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Broadening the examination of socio-cultural constructs relevant to African American colorectal cancer screening

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Abstract

The importance of socio-cultural constructs as influences on cancer attitudes and screening has been established in the literature. This paper reports on efforts to explore alternatives to constructs previously associated with African American cancer screening, but with low acceptance among community members or incomplete measurement (empowerment and collectivism) and develop a measure for a recently identified construct of interest (privacy). We report preliminary psychometric data on these socio-cultural scales and their associations with cancer attitudes. African Americans (N=1021), 50 to 75 years of age participated in this study. Participants were identified via a listed sample and completed a telephone survey administered via call center. Socio-cultural attitudes were assessed using items identified through computerized database searches, reviewed by advisory panels, edited and tested using cognitive response strategies. Cancer screening pros and cons, cancer worry, perceived cancer risk, colorectal cancer screening subjective norms, and perceived self-efficacy for colorectal cancer screening were also assessed. Confirmatory factor analyses and multivariate analyses were conducted to provide support for the validity of the constructs and to understand the associations among the selected socio-cultural constructs (empowerment, collectivism and empowerment) and cancer beliefs and attitudes (CRC perceived benefits and barriers, perceived risks, subjective norms, and perceived behavioral control/self-efficacy). Consistent with the literature, the factor analytic model (RMSEA for the model was 0.062; 90% CI: 0.060-0.065) provided support for the empowerment, collectivism and privacy constructs. The modified collectivism and privacy scales had acceptable reliability. The privacy scale demonstrated the strongest associations with measures of cancer beliefs and attitudes. The implication of the findings and need for further scale development activities is discussed.

Keywords

culture; cancer; colorectal cancer; African Americans

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Colorectal cancer (CRC) is the third leading cause of cancer death, making increased colorectal cancer screening (CRCS) an important health promotion goal (American Cancer Society, 2013; Jemal, Siegel, Xu & Ward, 2010). Later stage of CRC at diagnosis is implicated in African American survival disparities and related to poorer access to screening and care (Jemal, et al, 2010). However, studies suggest access to care cannot fully explain excess mortality and reduced survival in African Americans compared to whites (American Cancer Society, 2013; Jemal, et al., 2010). Moreover, studies have identified socio-cultural attitudes linked to cancer stage at the time of diagnosis (Cooper & Koroukian, 2004; Lannin, Matthews, Mitchell & Swanson, 2002), as well as cancer screening (Brittain, Loveland-Cherry, Northouse, Caldwell, Taylor, 2012; Odedina, Dagne, Pressey, et al., 2011; Purnell, Katz, Andersen, et al., 2010; Sussner, Edwards, Thompson, et al., 2011; Thompson, Valdimarsdottir, Winkel, De Shong, Jandorf & Redd, 2004; Zollinger, Champion, Monahan, et al., 2010).

Socio-cultural variables and cancer screening

Several studies have demonstrated a relationship between socio-cultural attitudes and self-reported screening, intent to screen, and cancer attitudes (Brittain, et al., 2012; Odedina, et al., 2011; Purnell, et al., 2010; Thompson, et al., 2004; Sussner, et al., 2011; Zollinger, et al., 2010). Religiosity has been associated with prostate cancer screening (Odedina, et al., 2011) and CRCS among African American men (Brittain, et al., 2012). In a mammography study Zollinger, et al. (2010) noted strong religious beliefs among African American women. Cancer fatalism and mistrust of the medical system have been associated with decreased utilization of mammography (Mayo, et al., 2001; Harris, Miller & Davis, 2003; Thompson, et al., 2004), and CRCS (Powe, 2001; Purnell, 2009). However, some recent studies failed to find cancer fatalism among African Americans (Odedina, et al., 2011), particularly highly educated women (Zollinger, et al., 2010). Collectivism has been associated with mammography (Sussner et al., 2011), as well as CRCS (Brittain, et al., 2012). Sussner, et al. (2011) reported associations among racial identity, perceived benefits, confidentiality concerns and genetic testing for breast and ovarian cancer risk. Brittain (2012) noted an association with CRC beliefs among women.

