

## **The Contributions of Race, Spirituality, Locus of Control to Perceptions of Relative Cancer Risk**

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### **ABSTRACT**

Guided by the assumption that perceptions of relative risk help shape the health oriented behavior of individuals, this project has explored the factors that contribute to the formation of those perceptions. Considerable scholarly and professional attention has been paid to the substantial gaps in health outcomes between African Americans and other groups in the United States. African American perceptions regarding the existence of racial bias in the health care system may ironically contribute to disparities in health by means of a self-fulfilling prophecy. This outcome is consistent with predictions from the literature on the Locus of Control (LOC) where those who believe that their fate lies in the hands of powerful others, tend not to act in their own interest. The primary counterweight, especially for African Americans, appears to emerge when belief in a powerful other refers to faith in a caring God.

This paper reports on a secondary analysis of data from a large survey (n = 4,242) of American adults (MIDUS). Our analysis includes several measures of health LOC, spirituality, health status and beliefs about the nature and availability of health care that were used in combination with measures of racial identification as predictors of perceptions of relative cancer risk. Consistent with the existing literature, those with higher internal locus of control believed that their cancer risk was lower than that of others. Our expectations were also met with regard to the association between perceived difficulty in obtaining medical care and greater perceived risk. African Americans had lower perceptions of relative risk; a relationship that we interpret as a reflection of higher levels of spirituality, and lower levels of superstition.

## Introduction

This project had its origins in the Media and Smoking Study headed by Chanita Hughes-Halbert.<sup>1</sup> This was a study that was concerned with understanding how African Americans would respond to differentially framed invitations to participate in research relating genetics and smoking. While the core of that study was an experimental design, Hughes-Halbert developed an extensive questionnaire that gathered information about respondents' health status, experience with tobacco, and their willingness to participate in genetic research. From our perspective, a key component of these background questions were the 18 items on the questionnaire that measured several dimensions of what is referred to as the Health Locus of Control (HLOC).

As is well known, the concept of a Locus of Control is a widely used measure of personality with an extended history in the field of organizational behavior.<sup>2</sup> Less well known are the implications of the concept for political theory. Its readily observed association with popular measures of liberal and conservative views regarding the nature of power and autonomy within social systems, also seemed likely to be implicated in differential perceptions of risk, especially as they relate to the ways in which risks are distributed within society.<sup>3</sup> Among the major distinctions that have been explored in studies of locus of control are those related to distinctions between views about powerful others, and views regarding the external influence of chance or luck.

To the extent that our beliefs about "powerful others" includes beliefs about God, it seems likely that religious beliefs, and spirituality more generally, may be important parts of the LOC construct. Physicians believe that religiosity and spirituality helps patients cope with illness, in part by supporting a positive state of mind. Physicians also believe that religiosity may also provide support through the patient's religious community.<sup>4</sup> This kind of influence seems to be especially likely for African Americans, a population for whom the importance of religion and spirituality is well established.

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<sup>1</sup> Halbert, C.H., Gandy, O.H., Collier, A., Shaker, L. "Beliefs about tobacco use in African Americans" *Ethnicity and Disease*, 17:92-98 (Winter, 2007); Halbert, C.H. Armstrong, K., Gandy, O.H., Shaker, L. "Racial differences in trust in health care providers." *Arch Intern Med.*, 166:896-901 (2006). The project was funded through the EPIC Center of Excellence in Cancer Communication Research at the Annenberg School for Communication at the University of Pennsylvania.

<sup>2</sup> Christopher Leone and Joseph Burns. (2000). The measurement of locus of control: Assessing more than meets the eye? *The Journal of Psychology*, 134(1): 63-74.

<sup>3</sup> Paul Slovic, Melissa Finucane, Ellen Peters, and Donald MacGregor (2004). Risk as analysis and risk as feelings: Some thoughts about affect, reason, risk, and rationality. *Risk Analysis*, 23(2): 1-12.

