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A Religious Framework as a Lens for Understanding the Intersection of Genetics, Health, and Disease

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Abstract

The primary goal of this study was to determine the extent to which religious frameworks inform lay public understandings of genes and disease. Contrary to existing research, there were minimal differences between racial groups. We did, however, observe two patterns in that data that are worthy of discussion. First, because participants were from the South, the finding that participants from both racial groups ascribe to a religious belief system to make sense of their lived experiences is not surprising. Rather, it appears to be reflective of the religious culture that is an integral part of the South and our identity as a nation. A second noteworthy finding is that while a significant number of participants believe a relationship exists between health status, genes, and religious behaviors, they also recognize that positive health behaviors must also be adopted as a means for staving off disease. In some cases, however, there was a belief that health issues could dissolve or disappear as a result of certain religious behaviors such as prayer.

Keywords

African American; European American; genetics; human genetic research; prayer; religious behaviors; religious frameworks; religious identity; Southern culture; spirituality

INTRODUCTION

Medical literature on health and the lay public suggests that sensitivity to a patient's identity is critical to addressing the many health issues plaguing many segments of this important population. While race has been noted as a critical part of one's identity [Orbe and Harris, 2008], the same can also be said for other aspects of how a person chooses to define him/herself. Koenig [2004] argues that practitioners should be more sensitive to other aspects of culture as well [Kniss and Campbell, 1997], such as religious identity. Matthews et al. [2002] offer that such mindfulness should be directed toward the spiritual beliefs of one's patients, which requires that practitioners take into account a patient's spiritual history in order to provide health care consistent with one's religious or spiritual beliefs and practices. While some may believe doing so might compromise health outcomes, the possibility is greater that patients who consult with their doctors and actively engage in religious beliefs and behaviors will have improved health and reduced health risks. These findings warrant more purposeful efforts in developing health messages that are sensitive to those culture-specific beliefs and values, thus making the messages more impactful, salient, and relevant to the lay public.

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While the literature indicates that racial differences regarding religious beliefs and health do exist [Aaron et al., 2003; Culver et al., 2002; Harris et al., 2004; Holt et al., 2003; Johnson et al., 2005; Koenig, 2004; Larson and Larson, 2003], the current study aimed to explore this relationship in a geographical location where race and religion matter. Because the southern states in the U. S. are institutions with a very strong religious faith and have a strong history of racial division, we thought it was imperative to our understanding of religion and health to consider the extent to which these two frameworks or epistemologies function in lay public understandings of health and genetics.

Standpoint Theory as a Theoretical Framework

Religious frameworks are increasingly being recognized as a standpoint or epistemology. Standpoint theory has traditionally been used to explore women's "common interests rising out of common experience, interests of which they can and should become aware. When this awareness is reached, collective action becomes likely which can bring about desirable changes in women interests" [New, 1998, p. 349]. There is a longstanding debate regarding the utility of standpoint theory. According to some theories of feminism, it is a woman's gendered identity that informs her socially constructed reality. No matter what roles a woman fulfills in her life, she is defined by her gender. There is much validity to this position; nevertheless, we must consider what happens to people who have other socially constructed identities [Reynolds, 2002], as we have already articulated. Standpoint theory was originally designed to give voice to the experiences of women as a marginalized group and has evolved to include other socially constructed identities, such as race, gender, class, and occupation [King, 1988; Stanback, 1989]. Thus, for the purposes of this study, standpoint theory is used as a framework for understanding how socially constructed [and intersecting] identities influence societal understandings of human genome research [HGR], health, and religious beliefs. Therefore, it is imperative that, in a society where advances in HGR directly impact the lay public and health community alike, research is conducted that examines the apparent relationship between religious [read cultural] standpoints and health.

Through qualitative methodologies such as focus groups and in-depth interviews, we can gain an increased knowledge and understanding of the multiple dimensions of a standpoint. Although race and ethnic disparities literature has found that racial standpoints play an important role in the way people think about health, we aimed to explore this relationship within a southern culture where racial and religious standpoints frequently intersect.

