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Cultural Diversity in Causal Attributions for Illness: The Role of the Supernatural

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We investigated cultural diversity in beliefs about the causes of illness and assessed the possibility that popular free-form methodologies (asking subjects to generate causes) inhibit minorities from expressing their belief in supernatural causes. As predicted, when asked to generate causes of illness and rate these in terms of their importance, whites and minorities did not differ in the number or type (natural vs supernatural) of causes they generated or in the importance rating they assigned to these. However, when these same subjects were provided with natural and supernatural causes to rate in terms of importance, minorities rated supernatural causes significantly more important than did whites, and more minorities than whites endorsed such causes. Cultural differences in causal attributions for illness are examined, and the role of methodology in determining such attributions is highlighted.

KEY WORDS: culture; causal attributions; illness; health beliefs; ethnic differences.

INTRODUCTION

Health psychology researchers have examined people's beliefs about the causes of illness because these appear to be important mediators of health-related behavior and of illness outcomes. On the whole, studies have found that people tend to attribute illness to diet, heredity, weight, smoking, alcohol use, stress, lack of exercise, and other intrapersonal, natural variables (Affleck

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et al., 1987; Blaxter, 1983; Taylor *et al.*, 1984; Tennen *et al.*, 1984). However, because these studies typically have employed White subjects, we do not know if these causal attributions hold for ethnic-cultural minorities.

Research in anthropology and sociology suggests that there is considerable cultural diversity in beliefs about the causes of illness (Murdock, 1980) and that people of color attribute illness to other variables. Specifically, these studies have found that African-Americans (Bailey, 1988, 1991; Jackson, 1981; Snow, 1974, 1977), Latino-Americans (Castro *et al.*, 1985; Chesney *et al.*, 1980; Maduro, 1983; Martinez, 1978), Asian-Americans (Gould-Martin, 1978; Gould-Martin and Ngin, 1981), and Native-Americans (Csordas, 1989; Kane and Kane, 1972; Kunitz, 1983) attribute illness not only to the intrapersonal, natural variables listed above, but also to supernatural variables. These supernatural causes are often viewed as more significant than the natural ones, and the belief in their primacy may account for the multitude of ethnic differences in health-related behavior (Landrine and Klonoff, 1992). Investigating cultural differences in causal attributions for illness then becomes essential to providing effective behavioral medicine interventions for our diverse population as well as to decreasing the health gap between minorities and Whites, and such investigations also may limit the generalizability of findings from White samples.

Investigating cultural diversity in causal attributions for illness, however, may necessitate a change from the current methodology in which people are asked to generate causes of illness. This is because ethnic-cultural minorities may be reluctant to volunteer supernatural causes (e.g., God's punishment, the Evil Eye, hexes, bad blood, sinful thoughts, the imbalance of hot and cold) to White, middle-class American researchers, who are likely to view such attributions as "superstitious" (Landrine and Klonoff, 1992). Thus, both supernatural and natural causes may need to be provided for subjects for possible ethnic differences to emerge. One obvious source of concern raised by providing causes for subjects to rate in terms of their importance, however, is that doing so may render the causes more salient; people may rate a cause as important because the experimenter called attention to it by providing it. This possibility must be investigated empirically.

The purpose of this study was to investigate possible ethnic-cultural differences in causal attributions for illness and to examine the extent to which free-form methodologies (asking subjects to generate causes) inhibit minorities from revealing their beliefs. We hypothesized that, when asked to generate their own causes for illness (free-form method), ethnic-cultural minorities would not differ from Whites in causal attributions. We predicted that both groups would generate similar natural and intrapersonal causes and rate these similarly in importance. We also hypothesized that,

when provided with supernatural and natural causes, ethnic-minorities and Whites would not differ in the ratings of importance they assigned to the natural, intrapersonal causes but would differ in the importance they attributed to supernatural causes, with minorities rating supernatural causes as significantly more important. Finally, we hypothesized that providing causes would not increase their salience; we predicted that causes provided by the experimenter would not be rated as more important than when those same causes were generated by the subjects.

METHOD

Participants

One-hundred forty-nine undergraduates participated in the study. These 74 women and 75 men ranged in age from 18 to 61 years (mean = 28.5, *SD* = 9.3). Sixty were traditional college-student age (18–22) and 89 were older (23–61). Seventy-nine were White and 70 were people of color (35 Blacks, 23 Latinos, 12 Asian/Pacific Islanders). Fifty-one were Protestant, 46 were Catholic, 22 were Moslem or Buddhist, 2 were Jewish, and 28 listed their religion as None.

