Limitations

The present research had a number of important limitations that should be acknowledged and addressed in future research. One limitation is that the present studies did not attempt to elucidate the causes of health moralization. The present studies were intended to begin a program of research that could speak to the nature of health moralization itself and some of its implications. An important question for future research is *why* some people see health behavior in moral terms, and whether one or multiple components, such as purity concerns, moral character evaluations linked to laziness and self-control judgments, and concerns related to free-riding and burdening society with healthcare costs, are necessary for moralization to occur. For example, if an experimental condition made it clear that a person had ample means to pay out of pocket for their healthcare, or that the person suffered no ill effects from their bad behavior, would their behavior draw the same level of condemnation from high moralizers? Manipulations such as this may help to tease apart the core mechanism(s) underlying health moralization. Moreover, health moralization was simply measured, and correlational evidence was gathered for its hypothesized consequences. Although it is not unusual for a proposed individual

difference variable to be observed rather than manipulated, future research may benefit from obtaining causal evidence of the effects of health moralization.

Another limitation is that the samples, while adequately powered, were not representative of the broader U.S. population to which this research is intended to generalize. For example, several health statistics found across the Mturk samples in Studies 2 – 4 differed greatly from known averages in the general U.S. population, such as higher self-reported smoking and physical activity levels and a lower BMI than the general population. Firmer conclusions should only be drawn when this work is replicated with other types of samples. With that acknowledged, certain findings, such as that some people endorse the policy of differential health costs for people who contributed to their health problems and rate such individuals as more personally responsible and blameworthy for their behavior, have been found in studies that used nationally representative samples (e.g., Gollust & Lynch, 2011; Mata & Hertwig, 2018). Thus, there is reason to suspect that at least some of the present results would largely replicate in more representative samples.

Other limitations concern some of the study methods used. For example, the measures of health moralization and personal importance of health, while consisting of face-valid items and achieving a good model fit, would have benefitted from following other best practices in scale design. These include starting with a larger pool of items, including a larger (or even equal) number of negatively phrased items, using samples from the same participant pool throughout the scale development process (i.e., using Mturk throughout, rather than starting with a YourMorals.org sample), and investigating the scales' test-retest reliability. While the scales achieved their purpose and demonstrated some important types of reliability and validity, the measures would benefit from further testing and development. Another methodological

limitation is that all individual health variables were self-report measures, leaving open the potential for biased responding. While this is always an issue with self-report measures, it may be of particular concern here if health moralization, personal importance of health, and self-reported health behaviors are positively associated with self-enhancement bias or socially desirable responding. Given this concern, the strength of the correlations between these measures should be interpreted with some caution. If objective health information cannot be obtained in future studies, interpretations of these associations would benefit from including self-enhancement and impression management measures (e.g., Paulhus, 2002), as well as counterbalancing the placement of these measures to account for any influence of attitude scales on self-reported behavior. The limitations of the vignette in Study 4 in terms of the potentially ineffective manipulation were already discussed at length. Overall, the limitations discussed here present a number of opportunities for future research.

Future Directions

As discussed in the limitations section, an important question for future research is *why* some people moralize health. Does health moralization simply reduce to the tendency to moralize effort and self-control more generally, or does a preoccupation with personal responsibility combine with other factors, such as purity (a moral foundation that correlated with health moralization in Study 1) and purity-related religious beliefs (given the consistent moderate-to-strong correlation between religiosity and MH), disgust sensitivity, and/or concerns about free-riding group members and harm to society through increased healthcare costs. Furthermore, is health moralization fundamentally connected to concern over harm to the individual or society, or are harm concerns only post-hoc rationalizations of moral judgments

(Haidt, 2001)? Future research would benefit from investigating whether poor health behaviors are moralized in situations in which it is made clear that no harm results from the behavior.

More research is needed to understand the effects of health moralization on personal health behaviors. Perhaps a benefit of health moralization is increased motivation to maintain good health, given that research on moralized attitudes more generally suggests that they should show stronger links with behavior (Skitka, 2010). Moreover, while more research is needed, studies to date suggest that personal moral norms predict stronger health behavior intentions (Rivis, Sheeran, & Armitage, 2009). Relatedly, research suggests that the value a person places on health moderates the relation between beliefs in self-control over health and performance of health-promoting behaviors (Lau, Hartman, & Ware, 1986).