METHODS

The current study is part of a larger study on lay understandings of the relationship between genetics and health, particularly among low-economic status African Americans [AA] and European Americans [EA] in rural and urban areas of the South. A total of 50 in-depth interviews were conducted to discover current lay understandings used by low income AAs and EAs in the South in their discussions of the relationship between religion, genes, and health behaviors.

To gain understanding of the concepts lay people employ for articulating the relationships among “genes”, “behavior”, and “health,” we conducted two series of interviews. The first was a series of 50 interviews with low income EAs and AAs. We, the authors of this paper, are members of the [organization deleted to provide anonymity, hereafter “OURORG”], and it is our priority to focus on the discourses and health needs of low-income individuals. In conventional studies, a “general” population survey is sought, but using “general” methods usually produces samples that are deficient in representing low-income individuals. Most health care research thus ends up further marginalizing those in poverty. To contribute to

redressing this imbalance, we use methods that focus on participation by low-income individuals.

"OURORG" defines "low income" using the Center for Disease Control's categories for "poor" [below the federal poverty level] and "near poor" [100–199% of the federal poverty level], here operationalized as a household income of less than $35,000 USD. In the first study we focused on European Americans [13 women, 10 men] and African Americans [12 women, 23 men] because these are the two largest demographic groups in our region. [Two individuals who reported their race as "other," one male and one female, were not included in our data because they did not identify completely with either of our demographic groups of interest.] We divided our recruitment between two cities within an hour and a half of downtown Atlanta, Georgia. This provides us with an urban environment and rural counties in the health district surrounding Atlanta and allows us to gain diversity in population density and lifestyles.

Forty participants were recruited by ORCMacro, a research firm with extensive experience in low income and minority research. They recruited participants by going to locations where low-income individuals were present and inviting them to interview through a one-on-one approach [i.e. the Salvation Army and low income apartment complexes]. Subsequently, members of our research team recruited an additional 10 persons from the rural area to increase the number of younger individuals participating in the study. We recruited these individuals by going to barber and beauty shops, asking the management if they would allow onsite recruiting. Participants were provided an honorarium of 75$USD for a one hour interview. Over 90% of participants in all venues approached agreed to participate. In all cases but six, interviewees were matched by ethnicity with the interviewer.

Interviewers received between two and four hours of training on the interview guide [depending on prior experience]. The unit of analysis for the current study is the talk turns provided in response to the interview question pointedly asking participants to share their personal opinions about the relationship between religious beliefs and behaviors and health status. The question was designed to prompt participants to describe their religious beliefs and to identify specific religious behaviors [i.e. prayer, fasting, reading the Bible] they recognize/identify as central to coping with various health issues. To better understand how such frameworks are used to understand HGR and disease, the religious statements provided by participants were compared with their responses to three separate questions about genetics and disease [heart disease, lung cancer, and diabetes]. Participants were asked whom they perceived was at greater risk for the disease, Gene who has the gene for that disease or Doug who does not. In order to determine the extent to which the lay public understands gene and environment interaction, participants were also probed to discuss whether or not they believed healthy [i.e., diet, exercise] or unhealthy behaviors affect their risk level. Audiotapes of interviews were transcribed and then were corrected by a second auditor from the team.

Data Analysis

Three techniques were employed to establish trustworthiness in the blended manifest and latent content analysis, as recommended for coding data such as transcripts and field notes [Berg, 1998]. First, a qualitative latent analysis was used, with three coders independently reading the transcripts [Lincoln and Guba, 1986], and using the talk turns in response to the religion question as the unit of analysis to highlight any beliefs about and attitudes toward religious behaviors and their influence on health. The coders also conducted a second reading of the transcripts [open coding] to capture any references with spiritual or religious connotations. This open coding promoted the likelihood that all references to religion, religious behaviors, and God would be noted. A textual search of such terms as "prayer",

"healing", and faith was conducted to discover religious references that occurred naturally in the course of the interview; therefore, responses prompted by the religion question were examined separately.