<sup>4</sup> Farr Curlin, Sarah Sellergren, John Lantos, and Marshall Chin (2007). Physicians' observations and interpretations of the influence of religion and spirituality on health. *Arch Intern Med* (167):649-654.

Researchers at St. Louis University have been especially interested in the relationship between Spiritual Health Locus of Control and breast cancer beliefs among African American women. They noted that spiritual beliefs might include an active component, where “God empowers the individual to take healthy actions” and a more passive component where people rely “on God to protect their health rather than taking action themselves.”<sup>5</sup>

Interestingly, in one of their studies<sup>6</sup>, active spiritual HLOC was associated with reporting fewer perceived benefits and greater barriers to mammography. Even more interesting was the observation that the expression of spiritual beliefs was positively associated with other measures of internality. This finding among African American has not been observed with Caucasians; quite the opposite has generally been the case.

Our study is focused primarily on the health related beliefs of African Americans. A great deal of attention is being paid these days to the problem of identifying and controlling those factors that contribute to the sizeable disparity between African Americans and others with regard to a broad range of health outcomes. For example, the American Cancer Society reports: “African Americans have the highest mortality rate of any racial and ethnic group for all cancers combined, and for most major cancers.”<sup>7</sup>

Part of the ongoing discussion about the cause of this and other disparities in health outcomes includes an investigation of the role that differences in the quality of the health care some populations receive might play. Indeed, some of the more heated debates of late focus on the extent to which the quality of care seems to depend more on the location than on the race of the provider.<sup>8</sup> Many of these analyses distinguish between locations in terms of the relative affluence of neighborhoods, finding that controlling for neighborhood type narrows the health gap across racial lines.<sup>9</sup>

We were particularly interested in determining the extent to which perceptions regarding the availability of health care might be associated with HLOC and perceptions of relative

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<sup>5</sup> Cheryl Holt, Eddie Clark, Matthew Kreuter and Darcell Scharff (2000). Does locus of control moderate the effects of tailored health education materials? *Health Education Research*, 15(4): 393-403; Cheryl Holt, Eddie Clark, Matthew Kreuter and Doris Rubio (2003). Spiritual health locus of control and breast cancer beliefs among urban African American women. *Health Psychology*, 22(2): 294.

<sup>6</sup> Holt, et al., op. cit. 2003.

<sup>7</sup> American Cancer Society. *Cancer Facts & Figures for African Americans 2005-2006*. Atlanta: American Cancer Society, Inc., p. 1.

<sup>8</sup> Michael Marmout, Rebecca Fuhrer, Susan Ettner, Nadine Marks, Lary Bumpass, and Carol Ryff (1998). Contribution of psychosocial factors to socioeconomic differences in health. *The Milbank Quarterly*, 76(3): 403-448.

<sup>9</sup> Christopher Browning, Kathleen Cagney and Ming Wen. (2003). Explaining variation in health status across space and time: implications for racial and ethnic disparities in self-rated health. *Social Science & Medicine*, 57:1221-1235.

health risk.<sup>10</sup> Because of our interest in the role that institutional racism might play in health disparities, we were especially concerned about whether these relationships would survive controls for social class.<sup>11</sup>

In this project we sought to explore the ways in which several dimensions of Health Locus of Control performed in large and therefore diversified samples of African Americans, but we were also hopeful that we might be able to determine if differences across racial groups might also be observed.

We were particularly interested in the possibility that African Americans have specialized beliefs about cancer and cancer risk that might explain their observed reluctance toward participation in genetic testing related to cancer.<sup>12</sup> One study that compared African American and White women's beliefs about breast cancer observed significant differences between White and Black respondents, with African Americans more likely to suggest that health is a matter of luck, and that their health depended on powerful others.<sup>13</sup>

The analysis reported in this paper is based entirely on data gathered for a large national study of American adults. This large national survey of midlife development referred to as MIDUS<sup>14</sup> provided an unusual opportunity to explore some of these issues.

