5-2022

Perceived COVID-19 Threat Across the Intersections of Age, Race/Ethnicity, and Gender

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An Honors Thesis submitted in partial fulfillment

of the requirements for Honors Studies in Sociology

By

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Spring 2022

Sociology

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ACKNOWLEDGEMENTS

Special thanks to my thesis director Dr. Brittany Hearne for her patience and guidance throughout the development of my research, to Dr. Lori Holyfield for encouraging my interest in sociology, and to Dr. Michael Niño, Dr. Trish Amason, and Dr. Ron Warren, for their willingness and availability to serve on my thesis committee. Special thanks to the Universtiy of Arkansas Honors College for supporting my research through the Honors College Research Grant.

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INTRODUCTION

The onset of the novel coronavirus 2019 (COVID-19) pandemic caused large scale societal disruptions. In the context of general uncertainty related to COVID-19, various emergency measures were implemented to slow the spread of the disease, including quarantining, social distancing, and mask wearing. Little attention was given to understanding the perceived threat of the virus across the population. For instance, with the exception of political affiliation divisions (Bruine de Bruin and Bennett 2020; Cavillo et al. 2020), there is little research about whether perceived health threat due to COVID-19 differed across age, race/ethnicity, or gender. Further, the limited research that does exist focuses on perceived threat of COVID-19 to personal health, which leaves unanswered questions about perceived threat to population health. As the pandemic continues, and as patience with safety measures (e.g., masking) wanes, these same uncertainties about perceived threat due to COVID-19 remain.

In this study, using data collected in February 2021, I investigate the associations between perceived threat of COVID-19 for population health and age, race/ethnicity, and gender. I also examine the associations between perceived threat of COVID-19 for personal health and age, race/ethnicity, and gender. Given known disparities in infection and mortality that burdens older people, I analyze whether age moderates the associations between perceived threat and race/ethnicity and between perceived threat and gender.

Investigations of perceived threat at the intersection of age and race/ethnicity or age and gender provide a more precise view of which social groups perceived threats to health a year into the pandemic. Niño (2020) and his associates have published work examining how perceived threat of COVID-19 to health is associated with age,

race/ethnicity, and gender based on data collected in April 2020. In this study, I add to their research by examining more recent data and by examining how group intersections affect the results. This addition to the limited research on threat perception towards COVID-19 will also help to identify subgroups who may be at greater risk of negative mental health outcomes or who express undue optimism concerning their health risk. Further, developing an understanding of health risk perception during the COVID-19 pandemic will help communities and nations adequately prepare for predicted future pandemics.

BACKGROUND

Perceived Threat

The Encyclopedia of Health Communication defines perceived threat as "an individual's cognitive assessment of the likelihood a danger will affect them and how bad it will be if it does" (Thompson 2014: 1050). From this definition it is derived that threat is evaluated based on perceived susceptibility and the perceived severity of consequences (Thompson 2014). Several factors may impact one's perceived threat, including the immediacy of the threat, personal experiences, understanding of statistical principles, and engaging in risky behavior (Thompson 2014). Because threat perception plays a role in predicting preventative behaviors, unrealistic optimism may be linked to negative health outcomes, though studies have found mixed results concerning this association (Ferrer and Klein 2015). More pessimistic views are associated with fear and distress which may negatively impact the mental health of an individual (Ferrer and Klein 2015).

Unfortunately, there are not any studies that provide in-depth analyses of differences between perceived personal threats and perceived population threat. Yet, it is plausible that in an individualistic society like in the United States, there were always greater perceived threats to self than perceived threats to the population. After a year into the pandemic, characterized by isolation and diminishing social ties, private interests were likely strengthened but concerns for the public were likely weakened. Further, in a racialized and gendered society, like in the United States, perceptions of threat to self will likely be greater among racial minority groups because of histories of medical racism and among women, a more risk adverse group. In this study, I distinguish between perceived population threat and perceived personal threat because differences in these two measures may shed light on social group differences in health and safety compliance as well as social group differences in personal and public health concerns.