Procedure

Each subject completed a two-part questionnaire. In the first part, subjects were instructed to list the things that they personally believe cause illness (cause people to get sick) and then to rate each of these causes in terms of its importance on a scale that ranged from 1 (not at all) to 7 (extremely). The second part of the questionnaire provided subjects with 37 possible causes of illness, covering a wide range of supernatural, interpersonal, intrapersonal, and natural causes. Subjects were instructed to rate these experimenter-provided causes in terms of how important the subject personally believed them to be as causes of illness in general; these ratings were on the same 7-point scale.

RESULTS

Subject-Generated Causes

Examples of subject-generated causes are shown in Table I, along with the 25 categories into which such responses were coded. Subject-gen-

Table I. Coding Categories for Causes Generated by Subjects

Stress	Specific stressors	Smoking	Alcohol use	Drug use
Stress	School	Smoking	Drinking	Drugs
Pressure	Finals	Smoke	Booze	Taking drugs
	Work	Tobacco use		
	Demanding boss			
Exercise	**Lack of rest**	**Contagion**	**Virus/bacteria**	**Heredity**
Lack of exercise	Improper sleep	People sneezing	Virus	Genes
Sedentary life	Not enough sleep	Kissing sick people	Bacteria	Genetics
			Nosocomial	Inherited
	Exhaustion	Hanging around sick people	Infections	Heredity
	Fatigue			
Emotions	**Personality**	**Vitamins**	**Diet**	**Environmental**
Loneliness	Attitude	Vitamin deficiency	Eating junk	Pollution
Anxiety	Low self-esteem		Improper diet	Smog
Worry	Hypochondria		Eating eggs & red meat	Pesticides/DDT
Depression	Type A			Toxic waste
	Retentive			Radioactivity
				Noise
				Pollen/allergy
Weather/cold	**Other natural**	**Unclassifiable**	**Status**	**Weight**
Weather	Lack of immunity	Smells	Poverty	Being fat
Climate	Vectors	Social issues	Homelessness	Overweight
Damp	Bodily injury	Body on rust	Sex	Obesity
Catching a draft	Toilet seats	Tongue depressors	Aging	Weight
Getting wet	Chemical imbalances		Poor housing	
Exposure to cold	Accidents/trauma	Fomites		
Supernatural	**Lifestyles**	**Sex**	**Hygiene**	**Relationships**
Bad luck	Bad habits	Anal sex	Cleanliness	Marital disputes
Fate	Partying	Unsafe sex	Not bathing	Bad kids
Voodoo	Lifestyle	Unprotected sex	Not brushing teeth	Family trouble
Religious guilt		Illicit sex	Bad hygiene	
		Sex (STDs)	Not washing hands before eating	

erated causes were coded by two researchers independently, with an inter-rater agreement of 99.97%.

Subjects freely generated an average of 6 (±3) causes of illness (Table II), and there were no ethnic or gender differences in the total number of causes generated. The most frequently generated causes were diet (69.8%),

stress (60.4%), contagion (40.9%), virus (40.3%), environment/pollution (36.2%), emotions (43.2%), smoking (32.9%), drug use (32.9%), exposure to cold/weather (31.5%), and alcohol use (30.9%). These causes are similar to those found in the studies reviewed here, albeit those studies employed patient samples. Causes rated as most important (mean importance rating on a 7-point scale) were drug use (6.44), sexual activity (6.22), alcohol use (6.21), weight (6.14), lifestyle (6.13), stress (6.12), virus (6.12), smoking (6.07), lack of exercise (5.66), social status (5.55), and diet (5.54). Thus, causes generated by large percentages of the sample were not necessarily rated as the most important causes; the relationship between the number of subjects who generated the cause and the rating of importance they gave it appeared to be neither strong, linear, nor direct. For example, while diet was the most frequently generated cause, its rating of importance was relatively low. Similarly, while only 16.8% of the sample generated sexual activity as a cause of illness, its importance rating was high. This suggests caution in using the percentage of people who generate a cause as an indication of the cause's importance. Causes generated by most of the sample may not be those viewed as most important, but rather, those that the experimenter expects. We return to this point later in the analyses.