A review of African American cancer relevant socio-cultural constructs (Deshpande, Thompson Sanders, Vaughn & Kreuter, 2009) described problematic measurement. The purpose of this study was to construct scales addressing several of these measurement issues. Religiosity/spirituality items address the belief in a higher power and commitment to attendant values (Office of Behavior and Social Science Research, 2004; Mattis, 2000) and have demonstrated good reliability (Lukwago, et al., 2001; Powe, 2001). Although reliability data have been strong for fatalism, the belief that events are beyond individual control (Hiatt, et al., 2008), it has not been clear whether fatalism in general, cancer fatalism, or both (Mayo, et al., 2001; Harris, et al., 2003) were measured. Furthermore, Thompson Sanders, Lewis & Williams (2011) noted that African American adults expressed negative reactions to fatalism items and suggested that community empowerment might be a more acceptable construct. Racial identification addresses a psychological attachment to a social category based on “race” or skin color, common history, nationality, or culture (Thompson, 1990). Items cover a range of topics, including the centrality, salience, public and private

regard of ethnic identity (Sellers, Smith, Shelton, Rowley, Chavous, 1998), and racial pride (Yancey, Aneshensel & Driscoll, 2001). Trust of the medical profession addresses the belief that professionals and institutions will act consistent with patients' interests and includes factors such as the experience of discrimination. Current scales have strong reliability and validity (Thompson, et al., 2004). The family component of collectivism, the belief that one is linked with others in the social milieu, has been examined (Kreuter et al., 2003; Lukwago, et al., 2001) using reliable measures =. However, there has been no attention to the community component of the construct. This may be important given findings from Purnell et al., (2010) associating greater intention to be screened with perceiving high group susceptibility, traditional culture, low mistrust, and having an African American physician. Finally, privacy, the desire to maintain confidentiality, may be commonplace among African Americans due to feelings of discomfort when sharing personal experiences outside the social reference group (Matthews, Sellergreen, Manfredi & Williams, 2010). While discussed in the qualitative literature (Matthews, et al., 2010; Thompson Sanders, Bazile & Akbar, 2004), investigators have not offered suggestions for its measurement.

This paper reports the psychometric properties of empowerment, a broader measure of collectivism, and privacy, and their association with CRCS attitudes. The Washington University in St. Louis Institutional Review Board approved study and consent procedures.

Methods

Participants

Participants were 1,021 African Americans (683 women, 338 men) recruited from a listed sample (Figure 1) drawn to assure that Northeast, Southeast, Midwest, Northwest and Southwest regions of the United States were represented. Eligibility criteria for participation included birth in the United States, self-identified African American without a CRC diagnosis, and age 50 to 75 years.

Item Development

Socio-cultural items relevant to cancer screening attitudes were identified through a search of computerized databases: Ovid Healthstar (1990-2006), PsycINFO (1990-2008), Medline (1990-2008), Sociofile (1990-2008), and Social Sciences Citation Index (1990-2008). A Scientific Advisory Committee composed of research faculty from public health, psychology, social work, epidemiology and communications and a Community Advisory Committee composed of members from social service, health and religious organizations reviewed proposed items. The committees identified redundancies in items across measures, suggested items to exclude, edited, reworded and wrote items. Items were then subjected to cognitive response testing (Thompson Sanders, et al., 2011) resulting in a final set of 55 items representing spirituality, religiosity, ethnic identity, medical mistrust, medical discrimination, collectivism, items developed to measure privacy, African American cancer beliefs, female and male gender role and positively reworded fatalism items used to measure empowerment. The collectivism scale was revised to include both family and community items. The new empowerment items included queries related to the extent to which there is a belief that CRCS is a group (African American) and personal course of action that can

prevent CRC. Thus, these items are distinguishable from self-efficacy, the belief that one has the ability to execute the actions required to manage a situation (Bandura, 1994), which these items do not assess (see Thompson Sanders, et al., 2011 for a full discussion of item revisions).

Measures

McQueen's 8-item perceived pros ($\alpha = 0.75$) and 10-item cons scale ($\alpha = 0.78$) measured CRCS benefits and barriers (McQueen, Tiro & Vernon, 2008). The scales were invariant across gender, race, and prior CRCS. Responses ranged from not important to very important. The pro items coefficient alpha for this sample was .80, with a con alpha of .77.

Cancer worry was assessed using two items: "I am afraid of having an abnormal test result" and "I am worried that screening will show that I have CRC". A 3-item validated scale measured absolute perceived risk of CRC (Vernon, Myers & Tilley, 1997). Responses ranged from strongly disagree to strongly agree. The coefficient alpha for this sample was .69. In addition to this scale, one item assessed participants' comparative perceived risk (relative to others their age and sex), which is independent of, but positively associated with, absolute perceived risk.