COVID-19 across age, race/ethnicity, and gender

Since the beginning of the pandemic, the mortality rate for older adults (> 65) due to COVID-19 infections was significantly higher than any other group. According to the CDC, over 80% of all deaths attributed to COVID-19 in 2020 were among adults ages 65 and up (Ahmad et al. 2021). Prior studies show that increased age is positively associated with higher threat perception, with those over the age of 65 significantly more likely to consider COVID-19 a major threat (Niño et al. 2020). In another study, younger adults (ages 18-49) experienced greater anxiety associated with perceived threat of COVID-19, while adults over the age of 50 experienced less psychological distress (Wilson, Lee, and Shook 2021). Yet, there is an absence of research examining the impact of age on threat perception when intersected with gender or race/ethnicity.

Differences in threat perceptions have roots in lived experiences in which racial and ethnic minorities are often more susceptible than White people to illness, death, and other social misfortunes during large scale challenges such as the COVID-19 pandemic. Numerous studies have found that racial and ethnic minorities, especially Black and Hispanic communities, have been disproportionately impacted by the COVID-19 pandemic, representing more positive cases and higher morbidity and mortality rates (Hooper, Nápoles and Pérez-Stable 2020; Gold et al. 2020). Additionally, Black, Hispanic, and Asian populations face barriers to healthcare access that may cause these groups to be more fearful of illness and death during the COVID-19 pandemic (Cobb, Erving, and Byrd 2020; Moen, Pedtke, and Flood. 2020). There is limited literature discussing the impact of COVID-19 on Asian Americans. One study found that Asian Americans comprised only 3.6% of those who died due to COVID-19, but those data may be skewed due to undertesting early in the pandemic (Yan et al. 2021). Compared to other groups, hospitalized Asian Americans took the longest to seek medical care for COVID-19 and, one year into the pandemic, Asian Americans had a significantly higher case fatality compared to White people due to undertesting and reluctancy to seek care (Yan et al. 2021).

Previous studies related to gender differences throughout the COVID-19 pandemic have shown that women experience significantly more distress concerning the pandemic than men (Lewis and Duch 2021; Niño et al. 2020). One qualitative study performed throughout the spring and summer of 2020 found that men and women expressed similar levels of perceived risk concerning the COVID-19 pandemic, yet women expressed greater anxiety and concern about the effects of COVID-19 compared

to men (Umamaheswar and Tan 2020). This has been discussed in light of general trends in which women are the primary caretakers in a household. In other words, because caretakers often take responsibility for health and welfare of the household, they must consider the pandemic a serious risk (Umamaheswar and Tan 2020). Even when comparing men and women in caretaker roles, women experienced greater stress and more mental health concerns, suggesting there are other factors in effect (Wade et al. 2021). Gendered risk assessment might further explain the disparity as men are more likely to perceive less risk and therefore engage in riskier behavior (Lewis and Duch 2021). Also, an examination of gender roles within race/ethnicity has revealed further variations, as some groups of racial minority women expressed less psychological distress due to COVID-19 compared to White men (Hearne 2021), which may indicate variation in threat perception among subgroups.

While race/ethnicity, age, and gender have been explored separately as predictors of perceived threat due to the COVID-19 pandemic, very few researchers have considered whether these variables intersect in their associations with perceived threat. Investigating the variations of perceived threat due to COVID-19 at intersections of these variables may help to illuminate the social groups that require mental health assistance and preventative measure education. In this study, I examine whether age, race/ethnicity, and gender are associated with perceived threat due to COVID-19 toward population health and toward personal health. Moreover, I analyze whether age moderates the effects of race/ethnicity and gender for both outcomes.

DATA AND MEASURES

The data used in this study are taken from Wave 83 of the American Trends Panel (ATP), an ongoing, online, national, probability-based sample of United States adults managed by the Pew Research Center. Wave 83 responses were collected February 1-21, 2021. These data represent a recent nationally representative sample of public opinions related to the COVID-19 pandemic. There were 10,121 participants in the panel with a 74.7 percent response rate. After deleting cases with missing responses for any of the study variables, the analytic sample size was 9,069.

