RACIAL/ETHNIC MINORITIES PERCEIVE THEMSELVES AT LOWER RISK FOR CANCER THAN WHITES

Heather Orom[1]
Marc T. Kiviniemi[1]
Levi Ross[1,2]
Willie Underwood III[1,2]

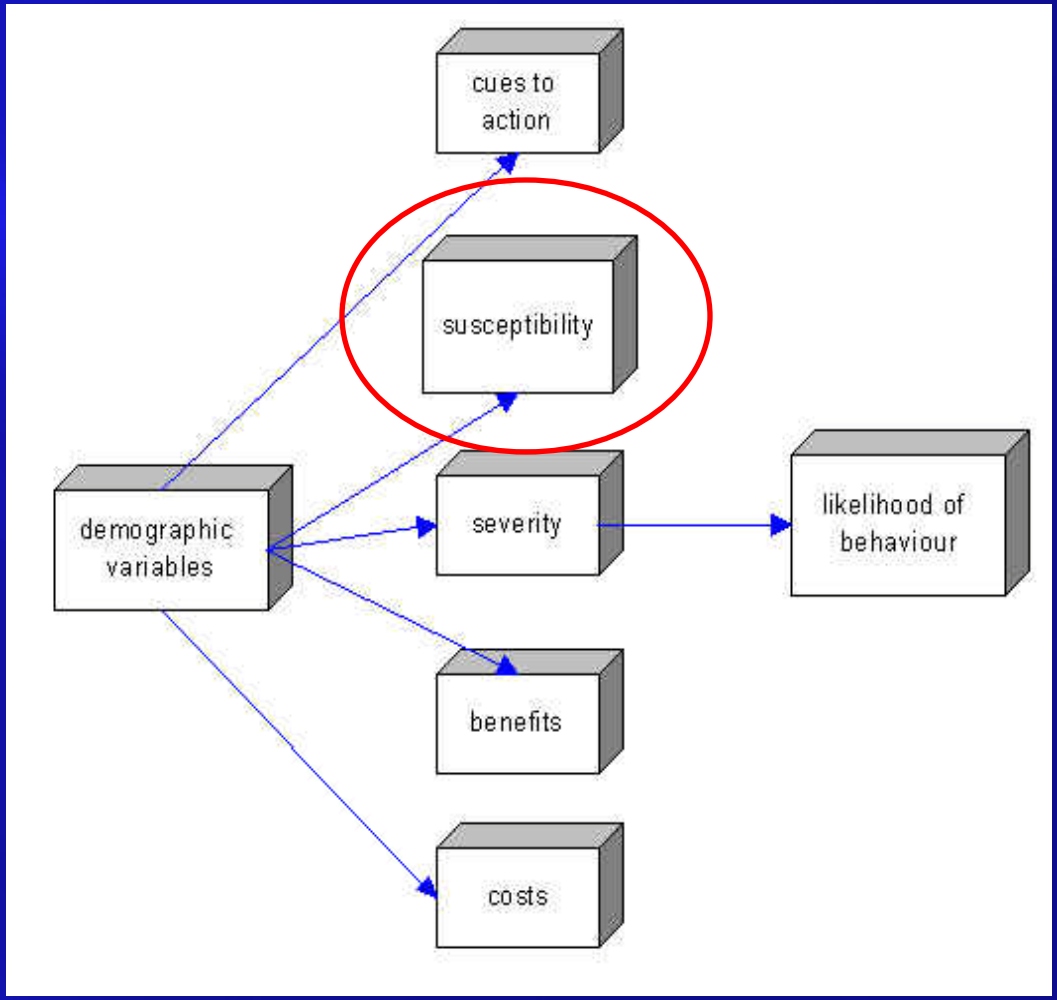
[1]The School of Public Health and Health Professions, University at Buffalo, The State University of New York
[2] Roswell Park Cancer Institute, Buffalo, NY

Acknowledgements: Dr. Kiviniemi was supported by NIH grant K07CA106225. Dr. Underwood was supported by an Astella/AUA Foundation Risking Star in Urology Award.