An individual's subjective norms reflect beliefs about whether or not important referents approve or disapprove of a behavior, encourage or discourage engagement in it, and motivation to comply. A 4-item measure was administered to assess family and friends' influence on CRCS (Vernon, et al., 1997). Responses ranged from strongly disagree to strongly agree. The coefficient alpha for this sample was .71.

Individuals confident in their ability to perform the actions to complete CRCS are able to overcome barriers to screening. A validated 4-item measure of CRCS self-efficacy ($\alpha = 0.82$) was administered (Vernon, et al., 1997). Response options ranged from strongly disagree to strongly agree or not at all confident to very confident. The coefficient alpha for this sample was .51.

Age, education, income, marital and health insurance status were collected.

Procedure

Individuals trained to administer telephone surveys explained eligibility criteria, the project, and requested participation. If two eligible individuals were identified, the Computer Assisted Telephone Interview (CATI) system determined which respondent was selected. If more than two eligible individuals were identified, the CATI used an alphabetical name listing associated with a pre-selected random number to determine who to select. Following eligibility screening, participants provided verbal consent and completed the survey. The survey took approximately 35 minutes to complete. Five percent of participants ($n=50$) were asked to consent to a retest to establish test-retest reliability.

Analyses

In order to verify the underlying socio-cultural constructs, we conducted confirmatory factor analysis (CFA) using the SEM package in R (version 2.11.1). Factor loadings determined

how well the observed variable measured the latent constructs. A factor loading of >0.32 (Tabachnick & Fidell, 2001), indicates an acceptable amount of shared variance; however, Klein (2004) recommends >0.60 . We examined the Root Mean Square Error of Approximation (RMSEA), Goodness-of-Fit Index (GFI), and Adjusted Goodness-of-Fit Index (AGFI) to assess model fit. An RMSEA of 0.05 or lower indicates a good fitting model, up to 0.08 indicates acceptable fit (Hu & Bentler, 1995). Models with GFI and AGFI 0.95 fit the data well (Hu & Bentler, 1995). Using SPSS we computed descriptive statistics to describe the sample and scales and General Linear Models (GLM) to understand associations among socio-cultural scales and cancer attitudes.

Results

Demographic characteristics of the sample are presented in Table 1. The mean age was about 63 years. Educational attainment was nearly the same for both sexes, except among those with some college. Women were more likely to earn less than \$35,000 a year (49.7%) compared to men (39%) and less likely to earn \$75,000 or more (9.7% and 20.5%, respectively). An overwhelming majority of participants reported having health insurance, (women, $n=667$; 97.6% and men, $n=320$; 94.7%). While only 34.3% of women were currently married or partnered, more than half of the men (51.8%) were married or partnered.

Prior to CFA, we conducted bivariate analyses to compare participants with complete and incomplete data to identify possible sources of bias in the results. Table 2 indicates that significant differences in demographics were minimal between those with incomplete and complete data. The significant difference in average age ($t(1019)=3.3$; $p<0.05$) between participants with complete and incomplete data was less than two years (62.5 vs. 64.2 respectively). Although there were significant relationships between complete data and marital status ($\chi^2(6)=16.9$; $p<0.01$) and education ($\chi^2(6)=12.8$; $p<0.05$), a review of standardized residuals found none with a magnitude greater than 1.5, indicating only minor differences between expected and observed frequencies for these two characteristics.

The initial factor model (all 55 observed variables loaded on 11 factors) resulted in a RMSEA of 0.066 (90% CI: 0.064-0.068), indicating acceptable fit. The GFI and AGFI were 0.75 and 0.73 respectively for the overall model, 0.77 and 0.75 respectively for the women-only model, and 0.71 and 0.73 respectively for the men-only model. The model included unacceptably low loadings (<0.1) for several observed variables comprising a cancer myths factor and female gender role factor; a spirituality factor included low loadings (<0.3). Covariance analyses for the mistrust and discrimination factors had a covariance of 0.99. As a result, mistrust and medical discrimination were combined into a single factor and the cancer myths, spirituality, and female gender role factors were dropped.