The results of the initial coding were reviewed and discussed, leading to the identification of several consistent themes regarding the role of religion in coping with possible health issues. The transcripts were coded independently a second time with these in mind to identify any additional references. Findings are supported by at least two examples for each assertion [Berg, 1998].

RESULTS

The results revealed that 48 of the 50 study participants offered one or more substantive responses to the question about religion and discussed the degree to which they believed there was a relationship between the practice of religious behaviors, health, and healing. Of the 318 talk turns devoted to discussion of this subject, 98 talk turns clearly articulated participant attitudes and beliefs about the subject.

Engagement of Religious Beliefs and Behaviors

Seventy-five talk turns of the 98 talk turns, or 76%, of the total were affirmative responses, or a confirmation by participants that they ascribe to a religious framework, but in varying degrees. Of the 48 participants, 33 offered an affirmative response, 21 women and 12 men. Participants shared that they either believe God exists, engage in religious behaviors such as prayer, church attendance, or Bible study, or acknowledge the existence of God/Higher Power. Analysis reveals that 74% of the AA participants offered affirmative responses, which included 100% [n = 13] of the female and 30% [n = 7] of the male participants. As for EA participants, 62% also responded in the affirmative, with 61% of the females [n = 8] and 50% of the males [n = 5] reporting a religious framework. In the following section, we will describe the more complex aspects of the data, whereby participants elaborated on or explained whether they believed religious behaviors directly affect one's health status.

Religion, Health, and Disease Interaction: Affirmative Talk Turns—Participants were asked if they believed religious behaviors such as prayer for healing or other church activities have the potential to affect whether or not a person can be cured from a disease. Twenty-nine of the 75 affirmative talk turns [38%] reflect a general belief of a relationship between religion, which was conceptualized in a very broad sense, and health. Affirmative talk turns support a general belief among a significant number of participants that religious beliefs are important. Within these talk turns, analysis reveals eight different frameworks or themes that describe how participants attempt to explain the tenets of their beliefs and how they are used to explain the aforementioned relationship.

Health is predetermined by God: The theme of predetermination refers to the belief that one's health status is predetermined by God. These participants see the role of God in their lives as having one function, whereas prayer as a religious behavior fills a separate and undefined purpose. WM157 [White Male 157] and BF64 [Black Female 64] both offer examples of this approach to understanding the role of religion in one's health status. In general, they believe in prayer and recognize it as important; however, in the case of ill health, they note that "if it's meant to be, it's meant to be," thus implying that if a person has a gene for a disease, they will in fact have the disease as some point, regardless of any religious behaviors or interventions [e.g., prayer, healing services]. Participants appear to believe that no behaviors including religious behaviors can change the course of a disease, if it is predetermined by God through their genetic makeup.

In his interview, WM157 explains that prayer, though important, plays more of a role in one's conscience rather than in one's physical health. He further notes that, "But as far as treating, you know, keeping you from getting diseases or, you know, or dying from like a cancer or something, I don't believe that. That's not going to, either way, it's not going to keep you from getting that, you know." According to this talk turn, no relationship exists between religious behaviors and health status. The framework used by these participants indicates that prayer serves neither a preventative nor a restorative role if someone has a deleterious gene.

Gene means disease: Further analysis of the responses from WM157 and BF64 to the question about genes and health risks reveals two different attitudes towards this relationship. BF64 expresses a belief that having a gene for a heart disease or diabetes greatly increases the likelihood that they will have that disease. She further articulates that those risks can be reduced if individuals adopt more healthy behaviors. She notes, "It's gonna affect their health, like, I give them maybe, I'll say eighty percent. 'Cause, you know, if they do right by they body, then it will impact them. That's what I believe." This participant espouses this framework to understand the relationship between genes and health. She believes that religious belief systems play an important role in how one deals or copes with their health status. This position is further supported by her belief that having the gene increases one's risk for the disease; however, it must be noted that she is of the mindset that those risks can be reduced with the adoption of positive health behaviors.

