REGULAR ARTICLE

Americans' Health Mindsets: Content, Cultural Patterning, and Associations With Physical and Mental Health

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Abstract

Background *Health mindsets* are mental frameworks that help people recognize, organize, interpret, and respond to health-relevant information. Although mindsets shape health behaviors and outcomes, no study has examined the health mindsets of ethnically and socioeconomically diverse Americans.

Purpose We explored the content, cultural patterning, and health correlates of diverse Americans' health mindsets.

Methods Two studies surveyed approximately equal numbers of African American, Asian American, European American, and Latinx American men and women of lower and higher socioeconomic status (SES). Study 1 ($N = 334$) used open-ended questions to elicit participants' mindsets about the definitions, causes, and benefits of health. Study 2 ($N = 320$) used Study 1's results to develop a closed-ended instrument.

Results In Study 1, open-ended questioning revealed six overarching mindset themes: *behavioral, medical, physical, psychological, social,* and *spiritual.* The most prevalent mindsets were psychological definitions, behavioral causes, and psychological benefits. Participants mentioned more cause themes than definition or benefit themes, and mindset theme mentions correlated with worse health. Older participants mentioned more themes than younger, women mentioned more definition themes than men, and low-SES participants mentioned more cause themes than high-SES participants. In Study 2, closed-ended scales uncovered more complex and positive health mindsets. Psychological and spiritual benefit mindsets correlated with good mental health. African Americans and women endorsed the widest array of mindsets, and the spiritual benefit mindset partially explained the superior mental health of African Americans.

Conclusions Many Americans hold simplistic, illness-focused health mindsets. Cultivating more complex, benefit-focused, and culturally appropriate health mindsets could support health.

Keywords Mindset • Lay theories • Health disparities • Race paradox • Mental health

In 1948, the World Health Organization urged people to replace their notion of health as "merely the absence of disease" with "a complete state of physical, mental, and social well-being" [1]. Seventy years later, studies suggest that Americans have not adopted this more complex and positive model of health [2, 3]. Meanwhile, research increasingly demonstrates just how strongly people's thoughts and feelings about health affect their behaviors and outcomes. In recent years, for example, studies have shown that health mindsets shape a range of health-relevant variables, from the effects of exercise [4], to the impacts of stress [5], to the lengths of lives [6].

Health mindsets are mental frameworks that help people recognize, organize, interpret, and respond to health-relevant information [7]. In the current article, we explore health mindsets about what health *is*, what *causes* health, and what the *benefits* of health are. The multidimensional construct of health mindset draws from the rich literatures on health-relevant lay theories [8], implicit theories [9], schemas [10], social representations [11], cultural models [12], narratives [13], metaphors [14], and the social and cultural construction of health and illness [15, 16]. Similar to schemas and beliefs, health mindsets include cognitive, emotional, motivational, and

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behavioral components that allow individuals to orient toward and pursue health, as they understand it in their cultural contexts [5, 17].

Despite the robust effects of mindsets on health outcomes, no studies have systematically surveyed the health mindsets of socioeconomically and ethnically diverse Americans. To address this gap in the literature, the two studies reported here explored the following questions: *How do Americans define health? What do Americans think causes health?* and *What do Americans think the benefits of health are?* Because people of color and low-income Americans are both the sickest [18] and fastest-growing [19] segments of U.S. society, we sampled approximately equal numbers of men and women from four ethnic groups (African Americans, Asian Americans, European Americans, and Latinx Americans) and two socioeconomic groups (Americans with and without a college degree). Using large and diverse samples allowed us both to capture general trends and to explore cultural patterns. We also examined connections between Americans' health mindsets and their self-reported physical and mental health.

As the population of the USA continues to grow, age, and diversify, health providers, policy makers, and researchers will need more techniques to address rising health problems and health disparities. Research increasingly recommends large-scale interventions, including increasing access to health care [20], healthy food [21], and physical activity [22], while reducing exposures to toxins [23], violence [24], and other stressors [25]. An additional and cost-effective tool for improving health could be shaping mindsets in culturally appropriate ways.

Mindsets and Health

A growing body of research demonstrates that people's mindsets influence their physical and mental health. For instance, Levy and colleagues [6] documented that people who hold the mindset that aging inevitably leads to physical or mental deterioration actually die sooner than do people with more positive mindsets. Likewise, Crum and colleagues [5] revealed that finance workers given the mindset that stress is enhancing had healthier physiological responses to work demands than did workers given the mindset that stress is debilitating. Crum and Langer [4] also discovered that hotel room attendants who adopted the mindset that their work is good exercise later showed greater reductions in weight and blood pressure than did attendants who did not adopt this mindset.