Health moralization demonstrated consistent (though relatively small) positive correlations with self-rated health, health effort, physical activity and diet quality in the present research. If reflective of actual behavior, this would be an important benefit of health moralization. However, future research should determine whether there is a true causal association between health moralization and behavior, or whether alternative explanations account for this association. These could include a third variable, such as self-enhancement, explaining the observed associations, or the causal direction could be reversed, such that people who have naturally better health or enjoy engaging in certain health behaviors become more likely to moralize health. Of course, it is also possible to endorse a moral view of health while experiencing poor health. In these cases, does moralization have a positive or negative influence on people's well-being? In the case of obesity, endorsement of the Protestant work ethic is associated with lower self-esteem and greater depression and anxiety (Quinn & Crocker, 1999) for people who are obese, but not average weight individuals, suggesting that this value system

may have drawbacks for people experiencing health issues that tend to inspire self-blame. Another study found that messages intended to demoralize healthy eating, compared to moralizing messages, resulted in healthier snacking choices among participants who perceived themselves as overweight, but increased unhealthy snacking among those without self-perceived overweight status (Mulder, Rupp, & Dijkstra, 2014). Thus, moralized attitudes may be more beneficial for people who perceive themselves to be in good health or do not suffer from a stigmatized condition (e.g., obesity).

Another question for future research, given the apparent impression management benefits of presenting oneself as fit and health-conscious (e.g., Rodgers et al., 2009; Vartanian et al., 2007), is whether (and in what contexts) people attempt to signal health, and what the effects are of revealing different positive health behaviors. Additionally, future research should investigate whether health moralization predicts stronger positive reactions to good health behaviors, or if health moralization's effects are mainly limited to judgments of bad behavior. Conversely, what are the consequences of signaling certain poor health habits, such as a poor diet or sedentary behavior, apart from any known health conditions? The evidence from a meta-analysis on the effects of obesity in the workplace suggest that there could be detrimental consequences to people who signal low health effort, as obese people appear to be penalized at all stages, from hiring to promotions (Rudolph et al., 2009).

Given that the valorization of effort (Celniker et al., 2020) and self-control (Mooijman et al., 2018) appear to be at least a major component of moralized health attitudes, future research would benefit from studying the roles of perceived self-control and work ethic in judgments of others' moral character. Moral character information plays a central role in person perception (Goodwin, Piazza, & Rozin, 2014; Hartley et al., 2016; Landy, Piazza, & Goodwin, 2016;

Wojciszke, Bazinska, & Jaworski, 1998). Goodwin and colleagues' (2014; Landy et al., 2016) studies demonstrate that morality is more important than warmth or competence in determining whether someone is a good interaction partner. For example, Goodwin et al. (2014) found that, across many social roles, a person said to be highly moral but cold was preferred over a person described as immoral but warm. Traits such as hardworking, self-disciplined, and others related to the notions of work ethic and self-control have not been tested in these models, however, so less is known about how central these are in person perception.

Studies on perceptions of groups such as obese people (for a review, see Puhl & Heuer, 2009) and welfare recipients (e.g., Cozzarelli, Wilkinson, & Tagler, 2001) indicate that perceptions of traits such as laziness, low self-control, and poor work ethic create an overall negative impression (spanning warmth and competence dimensions) and elicit strong negative emotions such as disgust and contempt. Perceived exertion of effort appears to reduce negative judgments. For example, studies show that perceivers hold a "pro-effort" bias when evaluating obese individuals – negative impressions are mitigated when perceivers learn that the target puts a great deal of effort into weight loss, regardless of whether they are successful in losing weight (Beames, Black, & Vartanian, 2016; Black, Sokol, & Vartanian, 2014). It would logically follow that, given such negative overall impressions created by a perceived lack of effort, moral character judgments may similarly be affected. Moralized attitudes also lead to less positive impressions of a person's moral character if the person is described as violating the moral value, as was found in research on the moralization of rationality (Ståhl et al., 2016). More health-related research is needed, however. Van Leeuwen, Hunt, and Park (2015) called for more research on this topic in their review of obesity-related prejudice. Their review suggests that obesity stigma derives from both perceptions of appearance and psychological character, but that

more research is needed to understand, from an evolutionary perspective, why obesity affects perceptions of character and whether obese individuals are perceived as "poor cooperation partners." Laziness, for example, did not rank as a highly important trait in moral judgments of acquaintances (Hartley et al., 2016). However, perhaps it becomes central to moral judgments in certain contexts, such as when choosing individuals with whom to work or form close relationships, or when making decisions about policies that benefit or disadvantage certain groups (Cohen & Morse, 2014; van Leeuwen et al., 2015).