Dependent Variables

The dependent variables are perceived threat to personal and population health. Threat to population health was measured using the question "How much of a threat, if any, is the coronavirus outbreak for the health of the U.S. population as a whole?" Original responses included three categories: 'not a threat', 'a minor threat', and 'a major threat'. Threat to personal health was measured using the question "How much of a threat, if any, is the coronavirus outbreak for your personal health?" and included the same response categories: 'not a threat', a minor threat', and 'a major threat'. Following the lead of prior research in this area (Niño et al. 2020), and to ease the interpretation of results, both threat measures are included as binary outcomes: (0) not a threat/minor threat and (1) a major threat.

Independent Variables

Age was measured in four age range categories, and I assigned variable name to each category: Young Adult (18–29) (reference), Adult (30–49), Middle Age (50–64), and Older (65). Race/ethnicity was measured using a respondent's self-reported racial

and ethnic identity. The categories included White (reference), Black, Hispanic, and Other. In this study, the 'Other' category was disaggregated into Asian/Asian American, Mixed, and Other. I include Asian/Asian American in the analyses, but the Mixed and Other subsample sizes were too small to include. Gender was self-reported as male or female.

Control Variables

Covariates included in this study are education, political ideology, U.S. census region, household income, and metropolitan residency. Education level was originally measured as high school or less (reference), some college, college graduate or don't know/refused. Respondents who selected don't know/refused were coded out of the sample. Annual household income was recoded from nine options in the panel survey to three categories: less than $40,000 (reference), $40,000 to 80,000, or greater than $80,000. Political ideology was self-reported as very conservative (reference), conservative, moderate, liberal, or very liberal. U.S. census region was taken from respondents' zip codes and categorized as Northeast (reference), Midwest, South, or West. Metropolitan residency was determined by the ATP using FIPS metropolitan indicators to determine non-urban (reference) or urban residency.

These control variables were included as they may impact perceived disease susceptibility. Higher educational attainment has been associated with higher levels of stress and anxiety during the COVID-19 pandemic possibly due to greater self-awareness, which may in turn impact perceived threat (Salari et al. 2020). Previous research has shown that those who identify with the liberal Democratic political party consider the pandemic to be a greater health risk and place greater importance on social

distancing in comparison to those who identify as Republican (Allcott et al. 2020). Region impacted anxiety and psychological distress based on higher spikes of cases through the course of the pandemic (Wu, Walkover, and Zhang 2021). Income plays an important role in predicting mental health and personal risk perception during COVID-19, as low-income groups, which often overlap with disadvantaged racial minorities, are faced with greater stress and financial instability (Purtle 2020). Metropolitan residency, which tends to overrepresent racial minorities and lower income households, can reduce ability to socially distance and work from home (Hooper et al. 2020; Yang, Choi, and Sun 2021).

ANALYTIC STRATEGY

In this study age, race/ethnicity, and gender are used to estimate perceived major threat to personal health and population health, controlling for education level, political ideology, U.S. census region, household income, and metropolitan residency. All analyses were completed using SAS 9.4. I began by estimating descriptive statistics. Descriptive statistics (proportions) are reported in Table 1.

Logistic regression analyses were completed to assess the log-odds of perceived major threat to both population health and personal health. The first model for both outcomes estimate how age, race/ethnicity, gender, and the control variables are *on average* associated with perceived major threat to population health (Model 1A) and personal health (Model 1B). The next model for both outcomes include the interaction between age and race/ethnicity. The last model for both outcomes include the interaction between age and gender. Predicted probabilities of perceived major threat to personal

health across age and race/ethnicity were estimated and are shown graphically in Figure 1. The cell sizes for age by race/ethnicity and age by gender are reported in Appendix A.

RESULTS

Descriptive Statistics

Table 1 presents descriptive statistics. About two-thirds (68%) of respondents perceived COVID-19 to be a major threat to personal health, while only about one-third (34%) of respondents perceived COVID-19 to be a major threat to population health. The majority of respondents were 30-49 year old adults (33%) followed by the 50-64 year old middle age (30%) respondents, 65+ older (27%) respondents, and 18-29 year old young adults (9%). The vast majority of respondents were White (70%) followed by Hispanic (17%), Black (9%), and Asian (4%). Females were 54 percent of the sample compared to 46 percent male respondents. Additionally, most respondents lived in urban areas (88%), lived in the South (40%), had graduated from college (56%), reported high household income (42%), and reported a moderate political ideology (37%).