The final CFA was performed on 655 individuals with complete data for 43 observed variables loading on seven factors: religiosity, ethnic identity, medical mistrust/discrimination, empowerment, collectivism, privacy, and male gender role. Overall, factor loadings for individual items ranged from 0.31 to 0.88. The average factor loadings ranged from a low of 0.49 for ethnic identity to a high of 0.74 for male gender role.

Of importance, six items comprising the empowerment scale, with factor loadings between 0.46 and 0.78, were retained in the final model. The items addressed the belief that the individual or group can act to improve health and screening behaviors. The five collectivism items had factor loadings between 0.50 and 0.75 and measured both family and community influence on health and screening attitudes. The six privacy items measuring attitudes related to sharing personal and family health information with health professionals had factor loadings between 0.31 and 0.73.

The RMSEA was 0.062 (90% CI: 0.060-0.065), indicating acceptable fit. The GFI and AGFI were 0.81 and 0.80 respectively for the overall model, 0.79 and 0.76 respectively for the women-only model, and 0.74 and 0.71 respectively for the men-only model. Factor loadings were similar for the males and females when the CFA was run separately for the two groups. Table 3 shows the factor loadings for each item across the seven constructs.

The standardized α coefficient for the empowerment, collectivism and privacy subscales were: empowerment, six items, .62; collectivism, five items, .67; and privacy, six items, .70. Test-retest was as follows: empowerment .58, collectivism .71, and privacy .63. Mean scores for each scale by sex are provided in Table 4.

A multivariate analysis of variance was completed in order to examine the associations among the proposed empowerment, revised collectivism and new privacy scales and dependent variables - cancer worry, perceived cancer risk, social norms around cancer screening, perceived behavioral control/self-efficacy, benefits and barriers to CRCS (see Table 4). Other independent variables in this analysis included sex, education and insurance status. The test statistic was significant for each of the tested socio-cultural variables: empowerment ($F(6, 1011) = 9.84, p < .001, \text{Adj } R^2 = .06$), collectivism ($F(6, 1011) = 6.17, p < .001, \text{Adj } R^2 = .04$), privacy ($F(6, 1011) = 45.57, p < .001, \text{Adj } R^2 = .21$). However, the variance explained was minimal with the exception of the privacy scale associations. Privacy beliefs were associated with each of the cancer attitudes; while empowerment was associated with self-efficacy, social norms and attitudes on cancer screening benefits. Collectivism was associated with social norms and attitudes on cancer screening benefits.

Discussion

Confirmatory factor analyses support the use of three socio-cultural constructs of interest (Deshpande, et al., 2009; Thompson Sanders, et al. 2011). Fit indices (RMSEA, GFI, AGFI) suggest that the original eleven factor model is inferior to a seven factor model; however, both models retained the constructs of interest. The factor analytic results presented suggest that an alternative construct to fatalism, empowerment, a more inclusive measure of collectivism, and the privacy measure are viable. While the scales retained require additional refinement; the privacy and collectivism scales had sufficient internal consistency and test-retest reliability to permit further exploration of their utility in CRCS education and intervention. The empowerment scale had marginal internal consistency reliability and low test-retest reliability that suggest the need to edit and test additional items. While there are psychometric issues, factor analytic results support continued consideration of an alternative to fatalism as recommended by Thompson Sanders, et al., (2011).

The associations among the empowerment, collectivism and privacy scales and cancer attitudes and beliefs provide further support for their value in CRCs education activities. Previous studies have linked our more inclusive notion of collectivism and the privacy construct to cancer attitudes through qualitative analyses (Deshpande, et al., 2009; Matthews, et al., 2010) and this study provides empirical support for the relationship. The privacy scale appears to have broad associations with cancer attitudes and suggests a communication style that may affect African American willingness to discuss concerns about CRCs recommendations and information. The association between privacy and CRCs barrier attitudes suggests the need to consider tailored rather than targeted education and navigation strategies to address the needs of individuals with high privacy concerns. In addition, this suggests that descriptive and injunctive norms of the African American community governing the content and level of self-disclosure are important to address in cancer education and behavioral interventions. This finding may extend to other health behavior interventions requiring disclosure, such as communications about health histories and sexual health behavior.

The associations between empowerment and self-efficacy and screening benefits were expected based on the relationships suggested by TRA/TPB (Fishbein & Ajzen, 2010). Similarly, the associations between collectivism, social norms and screening benefits were expected based on the theoretical understanding of the construct and the role of social norms in health behavior (Jacobson, et al., 2010). These associations suggest the possibility of using community benefit and the shared belief in the value of CRCs to promote screening in the African American community.