A series of chi-square analyses was run to assess ethnic differences in generating specific types of causes. As predicted, none of these 25 chi-squares was significant; minorities and Whites did not differ in the types of causes they freely generated. However, there were gender, age, and re-

Table II. Number of Causes Generated

Generated by	*N*	Mode	Median	Mean	σ	Range
Sample	149	6	5	6.42	2.89	0–16
Women	74	5	6	6.70	3.13	0–16
Men	75	6	6	6.13	2.62	1–14
Whites	79	4	6	6.58	2.87	0–15
Blacks	35	4,5	5	6.20	3.23	1–16
Latinos	23	5	6	6.57	2.94	2–14
Age 18–22	60	6	6	6.70	2.69	3–13
Age 23–61	89	5	5	6.22	3.01	0–16

Causes generated ≈ 6 ± 3

Women vs men: t = 1.20, ns
Whites vs Latinos: t = .02, ns
Blacks vs Latinos: t = −.44, ns
Whites vs Blacks: t = .63, ns
Young vs older: t = .99, ns

ligion differences in the kinds of causes generated. Women were more likely than men to list specific stressors (e.g., a demanding boss, sexual harassment; $\chi^2 = 4.17$, $p < .04$), lack of rest ($\chi^2 = 3.60$, $p < .05$), heredity ($\chi^2 = 4.90$, $p < .02$), and emotions (e.g., anger, depression; $\chi^2 = 3.84$, $p < .05$) as causes of illness. Young people (18–22) were more likely than older people (23–61) to list emotions (e.g., anxiety; $\chi^2 = 3.69$, $p < .05$), lack of vitamins($\chi^2 = 3.60$, $p < .02$), and cold weather ($\chi^2 = 10.64$, $p < .001$) as causes of illness. Finally, Protestants were more likely than others to list lack of exercise as a cause of illness ($\chi^2 = 13.32$, $p < .004$).

A MANOVA was run to assess ethnic differences in the importance ratings that subjects assigned to their own generated causes. The MANOVA for ethnicity (White vs Non-White) was not significant [$T^2 = 22.49$, $F(25,122) = 00.75$, $p < .79$]. As predicted, ethnic minorities did not differ from Whites in the importance that they attributed to any of the generated causes, including the supernatural causes. No gender differences were found [$T^2 = 44.92$, $F(25,122) = 1.50$, $p < .08$] Thus, as hypothesized, no ethnic differences of any sort emerged when subjects were asked to generate their own causes of illness and to rate these in terms of their importance.

Experimenter-Provided Causes

The 37 causes provided by the experimenters were factor analyzed using a principal-components analysis with an oblique rotation for simple factor loadings. Factors were retained on the basis of an eigenvalue ≥1.00, and items were retained on a factor if their loading was >0.5; items with lower factor loadings were not retained in the factors. These results are shown in Table III. Eight factors, accounting for 66.4% of the variance, emerged. These eight factors, rather than the 37 variables, were used as dependent variables in the analysis of possible ethnic differences in causal attributions.

MANOVA and follow-up ANOVAs for ethnic differences (White vs Non-White) on the experimenter-provided causes were conducted. For each subject, a total factor score for each of the eight factors was calculated by summing the ratings the subject had given to each cause in that factor. Table IV shows those results along with the mean total factor score on each of the eight factors for Whites and people of color. As predicted, the only ethnic difference in causal attributions that emerged was on the supernatural factor. People of color rated supernatural causes as significantly more important than did Whites.

Table III. Rotated Sorted Factors: Experimenter-Provided Causes

Causes	
I Supernatural, 26.67% of variance	
Sinful thoughts	.871
Punishment from God	.869
The Evil Eye	.747
Sinful acts	.728
Lack of faith	.643
Hexes	.600
Payback	.549
Thin blood	.539
II. Interpersonal stress, 13.84%	
Emotions	.794
Relationships	.788
Worry	.654
Lack of harmony with nature	.623
Lack of harmony with others	.563
Envy	.526
III. Lifestyles, 6.25%	
Diet	.764
Hygiene	.759
Exercise	.694
Lack of rest	.555
Exhaustion	.544
IV. Personality, 4.49%	
Ambition	.873
Anger	.759
Anxiety	.640
V. Chance, 4.23%	
Bad luck	.830
Fate	.522
VI. Substance use, 3.84%	
Drinking	.793
Smoking	.789
VII. Natural, 3.65%	
Genes	.659
Sex	.606
VIII. Weather, 3.44%	
Weather	.781

Table V presents a more detailed analysis of ethnic differences in making supernatural attributions for illness. The percentage of subjects who rated each supernatural cause as "important" (a rating ≥4) is shown, along

Table IV. MANOVA And ANOVA of Ethnic Differences on Experimenter-Provided Causes: MANOVA, $T^2 = 17.83$, $F(8,132) = 2.12$, $p = .04$