Multivariate Analyses

Multivariate analyses show that the independent variables age, race/ethnicity, and gender had statistically significant associations with perceived major threat of COVID-19 for both population and personal health.

Results for perceived major threat to population health are shown in Table 2, Model 1A. Compared to White people, Black (b = .84, p <.001), Hispanic (b = .78, p <.001), and Asian (b = .83, p <.001) people had greater log-odds of perceiving major threat of COVID-19 toward population health. Compared to males, females (b = .21, p

<.05) also had higher log-odds of perceiving COVID-19 as a major threat to population health. On average, adult (30-49) (b = .71, p <.001), middle age (50-64) (b = 1.16, p <.001), and older (65+) (b = 1.54, p <.001) people had higher log-odds of perceiving COVID-19 as a major threat to population health compared to young adults (18-29).

In addition, several of the control variables were statistically associated with perceived threat of COVID-19 to population health (Table 2, Model 1A). Compared to the people in the Northeast region, people in the Midwest (b = -.32, p <.05) had lower log-odds of perceiving COVID-19 as a major threat toward population health. Both middle (b = -.21, p <.05) and high (b = -.50, p<.001) income respondents had lower log odds of perceiving COVID-19 as a major threat toward population health when compared to low-income respondents. Compared to very conservative respondents, Moderate (b = .85, p < .01), liberal (b = .96, p < .01), and very liberal (b = 1.02, p < .01) respondents all had higher log-odds of perceiving COVID-19 as a major threat to population health.

Perceived major threat to personal health is shown in Table 2, Model 1B. Black (b = .89, p <.001), Hispanic (b = .74, p <.001), and Asian (b = 1.08, p <.001) people had greater log-odds of perceiving COVID-19 as a major threat toward personal health compared to White people. Females had higher log-odds of perceiving COVID-19 as a major threat to personal health (b = .32, p <.001) compared to males. Middle age (50-64) (b = .44, p <.01) and older (65+) (b = .88, p <.001) people had greater log-odds of perceiving major threat of COVID-19 to personal health compared to young adults (18-29).

Control variables for perceived major threat to personal health are also included in Table 2, Model 1B. People in the Midwest (b = -.30, p <.01) showed significantly lower

log-odds of perceiving COVID-19 as a major threat to personal health compared to respondents in the Northeast. High income people (b = -.49, p <.001) had lower log-odds of perceiving COVID-19 as a major threat to personal health when compared to low-income people. Those who completed a college degree (b = .27, p <.05) had higher log-odds of perceiving major threat of COVID-19 to personal health when compared to those with a high school education or less. Urban residents (b = .32, p <.01) had higher log-odds of perceiving major threat of COVID-19 to personal health when compared to non-urban residents. Compared to very conservative respondents, conservative (b = 0.33, p < .001), moderate (b = 1.30, p < .001), liberal (b =2.26, p < .001), and very liberal (b = 2.48, p < .001) respondents all had higher log-odds perceiving COVID-19 as a major threat to personal health.

Interactions

Interaction effects were estimated for both outcomes. The interactions between age and race/ethnicity (Table 2, Model 2A) or between age and gender (Table 2, Model 3A) had no statistically significant association with perceived major threat of COVID-19 to population health.

Interactions between age and race/ethnicity for perceived major threat of COVID-19 to personal health for are shown in Table 2, Model 2B. Only the interaction between adult (30-49) and Asian was statistically significant (b = -1.48, p < .05). Rather than similar perceptions of major threat to personal health due to COVID-19 for adults (30-49) and young adults (18-29), as is generally the case for the other race/ethnic groups, among Asians and Asian Americans, young adults (18-29) had higher log-odds of perceiving COVID-19 as a threat to personal health than adults (30-49). I graphed the predicted

probabilities for ease of interpretation of the interaction effects (see Figure 1). The interactions between age and gender were not significantly associated with perceived major threat of COVID-19 to personal health (Table 2, Model 3B).