Limitations

While the data suggest the promise of several revised and new scales relevant to CRCs, additional research is required. Only the privacy scale met accepted internal consistency reliability standards of .70 or better; for test-retest only the collectivism scale was suitable to move forward as a measure. The scales require editing based on individual item reliabilities and functioning; reliabilities and associations with cancer attitudes and beliefs can then be determined in a new sample. Although a previously validated scale was used, the internal consistency reliability for perceived behavioral control/self-efficacy was poor. This instability in measurement may affect the ability to replicate associations with this variable. Finally, the sample used in this study was not representative of older African Americans and a representative sample might yield different results. Despite these limitations, this study suggests new and alternative assessment strategies for three socio-cultural constructs associated with African American CRCs.

Summary and recommendations for future research

This study suggests the relevance of empowerment, collectivism and privacy to understand CRCs attitudes. Future studies should explore the scale validities, refine items to improve reliabilities and further examine their importance to actual screening behavior. Health educators may find the scales useful in identifying communities where positive frames of health messages, family and group appeals, as well as community recommendations for collective action may be useful. In addition, the privacy scale may assist in identifying

communities where health professional communications research and training will be most useful due to social norms against health information disclosure.

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References

- Ajzen, I. *personality and behavior*. Dorsey Press; Chicago, IL: 1992. Attitudes.
- American Cancer Society. *Cancer Facts and Figures for African Americans 2013-2014*. American Cancer Society; Atlanta, GA: 2013.
- Bandura A, Adams N, Byer J. Cognitive processes mediating behavioral change. *Journal of Personality and Social Psychology*. 1977; 35(3):125–139. [PubMed: 15093]
- Bandura, A. Social cognitive theory and exercise of control over HIV infection. In: DiClemente, Ralph J.; Peterson, John L., editors. *Preventing AIDS: Theories and methods of behavioral interventions*. Plenum Press; New York, NY: 1994. p. 25-59.
- Bernstein, IH.; Garbin, CP.; Teng, GK. *Applied Multivariate Analysis: Chapter 7*. Springer-Verlag; New York: 1988.
- Brittain K, Loveland-Cherry C, Northouse L, Caldwell CH, Taylor JY. Sociocultural differences and colorectal cancer screening among African American men and women. *Oncology Nursing Forum*. 2012; 39:100–107. [PubMed: 22201660]
- Cooper GS, Koroukian SM. Geographic variation among Medical beneficiaries in the use of colorectal carcinoma screening procedures. *American Journal of Gastroenterology*. 2004; 99:1544–1550. [PubMed: 15307875]
- Deshpande A, Sanders Thompson V, Vaughn K, Kreuter M. Use of socio-cultural constructs in cancer research among African Americans: A review. *Cancer Control*. 2009; 16(3):256–265. [PubMed: 19556966]
- Fishbein; Ajzen, I. *Predicting and Changing Behavior: The Reasoned Action Approach*. Psychology Press (Taylor & Francis); New York: 2010.
- Harris D, Miller J, Davis D. Racial differences in breast cancer screening, knowledge and compliance. *Journal of the National Medical Association*. 2003; 95(8):693–701. [PubMed: 12934865]
- Hiatt RA, Pasick RJ, Pérez-Stable EJ, McPhee SJ, Engelstad L, Lee M, Sabogal F, Carol ND, Onofrio SS. Pathways to early cancer detection in the multiethnic population of the San Francisco bay area. *Health Education and Behavior*. 2008; 23:S10–S27.
- Hu, L.; Bentler, PM. Evaluating model fit. In: Hoyle, RH., editor. *Structural Equation Modeling*. Sage; Thousand Oaks, CA: 1995. p. 76-99.
- Jacobson RP, Mortensen CR, Cialdini RB. Bodies Obligated and Unbound: Differentiated Response Tendencies for Injunctive and Descriptive Social Norms. *Journal of Personality and Social Psychology*. 2010 Advance online publication. Doi: 10.1037/a0021470.
- Jemal A, Siegel R, Xu J, Ward E. *Cancer Statistics*. CA: A Cancer Journal for Clinicians. 2010; 60(5): 277–300. 2010. [PubMed: 20610543]
- Klein, RB. *Principles and practice of structural equation modeling*. 2nd. Guilford Press; New York, NY: 2004.
- Kreuter, M., et al. Reactions to behaviorally vs. culturally tailored cancer communication among African American women; Presented at the American Public Health Association Annual Meeting; San Francisco, CA. 2003.
- Kreuter MW, Skinner CS, Steger-May K, Holt CL, Bucholtz DC, Clark EM, Haire-Joshu D. Responses to behaviorally vs. culturally tailored cancer communication among African American women. *American Journal of Health Behaviour*. 2004; 28(3):195–207.