Future research would also benefit from following up on Study 4 in several ways. One improvement would be to include a measure of moral emotions, particularly those of anger, disgust, and contempt (Ståhl et al., 2016; Wright, Cullum, & Schwab, 2008). Research has found that experiencing stronger negative moral emotions towards an individual explains the relation between a moralized attitude and judgments of blame and punishment of a target who violates a moral value (Ståhl et al., 2016). Thus, in the present research, moral emotions should be included in future iterations of the Study 4 design in order to test whether the strength of certain emotions is an important mediator in the relation between a moral attitude and negative judgment or punishment of someone who engages in the moralized behavior. Additionally, our understanding of health moralization would benefit greatly from exploring intersectionality issues and boundary conditions. If health moralization can have negative consequences, we should determine the factors that make people more or less likely to blame an individual for a health problem and the people who are most likely to be recipients of such blame. The vignette target in Study 4 was male, and no race information was given, leaving us unable to evaluate how health moralization interacts with gender and race. Moreover, the resource manipulation needs to better convey the target's low-income, disadvantaged status. The obesity literature has had mixed findings related

to both gender and race, but a particular concern may be the potential for poor health behaviors to interact with existing race and class stereotypes, as race and class have already been shown to influence physicians' perceptions of patients (van Ryn & Burke, 2001).

Another future direction is to recruit samples of healthcare providers such as nurses and physicians to test the influence of health moralization on perceptions of patients with varying health behaviors and other factors, such as race and socioeconomic status. Nurses and physicians are vulnerable to negative judgments and decreased sympathy for patients perceived to have caused their condition and for those who do not exert sufficient effort to improve their health (Hill, 2010). Given that much of this research has focused on smoking and lung cancer, more research is needed to understand physicians' susceptibility to responsibility and blame attributions, and the effects of these judgments on their relationships with patients perceived to have unhealthy lifestyles. Patients themselves are also an important group to study, as some patients are aware of the stigma associated with poor health behaviors and report avoiding or delaying seeing doctors for health problems because of fear of being blamed for their condition (Alegria Drury & Louis, 2002; Amy, Aalborg, Lyons, & Keranen, 2006). This may contribute to health disparities among lower income and minority populations, who are more likely to engage in stigmatized behaviors such as smoking (Barbeau, Krieger, & Soobader, 2004) and have a poor-quality diet (Darmon & Drewnowski, 2008).

Finally, future research should investigate whether it is possible to meaningfully decrease health moralization in order to reduce harmful stigmatization of others. A major question for this research is whether attitudes can be "de-moralized" without reducing any positive effects of moralization, such as people's personal sense of control and health self-efficacy, as research in obesity attitudes has found that belief in the malleability of weight is linked to both greater self-

efficacy for weight loss and stronger antifat attitudes (Burnette, Hoyt, Dweck, & Auster-Gussman, 2017).

Healthism is here to stay, as the evidence of individual health behaviors' links to chronic diseases grows and serves to reinforce the societal belief in people's personal responsibility for health. With its message about what people *should* do for their health, and the extent to which people should be held *responsible* for their health outcomes, the moral language embedded in healthism is well-represented through the empirical measure of health moralization in the present research. The emerging research on the moralization of health can inspire new directions at the intersections of health, moral, and social psychology, and has far-reaching implications for blame and stigmatization of others, public policy views, individual health behaviors, and interpersonal relations in a wide variety of contexts.

Conclusion

The present research was intended to expand our understanding of the relevance of moral values in the health domain. It accomplished this by creating a reliable measure of health moralization, investigating the extent to which people endorse a moral view of health, and testing the hypotheses that health moralization predicts control, personal responsibility, and negligence and blame attributions for ostensibly preventable health conditions, as well as healthcare policy preferences that penalize individuals who engage in undesirable health behaviors. These hypotheses were confirmed, thereby supporting the contention that health moralization is a meaningful individual difference with important consequences for interpersonal relations and health policy views. However, given some of the null findings in Study 4, more research is needed to determine whether, or to what degree, high moralizers are sensitive in their judgments to situational constraints, such as poverty and unequal access to healthcare, that increase the likelihood of bad health practices.