Similarly, three other participants describe this belief of a relationship between genes, disease, and health by discussing how having a gene for heart disease, lung cancer, and diabetes coupled with negative health behaviors significantly increases risks for disease. BF62 describes how the fictional character Doug has less risk than Gene.

> Yeah, I'm changin' to Doug, because, I mean, 'cause Gene, no matter what he does in the, uh, I mean, he still has that gene, so. I mean, they mighta, they mighta, you know, live the same lifestyle [indecipherable] the same time, but still, Gene is more, um, I think Gene is more apt to get it.

This talk reflects a belief that the presence of a gene for a disease [diabetes] is more likely to become a real health issue for a person with that gene. BF62 also expresses a belief that a change in lifestyle, such as proper eating and exercising, plays an equally important role in one's risk for disease. Similarly, BM11 believes Gene is a higher risk for heart disease, yet is somewhat confused about who is really at a greater risk for poor health. The presence of a gene leads to an assumption that this means the person already has the disease; nevertheless, the participants recognize that this person must be proactive in their health if they do not want the disease to manifest itself.

Preventative religious behaviors: A second general theme reveals a belief that undertaking a proactive religious behavior has the potential to significantly reduce the risks or "heal" one from an illness or disease. Participants provided narratives of their own experiences or those from others in their interpersonal networks where a direct relationship was made between religious behaviors and improved health. [We must note that all of the quotes are from AAs, as their responses were more elaborate than those of the EA participants.] For example, BM61 [Black Male 61] believes that religious behaviors such as prayer are directly related to being healed of disease. He specifically shares the story of his friend who was battling cancer but the doctor was unable to diagnose her a second time for the disease, as he was unable to "find" it. In short, he concludes that after her church prayed for her and "when she went back to the doctor, he didn't find anything." BM61 expresses some hesitation in healing as a reality, but reports it as a phenomenon that can only be described as religious in

nature. We also note that BF62 also identifies prayer as a preventative religious behavior and uses the experience of a third person as evidence supporting this belief and perspective.

Unlike BM61 and BF62, BM11 believes prayer is the solution to the problem of disease. He believes that God "won't allow you to be stressful for longer than the few seconds you realize something wasn't right, and then you think, 'Oh, I gotta still trust in Him.' Then stress is gone." BM11 continues to share how prayer coupled with a relationship with God is of equal if not more importance, particularly if one would like to improve their health. He contends that religious activity is critical to effectively managing one's health and one must be actively involved in the process in order to do so.

Preventative health behaviors: This third sub-theme involves a participant's assumption that engagement in certain religious behaviors along with preventative health behaviors [e.g., proper eating, regular doctor's visit, and exercise] can prevent the onset of disease. When asked what, if any, religious beliefs she had that might affect or influence one's health, WF102 shared that, "I believe that all things are possible through Jesus Christ, and I believe that, uh, in the Bible, I'm a Christian, and I definitely believe what Jesus God said, that by my stripes, you are healed." She further notes that watching television ministries and having a Christian doctor are important to her understanding of health and aids in facilitating a positive health status. According to WF102,

> that helps people, even Christians, you know, because, through better nutrition, you know, you can't just continuously eat fries all the time, and hamburgers and stuff like that. You've got to have a proper diet for your health. And God says that he wishes above all things that we would be in good health and prosper. And so, as, you know, it's like, it's like breaking away all the other habits of our flesh, uh, you know, and being obedient to God, we have to do these things. And it's hard sometimes.