Although studies increasingly link mindsets and health outcomes, the content and cultural patterning of Americans' health mindsets are not well understood. Current research suggests that many Americans are likely to harbor simple, illness-centric, or negative health mindsets. For example, a review of research on lay health theories found that the most prevalent definition of health is *the absence of illness* [2, 3, 26]. Regarding the causes of health, a linguistic analysis of American restaurant menus discovered that the "healthy" items were described as more depriving and boring than the standard items [27]. Other researchers note that many Americans have sedentary lifestyles because they perceive the short-term costs of exercise (e.g., time, discomfort) as outweighing its long-term benefits [28, 29].

One obstacle to understanding Americans' health mindsets is that most social science research focuses on people's thoughts about illness [3, 30]. Theorists have noted the need for both researchers and lay publics to separate notions of health and illness [31–34]. Yet the few studies examining how people conceive of health have limited application to contemporary American society. Most of these studies took place in the 1970s and 1980s, relied exclusively on qualitative methods, and used small convenience samples [3]. They also focused on people with specific illnesses [35], or in other countries [26, 36, 37], or in small subcultures [38, 39]. One recent study that overcame many of these limitations [40] nevertheless used mostly European American (75%–84%) and college-educated (80%–90%) samples. Because the USA is only 63% European American and 30% college-educated [41], the generalizability of this study is uncertain.

Diversity of U.S. Health Mindsets

Whereas research on mainstream Americans' health mindsets is lacking, research on the health mindsets of diverse U.S. ethnic and socioeconomic groups is even scarcer. The existing evidence suggests that Americans of color and of lower socioeconomic status likely think about health differently than do middle-class European Americans. For example, researchers find middle-class European American cultures (the cultures of origin and training for most U.S. health researchers and providers) [42] tend to associate *health* and *well-being* with *independence*, individuality, uniqueness, and control [43–45].

In contrast, many other cultures, including those of lower-class Americans, African Americans, Latino Americans, Asian Americans, Native Americans, East Asians, and South Asians tend to associate health with *interdependence,* relationality, similarity, and the ability to cope [46–49]. Possibly reflecting greater interdependence, African Americans also view social factors as stronger determinants of illness than do European Americans [50, 51]. African Americans and Latinx Americans are also more likely to believe that god causes illness [52].

At the same time, African Americans exhibit better mental health than do European Americans, despite greater material and psychosocial stressors—a phenomenon known as the *race paradox in mental health* [53, 54]. Although researchers have tried to link race

paradoxes to the greater levels of social support in these ethnic communities, results have been mixed [55]. Given the power of mindsets to shape health, a question our research poses is whether ethnic differences in mindsets can explain ethnic differences in health outcomes.

Men and women also likely have different health mindsets, with women possibly adopting more interdependent and holistic notions. For instance, more women than men view sex and sin as causing illnesses as diverse as diabetes, colds, and lung cancer [56]. Women's relationships also affect their physical and mental health than do men's [57, 58].

Although these literatures shed light on the possible cultural patterning of American health mindsets, they still focus overwhelmingly on illness, rather than on wellness. They also examine beliefs about the causes of illness, but not the benefits of health. Finally, these studies highlight the likelihood of cultural variability in health mindsets, but do not systematically test this variability. Our research attempts to address all these shortcomings.

Overview of the Current Research

To explore the health mindsets of a rapidly diversifying USA, we surveyed two balanced-cell samples of male and female African Americans, Asian Americans, European Americans, and Latinx Americans, both with and without bachelor's degrees (high-SES and low-SES), a robust indicator of socioeconomic status [59]. To examine participants' health mindsets with a minimum of prompting or priming, Study 1 featured open-ended questions about the definitions, causes, and benefits of health. Our main research questions were: (i) Are Americans' health mindsets simple, illness-centric, and negative, as the literature suggests? and (ii) Do older participants, women, participants of color, and low-SES participants mention more themes, reflecting more complex mindsets? Study 2 applied findings from Study 1 to construct a closed-ended health mindsets measure. We expected the additional scaffolding of closed-ended items would help participants generate more complex and positive health mindsets [60]. Using this instrument, we also tested whether different cultures' emphases on different mindsets could help explain some cultural patterning of health outcomes.

Study 1 Method

Participants

Survey Sampling International sent email, voice, and text messages to its nationwide database of paid participants, inviting them to complete a study titled "Lifeways Survey." The final sample included 334 participants, ages 25–87 years (M = 43.10, SD = 14.09), who listed their primary ethnic identity as African American (23%), Asian American (25%), European American (30%), or Latinx American (22%). Within each ethnicity, half of

participants were male and half had less than a college degree (low-SES). Mean age did not differ between ethnic, gender, or education groups, and participants were approximately equally drawn from the nine U.S. census regions.