Perceived risk is a key predictor in several models of health behavior

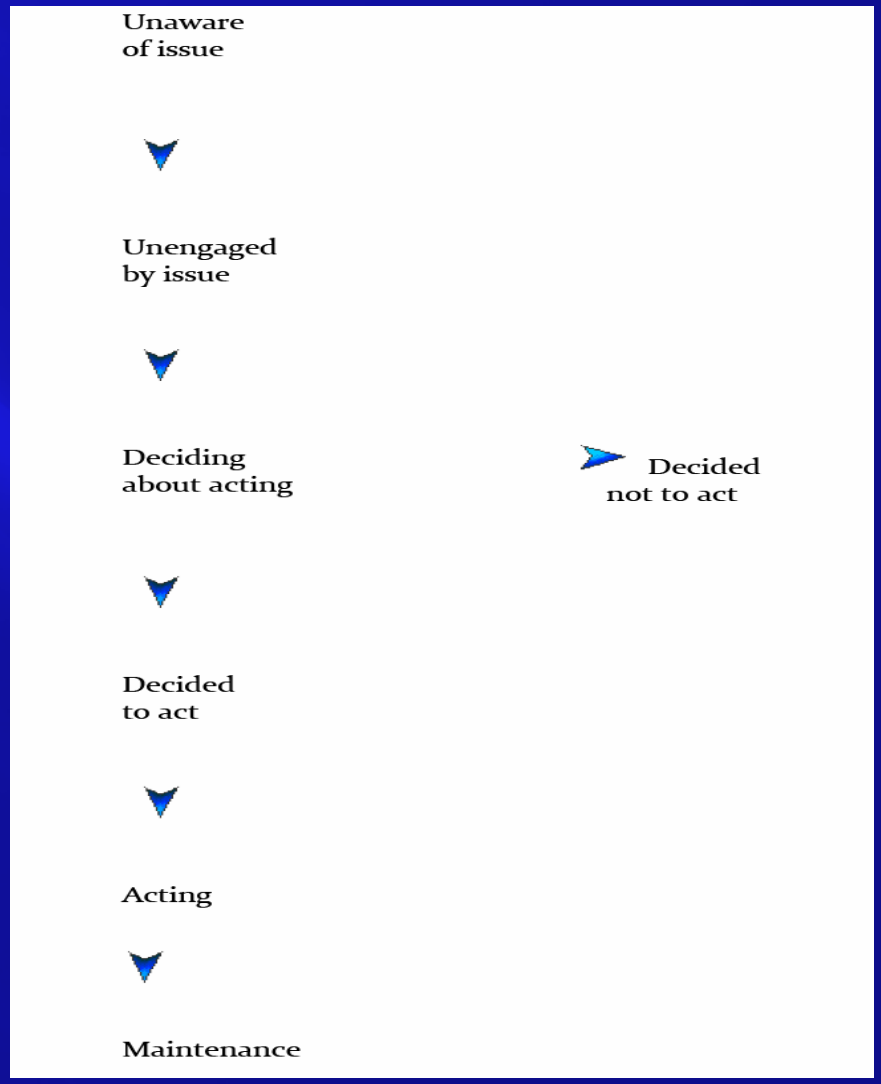
Health Belief Model

Janz NK, Becker MH. The Health Belief Model: A decade later. Health Education Quarterly. 1984;11(1):1-47.



- Precaution Adoption Process Model

  Weinstein N. The precaution adoption process. Health Psychology. 1988;7(4):355–86



Empirical evidence for the role of perceived cancer risk (PCR) in prevention

- Perceived cancer risk predicts cancer prevention, most consistently screening[1,2]

- Although heightened perceived risk may be insufficient for motivating health behaviors such as cancer screening, the absence of perceived risk is a sufficient barrier to behavior.[3]

[1]Katapodi MC, Lee KA, Facione NC, Dodd MJ.. Preventive Medicine. 2004;38(4):388-402.
[2]Vernon SW.. Journal of the National Cancer Institute Monographs. 1999;1999(25):101-19.
[3]McQueen, A., Swank, P. R., Bastian, L. A., Vernon, S. W., McQueen, A., Swank, P. R., et al. (2008). Health Psychology, 27(1), 68-77.

Relative to Whites, do non-Whites perceive their risk of getting cancer as lower?

Previous research on racial differences in PCR

Limited:

- Black, Hispanic and other non-White respondents to the 2000 National Health Interview Survey (NHIS) had lower global PCR than Whites[1]
- Among 800 participants in a no-cost oral cancer screening in the New York city area, relative to other racial/ethnic groups, Asians reported lower perceived risk for oral cancer[2]
- Women recruited from primary care clinics in San Francisco[3] Compared to Whites:
  - Asians < PCR cervical, breast, and colon cancer
  - Hispanics > PCR colon, cervical cancer
  - Blacks = Whites

[1]Honda K, Neugut AL. Cancer detection and prevention. 2004;28(1):1-7
[2]Hay JL, Ostroff JS, Cruz GD, LeGeros RZ, Kenigsberg H, Franklin DM. Cancer Epidemiology, Biomarkers and Prevention. 2002;11(2):155-8.
[3]Kim SE, Perez-Stable EJ, Wong S, Gregorich S, Sawaya GF, Walsh JME, et al. Archives of Internal Medicine. 2008;168(7):728-34.

