

31. National Center for Health Statistics: Monthly Vital Statistics Report. April 25, 1988;37(1):1.

32. National Center for Health Statistics-National Heart, Lung, and Blood Institute Collaborative Lipid Group. Trends in serum cholesterol levels among U.S. adults aged 20-74 years. *JAMA* 1987;57:937-942.

33. Nesje LA, Mjos OD. Plasma HDL cholesterol and the subclasses HDL<sub>2</sub> and HDL<sub>3</sub> in smokers and non-smokers. *Artery* 1985;13(1):7-8.

34. Robertson FW, Cumming AM, Douglas AS et al. Coronary heart disease in Northeast Scotland—a study of genetic and environmental variation in serum lipoprotein and other variables. *Scottish Med J* 1980;25:212-21.

35. Sato I, Nishida M, Okita K et al. Beneficial effects of stopping smoking on future cardiac events in male smokers with previous myocardial infarction. *Jpn Circ J* 1992; 56(3):217-22.

36. Shaten JB, Kuller LH, Deaton JD. Association between baseline risk factors, cigarette smoking, and CHD mortality after 10.5 years. *Preventive Medicine* 1991;20:655-669.

37. Shennan NM, Seed M, Wynn V. Variation in serum lipid and lipoprotein levels associated with changes in smoking behavior in non-obese Caucasian males. *Atherosclerosis* 1985;58:17-25.

38. Siconolfi S, Cullinane E, Carleton R et al. Assessing VO<sub>2</sub> max in epidemiologic studies: modification of the Astrand-Rhyming test. *Med Sci Sports Ex* 1982;14:335-9.

39. Smoking and Health: A National Status Report. Rockville, MD: U.S. Department of Health and Human Services, 1990.

40. Stender S, Astrup P, Kjeldsen K. The effect of carbon monoxide in cholesterol in the aortic walls of rabbits. *Atherosclerosis* 1977;28:357-67.

41. Tucker LA. Use of smokeless tobacco, cigarette smoking, and hypercholesterolemia. *Am J Public Health* 1989;79(8):1048-50.

42. Tucker LA, Aldana SG, Freidman BM. Family history of heart disease and hypercholesterolemia. *Health Values* 1990;14(2):3-8.

43. Tuomilehto J, Tanskanen A, Salonen JT, Nissinen A, Koskela K. Effects of smoking and stopping smoking on serum high-density lipoprotein cholesterol levels in a representative population sample. *Preventive Medicine* 1986;15(1):35-45.

## Cultural Differences in Attitudes, Values, and Beliefs About Osteoporosis in First and Second Generation Japanese-American Women

David Matsumoto, PhD  
K. K. Pun, MD, PhD  
Mihoko Nakatani, PhD  
Dai Kadowaki, DDS, PhD  
Michelle Weissman, BA  
Loren McCarter, MA  
Debora Fletcher, BA  
Sachiko Takeuchi, MA

---

David Matsumoto is affiliated with the Department of Psychology, San Francisco State University. K. K. Pun is affiliated with the Program in Osteoporosis and Bone Biology, University of California. Mihoko Nakatani is with the Culture and Aging Research Center, San Francisco. Dai Kadowaki is with the Department of Environmental Management, Nihon University, Japan. Michelle Weissman, Loren McCarter, Debora Fletcher and Sachiko Takeuchi were all affiliated with the Department of Psychology, San Francisco State University, at the time of writing.

Address correspondence to David Matsumoto, Department of Psychology, San Francisco State University, 1600 Holloway Avenue, San Francisco, CA 94132.

The authors thank Carinda Wilson Cohn, Nathan Yrizarry, Galin Luk, Minjoo Lee, Cenita Kupperbusch, and Erin Milligan for their assistance in our general research program.

This research was supported in part by a Faculty Affirmative Action Grant and a California State University Award for Research, Scholarship, and Creative Activity awarded to the first author, and by a research grant from Minoru Kadowaki.

**ABSTRACT.** This study examines attitudinal differences related to osteoporosis between first and second generation Japanese-American women. In an interview, the women completed a battery of tests assessing their attitudes, values, and beliefs about the diagnosis, treatment, and follow-up care of osteoporosis. The groups differed in their general knowledge of osteoporosis, perceptions of the disease, attributions of its causes, anticipated and preferred support mechanisms for care, and anticipated areas of concern for self- or other-care. There were also considerable differences in treatment compliance and feelings toward physicians. The findings were discussed in relation to the effects of culture on health-care attitudes and behaviors. [Article copies available from *The Haworth Document Delivery Service*: 1-800-342-9678.]

Several conceptual frameworks guide research and theoretical work in health psychology. The Health Belief Model (Becker, 1974; Becker & Maiman, 1975), for example, suggests that perceptions, attitudes, and beliefs affect motivations to engage in preventive health services and behaviors. Social learning theory (Bandura, 1977) suggests that health-related behaviors are products of personal and environmental variables. The theory of reasoned action focuses on intentions to engage in health-protective behavior (Ajzen & Fishbein, 1980).