Procedure and Measures

On their own computers, participants completed an online survey with these measures:

Health definition mindset

Participants typed responses to the open-ended question: *What does being healthy mean to you?*

Health cause mindset

Participants answered five open-ended questions: *Why are some people healthier than others? Why do you think some people get sick more often or more severely than others? What is the best way for people to get better when they are sick? What causes your health to get better/worse?* and *What keeps you from being your healthiest self?*

Health benefit mindset

Participants answered four open-ended questions: *Why should/shouldn't people try to be healthy? If your health improved/got worse what else in your life would improve/get worse? Why do you/don't you want to be as healthy as you can possibly be?* and *When it comes to your health, what matters most to you?*

Self-reported general health

One item from the U.S. Centers for Disease Control and Prevention's (CDC's) (2011) Healthy Days Measure (HDM) asked participants to rate their general health (1 = *excellent*, 5 = *poor*; reverse coded).

Bad mental health days

Three items (α = .88) from the HDM asked how many days in the past month participants experienced problems with their mental health, sadness, and anxiety.

Number of chronic conditions

Participants checked all that applied to them from a list of 27 chronic physical and mental conditions. We summed these items.

Qualitative Coding Approach

Using both theory-informed, top-down methods and response-informed, bottom-up approaches, the authors generated an initial coding scheme with 41 categories. Next, two research assistants, blind to hypotheses,

applied the coding scheme to a random sample of 20% of the participants' answers, coding each response as either mentioning or not mentioning each category. Categories were not mutually exclusive. Cohen's kappas ranged from 0.75 to 1.00, indicating "substantial" to "almost perfect" interobserver agreement [61].

Next, research assistants reconciled discrepancies and divided the remaining 80% of the corpus between them. For analyses, the 41 categories were collapsed into six overarching *themes: behavioral* (health-related individual actions), *medical* (health care personnel, institutions, procedures, and pharmaceuticals), *psychological* (mental states and traits), *physical* (bodily features and processes), *social* (relational and sociocultural forces), and *spiritual* (religion and spirituality). For each mindset dimension (i.e., definition, cause, and benefit), we summed the themes participants mentioned to create three new outcome variables: *total definition themes, total cause themes,* and *total benefit themes.*

Analytic Approach

To explore the cultural patterning of health mindsets, on each mindset theme (e.g., *behavioral definition, medical cause*), we performed a binary logistic regression with age as a covariate and ethnicity, gender, and SES as factors. On the continuous variables of health outcomes and total mindset themes, we tested the same model using ANCOVAs. Because no interactions were significant, we removed the interaction terms, leaving a four-factor main effects model (age + ethnicity + gender + SES). We used the Benjamini–Hochberg step-up procedure [62] to control Type 1 error for this family of analyses and pairwise comparisons with interpret effects of the four-level ethnicity variable. We then examined correlations between health mindset theme mentions (total and individual) and health outcomes, adjusting significance with the Benjamini–Hochberg procedure.

Study 1 Results

Table 1 presents the percent of participants who mentioned each theme, the categories coded in each theme, and examples of responses for each theme. Table 2 then presents the cultural patterning of health mindset theme mentions and health outcomes.

Health Definition Mindset

Participants mentioned an average of 1.41 ($SE = 0.05$) of the six definition themes. As Table 1 shows, the most frequently mentioned definition theme was *psychological* (50.3% of participants). The most frequently mentioned health definition coding category was *absence of illness*

(41.1%). As Table 2 depicts, the older participants were, the more definition themes they mentioned, $F(1, 327) = 8.52$, $p = .004$; and women mentioned more definition themes than did men, $F(1, 327) = 10.18$, $p = .002$. Effects of age on behavioral definitions, $\chi^2(1, 334) = 10.18$, $p = .001$; psychological definitions, $\chi^2(1, 334) = 11.28$, $p = .001$; and social definitions, $\chi^2(1, 334) = 7.14$, $p = .008$, revealed that each year of age decreased the likelihood of mentioning a behavioral theme by 0.97, but increased the likelihood of mentioning a psychological theme by 1.03 and a social theme by 1.05. A significant effect of gender, $\chi^2(1, 334) = 7.35$, $p = .007$, revealed that more women than men mentioned social definitions.

Health Cause Mindset

Participants mentioned an average of 3.15 of the six cause themes ($SE = 1.19$). As Table 1 shows, the most frequently mentioned cause theme was *behavioral* (92.2%). The most frequently mentioned cause category was *diet* (66.2%).