	Factor	Whites	People of color	SS	$F(1,139)$	p
I.	Supernatural	12.05	16.28	629.03	11.03	.001
II.	Interpersonal Stress	21.86	22.54	15.90	.23	—
III.	Lifestyles	26.45	25.79	15.08	.50	—
IV.	Personality	12.68	12.75	.18	.01	—
V.	Chance	3.79	3.91	.45	.08	—
VI.	Substance use	12.09	12.07	.01	.00	—
VII.	Natural	9.50	9.89	5.50	.63	—
VIII.	Weather	4.03	4.25	1.81	.64	—

with the mean ratings for Whites and people of color and the ANOVA; chi-square analyses are also shown in Table V. As predicted (ANOVAs), people of color rated nearly all of the supernatural causes as more important than did Whites. The means for both groups, however, are low, which might imply that neither Whites nor people of color saw supernatural causes as important. The chi-square analyses indicate that this is not the case. For five of the eight supernatural causes, significantly more people of color than Whites rated these causes as important (a rating ≥4).

Twelve of the causes generated by the sample matched causes provided by the experimenters. Table VI compares the importance rating assigned to each of these 12 causes when the experimenter provided them versus when the subjects generated them (these are repeated measures). If providing a cause increases its salience, then causes should be rated more important when the experimenter provides them. As shown in Table VI, on the whole, this was not the case. Rather, for 6 of these 12 causes, there were no significant differences in mean importance ratings; for the remaining 6 causes, subjects rated the cause significantly more important when the experimenters provided it than when they generated it. While these six means differed significantly, the differences between the means were small (average difference, .46). Thus, no clear support for the salience hypothesis was found. In addition, while only 4.7% of the sample generated supernatural causes, large percentages of Whites and people of color alike rated these causes as important (a rating ≥4) when we provided them. Given that subjects do not appear to rate a cause as important simply because the experimenter provided it, these data probably reflect the importance that subjects attribute to these supernatural causes. Thus, these data suggest that people are reluctant to generate or volunteer causes that they believe the experimenter does not endorse, despite their belief that these causes are important.

DISCUSSION

This study has four important results. First, as predicted and indicated in the literature of other social sciences, people of color endorsed more

Table V. ANOVAs and Chi-Square Values of Variables Constituting the Supernatural Factor

ANOVA	Mean importance rating: Whites	Mean importance rating: People of color	SS	F^a	p
Sinful thoughts	1.39	2.13	19.38	11.85	.0008
Punishment from God	1.46	2.37	29.35	10.91	.001
The Evil Eye	1.20	1.81	12.79	10.56	.001
Payback for wrongdoing	1.51	2.15	14.21	7.08	.009
Hexes	1.38	1.81	6.43	4.52	.04
Sinful acts	2.34	3.03	16.84	3.94	.05
Thin blood	2.53	3.11	11.73	3.20	—
Lack of faith	2.58	2.91	3.82	1.18	—

Supernatural cause	Rating: High (≥ 4)	Rating: Low (<4)	χ^{2b}	p
Sinful thoughts				
Whites	5 (6.3%)	74	6.24	.02
Minorities	14 (20%)	56		
Punishment from God				
Whites	5 (6.3%)	74	10.68	.01
Minorities	18 (25.7%)	52		
The Evil Eye				
Whites	1 (1.3%)	78	6.75	.01
Minorities	8 (11.4%)	62		
Payback for wrongdoing				
Whites	4 (5.1%)	75	6.70	.01
Minorities	13 (18.6%)	57		
Hexes				
Whites	4 (5.1%)	75	2.83	—
Minorities	9 (12.9%)	61		
Sinful acts				
Whites	19 (24.1%)	60	3.67	—
Minorities	27 (38.6%)	43		
Thin blood				
Whites	18 (22.8%)	61	7.77	.01
Minorities	31 (44.3%)	39		
Lack of faith				
Whites	24 (30.4%)	55	0.11	—
Minorities	23 (32.9%)	47		

[a]df = 1,139 for each F.
[b]df = 1 for each χ^2 value.

supernatural causes of illness than did Whites, and their tendency to endorse these causes—in addition to the natural ones—was the only difference between the two groups. This suggests considerable cultural diversity in causal attributions and so the need to be sensitive to these beliefs and their role in health-related behavior. While people of color rated supernatural causes as significantly more important than did Whites (Table V), the mean importance ratings for both groups were low (1–2 on a 7-point scale), suggesting that neither Whites nor people of color saw supernatural causes as important. On the other hand, however, the chi-squares (Table VI) indicated that more people of color than Whites rated