Future research would benefit from expanding on the present studies, addressing important theoretical questions such as the core reason(s) that people moralize health, and continuing to clarify the potential positive and negative consequences of health moralization. On the positive side, health moralization may lead to greater investment in one's own health. A moralized health attitude should be approached with caution, however, as health moralization may lead to reproach of people perceived as failing to exert sufficient health effort, blame and stigmatization of those with health problems, and lower support for policies that aid disadvantaged groups (or conversely, stronger support for policies that may harm these groups), who are already more likely to have poor health practices and suffer from chronic conditions.

It should also be acknowledged that there is an inherent tension between the desire to minimize the harmful effects of blame and stigma and the recognition that individual health behaviors play a large, undeniable role in improving well-being and decreasing the chronic disease burden that currently afflicts so many communities in the U.S. and around the world (Lim et al., 2010; Sagner et al., 2014). Any quest to de-moralize health may benefit from an approach that still acknowledges the legitimate role of individual health choices, especially given the prominence of the personal responsibility narrative among both health moralizers and political conservatives (Gollust et al., 2009). Messages intended to increase the salience of the many social, environmental, and biological factors that hinder people's realistic ability to make those choices or experience ideal levels of health may suffer from partisan interpretations and polarized responses, as prior research has found (Gollust et al., 2009). However, by better understanding the moral roots of these judgments, and potentially leveraging those or other cherished moral values that health moralizers endorse, we can strive for an approach that decreases harmful stigmatization and victim-blaming while motivating people to create a political and social environment that gives everyone a fair chance to engage in health-promoting behaviors.

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Appendix

Table 1

Original Pool of MH and PIH Items

Moralization of Health

1. People have a moral responsibility to strive for a healthy lifestyle
2. Having an unhealthy lifestyle is something I morally disapprove of
3. Getting a preventable health condition is a moral failing
4. Maintaining a healthy lifestyle is a moral virtue
5. No matter what, people should never be blamed for their health problems (R)
6. People are not morally responsible for their health problems (R)
7. A person's morality is in no way related to their health behaviors (R)
8. It is morally wrong for a person to not look after their health
9. I am disgusted by people who don't make an effort to be healthy
10. No matter what their circumstances, everyone has a moral responsibility to develop good health habits
11. It is immoral to engage in unhealthy behaviors
12. It is immoral to never exercise
13. Eating an unhealthy diet is morally wrong
14. Smoking cigarettes is immoral
15. It is immoral to drink alcohol to excess
16. It is morally wrong to practice behaviors that could lead to chronic diseases
17. A person's bad health habits reflect poorly on their moral character

Personal Importance of Health

1. It is important to me personally that I meet my health goals
2. I care deeply about my health
3. I personally value having a healthy lifestyle
4. Health is one of the most important things in my life
5. It is important to me personally to prevent chronic health conditions
6. Health is not that important to me (R)
7. I rarely think much about my health (R)
8. It is not important to me to engage in healthy behaviors (R)
9. It is important to me personally to exercise
10. It is important to me personally to eat healthy foods
11. It is important to me personally to avoid smoking cigarettes
12. It is important to me personally not to drink alcohol to excess
13. It is important to me personally to follow health recommendations from my physician or other health authorities
14. It is important to me personally to educate myself about health issues
15. I get upset with myself when I fail to meet my health goals
16. My health is not a big priority in my life (R)