As Table 2 depicts, the number of cause themes participants mentioned increased with age, $F(1, 327) = 17.20$, $p < .001$, and low-SES participants mentioned more cause themes than did high-SES participants, $F(1, 327) = 8.55$, $p = .004$. Each year of age increased the likelihood of mentioning a medical theme by 1.04, $\chi^2(1, 334) = 16.95$, $p < .001$, and the likelihood of mentioning a spiritual theme by 1.04, $\chi^2(1, 334) = 7.17$, $p = .007$. In addition, more low-SES than high-SES participants mentioned psychological themes, $\chi^2(1, 334) = 10.69$, $p = .001$.

Health Benefit Mindset

Participants mentioned an average of 1.90 ($SE = 0.06$) of the five benefits themes. As Table 1 shows, the most frequently mentioned benefit theme was *psychological* (63.5%). The most frequently cited benefit category was *a long life* (40.1%). An effect of age on *psychological* benefit, $\chi^2(1, 334) = 12.35$, $p < .001$, showed that the likelihood of mentioning this theme increased each year by 1.03 (see Table 2).

Health Outcomes

On average, participants rated their health between *good* and *very good* ($M = 3.22$, $SE = 0.06$), reported an average of 4.57 ($SE = 0.39$) bad mental health days in the past month, and checked 1.91 ($SE = 0.11$) chronic conditions. As Table 2 shows, number of chronic conditions rose with age, $F(1, 327) = 56.67$, $p < .000$. Ethnicity effects on bad mental health days, $F(3, 327) = 3.99$, $p = .008$, and chronic conditions, $F(3, 327) = 6.30$, $p < .001$, reflected the race health paradox: African Americans

Table 1 Mindset themes, categories, and examples, and percent of participants who mentioned each theme

Theme	Categories	Example	Participants (%)
Behavioral			
Definition	Drugs and alcohol, diet, habits, physical activity, sleep, stress, rest, supplements, water	"Exercising"	27.5
Cause	"…"[a]	"Eat the right things"	92.2
Benefit	"…"	"Sleep better"	20.7
Medical			
Definition	Doctor/hospital, medication, alternative medicine	"Good results on physical"	6.3
Cause	"…"	"I went to a pain specialist"	56.9
Physical			
Definition	Absence of illness, aging, biology, weight, pain	"Free of serious illness"	45.8
Cause	"…"	"Getting older"	58.4
Benefit	"…," Appearance, function, long life	"Look good in clothes"	51.5
Psychological			
Definition	Attitude, balance, cognition, control, energy, motivation, happiness, mental health, quality of life	"Mentally and emotionally stable"	50.3
Cause	"…"	"My attitude"	65.6
Benefit	"…," Self-confidence	"Feel more in control"	63.5
Social			
Definition	Altruism, environment, family, non-kin relationships, money, society, sense of purpose, upbringing, work	"Sharing quality time with my family and friends"	5.7
Cause	"…"	"People not respecting you"	33.6
Benefit		"A long-term relationship"	51.8
Spiritual			
Definition	Religion and spirituality	"Spiritual living"	5.7
Cause	"…"	"Trust and believe in Jesus"	6.3
Benefit	"…"	"Help divine providence"	2.7

[a]The text "…" denotes that the coding categories for this theme are the same as those for the preceding theme.

Table 2 Cultural patterning of health mindset themes and health outcomes in Study 1

Measure	Age	Ethnicity	Gender	Socioeconomic status
Definition themes				
Total mentioned	O > Y**		F > M**	
Behavioral	Y > O**			
Psychological	O > Y**			
Social	O > Y**		F > M***	
Cause themes				
Total mentioned	O > Y***			Lo > Hi**
Medical	O > Y***			
Psychological	O > Y**			
Spiritual	O > Y**			
Benefit themes				
Psychological	O > Y**			
Health outcomes				
No. of chronic conditions	O > Y***	AfAm > AsAm, EuAm, LaAm***	F > M**	Lo > Hi***
General health				Lo > Hi**
No. of mental health days		EuAm > AsAm, LaAm**		

*p < .05; **p < .01; ***p < .001; *O* older; *Y* younger; *AfAm* African American; *AsAm* Asian American; *EuAm* European American; *LaAm* Latinx American; *F* female; *M* male; *Lo* having less education than a bachelor's degree; *Hi* having a bachelor's degree or more.

reported the most chronic conditions, but European Americans reported the most bad mental health days. Women had more bad mental health days than did men, $F(1, 327) = 4.81$, $p = .029$, and more chronic conditions, $F(1, 327) = 8.38$, $p = .004$. Low-SES participants reported worse general health than high-SES participants, $F(1, 327) = 7.10$, $p = .008$; more bad mental health days, $F(1, 327) = 5.17$, $p = .024$; and more chronic conditions, $F(1, 327) = 14.78$, $p = .000$.