Table VI. Differences in Importance Ratings for Subject-Generated vs Experimenter-Provided Causes

	Mean rating		Difference between means	Wilcoxon's T (2-tailed)
	Subject-generated	Experimenter-provided		
Diet (N = 103)	5.52	6.03	.51	435.00**
Virus (N = 59)	6.18	6.51	.33	135.00*
Drug use (N = 48)	6.42	6.39	.03	73.00
Smoking (N = 48)	6.10	6.08	.02	128.50
Weather (N = 47)	4.39	4.85	.46	86.50*
Alcohol use (N = 44)	6.11	6.38	.27	39.00
Exercise (N = 44)	5.60	6.11	.51	42.50**
Lack of rest (N = 39)	5.18	5.62	.44	50.00*
Heredity (N = 30)	5.28	5.80	.52	18.00*
Sex (N = 25)	6.35	6.24	.11	42.50
Relationships (N = 11)	5.23	5.27	.04	10.50
Lack of vitamins (N = 8)	4.38	4.38	.00	10.50
% of total sample rating each supernatural cause as important (≥4)				
Bad blood	66.4			
Lack of harmony w/ nature	44.3			
Thin blood	32.9			
Sinful acts	30.9			
Selfishness	28.9			
Lack of faith	22.8			
Disobeying family	20.1			
Punishment from God	15.4			
Fate	14.8			
Bad luck	14.1			
Sinful thoughts	12.8			
Payback for things done wrong	11.4			
Hexes	8.7			
The Evil Eye	6.0			

*$p < .05$.
**$p < .01$.

these causes as important (a rating ≥4). Taken together, these findings suggest that there is not only considerable cultural diversity in causal attributions for illness, but also considerable diversity among minorities; some minorities view supernatural causes as very important, while others reject such attributions. These differences cannot be attributed to education (because they were all college students) and so probably reflect acculturation, as well as membership in specific minority groups. It is important to note that large percentages of these minority, college-educated subjects endorsed supernatural causes and to consider the possibility that such beliefs may be largely independent of education.

The second finding was that reasonable numbers of the White college students in the sample also endorsed supernatural causes of illness (e.g., 30.4% rated lack of faith as 4 or higher in importance as a cause). This suggests that such health-related beliefs may hold for many Whites as well as for many people of color and, thereby, highlights the need for health psychology to begin to investigate such beliefs. If supernatural causes are inherently uncontrollable, the belief in them has important implications for help-seeking and symptom-reporting behaviors.

The third finding was that the methodology used to examine people's causal attributions for illness in part determines the nature of the results. Whites and people of color alike appear to be reluctant to generate supernatural causes for researchers who are likely to view such attributions as mere superstition; both groups fail to generate these, despite seeing such causes as very important. Thus, while only 4.7% of the total sample generated any type of supernatural cause, up to 66.4% rated such causes as very important (ratings > 4) when these were provided. This implies that the results in the literature regarding people's beliefs about the causes of illness may in part represent socially desirable rather than truthful answers; subjects may be telling us what they believe we believe and want to hear. Thus, data on health beliefs may need to be collected differently (*viz.*, by providing causes), not only to allow cultural diversity to manifest itself but also to acquire more accurate data.

The fourth finding was that providing such causes does not appear to increase their salience or importance, i.e., subjects did not uniformly attribute greater importance to causes simply because we provided them. Thus, providing causes does not appear to communicate that the experimenter views these as important (and so subjects rate them as important); rather, it may communicate that the experimenter views such causes to be acceptable, reasonable attributions and, so, facilitate honest responding.

This study is limited by the use of college students and must be replicated with medical patients to assess the generalizability of these findings. We do note that the literature reviewed here on minorities' supernatural

attributions was based on medical patients [e.g., Bailey's (1991) sample of Black hypertensives and Csordas' (1989) Navajo cancer patients] as well as on normals. This suggests that such beliefs may hold irrespective of health status and that the beliefs then may be less of a reaction to illness and more of a manifestation of cultural concepts. Likewise this study is limited by the small numbers of subjects in each of the minority groups and did not permit an analysis of possible differences among the various minority groups. Replication with larger samples to permit such comparisons, as well as with medical patients, will clarify the generalizability of these results. In addition, many statistical tests were run, and this raises the possibility that at least a few of the differences found might be spurious; those differences, however, were predicted and, so, may argue against this possibility. Yet in light of such limitations, we can at best only tentatively suggest that (a) generalizations regarding people's health beliefs, based on White samples, are inappropriate and (b) the methodologies we use to examine those beliefs may have contributed to our findings and obscured cultural differences.

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