Estimated 2009 Cancer Incidence and Mortality by Race/Ethnicity*

	Black	Hispanic	Asian/PI	White
All site incidence Male	651.5	419.4	354.0	551.4
Female	398.9	317.8	287.8	423.6
All site mortality Male	313.0	159.0	138.8	230.7
Female	186.7	105.2	95.9	159.2

*Per 100,000 population, age adjusted to the 2000 US standard population.

Jemal, A. et al. (2009). Cancer Statistics, 2009. *CA: Cancer J Clin.* http://caonline.amcancersoc.org/cgi/content/full/caac.20006v1

- **Blacks:** lower perceived risk in this population especially concerning

- **Hispanics and Asians:** lower risk does not equate to no risk. All groups should be encouraged to engage in prevention and screening

Screening rates lower in non-Whites than Whites

- Blacks may have lower colorectal screening and mammography than Whites[2]
- Hispanics and Asians have lower rate of mammography, cervical screening, colorectal cancer screening and prostate cancer screening than Whites[1-3]

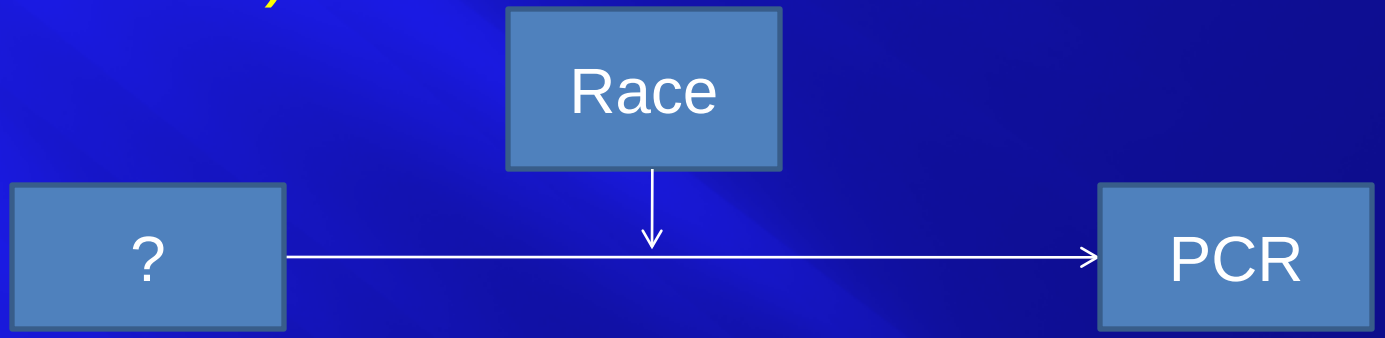
[1]CDC. National Health Interview Survey in Health, United States 2007. Centers for Disease Control and Prevention (CDC); 2007; Available from: http://www.cdc.gov/cancer/breast/statistics/screening.htm.
[2]Ponce NA, Babey SH, Etzioni D, Spencer BA, Brown ER, Chawla N. Cancer screening in California: Findings from the 2001 California Health Interview Survey. Los Angeles: UCLA Center for Health Policy Research 2003.
[3]Wee CC, McCarthy EP, Phillips RS. Preventive Medicine. 2005;41:23-9.

Research Questions

1. Do non-Whites have lower perceived cancer risk (PCR) than Whites?

2. Are racial/ethnic differences in PCR accounted for by racial/ethnic **variability in the predictors of PCR** (mediation hypothesis)?

3. Are racial/ethnic difference in PCR accounted for by racial/ethnic **differences in the influence of predictors on PCR** (moderation hypothesis)?



4. Are racial/ethnic differences in PCR reduced in older cohorts?

Methods

Sample

- 2007 HINTS
- Included RDD and mail participants
- N = 5,581 (RDD = 2,820 / mail = 2,768)

White = 4,319

Black = 567

Hispanic = 514

Asian = 181

Data Analysis

- STATA 10, weighted data
- Linear and logistic regression
- Included Mode as covariate in all analyses
- Mode Effects: PCR varied as a function of Race X Mode interaction (*B* = -0.43, 95% CI = -0.73 to -0.10)

  Asians in the RDD sample reported lower PCR (M = 1.85, 95% CI = 1.53 to 2.17, n = 62) than Asians in the mail sample (M = 2.33, 95% CI = 2.11 to 2.56, n = 119).