Relationships Between Health Mindsets and Health Outcomes

Correlations between total mindset theme mentions and health outcomes showed that mentioning more mindset themes was associated with worse health. Total definition themes mentioned positively correlated with number of chronic conditions ($r = .19$, $p < .001$). Total cause themes positively correlated with both chronic conditions ($r = .26$, $p < .001$) and bad mental health days ($r = .15$, $p = .008$) and negatively correlated with self-rated general health ($r = −.26$, $p = .003$). Total benefit themes also correlated with number of chronic conditions ($r = .13$, $p = .01$). Correlations between individual themes and health outcomes also showed that more health mindset theme mentions correlated with worse health. Mentioning physical causes positively correlated with number of chronic conditions ($r = .17$, $p = .002$) and negatively correlated with general health ratings ($r = −.15$, $p = .006$). Mentioning social causes positively correlated with bad mental health days ($r = .17$, $p = .002$) and negatively correlated with general health ($r = −.15$, $p = .005$). Mentioning psychological benefits also correlated with chronic conditions ($r = .15$, $p = .007$).

Study 1 Discussion

This initial exploration supports the hypothesis that Americans have simple and illness-centric notions of what it means to be healthy, what causes health, and what the benefits of health are. Content analyses identified six overarching mindset themes: behavioral, medical, physical, psychological, social, and spiritual. On average, participants mentioned only 1.41 definition themes, 3.15 cause themes, and 1.90 benefit themes. The most prevalent definition of health was *the absence of illness,* and the number of health definition, cause, and benefit themes participants mentioned correlated with poor health outcomes. In other words, participants' health mindsets were associated with illness, not health.

In addition, the cultural patterning of total mindset mentions corresponded with the cultural patterning of illness. Older and low-SES participants mentioned more cause themes than did younger and high-SES

participants, while also reporting more chronic conditions. Likewise, women mentioned more definition themes than did men, while also reporting more chronic conditions and bad mental health days.

Another notable result was that the majority of participants mentioned psychological themes in their definitions, causes, and benefits of health. In addition, *psychological* was the most frequently mentioned definition and benefit theme. These results echo Downey and Chang's finding that the Social-Emotional Health factor explained the most variance in their Lay Concepts of Health Inventory [40]. Study 2 examines psychological mindsets in greater detail.

Examining the cultural patterning of mindset themes more closely, we see that the most pervasive effects were for age, with age increasing the likelihood of mentioning a social definition, a medical cause, and a spiritual cause, as well as a psychological definition, cause, or benefit. These findings are consistent with research showing older people have more holistic notions of health [38, 39]. Meanwhile, the likelihood of giving a behavioral definition decreased with age. Because this study's cross-sectional design does not specify causal direction, several explanations for these age effects are possible. One is the experience of chronic illness confers to older Americans more elaborate and nuanced health mindsets—mindsets that increasingly discount the effects of individual behaviors on health while recognizing the effects of health on psychological outcomes. Another hypothesis is that harboring more elaborate health mindsets—especially illness-focused ones—can lead to more chronic conditions. Still another hypothesis is that with age come both illness and more sophisticated understandings of health. Future studies are needed to understand the causal relationships between age, mindsets, and health.

A similar causal conundrum arises for the relationships between gender, mindset theme mentions, and chronic conditions. The finding that women mention more social definition themes is consistent with studies showing that women have more interdependent self-construals [63, 64]. With more chronic conditions than men, women may also arrive at their more social health mindsets through the experience of having to depend on others in times of illness. Yet another explanation for these associations is that women's more interdependent orientation leads to more illness, through pathways such as caregiver stress [65]. Once again, future studies are needed to establish causal relationships between these factors.

This study showed no relationships between ethnicity and mindsets. One explanation for this null effect is that the study format—an online survey on which participants typed in open-ended responses—did not motivate participants of color to share health mindsets that may

deviate from mainstream cultural representations. We address this possibility in Study 2 by using closed-ended scale items.

Study 2

Although the open-ended responses in Study 1 offered a detailed picture of participants' spontaneously generated health mindsets, the high variability inherent in qualitative data limited our ability to correlate mindsets with cultural factors and health outcomes. To overcome this limitation, in Study 2, we used the taxonomy established in Study 1 to develop a closed-ended health mindsets measurement instrument. We expected this instrument to yield psychometrically superior results, to elicit more nuanced and actionable health mindsets, and to afford a clearer examination of the relationships between cultural factors, mindsets, and health.

Study 2 Method

Participants and Procedure

Study 2 used the same recruitment procedure as Study 1 to create a 4 (ethnicity) × 2 (gender) × 2 (SES) balanced-cell panel of 320 participants, ages 25–87 ($M = 44.51$, $SE = 0.75$). On their own computers, participants completed the following measures:

Health cause mindsets scale

Participants rated 39 items on how much each one affects health (1 = *no effect,* 5 = *very strong effect*; see Supplementary Material 1).