DISCUSSION

The goals of this study were to estimate the effect of age, race/ethnicity, and gender on the perception of COVID-19 as a major threat to population health and personal health. To accomplish this, I estimated logistic regression models in which perceived threat was regressed on age, race/ethnicity, and gender. In the model for population health, as age increased so did the log-odds of perceiving COVID-19 as a major threat to population health. Compared to Whites, Black, Hispanic, and Asian people had higher log-odds of perceiving COVID-19 as a major threat to population health. Compared to males, females had higher log-odds of perceiving COVID-19 as a major threat to population health. In the model for personal health, there were significant interactions between age and race/ethnicity, but no significant interactions between age and gender. The statistically significant interactions between race/ethnicity and age highlighted the heightened log-odds for perceived major threats to personal health due to COVID-19 among Asian young adults.

The increased log-odds of perceiving major threat to population health as age increases is as expected; since the early stages of the COVID-19 pandemic, greater age has been heavily associated with greater risk of severe illness (CDC 2020). Additionally, the Pew Research Center found that following the news more closely is associated with perceiving COVID-19 as a greater threat. It reported that more adults (30-49) (54%),

middle-aged adults (50-64) (63%), and older adults (65+) (69%) followed COVID-19 news very closely in late March 2020 compared to young adults (18-29) (42%) (Pew Research Center 2020). The impact of following the news closely may also contribute to the rise in threat perception as age increases. The higher threat perception among Blacks, Hispanics, and Asians also aligns with the disproportionate mortality and morbidity rates among minority groups (Hooper et al. 2020; Gold et al. 2020; Yan et al. 2021). Additionally, because minority and ethnic groups often live in isolated communities, either in solidarity or due to residential segregation, these minorities may be more likely to see the negative impacts of COVID-19 more frequently that white populations (Yang et al. 2021). The higher log-odds of females perceiving COVID-19 as a major threat to population health, may be explained by the predominantly female role of caretaker in the household, which creates a sense of responsibility for the health and wellbeing of household members (Umamaheswar and Tan 2020). Previous findings that females have experienced higher levels of anxiety and psychological distress during the pandemic compared to men may also be associated with females' increased perception of threat to population health (Wade et al. 2021).

For perceived major threat to personal health, the significant interactions between age and race/ethnicity suggest the need for more nuanced interpretations of results. Among the interactions effects examined, only the interaction between adult and Asian yielded statistically significant results. Among Asian Americans, adults had lower log-odds of perceiving COVID-19 as a major threat to personal health compared to young adults. This differs from the patterns among Whites, Blacks, and Hispanics who all saw an increase in log-odds of perceived major threat from young adults to adults. This

discrepancy could be attributed to closer relations among Asian young adults with contacts in and around China, where the pandemic originated, or it may be related to discrimination experienced by young adult Asian Americans in relation to COVID-19. A previously published study, which found that Asian and young adult status were correlated with higher COVID-19 related anxiety, speculated that the higher perceived threat may be related to members of the sample having family living in higher risk areas of China and the surrounding regions (Lee 2020). Many Asian Americans experienced greater racial discrimination early in the pandemic due to the association of COVID-19 with Wuhan, China. The combination of discrimination and personal relationships may have contributed to the increased threat perception of young adult Asians, but more research on this topic is necessary.

The main effects within the interaction model for age and race/ethnicity also showed that Hispanic young adults had higher log-odds of perceiving COVID-19 as a major threat to personal health compared to White young adults. One possible explanation of this difference is that young adult Hispanics experienced greater risk of exposure due to worker policies. Work from home positions were typically associated with higher paying salary jobs, while essential workers in lower paying infrastructure jobs were forced to work in person at higher risk of exposure to COVID-19 (Raine et al. 2020). The lower education levels in the Hispanic population may have contributed toward more Hispanics occupying “essential” positions at higher risk of exposure (Raine et al. 2020), especially among young adults just entering the work force. With respect to the other interaction analyses, no significant interactions effects were found between age and gender. Finally, it is important to note that patterns for whites and blacks were

similar across age which was largely unexpected given the disproportionately high infection and death rates among black people.