- Controlled for education, gender, marital status, age in all analyses

Predictor Variable

Race/Ethnicity: participants self-classified as non-Hispanic White, non-Hispanic Black, Hispanic, Asian

Outcome Variable

Perceived Cancer Risk (PCR):

"How likely do you think it is that you will develop cancer in the future? Would you say your chance of getting cancer is:"

1 - very low

2 - somewhat low

3 - Moderate

4 - somewhat high

5 - very high

Potential Explanatory Variables

Family History: "Have any of your family members had cancer?"

Smoking Status: ever-smoker vs. never smoker

Self-reported general health: "in general, would you say your health is excellent/very good/good/fair/poor?"

Beliefs about cancer severity and preventability

Results

Do non-Whites have lower perceived cancer risk (PCR) than Whites?

Controlling for demographic characteristics, being non-White was associated with lower PCR relative to being White:

Black	(*B*= -0.40, 95% CI = -0.53 to -0.27)
Hispanic	(*B*= -0.34, 95% CI = -0.48 to -0.19)
Asian	(*B*= -0.69, 95% CI = -0.90 to -0.48)

Are Racial/Ethnic differences in PCR accounted for by racial/ethnic differences in the predictors of PCR?

Hypothesized Mediator: Family history of cancer

	Sobel Test (indirect effect)	% Racial difference accounted for by mediator
Black	-3.99 (<0.001)	14.6%
Hispanic	-5.29 (<0.001)	29.8%
Asian	-5.34 (<0.00)	27.2%

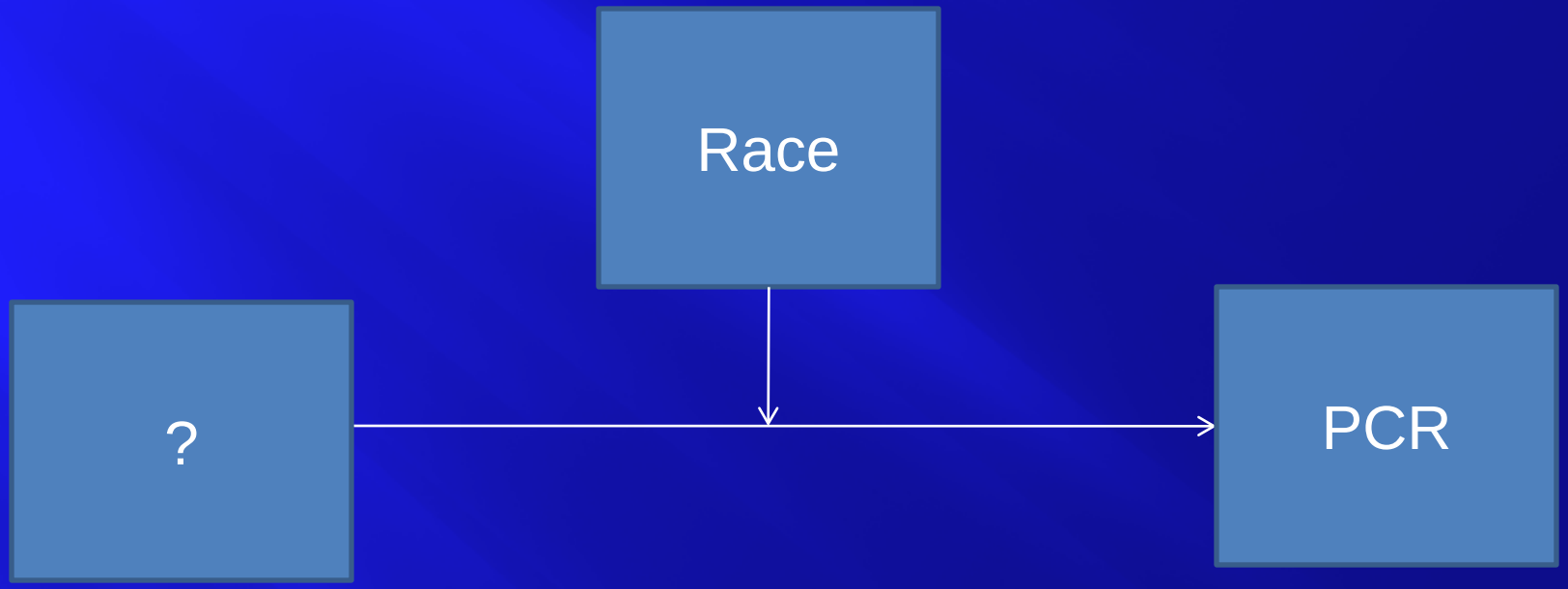
Hypothesized Mediator: Smoking Status

	Sobel Test (indirect effect)	% Racial difference accounted for by mediator
Black	***ns***	
Hispanic	**-2.77 (0.006)**	**10.4%**
Asian	**-4.02 (<0.001)**	**13.4%**