Health benefit mindsets scale

Participants rated 30 items (see Supplementary Material 2) on how much health affects each one (1 = *strong negative effect,* 4 = *no effect,* 7 = st*rong positive effect)*.

General and mental health status

Participants answered, *In general, would you say your health is…* and *In general, would you say your mental health is…*(1 = *poor,* 5 = *excellent*).

Number of chronic conditions

We summed which 27 conditions participants checked.

Analytic Approach

Guided by theory and exploratory factor analyses (see Supplementary Materials 1 and 2), we first averaged items from the health cause and benefit mindsets scales

to form the following 10 subscales: *behavioral causes, medical causes, physical causes, physical benefits, psychological causes, psychological benefits, social causes, social benefits, spiritual causes,* and *spiritual benefits*. We did not include a subscale for medical benefits because participants did not spontaneously mention this theme in Study 1. We did not include a subscale for behavioral benefits because relevant items (e.g., sex life, energy, stress) loaded on other factors.

On each mindset subscale and outcome measure, we first performed an ANCOVA with age as a covariate and ethnicity, gender, and SES as factors. To control Type 1 error for this family of effects, we used Benjamini and Hochberg's step-up procedure [62]. Because interactions were rare and did not follow discernible patterns, we removed interaction terms and used a four-factor main-effects model (age + ethnicity + gender + SES). Pairwise comparisons were used to interpret effects of the four-level ethnicity variable. We then calculated correlations between health mindsets subscales and health outcomes, using the Benjamini–Hochberg procedure to control false discovery rates. To examine whether cultural differences in health mindsets help explain cultural differences in health outcomes, we used the PROCESS mediation analysis macro (Model 4) for SPSS, version 2.16 [66].

Study 2 Results

Table 3 presents the means and cultural patterning of health mindsets and outcomes. Replicating Study 1, the most highly rated cause mindset was *behavioral* and the most highly rated benefit mindset was *psychological* (collapsing across age, ethnicity, SES, and gender).

Health Cause Mindset

As Table 3 depicts, compared with the other ethnic groups, African Americans most highly rated medical causes, $F(3, 313) = 9.26$, $p < .001$, and spiritual causes, $F(3, 313) = 13.49$, $p < .001$, whereas Asian Americans gave the lowest ratings to medical causes, spiritual causes, and physical causes, $F(3, 313) = 5.20$, $p = .002$. In addition, women, compared with men, more strongly endorsed the behavioral, $F(1, 313) = 7.53$, $p = .006$; medical, $F(1, 313) = 8.66$, $p = .003$; and physical subscales, $F(1, 313) = 7.45$, $p = .007$.

Health Benefit Mindset

Table 3 also presents the cultural patterning of health benefit mindset subscale ratings. African Americans endorsed spiritual benefits more than did the other ethnic groups, $F(3, 313) = 11.82$, $p = .000$, whereas women

Table 3 Means and cultural patterning of health mindsets and health outcomes in Study 2

Measure	M (SE)	Ethnicity	Gender	Socioeconomic status
Cause mindsets subscales				
Behavioral	4.12 (0.04)		F > M**	
Medical	3.78 (0.04)	AfAm > LaAm, EuAm > AsAm***	F > M**	
Physical	4.00 (0.05)	EuAm, AfAm, LaAm > AsAm**	F > M**	
Psychological	3.90 (0.04)			
Social	3.35 (0.04)			
Spiritual	3.42 (0.07)	AfAm > LaAm > AsAm; AfAm > EuAm***		
Benefit mindsets subscales				
Physical	5.65 (0.05)			
Psychological	5.90 (0.05)		F > M**	
Social	4.99 (0.06)			
Spiritual	5.33 (0.07)	AfAm > LaAm > AsAm, EuAm***		
Health outcomes				
Chronic conditions	1.43 (0.09)			
General health	3.34 (0.06)			Hi > Lo***
Mental health	3.79 (0.06)	AfAm > LaAm, EuAm, AsAm**		

Causes were rated on a 1–5 scale (1 = *no effect*, 5 = *very strong effect*), and benefits on a 1–7 scale (1 = *strong negative effect*, 4 = *no effect*, 7 = st*rong positive effect*).

*p < .05; **p < .01; ***p < .001; *AfAm* African American; *AsAm* Asian American; *EuAm* European American; *LaAm* Latinx American; *F* female; *M* male; *Lo* less than a college degree; *Hi* a college degree or more.

more highly rated psychological benefits than did men, $F(1, 313) = 9.02$, $p = .003$.