CONCLUSION

The findings of this study show that, for the most part, perceived major threat to population health and personal health were greater among some socially disadvantaged groups based on age, race/ethnicity, and gender. These findings are more straightforward for population health, but nuances emerge in estimating perceived major threat to personal health due to COVID-19. The examination of interaction effects for perceived major threat for both outcomes helps to fill a gap in the limited empirical COVID-19 research. Highlighting the groups which are more or less likely to perceive major threat to health due to COVID-19 creates a foundation to care for the associated physical and mental health needs.

There are, however, some limitations to this study. The cross-sectional design of this study prevents the establishment of any cause-and-effect relationships. Future research may benefit from using a longitudinal panel in order to better determine cause and effect. Small sample sizes of the subgroups may have limited the findings as well. Using larger or more diverse samples in the future may yield additional significant results. While this study highlights the associations between social status and perceived threat, it cannot fully explain the reasons threat perceptions differ. Future research can use this study as a baseline to examine in detail how the characteristics of each group affects threat perception.

Despite noted limitations, this study contributed to the literature by examining the effects of age, race/ethnicity, and gender on perceived threat of COVID-19 toward population health and personal health. Examining the interactions between these groups allows for opportunities to empirically recognize the impact of intersecting social statuses. When healthcare workers and policy makers consider how perceived threat is patterned across society, those with the greatest need can be identified and helped more efficiently.

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Tables and Figures

Table 1: Weighted descriptive statistics for all study variables. American Trends Panel, N = 9,069.

	Proportion
Major Threat to Population Health (1 = yes)	0.34
Major Threat to Personal Health (1 = yes)	0.68
Race/Ethnicity	
White	0.7
Black	0.09
Hispanic	0.17
Asian	0.03
Age Groups	
Young Adult (18-29)	0.1
Adult (30-49)	0.33
Middle Age (50-64)	0.3
Older (65+)	0.27
Gender	
Female	0.54
Control Variables	
Northeast	0.16
Midwest	0.22
South	0.4
West	0.23
Urban	0.89
High School or Less	0.15
Some College	0.29
College Graduate	0.56
Low Income (<$40,000)	0.27
Middle Income($40,000 to $80,000)	0.32
High Income (>$80,000)	0.42
Very Conservative	0.08
Conservative	0.23
Moderate	0.37
Liberal	0.23
Very Liberal	0.1