- Lannin DR, Mathews HF, Mitchell J, Swanson MS. Impacting cultural attitudes in African-American women to decrease breast cancer mortality. *The American Journal of Surgery*. 2002; 184(5):418–423.
- Lukwago SN, Kreuter MW, Bucholtz DC, Holt CL, Clark EM. Development and validation of brief scales to measure collectivism, religiosity, racial pride, and time orientation in urban African American women. *Family & Community Health*. 2001; 24(3):63. [PubMed: 11563945]
- Matthews AK, Sellergren SA, Manfredi C, Williams M. Factors influencing medical information seeking among African American cancer patients. *Journal of Health Communication*. 2010; 7(3): 205–219. [PubMed: 12166874]
- Mattis JS. African American women's definitions of spirituality and religiosity. *Journal of Black Psychology*. 2000; 26:101–122.
- Mayo RM, Ureda JR, Parker VG. Importance of fatalism in understanding mammography screening in rural elderly women. *Journal of Women & Aging*. 2001; 13(1):57–72. [PubMed: 11217186]
- McQueen A, Tiro J, Vernon S. Construct Validity and Invariance of Four Factors Associated with Colorectal Cancer Screening across Gender, Race, and Prior Screening. *Cancer Epidemiol Biomarkers Prev*. 2008; 17:2231–2237. [PubMed: 18768488]
- National Cancer Institute. The NCI strategic plan for leading the nation to eliminate the suffering and death due to cancer. U.S. Department of Health and Senior Service National Institutes of Health; Washington, DC: 2006.
- Odedina FT, Dagne G, Pressey S, Odedina O, Emanuel F, Scrivens J, Reams RR, Adams A, LaRose-Pierre M. Prostate cancer health and cultural beliefs if black men: The Florida Prostate Cancer Disparity Project. *Infectious Agents and Cancer*. 2011; 6(Suppl 2):S10. <http://www.infectagentscancer.com/content/6/S2/S10> Retrieved July 9, 2013. [PubMed: 21992652]
- Office of Behavior and Social Science Research. National Institutes of Health; Washington DC: 2004. Progress and Promise In Research on Socialand Cultural Dimensions of Health: A Research Agenda.
- Powe BD. Cancer fatalism among elderly African American women. *Journal of Psychosocial Oncology*. 2001; 19(3):85–95.
- Purnell JQ, Katz ML, Andersen BL, Palesh O, Jean-Pierre P, Figueroa-Moseley C, Bennett N. Social and cultural factors are related to perceived colorectal cancer screening benefits and intentions in African Americans. *Journal of Behavioral Medicine*. 2010; 33:24–34. [PubMed: 19876727]
- Sellers R, Smith M, Shelton J, Rowley SAJ, Chavous TM. Multidimensional model of racial identity: A reconceptualization of African American racial identity. *Personality and Social Psychology Review*. 1998; 1(2):18–39. [PubMed: 15647149]
- Sussner KM, Edwards TA, Thompson, et al. Ethnic, racial and cultural identity and perceived benefits and barriers related to genetic testing for breast cancer among at-risk women of women of African descent in New York City. *Public Health Genomics*. 2011; 14:356–70. [PubMed: 21540561]
- Tabachnick, BG.; Fidell, LS. Using Multivariate Statistics. Allyn and Bacon; Boston, MA: 2001.
- Thompson H, Valdimarsdottir H, Winkel G, De Shong D, Jandorf L, Redd W. The group-based medical mistrust scale: An investigation of psychometric properties. *Preventive Medicine*. 2004; 38(2):209–218. [PubMed: 14715214]
- Thompson Sanders VL. Factors affecting the level of African American identification. *Journal of Black Psychology*. 1990; 17(1):14–23.
- Thompson Sanders VL, Lewis T, Williams SL. Refining the Use of Cancer Related Cultural Constructs with African Americans. *Health Promotion and Practice*. 2011 DOI: 10.1177/1524839911399431. PMID: 21460257.
- Vernon SW, Myers RE, Tilley BC. Development and validation of an instrument to measure factors related to colorectal cancer screening adherence. *Cancer Epidemiol Biomarkers Prev*. 1997; 6:825–832. [PubMed: 9332766]
- Yancey AK, Aneshensel CS, Driscoll AK. The assessment of ethnic identity in a diverse urban youth population. *Journal of Black Psychology*. 2001; 27(2):190.
- Zollinger TW, Champion VL, Monahan PO, Steele-Moses SK, Ziner KW, Zhao Q, Hickey SA, et al. Effects of personal characteristics on African-American women's beliefs about breast cancer. *American Journal Health Promotion*. 2010; 24:371–377.