Hypothesized Mediator: Belief that everything causes cancer

	Sobel Test (indirect effect)	% Racial difference accounted for by mediator
Black	-3.03 (0.002)	8.2%
Hispanic	-3.66 (0.002)	17.9%
Asian	-3.15 (0.002)	12.3%

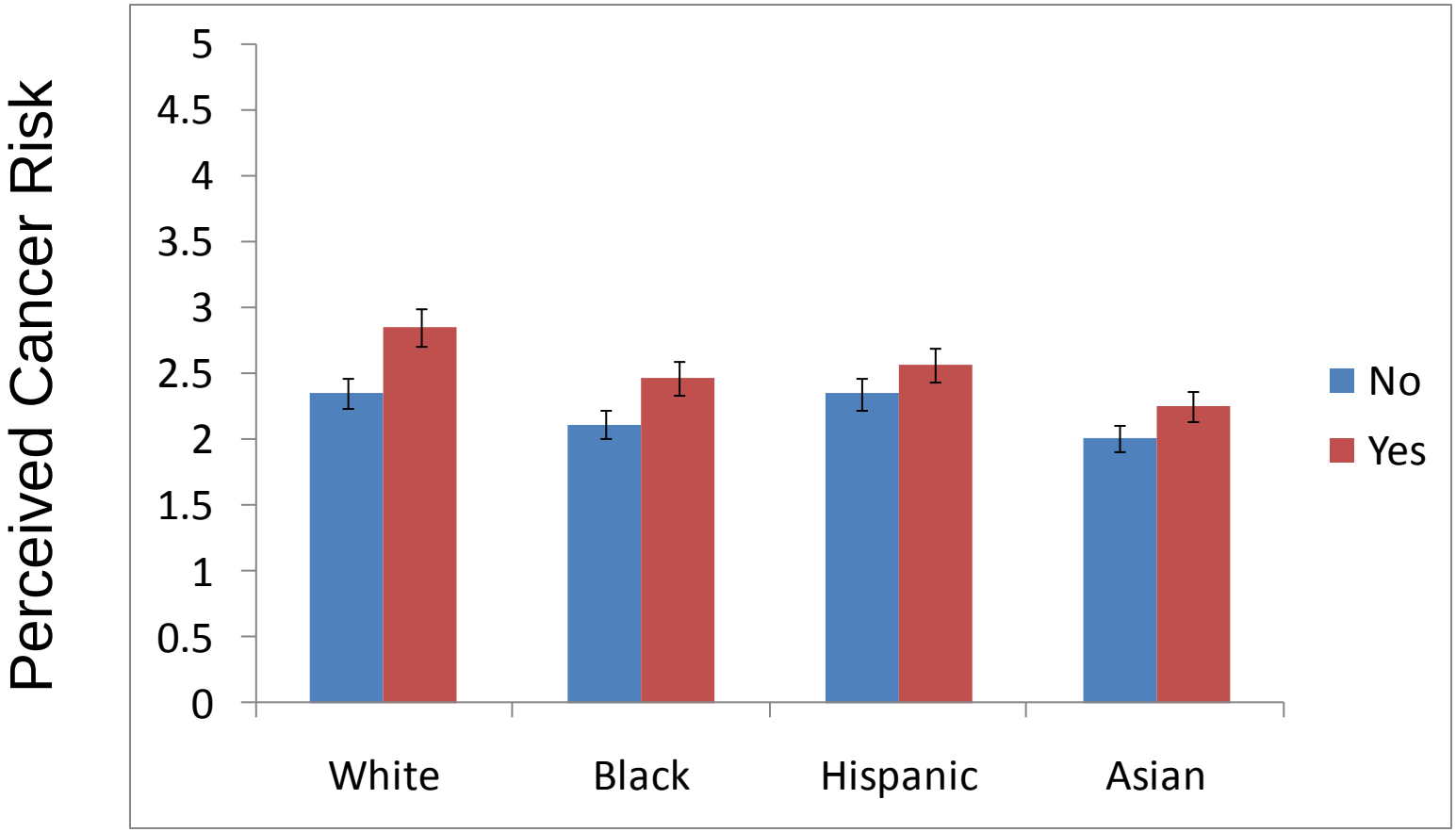
Are Racial/Ethnic difference in PCR accounted for by racial/ethnic differences in the influence of predictors on PCR?