## The MIDUS Dataset

The MIDUS survey is described as a “collaborative, interdisciplinary investigation of patterns, predictors, and consequences of midlife development in the areas of physical

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<sup>10</sup> Ronald Kessler, Kristin Michelson and David Williams (1999). The prevalence, distribution and mental health correlates of perceived discrimination in the United States. *Journal of Health and Social Behavior*, 40(3): 208-230.

<sup>11</sup> Margie Lachman and Suzanne Weaver (1998). The sense of control as a moderator of social class differences in health and well-being. *Journal of Personality and Social Psychology*, 74(3): 763-773.

<sup>12</sup> Alicia Matthews, Shelly Cummings, Sheila Thompson, Valerie Wohl, Marcy List and Olunfunmilayo Olopade (2000). Genetic testing of African Americans for susceptibility to inherited cancers: Use of focus groups to determine factors contributing to participation. *Journal of Psychosocial Oncology*, 18(2):1-19.

<sup>13</sup> Julie Barroso, Susan McMillan, Linda Casey, Wanda Gibson, Glenda Kaminski and Julie Meyer (2000). Comparison between African-American and White women in their beliefs about breast cancer and their health locus of control. *Cancer Nursing*, 23(4):268-276.

<sup>14</sup> National Survey of Midlife Development in the United States (MIDUS), 1995-1996, ICPSR 2760, June, 2003

<sup>16</sup> David Almeida, Shevaun Neupert, Sean Banks and Joyce Serido (2005). Do daily stress processes account for socioeconomic health disparities? *Journals of Gerontology: Series B*, Vol. 60B (Special Issue II): 34-39; Joseph Grzywacz, David Almeida, Shevaun Neupert and Susan Ettner (2004). Socioeconomic status and health: A micro-level

health, psychological well-being, and social responsibility.” It is supposed to be a nationally representative sample of English speaking adults between 25-74 years of age. The primary survey has 4,242 respondents. The instrument captured extensive data about physical and mental health, lifestyle, and somewhat curiously, it also invited respondents to indicate how they thought aspects of their lives, including their own behaviors affected their well-being.

Publications based on MIDUS data are being released more slowly than we would have expected, although some interesting published work examined the impact of stress on health disparities.<sup>16</sup>

The MIDUS data allow us to explore the stability of patterns across in a larger sample that includes Whites and others in addition to African Americans. In addition, the MIDUS data allow us to examine the subcomponents of HLOC as they relate to perceptions of relative cancer risk.

### *Variables*

The MIDUS dataset includes two different groups of locus of control variables. The first of these sets consisted of Pearling and Schooler Constraint and Mastery variables. A factor analysis and associated reliability tests supported the construction of two scales, one mastery scale comprised of five variables with an alpha of .72 and one constraint scale comprised of eight variables with an alpha of .85.

<b><i>Table 1 Mastery Variables: Internal Locus of Control</i></b>	
<i>SF1H</i>	I am in charge of my life
<i>SF1Z</i>	I determine what I am able to get
<i>SF1DD</i>	Future depends most on me
<i>SF1X</i>	I can succeed if I want to do something
<i>SF1U</i>	I can do anything I want

<b><i>Table 2 Constraint Variables: External Locus of Control</i></b>	
<i>SF1S</i>	I cannot change important things in my life
<i>SF1V</i>	Other People Determine What I do

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analysis of exposure and vulnerability to daily stressors. *Journal of Health and Social Behavior*, 45 (March): 1-16.

<i>SF1W</i>	Things always happen beyond my control
<i>SF1Y</i>	Many things interfere with what I want
<i>SF1AA</i>	I have little control of things
<i>SF1T</i>	I feel helpless dealing with problems
<i>SF1BB</i>	There is not way to solve a problem on my own
<i>SF1CC</i>	I feel I am being pushed around

The second set of locus of control variables were health locus of control variables consisting of six items. Four variables that were related to internal health locus of control had a reliability of only .69. We included two additional variables that had a correlation of .07, as two separate indicators of external health locus of control.