Figure 1.
Survey recruitment statistics

Table 1

Demographics of the study population by gender (N=1,021)

Demographics	Overall=1,021	Male = 338	Female = 683
Age, mean (SD)	63.1 (7.6)	62.4 (7.5)	63.4 (7.7)
% 50-63	51.4	54.4	49.9
% 64-76	48.6	45.6	50.1
Education, %			
Less than HS	3.3	3.3	3.4
Some HS	8.4	8.3	8.5
HS diploma or GED	26.5	27.2	26.2
Trade/technical/training school	5.3	4.7	5.6
Some college (no degree)	25.5	22.2	27.1
College degree	18.3	21.3	16.8
Graduate degree	12.4	12.4	12.4
Refused	0.2	0.6	
Income, %			
<\$10,000	8.8	7.4	9.5
\$10,000-\$19,999	18.0	14.8	19.6
\$20,000-\$34,999	19.4	16.9	20.6
\$35,000-\$49,999	14.7	15.1	14.5
\$50,000-\$74,999	12.0	13.0	11.6
\$75,000-\$99,999	7.6	10.4	6.3
>\$100,000	5.6	10.1	3.4
Refused	9.1	8.0	9.7
Not sure/Don't know	4.7		4.8
Employed			
No	71.5	66.3	74.1
Part-time	8.1	6.5	8.9
Full-time	20.2	26.9	16.8
Refused	0.2	0.3	0.1
Marital status, %			
Single	17.5	17.2	17.7
Married/ partnered	40.1	51.8	34.3
Divorced/ separated/ widowed	42.1	30.5	47.9
Refused	0.3	0.6	0.1

Table 2

Comparison of demographic characteristics for participants with complete (n=655) and incomplete (n=364) data on variables utilized in confirmatory factor analysis.

	Complete (n=655)		Incomplete (n=364)		
	n	%	n	%	t or χ^2 ; p
Demographics					
Age (Mean, SD)	62.5	7.4	64.2	8.0	t(1019)=3.3; p<0.01
Gender					$\chi^2(1)=0.01$; n.s.
	Male	216	63.9	122	36.1
	Female	439	64.3	244	35.7
Education					$\chi^2(6)=12.8$; p<0.05
	< high school	17	50.0	17	50.0
	Some high school	47	54.7	39	45.3
	High school diploma / GED	188	69.4	83	30.6
	Trade or tech school or training	31	57.4	23	42.6
	Some college	171	65.8	89	34.2
	College degree	114	61.0	73	39.0
	Graduate degree	87	68.5	40	31.5
Marital status					$\chi^2(3)=10.1$; p<0.05
	Single	129	72.1	50	27.9
	Married or living with partner	270	66.0	139	34.0
	Divorced or separated	139	58.4	99	41.6
	Widowed	116	60.4	76	39.6
Employment status					$\chi^2(2)=3.3$; n.s.
	Unemployed	456	62.5	274	37.5
	Part-time employment	57	68.7	26	31.3
	Full-time employment	141	68.4	65	31.6
Total household income					$\chi^2(6)=5.7$; n.s.
	<\$10k	58	64.4	32	35.6
	\$10k to < \$20k	124	67.4	60	32.6
	\$20k to < \$35k	136	68.7	62	31.3
	\$35k to < \$50k	96	64.0	54	36.0
	\$50k to < \$75k	79	64.2	44	35.8
	\$75k to < \$100k	55	70.5	23	29.5
	\$100k +	45	78.9	12	21.1

Table 3

Factor loadings of observed variables onto 7 constructs for the whole sample (n=655), women only (n=439), and men (n=216) using confirmatory factor analysis.