Race X Family History

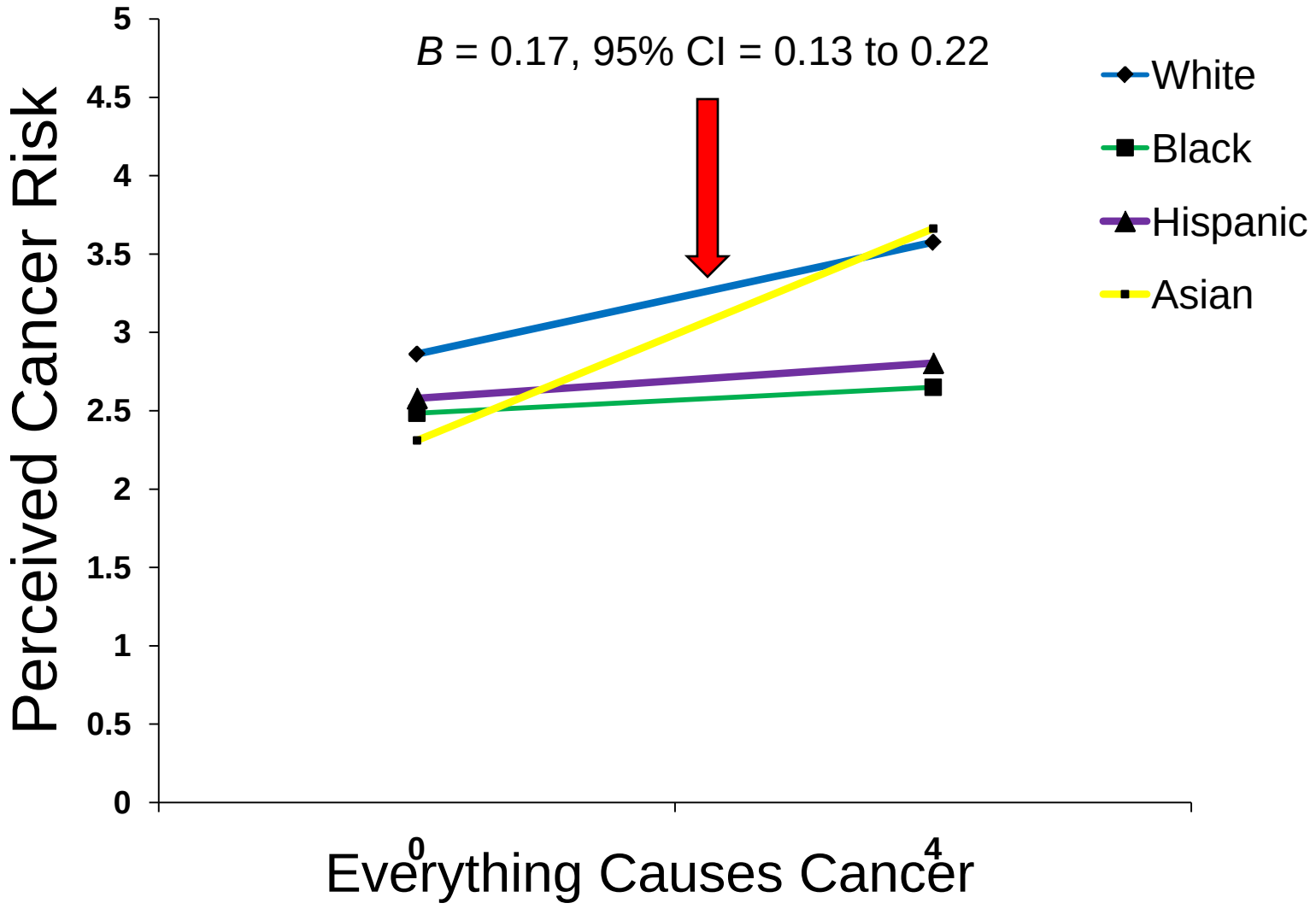
Trend for Race (Hispanic vs. White) X Family History (*B* = -0.26, 95% CI = -0.56 to 0.04)

PCR as a Function of Family History and Race



Race X ‘Everything Causes Cancer’