<i>SA7A</i>	Health depends on things I do
<i>SA7B</i>	Reduce heart attack risk
<i>SA7C</i>	Reduce cancer risk
<i>SA7D</i>	Work hard to stay healthy
<i>SA7E</i>	Getting better in doctor hands
<i>SA7F</i>	Difficult to find good medical care

There were seven questions related to importance of spirituality in one's life. These variables are listed in Table 4. One of these variables asked the respondents about the extent to which they were superstitious. The other six variables had a reliability of .901.

<i>Sra</i>	How religious are you?
<i>Srb</i>	How spiritual are you?
<i>Srd</i>	How important is religion in your life?
<i>Sre</i>	How important is spirituality in your life?
<i>Sr5</i>	When you have problems or difficulties in your family, work, or personal life, how often do you seek comfort through religious or spiritual means, such as praying, meditating, attending a religious or spiritual service, or talking to a religious or spiritual advisor?

**Table 4 Spirituality**

Sr6	When you have decisions to make in your daily life, how often do you ask yourself what your religious or spiritual beliefs suggest you should do?
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There were three related variables measuring comparative cancer risk. The first question asked the respondents about whether they believed their risk of cancer was higher or lower than the risk for other people. The second variable was for those who considered their risk was higher than the risk for other people. It asked the respondent how higher they believed their risk was. The third variable was for those who considered their risk was lower than the risk for other people. It asked the respondents how lower they believed their risk of getting cancer was.

These three variables were used to construct a single variable measuring perceived comparative risk of getting cancer. The values for this variable ranged between one (1) and seven (7) with a value of four (4) signifying that respondents perceive their risk of getting a cancer to be equal to others' risk.

#### *Research Questions and Preliminary Analysis*

One of the first questions we explored was the relationship between spirituality and locus of control. There was no significant relationship between the Mastery Scale and Spirituality. Neither was there a significant relationship between the Constraint Scale and Spirituality. On the other hand, while mastery was negatively related ( $r = -.058$ ,  $p < .01$ ) to being superstitious, the constraint scale was positively related to being superstitious ( $r = .163$ ,  $p < .001$ ).

The Internal Health Locus of Control variable was positively related to spirituality ( $r = .149$ ,  $p < .001$ ) and negatively related to being superstitious ( $r = -.052$ ,  $p < .01$ ). When we look at the two external health locus of control variables, the variable that indicates more passiveness and fatalism – belief that getting good care is difficult – is negatively related to being spiritual and positively related to being superstitious. The reverse is true for the “getting better in doctors’ hands” variable.

**Table 5 Spirituality and Locus of Control**

	Spirituality	Superstition
Mastery Scale Internal Locus of Control	.011	-.058**
Constraint Scale External Locus of Control	-.009	.163***
Internal Health Locus of Control	.149***	-.052**
Getting better in Doctors’ Hands	.064***	.025
Getting good care difficult	-.040*	.070***

As for the relationship between Race and Locus of Control, we recoded the race variable to produce three categories: White, African American, and Other. A Kruskal Wallis test showed that African Americans had higher mastery, higher internal health locus of control and higher spirituality than did members of other races. The difference between Whites and African Americans was significant for spirituality and mastery variables and approaching significance for Internal Health Locus of Control. There was no significant difference between Whites and African Americans with respect to External Locus of Control, the belief that getting better is in doctor's hands, or the belief that getting good care is difficult.

## The perception of relative cancer risk

The primary dependent variable in this study is Comparative Cancer Risk. The belief that one has higher risk of getting cancer than others was negatively correlated to education ( $r = -.051, p < .001$ ) and age ( $r = -.151, p < .001$ ) and was not significantly correlated with perceptions of cancer risk.