Table 2: Logistic Regression Estimates Predicting Perceived Major Threat to Population Health and Personal Health. American Trends Panel, N=9,069												
	Population Health						Personal Health					
	Model 1A		Model 2A		Model 3A		Model 1B		Model 2B		Model 3B	
	b(se)	OR	*b*(se)	OR	*b*(se)	OR	*b*(se)	OR	*b*(se)	OR	*b*(se)	OR
Adult (30-49)[a]	0.71 (.16)***	2.03	0.63 (.23)**	1.88	0.44 (.25)	1.55	0.11 (.14)	1.12	0.16 (.17)	1.17	-0.10 (.20)	0.9
Middle Age (50-64)[a]	1.16 (.16)***	3.19	1.26 (.23)***	3.53	1.07 (.26)***	2.92	0.44 (.15)***	1.56	0.52 (.17)**	1.68	0.35 (.21)	1.42
Older (65+)[a]	1.54 (.16)***	4.68	1.65 (.23)***	5.21	1.47 (.26)***	4.35	0.88 (.15)***	2.42	0.91 (.17)***	2.48	0.82 (.21)***	2.27
Black[b]	0.83 (.13)***	2.31	1.22 (.41)**	3.39	0.83 (.13)***	2.3	0.89 (.17)***	2.43	0.72 (.48)	2.05	0.88 (.17)***	2.42
Hispanic[b]	0.78 (.13)***	2.18	0.71 (.33)*	2.03	0.79 (.13)***	2.2	0.74 (.14)***	2.09	0.74 (.27)**	2.1	0.74 (.14)***	2.1
Asian[b]	0.83 (.20)***	2.3	0.96 (.48)*	2.61	0.84 (.20)***	2.33	1.08 (.22)***	2.94	2.18 (.68)**	8.85	1.09 (.22)***	2.98
Female[c]	0.21 (.08)*	1.23	0.21 (.08)*	1.23	-0.03 (.28)	0.97	0.32 (.08)***	1.38	0.32 (.08)***	1.38	0.09 (.23)	1.09
Controls												
Midwest[d]	-0.32 (.12)*	0.73	-0.32 (.12)**	0.72	-0.32 (.12)**	0.73	-0.30 (.13)**	0.74	-0.31 (.12)*	0.73	-0.29 (.13)*	0.75
South[d]	-0.09 (.11)	0.91	-0.07 (.11)	0.93	-0.10 (.11)	0.91	-0.10 (.12)	0.9	-0.10 (.12)	0.91	-0.11 (.12)	0.9
West[d]	-0.15 (.12)	0.86	-0.14 (.12)	0.87	-0.16 (12)	0.86	-0.20 (.13)	0.82	-0.19 (.13)	0.83	-0.20 (.13)	0.82
Urban[e]	0.08 (.12)	1.09	0.10 (.12)	1.1	0.09 (.12)	1.09	0.32 (.12)***	1.37	0.31 (.12)*	1.36	0.31 (.12)*	1.37
Some College[f]	0.10 (.11)	1.1	0.08 (.11)	1.08	0.10 (.11)	1.1	0.12 (.11)	1.12	0.12 (.11)	1.13	0.11 (.11)	1.12
College Graduate[f]	0.03 (.10)	1.03	0.02 (.10)	1.02	0.03 (.10)	1.03	0.27 (.10)***	1.31	0.28 (.10)**	1.32	0.27 (.10)**	1.31
Middle Income (40K to 80K)[g]	-0.21 (.10)*	0.81	-0.23 (.10)*	0.8	-0.21 (.10)*	0.81	-0.16 (.11)	0.85	-0.16 (.11)	0.85	-0.16 (.11)	0.85
High Income (>$80K)[g]	-0.50 (.10)***	0.61	-0.50 (.10)***	0.6	-0.50 (.10)***	0.61	-0.11 (.11)***	0.62	-0.48 (.11)***	0.62	-0.49 (.11)***	0.61
Conservative[h]	0.09 (.18)	1.1	0.09 (.18)	1.1	0.09 (.18)	1.09	0.33 (.14)***	1.39	0.32 (.14)*	1.38	0.33 (.14)*	1.39
Moderate[h]	0.85 (.16)***	2.34	0.85 (.17)***	2.35	0.85 (.17)***	2.33	1.30 (.14)***	3.68	1.30 (.14)***	3.66	1.30 (.14)***	3.68
Liberal[h]	0.96 (.18) ***	2.62	0.96 (.18)***	2.6	0.97 (.17)***	2.64	2.26 (.17)***	9.54	2.24 (.17)***	9.38	2.26 (.17)***	9.6
Very Liberal[h]	1.02 (.21)***	2.76	1.04 (.21)***	2.83	1.03 (.21)***	2.79	2.48 (.23)***	11.89	2.46 (.23)***	11.72	2.49 (.23)***	12
Adult * Black			-0.09 (.45)	5.82					0.32 (.55)	3.32		
Middle Age * Black			-0.75 (.46)	5.65					-0.06 (.55)	3.24		
Older * Black			-0.49 (48)	10.82					0.80 (.60)	11.28		
Adult * Hispanic			0.26 (.37)	4.95					0.0 (.34)	2.45		
Middle Age * Hispanic			0.17 (.40)	8.49					0.04 (.41)	3.64		
Older * Hispanic			-0.54 (.48)	6.16					-0.07 (.66)	4.85		
Adult * Asian			0.12 (.53)	5.53					-1.48 (.73)*	2.36		
Middle Age * Asian			-0.34 (.59)	6.56					-1.37 (.86)	3.78		
Older * Asian			-0.74 (.78)	6.49					-1.09 (.89)	7.39		
Adult * Female					0.48 (.31)	2.43					0.43 (.27)	1.51
Middle Age * Female					0.15 (.32)	3.29					0.19 (.27)	1.87
Older * Female					0.12 (.31)	4.76					0.62 (.27)	4.6

Notes: *p<.05; **p<.01; ***p<.001.