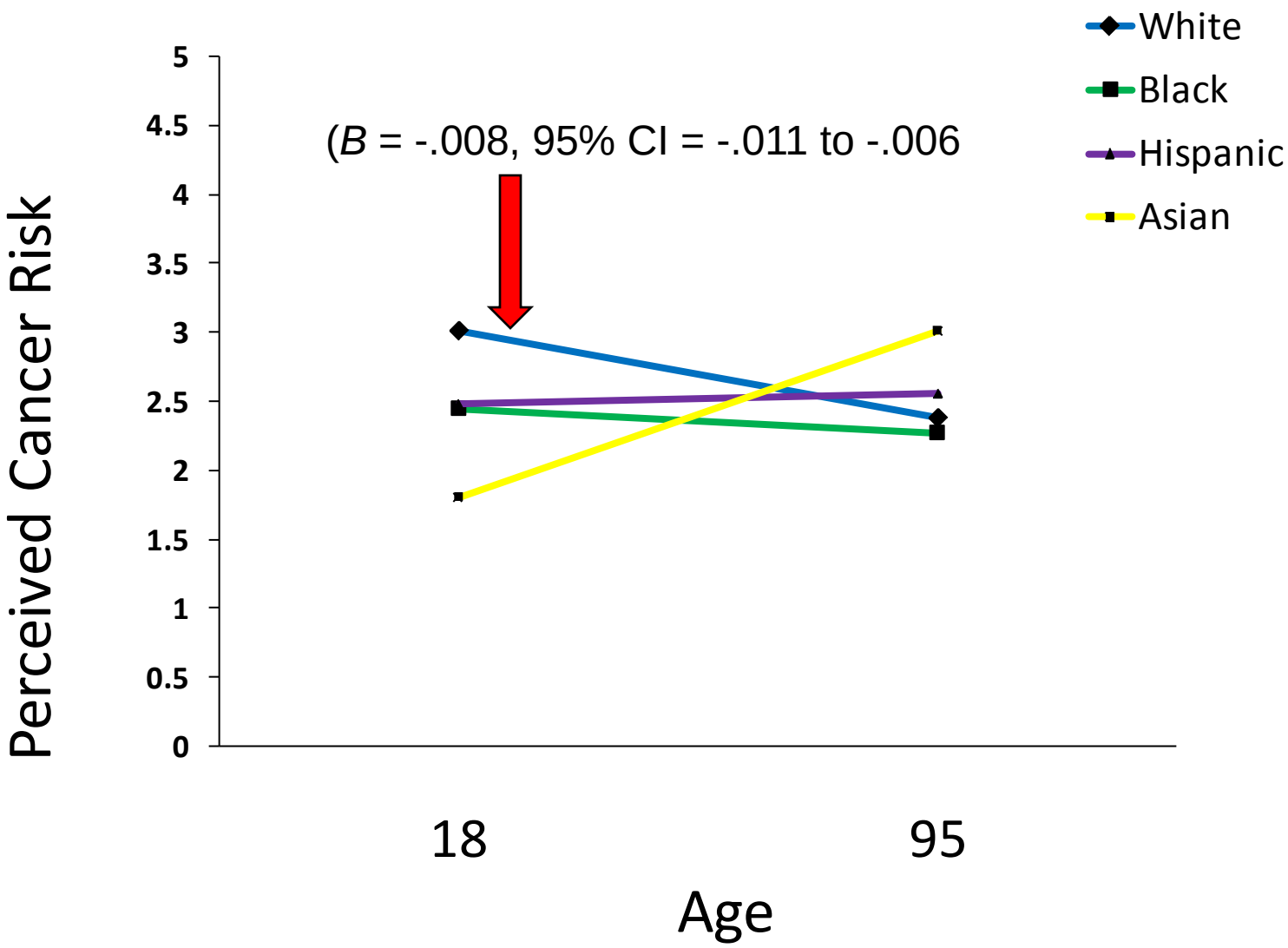
- Race (Black vs. White) X Everything Causes Cancer (*B* = -0.14, 95% CI = -0.27 to -0.01)
- Race (Hispanic vs. White) X Everything Causes Cancer) (*B* = -0.12, 95% CI= -0.23 to -0.02)


B = 0.17, 95% CI = 0.13 to 0.22
Perceived Cancer Risk
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0
4
Everything Causes Cancer
White
Black
Hispanic
Asian

Are racial/ethnic differences in PCR reduced in older cohorts?

- Some previous research did not find race differences in PCR or differences in the opposite direction than expected[1,2]
- In these previous studies these participants were ≥45 and ≥50, respectively.
- Could participant age explain the differences?

[1]Hay J, Coups E, Ford J. Journal of Health Communication. 2006;11 Suppl 1:71-92.
[2]Kim SE, Perez-Stable EJ, Wong S, Gregorich S, Sawaya GF, Walsh JME, et al. Archives of Internal Medicine. 2008;168(7):728-34.