Mastery scale and internal health locus of control scale were negatively related to comparative cancer risk ( $r = -.084, p < .001$ ;  $r = -.154, p < .001$ ), meaning that those with higher internal locus of control believed that their risks were lower than the cancer risk of others. On the other hand, external locus of control was positively correlated with comparative cancer risk perceptions ( $r = .104, p < .001$ ). The belief that getting good medical care is difficult was also positively correlated with perception of cancer risk ( $r = .049, p < .001$ ). While spirituality was negatively related to comparative cancer risk perceptions, being superstitious was positively correlated with comparative cancer risk. Finally, African Americans had lower perceptions of comparative cancer risk than did Whites and members of other populations.

	Block 1		Block 2		Block 3	
	B	$\beta$	B	$\beta$	B	$\beta$
Constant	4.785		4.572			
Age	-0.017	-0.152***	-0.015	-0.141***	-0.015	-0.139***
Gender	0.350	0.124***	0.358	0.127***	0.361	0.128***
Marital Status	0.024	0.026	0.023	0.024	0.023	0.024
Income	0.000	0.034 <sup>†</sup>	0.000	0.041*	0.000	0.041*
Education	-0.045	-0.083***	-0.034	-0.063**	-0.034	-0.062**
African American 1	-0.359	-0.060**	-0.334	-0.056**	-0.376	-0.063**
Internal HLOC			-0.047	-0.106***	-0.051	-0.116***
Doctor's Hands			0.033	0.046*	0.032	0.044*
Good Care Difficult			0.020	0.029	0.019	0.027
Spirituality			-0.010	-0.033 <sup>†</sup>	-0.009	-0.030
Superstition			0.129	0.070***	0.130	0.070***
Spiritual*Internal HLOC					0.000	-0.004

Spiritual*Doctor's Hands				0.002	0.012
Spiritual*Good Care Dfclt				0.001	0.007
Superst*Internal HLOC				0.014	0.026
Superst*Doctor's Hands				-0.044	-0.047**
Superst*Good Care Dfclt				0.021	0.024
Internal HLOC*Race				0.072	0.052**
Doctor's Hands*Race				0.024	0.009
Good Care Dfclt*Race				-0.040	-0.014
Spiritual*Race				0.023	0.017
Superst*Race				0.072	0.009
$\Delta R^2$	0.047***	0.021***		0.007*	
Notes:					
N=2943					
† P< .1 *p< .05 **p< .01 ***p< .001 2-tailed					

Table 6 presents the results of a hierarchical regression that predicts Perceived Comparative Cancer Risk. In the first block, we entered socio-demographic variables. Certainly, in this block, we are most interested in the relationship between race and perceived comparative cancer risk after controlling for socio-economic status. The two indicators of SES that were used were income and education. After controlling for these variables, on average, African Americans scored .359 less in perceived comparative cancer risk than Non-African Americans. The relationship between race and comparative cancer risk remained approximately the same in all three blocks. The R-square for this block was .047

In the second block we added the health locus of control variables and spirituality variables. Internal Health Locus of Control was negatively related to comparative cancer risk. On the other hand, belief that getting better is in doctor's hands and being superstitious were positively related to belief that one has higher susceptibility to cancer than other people. Finally, the relationship between spirituality and relative cancer risk approached, but did not achieve significance. The change in R-square was .021

The final block includes two-way interactions between the spirituality and health locus of control variables and race.