[a] Reference is Young Adult (18-29); [b] Reference is White; [c] Reference is male; [d] Reference is Northeast; [e] Reference is non-urban; [f] Reference is high school education or less; [g] Reference is low income (<$40,000); [h] Reference is very conservative.

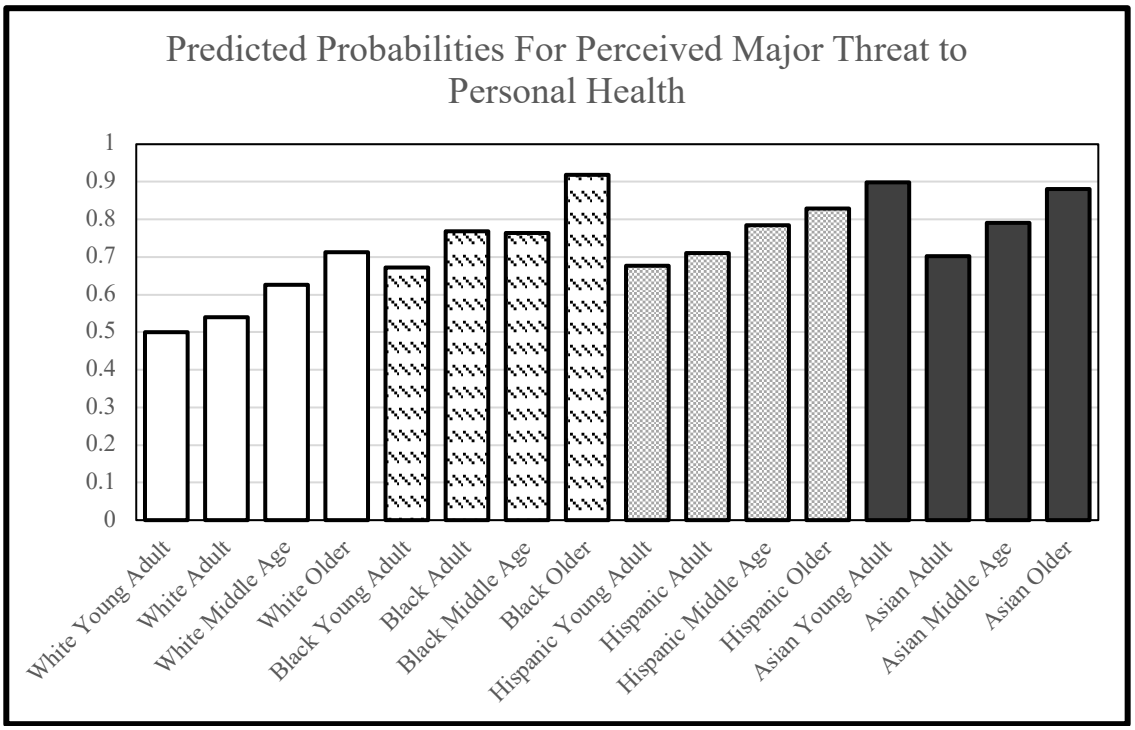

Figure 1. Predicted probabilities for perceived major threat to personal health. Reference is White young adult.

Appendix

Appendix A: Cell sizes for interaction groups.	
*Age * Race/Ethnicity*	*Sample Cell Sizes*
Young Adult * White	507
Adult * White	1858
Middle Age * White	1915
Older * White	2087
Young Adult * Black	67
Adult * Black	330
Middle Age * Black	300
Older * Black	150
Young Adult * Hispanic	258
Adult * Hispanic	671
Middle Age * Hispanic	441
Older * Hispanic	170
Young Adult * Asian	69
Adult * Asian	140
Middle Age * Asian	71
Older * Asian	35
*Age * Gender*	
Young Adult * Female	546
Adult * Female	1725
Middle Age * Female	1480
Older * Female	1173
Young Adult * Male	355
Adult * Male	1274
Middle Age * Male	1247
Older * Male	1269