Health Outcomes

Echoing the race mental health paradox and SES health gradient found in Study 1, African Americans had the best self-rated mental health, $F(3, 313) = 5.01$, $p = .002$, and high-SES participants reporting better general health than did low-SES participants, $F(1, 313) = 21.30$, $p < .001$. A trend-level effect of age also reflected the Study 1 finding that number of chronic conditions increased with age, $F(1, 313) = 5.74$, $p = .017$.

Relationships Between Health Mindsets and Health Outcomes

Unlike Study 1, Study 2 correlations between health benefit mindsets and health outcomes were positive. The higher participants' ratings on the spiritual benefit subscale, the better their self-rated mental health ($r = .22$, $p < .001$). Likewise, ratings on the psychological benefit subscale positively correlated with mental health ($r = .17$, $p = .002$). In contrast, several cause mindset subscale ratings were associated with chronic conditions, replicating Study 1: behavioral cause ($r = .17$, $p = .001$), medical cause ($r = .17$, $p = .003$), and physical cause ($r = .16$, $p = .005$).

Health Mindsets Explain Some Cultural Patterning of Health Outcomes

Because ethnicity related to both spiritual benefit mindset and mental health, we tested a mediation model linking these factors (see Supplementary Material 3 for statistical details). As Fig. 1 shows, the three ethnicity indicator variables (with African American as the reference group) were significantly related to the spiritual benefit subscale, which in turn was significantly related to mental health. Including the mindset variable made the relationship between ethnicity and mental health nonsignificant for the European American and Latinx American variables, suggesting that African Americans' endorsement of the spiritual benefit mindset fully explained African Americans' superior mental health, relative to that of Latinx and European Americans. The spiritual benefit mindset also partially explained African Americans' better mental health, relative to Asian Americans'.

Study 2 Discussion

In contrast to Study 1's open-ended response format, Study 2's closed-ended format revealed more complex health mindsets, more ethnic patterning of mindsets, and more positive correlations with health. Study 1 participants seldom mentioned the social causes, spiritual causes, or spiritual benefits of health. Yet when presented
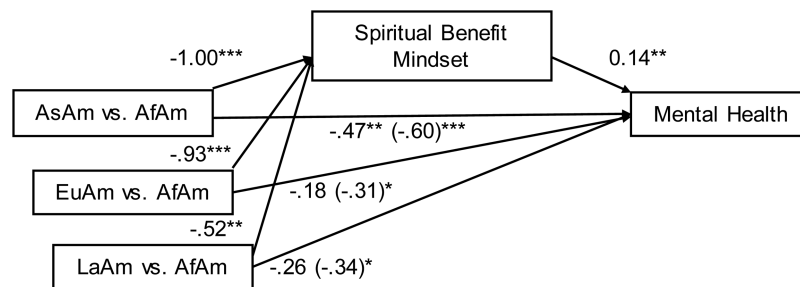
Fig. 1. Spiritual benefit mindset mediates the ethnicity–mental health relationship. Model controls for age, gender, and socioeconomic status. *$p < .05$; **$p < .01$; ***$p < .001$. *AfAm* African American; *AsAm* Asian American; *EuAm* European American; *LaAm* Latinx American.

with closed-ended scales, Study 2 participants endorsed all health mindset themes well above midpoint, with the behavioral cause and psychological benefit subscales receiving the highest ratings. Endorsing the spiritual and psychological benefit mindset subscales, in turn, was associated with better health—not worse, as had been the case in Study 1. Also unlike Study 1, African American participants in Study 2 more strongly endorsed a wider array of subscales than did other ethnic groups.

Why did a change in response formats alter result patterns between Study 1 and Study 2? One explanation is that the additional scaffolding of closed-ended items helped participants communicate latent, poorly elaborated, or seldom-expressed health mindsets [60]. A second explanation is that the closed-ended items empowered participants to express health mindsets that are not routinely represented in mainstream American culture. The strong relationships between ethnicity and spiritual mindsets in Study 2, but not in Study 1, support this hypothesis.

The spiritual benefit mindset also helped explain the relationship between ethnicity and mental health. Compared with other ethnic groups, African Americans had worse (Study 1) or similar (Study 2) physical health, but the same (Study 1) or better (Study 2) mental health—replicating the commonly reported race paradox in mental health. Our mediation analysis suggests that African Americans' better mental health is related to their belief that being healthy has spiritual benefits. Other researchers have documented that African Americans, compared with European Americans, derive more of their sense of self and self-esteem from their relationship with God [67]. Similarly, a spiritual health mindset may help protect African Americans from the disproportionate stressors they endure. This mediation model, however, assumes a causal relationship between mindsets and health—an assumption that the study's cross-sectional design does not afford. Longitudinal and experimental studies are needed to test this hypothesis.