Perceived Cancer Risk
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
(B = -.008, 95% CI = -.011 to -.006
White
Black
Hispanic
Asian
18
95
Age

Slopes differed significantly between:

Hispanics and Whites (*B* = .009, 95% CI = .001 to .018)

Asians and Whites (*B* = .02, 95% CI = .009 to .039)

The Black-White difference in slopes did not reach significance (*B* = .006, 95% CI = -.002 to .014)

- Race X Age interaction may explain discrepancies in the literature
- Among Whites only, PCR was reduced among older respondents, attenuating race/ethnicity-related differences in PCR

Discussion
Explanations for racial/ethnic differences in PCR?

- Awareness of family history and family history risk
  - As speculated previously,[1] lower likelihood of reporting family history of cancer among minorities appears to have implications for cancer risk perceptions.

[1]Orom H, Coté ML, González HM, Underwood I, W, Schwartz AG. Cancer. 2008;112(2):399-406.

- Unequal access to/ penetration of cancer health messages across groups
  - Health communication about family history risk may not have reached Hispanic communities
  - Less strong belief that everything causes cancer among non-Whites than Whites may be because some Whites feel inundated by risk messages but non-Whites rarely do
  - Messages may also have been less likely to have reached older White cohorts

Cancer risk messages in your neighborhood?

"The only advertisements I see in my neighbourhood are for HIV/AIDS treatment and I've also seen in magazines for herpes and HIV/AIDS treatments. But more than breast cancer. It's like a ten to one ratio."

[1]Salant T, Gehlert S. Sociology of Health and Illness. 2008;30(4):599-615.

More evidence in support of the need for:

- Continued investment in health communication tailored for non-White communities.

- Programs designed to build trust between non-Whites and the medical and public health systems

THANK YOU

horom@buffalo.edu

Sample Characteristics

	Total Sample %	White %	Black %	Hispanic %	Asian %
Family history	70.10	76.67	64.86*	51.91*	36.71*
Ever smoker	45.65	48.68	44.50	39.99‡	19.66*
Female	50.69	51.23	57.25	45.17 †	42.16
Married	57.20	60.31	36.32*	57.58	61.08
College or greater	24.91	27.64	16.40*	10.23*	45.96*
	Total Sample mean	White mean	Black mean	Hispanic mean	Asian mean
Age	44.33	46.27	43.85‡	36.50*	38.73*
Health	3.42	3.48	3.32‡	3.22*	3.30
PCR	2.62	2.73	2.34*	2.46*	2.09*

Sub-group significantly different than Whites * $p < .001$ † $p < .01$ ‡ $p < .05$

Adjusted model of Perceived Cancer Risk and 95% Confidence Intervals.

Predictor	*B*		*P*-value
Race			
White	Reference Group		
Black	-0.35	(-0.4711 to -0.2245)	0.001
Hispanic	-0.2518	(-0.3975 to -0.1061)	0.001
Asian	-0.5177	(-0.7290 to -0.3063)	0.001
Education			
< High school	Reference Group		
High school	0.0182	(-0.1275 to 0.1640)	0.800
Some college	0.0725	(-0.0680 to 0.2131)	0.310
College or greater	0.1718	(0.0297 to 0.3140)	0.020
Married	0.0738	(-0.0018 to 0.1493)	0.060
Age	-0.0080	(-0.0104 to -0.0057)	0.001
Gender	-0.39	(0.11 to -0.04)	0.300
Has family history cancer	0.4011	(0.3090 to 0.4932)	0.001
Ever smoker	0.3052	(0.2299 to 0.3805)	0.001
Perceived health	0.23	(-0.28 to -0.18)	0.001
RDD	-0.02	(-0.09 to 0.06)	0.640

Summary of Results

- **Black, Hispanic, and Asian respondents to HINTS perceived themselves at lower risk for getting cancer (lower PCR) than White respondents**

Mediators:

- Black-White differences: lower likelihood of reporting family history, less strong belief that everything causes cancer
- Hispanic-White differences: lower likelihood of reporting family history, smoking status, less strong belief that everything causes cancer
- Asian-White differences: lower likelihood of reporting family history, smoking status, less strong belief that everything causes cancer

Interactions: family history, belief that everything causes cancer, age

“When I think of cancer, I automatically think of death”

“Cancer is most often caused by a person’s behavior or lifestyle”

“Getting checked regularly for cancer helps find cancer when it’s easy to treat”

“Cancer is an illness that when detected early can typically be cured”

“It seems like everything causes cancer”

“There’s not much you can do to lower your chances of getting cancer”

“There are so many different recommendations about preventing cancer, it’s hard to know which ones to follow”

items were analyzed individually as mean *r* = .11; range = 0.00 to 0.33