Table 2
Original EFA of MH and PIH Scales

	1	2	3	4
MH-1. People have a moral responsibility to strive for a healthy lifestyle	**0.936**	0.09	-0.029	-0.307
MH-8. It is morally wrong for a person not to look after their health	**0.907**	0.026	0.002	-0.072
MH-16. It is morally wrong to practice behaviors that could lead to chronic diseases	**0.878**	-0.023	0.113	-0.091
MH-10. No matter what their circumstances, everyone has a moral responsibility to develop good health habits	**0.873**	0.061	-0.07	-0.114
MH-4. Maintaining a healthy lifestyle is a moral virtue	**0.825**	0.095	-0.03	-0.057
MH-12. It is morally wrong to never exercise	**0.809**	0.047	-0.036	0.027
MH-13. Eating an unhealthy diet is morally wrong	**0.796**	0.002	-0.011	0.088
MH-11. It is immoral to engage in unhealthy behaviors	**0.78**	-0.045	0.2	0.115
MH-2. Having an unhealthy lifestyle is something I morally disapprove of	**0.776**	0.081	0.062	0.098
MH-17. A person's bad health habits reflect poorly on their moral character	**0.719**	0.02	-0.052	0.228
MH-3. Getting a preventable health condition is a moral failing	**0.702**	-0.007	-0.012	0.153
MH-7. A person's morality is in no way related to their health behaviors (R)	**0.618**	-0.036	-0.005	0.226
MH-14. Smoking cigarettes is an immoral behavior	**0.617**	-0.129	0.332	0.067
MH-6. People are not morally responsible for their health problems (R)	0.457	0.036	-0.16	0.194
MH-9. I am disgusted by people who don't make an effort to be healthy	0.445	0.2	-0.093	0.336
PIH-3. I personally value having a healthy lifestyle	0.024	**0.849**	0.041	0.064
PIH-2. I care deeply about my health	0.024	**0.829**	-0.012	-0.082
PIH-1. It is important to me personally that I meet my health goals	0.01	**0.819**	0.012	0.007
PIH-6. Health is not that important to me (R)	-0.059	**0.808**	0.013	0.057
PIH-16. My health is not a big priority in my life (R)	-0.033	**0.762**	-0.115	-0.011
PIH-4. Health is one of the most important things in my life	0.094	**0.752**	-0.039	0.005
PIH-9. It is important to me personally to exercise	0.1	**0.732**	-0.077	0.046
PIH-10. It is important to me personally to eat healthy foods	0.077	**0.716**	0.053	-0.049
PIH-5. It is important to me personally to prevent chronic health conditions	-0.059	**0.686**	0.158	0.025
PIH-7. I rarely think much about my health (R)	-0.041	**0.645**	-0.131	0.037
PIH-14. It is important to me personally to educate myself about health issues	-0.032	**0.618**	0.025	-0.006

PIH-15. I get upset with myself when I fail to meet my health goals	0.14	0.499	0.017	0.088
PIH-8. It is not important to me to engage in healthy behaviors (R)	-0.034	0.401	0.055	0.025
PIH-13. It is important to me personally to follow health recommendations from my physician or other health authorities	0.047	0.347	0.132	-0.133
PIH-12. It is important to me personally not to drink alcohol to excess	-0.026	0.026	0.589	-0.001
MH-15. It is immoral to drink alcohol to excess	0.501	-0.099	0.512	0.149
PIH-11. It is important to me personally to avoid smoking cigarettes	0.008	0.114	0.439	-0.045
MH-5. No matter what, people should never be blamed for their health problems (R)	0.104	0.109	-0.013	0.533

Note. Items 1 – 17 on MH scale, items 18 – 33 on PIH scale.

Table 3
EFA of MH and PIH Scales Constrained to Two Factors

	1	2
MH-11. It is immoral to engage in unhealthy behaviors	**0.892**	-0.069
MH-8. It is morally wrong for a person not to look after their health	**0.881**	0.008
MH-16. It is morally wrong to practice behaviors that could lead to chronic diseases	**0.873**	-0.036
MH-2. Having an unhealthy lifestyle is something I morally disapprove of	**0.844**	0.055
MH-13. Eating an unhealthy diet is morally wrong	**0.841**	-0.025
MH-12. It is morally wrong to never exercise	**0.819**	0.024
MH-17. A person's bad health habits reflect poorly on their moral character	**0.81**	-0.015
MH-10. No matter what their circumstances, everyone has a moral responsibility to develop good health habits	**0.805**	0.047
MH-4. Maintaining a healthy lifestyle is a moral virtue	**0.794**	0.079
MH-1. People have a moral responsibility to strive for a healthy lifestyle	**0.787**	0.091
MH-3. Getting a preventable health condition is a moral failing	**0.776**	-0.037
MH-14. Smoking cigarettes is an immoral behavior	**0.743**	-0.143
MH-7. A person's morality is in no way related to their health behaviors (R)	**0.721**	-0.068
MH-15. It is immoral to drink alcohol to excess	**0.703**	-0.108
MH-9. I am disgusted by people who don't make an effort to be healthy	0.567	0.164
MH-6. People are not morally responsible for their health problems (R)	0.499	0.009
MH-5. No matter what, people should never be blamed for their health problems (R)	0.335	0.069
PIH-12. It is important to me personally not to drink alcohol to excess	0.131	0.037
PIH-3. I personally value having a healthy lifestyle	0.049	**0.85**
PIH-2. I care deeply about my health	-0.032	**0.84**
PIH-1. It is important to me personally that I meet my health goals	0.001	**0.824**
PIH-6. Health is not that important to me (R)	-0.048	**0.812**
PIH-16. My health is not a big priority in my life (R)	-0.085	**0.767**
PIH-4. Health is one of the most important things in my life	0.072	**0.754**
PIH-9. It is important to me personally to exercise	0.086	**0.73**
PIH-10. It is important to me personally to eat healthy foods	0.057	**0.723**
PIH-5. It is important to me personally to prevent chronic health conditions	-0.017	**0.691**
PIH-7. I rarely think much about my health (R)	-0.074	**0.646**
PIH-14. It is important to me personally to educate myself about health issues	-0.04	**0.624**
PIH-15. I get upset with myself when I fail to meet my health goals	0.176	0.492
PIH-8. It is not important to me to engage in healthy behaviors (R)	-0.015	0.404
PIH-13. It is important to me personally to follow health recommendations from my physician or other health authorities	0.018	0.359