WF102 suggests having an active religious life [e.g., attending church, involvement in the church community, exposure to television ministries] and a nutritious diet are part of a greater plan by God. It is inferred that her religious beliefs are also a part of God's plan. Thus, aligning oneself with religious doctrine can only result in a healthy lifestyle.

Similarly, a talk turn offered by BF10 reveals a belief that negative health consequences can be avoided by engagement in religious and proactive health behaviors. She specifically notes that healing from disease can result from prayer and provides the following explanation:

> … you know, a little R&R, less stress, uh, some prayer could certainly help, and possibly get rid of it. I know, until this day, we have prayed about it and what have you, and she doesn't have too many more signs of the cancer. So, that makes me think that, I mean, even though, she's been doing what the doctors told her, so I would think that would help, would be a big help in, you know, in reducing the nerves and reducing the cancer.

Using the experience of a friend or relative, BF10 articulates her understanding of the relationship between religious beliefs and health. She identifies specific health behaviors [e.g., regular doctor visits, rest, relaxation] she believes are very important and central to improving one's health status. WF108 also shares this belief, and in describing her father's impaired health that resulted in a quadruple bypass, she believes that prayer "helped tremendously" in his recovery. She states that, "Uh, prayer helped. I mean, it gave him, you know, what, let's see, twenty years, no not that long, about fifteen years, because he had churches praying for him. But I do believe in healing." It can be inferred from her talk turn that religious and preventative health behaviors must be employed if, in fact, a person is going to be healthy. Doing so will ultimately reverse their negative health status.

Genes and health/religious behaviors interact: In terms of genetics and disease, WF102 expresses a belief in a gene and behavior interaction. When asked about diabetes, she explains the risks for disease in the following manner:

> Uh, well, because number one, if they know they are diabetic, and they continue to do what the doctor tells them not to do, they're…it's kinda like playing Russian Roulette. They are taking great big risks. You know, don't eat any sugar, and now there's so many sugar free things that they can have, you know, that's just as good.

WF102 uses Russian roulette as a metaphor for health risks that incur when a person already has a gene for disease. It is inferred that the disease lies dormant until it is "triggered" by poor eating habits. If a person chooses to ignore their doctor's advice on how to manage living with diabetes, then they can live a healthy life; however, if they fail to do so, they will begin to suffer from the disease.

BF10 also believes that health is largely dependent an individual's behavior. While a gene for disease might be present, it is critical that a person adopt a healthy lifestyle in order to prevent the disease from occurring. She identifies Gene as being at greater risk, explaining that, "because he has the gene and maybe if he didn't even smoke or drink, I mean, from the beginning or didn't have a good exercise program at all, it's there, you know."

Healing is temporary: This fourth theme proposes a unique relationship between religious behaviors and health status and is different from the others. Much like *preventative health behaviors*, both themes reflect recognition by participants of the critical role prayer appears to play in one's health. The belief is that religious behaviors such as prayer do have the potential to change a person's health status, but the change is only temporary. Their statements also suggest that the disease remains dormant even though the signs or symptoms may not be visible. In other words, the disease or sickness either is lying dormant or never "goes away."

BM59 explains that, "well, prayer helps…but, uh, if you it, heart disease, I don't think nothing can help that…Yeah, [prayer] makes a difference." He offers his friend with diabetes as an example and the interviewer probes this further. The interviewer follows up the dialogue by asking if he believes his friend can be healed from the disease, to which he replies, "No." According to BM59, his friend "can live his life out comfortable, you know, by exercising" and if his friend were to pray for healing, "it would put the disease off temporarily, not forever." This sentiment is also shared by BM01 who shared that "If you got cancer, I believe when you pray about it and ask for healing, I believe it'll go in remission, when it just stop, but I also think it'll come back because it's in the body. I think you can heal it, but it still there."