Factor	Observed Item	Overall (n=655) $\chi^2(864)=3070$; $p<0.001$	Women (n=439) $\chi^2(706)=2243$; $p<0.001$	Men (n=216) $\chi^2(864)=1734$; $p<0.001$
Religiosity	Guide	0.88	0.89	0.88
	Comfort	0.74	0.70	0.77
	Leader		0.43	0.53
	Askgd	0.78	0.77	0.77
	Strength	0.64	0.64	0.61
	Gdheal	0.62	0.57	0.66
mistrust/discrim	Blackdr		0.25	0.45
	blackhea_r	0.54	0.56	0.50
	Complain	0.71	0.68	0.79
	Trust	0.58	0.59	0.55
	Trtpoor	0.55	0.53	0.60
	Discrim	0.69	0.67	0.72
	Contdis	0.56	0.59	0.49
	samecare_r	0.59	0.54	0.67
	access_r	0.38	0.41	0.32
Privacy	Private	0.40	0.42	0.39
	Notellfr	0.31	0.30	0.33
	Notelldr	0.70	0.66	0.75
	Personal	0.73	0.72	0.75
	Dislike	0.62	0.59	0.69
	Worry	0.59	0.56	0.64
Ethnicid	Hlthdec	0.64	0.64	0.63
	Respect	0.33	0.36	0.47
	Recognize	0.32	0.33	0.55
	commrace	0.66	0.73	0.48
	membrace	0.37	0.35	0.46
	Gladrace	0.66	0.62	0.78
	nocnctra_r	0.45	0.46	0.43
Collectivism	Infblk	0.75	0.73	0.77
	Communit	0.58	0.61	0.53
	Duty	0.67	0.69	0.63
	Othrcare	0.50	0.48	0.56
	Oblig	0.59	0.56	0.64
Empowerment	Recscree	0.65	0.63	0.70
	Findca	0.78	0.81	0.74
	Testfind	0.46	0.39	0.57
	Avoid	0.52	0.47	0.62
	Longlife	0.46	0.50	0.38

Factor	Observed Item	Overall (n=655) $\chi^2(864)=3070$; $p<0.001$	Women (n=439) $\chi^2(706)=2243$; $p<0.001$	Men (n=216) $\chi^2(864)=1734$; $p<0.001$
Male role	Respnblt	0.47	0.44	0.50
	Afraid	0.86		0.82
	Mennotlk	0.71		0.64
	Detached	0.68		0.55
RMSEA (90% CI)		0.062 (0.060-0.065)	0.070 (0.067-0.074)	0.068 (0.064-0.073)
GFI		0.81	0.79	0.74
AGFI		0.80	0.76	0.71

Table 4

Means, standard deviations and associations among African American socio-cultural constructs and cancer attitudes (N=1021)

Mean(SD)	Overall	Men	Women	<i>p</i>	
Empowerment	15.77(2.48)	15.72(2.34)	15.79(2.54)	.65	
Collectivism	14.80(3.10)	15.12(2.95)	14.65(3.16)	.02	
Privacy	13.58(3.57)	13.69(3.45)	13.53(3.63)	.50	
Empowerment			.06		
Construct	F	<i>df</i>	<i>p</i>	Adj R ²	Partial Eta ²
Screening Pros	48.01	1	.0001		.05
Screening Cons	1.88	1	.17		.00
Cancer Worry	0.21	1	.65		.00
Perceived Risk	0.49	1	.49		.00
Social Norms	6.97	1	.01		.01
Behav Control/ Self-Efficacy	8.56	1	.004		.01
Collectivism				.04	
Screening Pros	5.34	1	.02		.01
Screening Cons	0.01	1	.93		.00
Cancer Worry	3.12	1	.08		.00
Perceived Risk	0.90	1	.34		.00
Social Norms	31.96	1	.0001		.03
Behav Control/ Self-Efficacy	1.26	1	.26		.00
Privacy				.13	
Screening Pros	130.25	1	.0001		.04
Screening Cons	0.01	1	.0001		.11
Cancer Worry	9.81	1	.002		.01
Perceived Risk	40.81	1	.0001		.04
Social Norms	4.92	1	.03		.01
Behav Control/ Self-Efficacy	120.97	1	.0001		.11