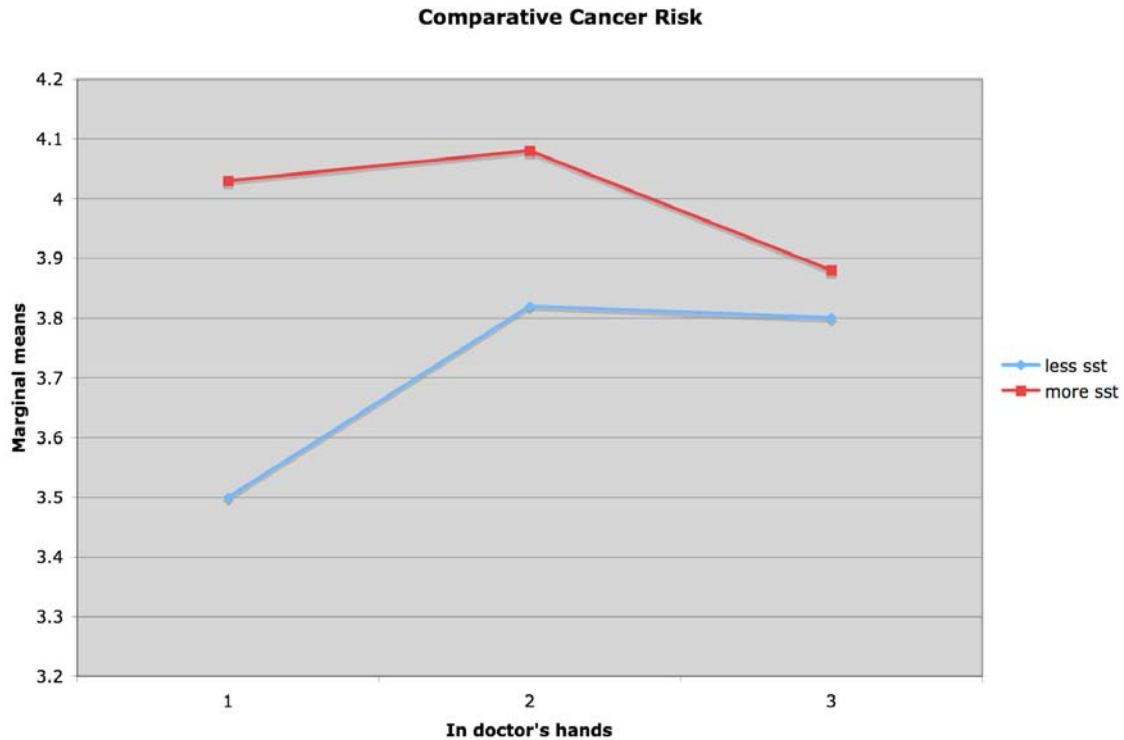


Figure 1 Interactions: Superstition

The first of these was the interaction between superstition and the belief that getting better is in doctors' hands (Figure 1). Among the respondents whose superstition score is lower, as the belief that getting good care is difficult increases; there is first an increase than a slight decrease in comparative cancer risk perception. This results in an overall increase in the perception of relative cancer risk as the belief that getting better is in doctors' hands increases. On the other hand, for those respondents with higher level of superstition, the initial increase is less than the subsequent decrease in perception of comparative cancer risk. This results in an overall decrease in the perception of relative cancer risk as the belief that getting better is in doctors' hands increases.