Level of faith determines healing: Unlike the other themes, the fifth and final theme reflects a clear belief that engagement in religious behaviors such as prayer do facilitate healing, which these participants believe depends significantly upon a person's level of faith or the extent to which they believe their religious behaviors will in fact result in a change in their health status. Participant BM13 describes this particular framework in the following way:

> As long as you believe in God, you know, and keep praying, God work in strange ways. …Yes, only if they believe, you know. They have to really believe, or trying to purify theirself, you know, because that's what basically prayer is about. Really praying from your inside, your inner self, because it's so much, and I was just finding out all types and sorts of things, because I pray a little on the health things

> myself, but I just don't, I don't abide by it, I don't live by it, you know what I'm saying.

BM13 espouses the belief that the more a person believes that prayer will work, the more likely it is that s/he will be healed from their disease. It is also implied that behavior or the act of prayer is critical to this approach to health. Thus, a behavioral and ideological relationship must occur between prayer [as an act] and belief if prayer [an end result] is to facilitate change vis-à-vis healing.

This ideal is also shared by WM155, who notes that belief level is paramount to a successful outcome of prayer. He notes:

> …if you believe it, it will. Because uh, if that's what your direction is and that's what you believe, if you even have the slightest idea in your head that you think there's a chance that trying this might work, then uh, you know, if you believe it, I think you can [be healed].

Similar to BM13, WM155 ascribes to the notion that a strong belief in the power of prayer must exist if a person is going to be healed. Thus, if a person has doubt that s/he will be healed, then they will not because their level of faith is not at a point where it will be activated to bring about positive results. WF106 offers a clear explanation for this way of thinking: "One has to truly believe in the power of prayer, because, uh, if you do a lot of praying, things, miracles are bound to happen."

Behavior triggers disease: WM155 believes that certain behaviors can function as a trigger for a disease. Consider the following talk turn.

> Because it was already a factor, you know, it was already a factor that he had to deal with, you know. His body has got something to think about, well, should I react to it or should I, you know, this way or should I react to it this way? Should I let it lie and not mess it up, or should I just let it spread throughout his bloodstream to where, you know. As far as the body goes, Doug doesn't have that present for his body, well, you know, his cells don't have to think, well, what do I do with this, you know.

As his response demonstrates, WM155 believes that a disease lies dormant until something appears to trigger or activate the cells that carry it. BM13 offers a succinct summary of this way of thinking: "Oh, that make it more possible like because if the doctor only gave you one, and said, 'Hey, you got these genes in you and it's already in you, and you have to stop, and you keep on trying to be hard headed, eventually it's gonna happen, you know." Thus, these participants believe that if you have the gene and if you don't work to prevent it, a person will "get" the disease.

Religion, Health, and Disease Interaction: Negative Talk Turns—Although the focus of this study is on religious frameworks, we would like to offer a very brief overview of the negative talk turns that emerged from the data. A total of 23 [24%] of the 98 talk turns were identified as reflecting a negative relationship between religious behaviors and health. Most of these participants appear to espouse a belief in God; however, they express strong reservations that prayer or any other religious behaviors have the power to influence one's health status. Eleven of the 50 participants offered negative talk turns [three women and eight men] and espoused varying degrees of disbelief in the relationship between religion and health. At least four [male] AA participants and seven EA participants [three females and four males] provided negative responses [four males] to the religion question.

Negative religious behavior/health interaction: Some study participants did not believe that a relationship exists between religious behaviors and one's health. Six talk turns fall into this category. There were three participants who clearly made this observation, which included two black males [BM 55 and BM67] and one white female [WF150]. While a belief in God was expressed, there was pointed disagreement with any conclusions that healing can result from religious behaviors. For example, when asked if prayer helps one's health in general and in the case of four different diseases, WF150 offered a firm, "No," thus conveying a strong rejection of the idea that such a relationship exists.