PIH-11. It is important to me personally to avoid smoking cigarettes	0.11	0.122

Note. Items 1 – 17 on MH scale, items 18 – 33 on PIH scale.

Table 4

Study 2 Scale Items: Moralization of Health and Personal Importance of Health

Moralization of Health

1. People have a moral responsibility to strive for a healthy lifestyle
*2. It is morally wrong for a person not to look after their health
3. It is morally wrong to practice behaviors that could lead to chronic diseases
4. No matter what their circumstances, everyone has a moral responsibility to develop good health habits
5. Maintaining a healthy lifestyle is a moral virtue
6. It is morally wrong to never exercise
7. Eating an unhealthy diet is morally wrong
8. It is immoral to engage in unhealthy behaviors
*9. Having an unhealthy lifestyle is something I morally disapprove of
10. A person's bad health habits reflect poorly on their moral character
11. Getting a preventable health condition is a moral failing
12. A person's morality is in no way related to their health behaviors (R)
13. Smoking cigarettes is an immoral behavior

Personal Importance of Health

1. I personally value having a healthy lifestyle
2. I care deeply about my health
3. It is important to me personally that I meet my health goals
*4. Health is not that important to me (R)
5. My health is not a big priority in my life (R)
6. Health is one of the most important things in my life
7. It is important to me personally to exercise
8. It is important to me personally to eat healthy foods
9. It is important to me personally to prevent chronic health conditions
10. I rarely think much about my health (R)
11. It is important to me personally to educate myself about health issues

*Removed items after study 2 correlation analysis

Table 5

Study 3 Scale Items: Moralization of Health and Personal Importance of Health

Moralization of Health

1. People have a moral responsibility to strive for a healthy lifestyle
2. It is morally wrong to practice behaviors that could lead to chronic diseases
3. No matter what their circumstances, everyone has a moral responsibility to develop good health habits
4. Maintaining a healthy lifestyle is a moral virtue
5. It is morally wrong to never exercise
6. Eating an unhealthy diet is morally wrong
7. It is immoral to engage in unhealthy behaviors
8. A person's bad health habits reflect poorly on their moral character
9. Getting a preventable health condition is a moral failing

*10. A person's morality is in no way related to their health behaviors (R)

11. Smoking cigarettes is an immoral behavior
12. It is immoral to drink alcohol to excess

Personal Importance of Health

1. I personally value having a healthy lifestyle
2. I care deeply about my health
3. It is important to me personally that I meet my health goals

*4. My health is not a big priority in my life (R)

5. Health is one of the most important things in my life
6. It is important to me personally to exercise
7. It is important to me personally to eat healthy foods
8. It is important to me personally to prevent chronic health conditions

*9. I rarely think much about my health (R)

10. It is important to me personally to educate myself about health issues

Note. The starred items indicate the three reverse-coded items that were found to perform poorly in factor analyses across Studies 2 and 3, and thus were removed from subsequent analyses in Study 3 and excluded entirely from Study 4.