Although spiritual and psychological benefit mindsets correlated with better mental health, behavioral, medical, and physical cause mindsets correlated with worse physical health. This finding replicates Study 1, where cause mindset mentions correlated with worse physical and mental health. With the caveat that our correlational data cannot support causal inferences, these results suggest that focusing on the benefits of health may motivate people to act in ways that keep them healthy, while dwelling on the many causes of health may actually undermine motivation. Future studies should explore how cause and benefit mindsets influence and are influenced by health, as well as how other factors influence these relationships.

A final finding that merits exploration is the absence of age effects. The most frequent cultural effects in Study 1 were of age, but in Study 2, age never reached statistical significance. One explanation for this pattern is that spontaneously expressing health mindsets requires practice, which comes with age, whereas rating health mindsets on a scale requires less practice, thus eliminating age differences. More research on this discrepancy between studies is needed.

Conclusions

Health care researchers, practitioners, and lay publics in the USA have historically focused on avoiding illness rather than on pursuing wellness. To help shift collective attention toward health and wellbeing, the overarching goals in the current research were to: (i) conduct the first large-scale surveys of diverse Americans' health (not illness) mindsets and (ii) explore the cultural patterning of those mindsets and their relationships to health outcomes. Combining qualitative and quantitative methods, these two surveys moved beyond the traditional scope of health research to query not only the definitions and causes of health, but also the benefits of health. Anticipating ethnic, gender, and socioeconomic variability in Americans' mindsets, we sampled approximately equal numbers of four major U.S. ethnic groups, men and women, and lower and higher SES participants (as indicated by educational attainment). To our knowledge, these are the first large surveys of socioeconomically and economically diverse Americans' health mindsets.

Study 1's qualitative procedure revealed that participants harbored simple and illness-centric health mindsets, the mentions of which correlated with poor health outcomes. Yet Study 2's closed-ended scales revealed more complex and nuanced mindsets, some of which correlated with good health outcomes. This combination of findings suggests that additional cultural scaffolding could help people expand their health mindsets.

Given the growing evidence that changing mindsets can improve health [4, 5, 68], we anticipate that helping Americans articulate richer and more positive health mindsets will lead them to adopt healthier behaviors and experience healthier outcomes. Yet a major limitation of the current studies is that their cross-sectional designs do not afford causal inferences. Multiple causal pathways are likely. Indeed, we expect that both cultures and health outcomes shape mindsets, which in turn shape both health outcomes and cultures, in a recursive process we call the culture cycle [69]. Other study designs are needed to test these relationships.

Our findings also suggest hypotheses for improving Americans' health mindsets and, in turn, possibly their health. In Study 1, participants generated an average of 3.15 health causes, but only 1.90 health benefits. Both Studies 1 and 2 then showed that health cause mindsets are associated with poor health, whereas Study 2 showed that health benefit mindsets are associated with good health. Future work should explore whether instilling the mindset that health means not just avoiding illness, but also pursuing spiritual and psychological benefits (including pleasure and fun) [70] promotes healthier behaviors and responses. Studies should also explore whether tailoring mindset interventions to particular cultural groups may further enhance their effectiveness. Our results suggest, for instance, that spiritual mindsets may be particularly relevant to African Americans.

The USA ranks #1 in the world in per capita health care spending [71], but in the bottom half of wealthy nations in life expectancy, infant mortality, cardiovascular disease, obesity, and diabetes [72]. Low-income and ethnic minority Americans, who are rapidly becoming the nation's majority populations [19], bear a disproportionate amount of this disease burden [18, 73, 74]. Although much remains to be explored, our findings reinforce the notion that health mindsets could prove to be a fruitful locus of intervention for both improving health and reducing health disparities. Health care providers, public health messengers, and even mobile application developers could collaborate to design and test mindset interventions. At the same time, researchers and practitioners should develop more nuanced understandings of what health means to people of different ages, ethnicities, genders, and socioeconomic statuses.

Supplementary Material

Supplementary material is available at *Annals of Behavioral Medicine* online.

Compliance with Ethical Standards

Authors' Statement of Conflict of Interest and Adherence to Ethical Standards The authors declare that they have no conflicts of interest.

Authors' Contributions All authors contributed to research conception and design, critical revision of the article for important intellectual content, and final approval of the published article. In addition, A.L.C. contributed to data analysis and interpretation and manuscript drafting; and D.Z.B. and A.J.C. contributed to data collection, analysis, and interpretation and manuscript drafting.

Ethical Approval The procedures and materials used in this study were approved by Stanford University's Institutional Review Board. This research was performed in accordance with the ethical standards of the 1964 Declaration of Helsinki and its later amendments.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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