In the case of BM55, he expressed a belief in the need for and importance of trusting in God; however, he provides an explanation for this disbelief in "all that healing stuff." He elaborates by stating that, "I mean, you trust in the Lord, I mean, but all these healers that get down and touch you on the forehead and you're healed and all, I don't believe in that, no." As his comments illustrate, BM55 is discounting any health benefits that may be reaped from the religious behaviors typically associated with prayer and healing services. BM67 also expresses disbelief in a relationship between healing and health. He shares that while he will not espouse or encourage the use of religious behaviors in response to a negative health status, he will not discourage others from doing so. BM67 further explains his way of thinking in the following talk turn:

> I mean it, it can't hurt, but I really don't think just sitting around and praying is gonna do a thing. The Lord helps those who help [sounds like] with the –selves. I mean it, it can't hurt, but I really don't think just sitting around and praying is gonna do anything. The Lord helps those who help themselves…

As his explanation suggests, this participant appears to express a strong belief that behaviors other than those of a religious nature are more instrumental and effective in resolving health issues. BM67 does not, however, offer specific examples of the kinds of behaviors to which he is referring.

Negative belief/negative relationship: A total of two talk turns reflected participants' lack of belief in the existence of a higher power or the salience of religious behaviors in relation to health. BM03 espoused this viewpoint, but did not provide a lengthy explanation of his thinking about this association. Instead, he succinctly stated that, "If it's gonna happen, it's gonna happen…Well, if you have a bad heart, I don't think no type of medication can help you. For so long, maybe it can, but not for long." We must also note that BM103 espouses a somewhat fatalistic attitude toward disease, which is supported by his rejection of any notion that faith or medical interventions are potentially useful in resolving health issues. Because other questions were posed in this study about participants' understandings and beliefs about genes and health, it may be inferred that BM103 has adopted a genetic framework as a means for understanding the ways in which health and behavior interact.

Preventative behaviors override religious behaviors: Data analysis reveals one talk turn that reflects a belief by one participant that religious behaviors alone do not impact our health. Instead relying solely on faith, one must be proactive and adopt myriad preventative behaviors as a means for managing or coping with disease or illness. BM07 explains

> I don't believe in prayers – like, I mean, I believe that you pray to God, but I feel like it depends on how you take care of yourself… Putting off?…If I pray to God, He'll give me a long-living life…[prayer] would help, and also if I do the right thing, it'll prolong my life…I mean eating right, exercising, avoiding cigarettes and alcohol.

As his talk turn suggests, engaging in healthy behaviors including proper diet, exercise, and abstaining from smoking or alcohol, can facilitate disease prevention. This sentiment is

shared by WF160, who states that "…you have to help yourself, too…you can't just do something that's messin' your health up and accept – expect faith to make you be alright, because you've got to kinda help yourself, too."

Negative Uncertainty: While a vast majority of the participants clearly espoused either a religious or nonreligious belief system regarding health, there were others who conveyed general feelings of uncertainty about religious behaviors and health. In an effort to explain those beliefs, these participants used firsthand experiences as a site for contextualize their thoughts on the topic. The analysis revealed seven uncertainty talk turns.

For WF100, that was an emotional struggle regarding her belief system, specifically as it relates to what she describes as a prayer life. The illness with which she was dealing at the time of the interview and her attempted suicide a few months prior to the interview were points of reference for this participant. When asked about the role of prayer in health, she disclosed that "it would be nice" if, in fact, it worked. WF100 further disclosed feelings of anger or resentment toward God, which appear to result from frustration with having her prayers remain unheard or unanswered. In contrast, WM101 lost his faith as a result of losing his mother to disease. He states that, "Uh, since my mother died, I lost contacts with, you know, doing any church, so I'm just now starting to get back into it. So the honest answer is, I don't know at this time."

In the case of WM 109 and WF 152, there is a belief in God as well as uncertainty regarding the ability for prayer to result in healing. WF 152 shares that someone in her interpersonal network [e.g., family member, friend] had a positive change in their health after she prayed for them. Despite this experience, she is uncertain about to whom or what [e.g., religious behavior] this change should be attributed: "I believe it helps, but I'm not 100 percent sure because no one is but God."