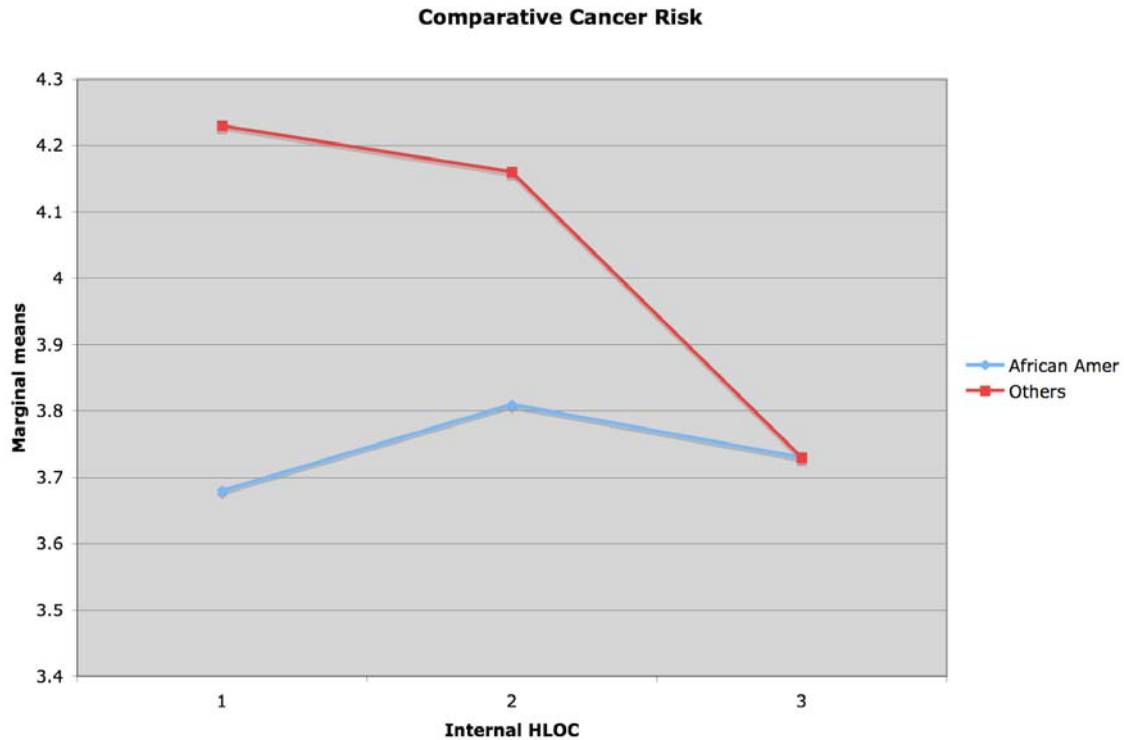


Figure 2 Interactions: Internal HLOC

The second interaction was between Internal Health Locus of Control and Race (Figure 2). At lower levels of internal HLOC control, African Americans had lower perceptions of comparative cancer risk. However, as internal HLOC increased, the difference between African Americans and non-African Americans decreases. At the highest level of internal HLOC, there is no difference between African Americans and other population groups.

### Discussion.

Our analysis of the MIDUS data suggest that the spirituality or religious beliefs that seems to empower African Americans with respect to their health may also be an important enabling factor for the general population. Specifically, bivariate findings indicated that internal health locus of control was positively related to spirituality and negatively related to being superstitious. Conversely, a more fatalist locus of control belief that “getting good health care is difficult” was negatively related to being spiritual and positively related to being superstitious.

Although the empowering influence of spirituality on health can be seen among African Americans and non-African Americans alike, African Americans’ were more spiritualistic and had higher internal health locus of control than non-African Americans. However, there was no significant interaction between race and spirituality in predicting health locus of control.

In addition to these findings, the multivariate analysis suggests that higher internal health locus of control is associated with having a perception that one's cancer risk is lower than others. This analysis also revealed that after controlling for socioeconomic status, African Americans had lower perceptions of comparative cancer risk than members of other races. However, this apparent difference between African Americans and others disappeared at higher levels of internal health locus of control.

It remains important for us to pursue greater understanding of the ways in which spirituality and locus of control influence those health related behaviors that respond to differences in relative risk perception.

However, the fact that African Americans face higher relative risks across a broad spectrum of threats to their health status, despite their tendency to have higher levels of spirituality and internal HLOC increases the role that access to quality health care seems likely to play in the distribution of health outcomes. It is clear, however, that access to care is not the only determinant of health status. Circumstances and behaviors associated with lower social and economic status, including those that are correlated with place of residence<sup>17</sup> should be examined in terms of the ways in which disadvantage cumulates over time, at rates shaped in part by racial discrimination.<sup>18</sup>

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<sup>17</sup> Marmot, et al., op. cit., p. 442.

<sup>18</sup> The concept of cumulative disadvantage is explored in considerable detail in a recent report from the National Research Council (2004). *Measuring Racial Discrimination*. Washington, DC: National Academies Press, pp. 223-247.