DISCUSSION

The primary goal of this study was to determine the extent to which religious frameworks inform lay public understandings of genes and disease. Contrary to existing research, there were minimal differences between racial groups. We did, however, observe two patterns in that data that are worthy of discussion. First, perhaps because participants were from the South, the finding that participants from both racial groups ascribe to a religious belief system to make sense of their lived experiences is not surprising. Rather, it may reflect the religious culture that is an integral part of the South and our identity as a nation. We must also note that in general, AAs and women were less likely to speak negatively about the relationship between genes, religion, and health, which may also be a result of Southern culture as well. However, because Southern culture was not a part of our data collection, any conclusions would be premature.

A second and equally noteworthy finding is that while a significant number of participants believe a relationship exists between health status and religious behaviors, they also recognize that positive health behaviors must also be adopted as a means for staving off disease. In some cases, however, there was a belief that health issues could dissolve or disappear as a result of certain religious behaviors such as prayer. Relief from disease can take place; however, when asked about risks for disease, there was a general assumption or belief that if a person has a gene for a certain disease, they will "get" the disease. Thus, individuals adopting this way of thinking appear to adopt understandings that are mutually exclusive, which could be problematic for health communication scholars and policy makers attempting to educate the lay public about various health issues and reduce race and ethnic disparities in health care.

CONCLUSION

The findings from the study are exploratory and not generalizable to religious communities or members of the lay public. Nevertheless, the findings offer insight into the degree to which religious frameworks are used to understand health and disease [Harris et al, 2004]. Considering the understandings participants from both racial groups have about genes and disease, it is important that future research be conducted to better understand the specific ways in which religious behaviors affect one's health status. Currently, there is very little social scientific evidence [e.g., research studies] of individuals who report using religious behaviors and have their health positively affected. Such inquiry is critical, as it will generate increased knowledge and understanding of the role that religious frameworks play in actual experiences where such systems are activated with the expectation of change.

As our findings suggest, efforts by the lay public to understand the interconnectedness between religious beliefs, genetics, and health are very complex. A significant number of our participants reflected a general belief in the efficacy of certain health behaviors and religious beliefs [and related behaviors] that potentially result in an improved health. In contrast, there were several other participants who either believed genes/health and religious behaviors are unrelated or espoused no religious belief system. These diverse conceptual frameworks are enlightening and speak to a larger issue regarding the construction of health messages about genetics. Messages designed to inform the lay public about the latest developments in HGR must be done in such a way that the information is accurate, informative, and useful in improving the health of those affected by these advances. The frameworks through which these messages are filtered make such a task a complex undertaking. Therefore, we encourage the genetics community and social scientists alike to further explore religious frameworks and the ways in which they inform understandings of HGR. Such efforts will equip the lay public with the knowledge necessary for making informed health decisions with sensitivity toward the fundamentals of their religious beliefs. While health messages will most likely not be religious in nature, we argue that consideration to religious belief systems must be a part of future initiatives to educate on HGR and the implications thereof.

Empirical data continues to support the need for health initiatives that are culturally sensitive, and the results from the current study provide further evidence that such efforts are warranted. The findings of this study demonstrate the importance of creating health messages that appeal to various aspects of our identities as social beings. Adopting a culturally sensitive approach can assist health care practitioners in creating messages that reflect the religious identities of audiences across racial groups that are more salient [see Koenig, 2004] than those that do not. In this study, a religious framework was used to understand the role of genes in one's health; therefore, the importance such epistemologies for audiences [e.g., patients, lay public] must be acknowledged and integrated as a central part of these messages [see Maier-Lorentz, 2004]. Such efforts potentially convey genuine concern by health care practitioners for the physical and spiritual well-being of their patients as well as a commitment to developing culturally sensitive models for health care intervention and HGR.

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