These models have received attention over the years (e.g., see review by Feist & Brannon, 1988). Less work, however, has examined social or cultural factors on health beliefs or preventive behaviors. This recognition is not new (e.g., see Suchman, 1964), and is increasingly warranted in our ever-diversifying world, especially in the U.S. Indeed, this broader view has led to research across ages (e.g., Mrozcek, Spiro, Aldwin, Ozer, & Bosse, 1993), gender (e.g., Linden, Chambers, Maurice, & Lenz, 1993), sexual preference (e.g., Fisher, Fisher, Williams, & Malloy, 1994), and ethnicity (e.g., Bundek, Marks, & Richardson, 1993).

Cultural influences on health beliefs and behavior are especially important to consider. Culture is the conglomeration of learned and shared rules governing attitudes, values, beliefs, and behaviors that are communicated across generations but different for individuals (Matsumoto, in press). Culture is the baseline operating system upon which individual differences on psychological dimensions exist. Different cultures have different operating systems that pro-

duce different health-related beliefs. These, in turn, lead to different preventive behaviors, and the use of services.

In this study, we examined cultural differences in attitudes, values, and beliefs related to osteoporosis in first and second generation Japanese-American women. Osteoporosis is a progressive weakening of bone, diagnosed by bone mineral density (BMD) decreases over time. Osteoporosis can develop with little symptomatology, but severe cases lead to fractures, especially in the hip, wrist, and vertebrae. Because it can progress undetected for years, it is often called the "silent epidemic" (Pun & Yeung, 1987).

Postmenopausal women are particularly at risk for osteoporosis (Wisneski, 1991), possibly because of changes in estrogen levels. Estrogen apparently enhances the metabolism of calcium in bone remodeling. With less estrogen, postmenopausal women tend to lose bone at a higher rate than before menopause, although there are individual differences. Estrogen therapy, in a variety of forms, has a positive effect on BMD (Erdstieck et al., 1994; Ettinger, Genant, & Cann, 1987; Hassager, Jensen, & Christiansen, 1994; Ryde, Bowers-Simpkins, Bowen-Simpkins, Evans, & Morgan, 1994).

Caucasian and Asian women are at higher risk for osteoporosis than other ethnicities (Pun, Chan, Chung, & Wong, 1990), but the mechanism for this difference is not known. Many Asian women are unable to digest milk, a major source of calcium in the American diet. Lactose intolerance, however, may be tempered by other calcium-rich foods in the Asian diet (e.g., tofu). People of other ethnicities also have lactose intolerance but are not at such a high risk.

The study of Japanese Americans can broaden our knowledge of the effects of culture on health-related attitudes, values, and beliefs. Older Japanese Americans are comprised of at least two major subgroups. One group is the first generation women, including women born and raised in Japan, but who emigrated to the U.S. as adolescents or adults. These individuals were enculturated in Japanese culture (albeit they will also have acculturated to some degree to American culture). The other group is the second generation women, including those who were born and raised in the U.S., primarily speak English, and were enculturated in the U.S. from birth (albeit with Japanese cultural values in the home).

These two groups may have markedly different health-related attitudes, values, and behaviors. Japanese culture is collectivistic; individual needs, wishes, and desires are sacrificed for the sake of a group or collective (Reischauer, 1988). Conformity and compliance are necessities for harmony and cohesion. Sanctions, such as social isolation, exist for non-compliance (Benedict, 1946). American culture, however, is individualistic, promotes uniqueness and autonomy, and places individual needs, wishes, and desires above those of groups. Members of individualistic societies are encouraged to express themselves, and non-conformity, non-compliance is tolerated (Triandis, Bontempo, Villareal, Asai, & Lucca, 1988).

Japanese culture is also highly status differentiating, and behaviors are linked to the status differential among interactants (Nakane, 1970). This is not true to the same degree in the U.S. (see Hofstede, 1980). Cultural differences in obedience to authority implicate differences in how first and second generation patients interact with health care providers, and comply with treatment regimens.

Japanese culture is influenced by Confucian and Buddhist teachings. Japanese people tend to attribute the cause for negative events to fate, luck, or predetermined destiny (e.g., see Matsumoto, Kudoh, Scherer, & Wallbott, 1988). Japanese people often assume less personal responsibility and control over events in their lives. American culture, however, is characterized by pragmatism and logical determinism. Events have observable and understandable causes that can be influenced by one's behaviors. This cultural difference can affect how first and second generation patients view disease etiology, and their own role in treating it.

The concept of *amae* is central to relationships in Japanese culture (Doi, 1973). Loosely translated, this word contains elements of the English words dependence, naivety, and sweetness. *Amae* is linked with collectivism, as it helps build interdependence. American culture, however, discourages dependence, and encourages autonomy and self-reliance. Japanese *amae* fosters greater reliance on others and society in general to care for them; Americans reject this reliance.

Differences between mainstream Japanese and American cultures do not necessarily address possible cultural differences between first and second generation Japanese Americans. Several studies, however, have shown that different generations of Japanese

Americans have acculturated from a traditional Japanese to an American cultural profile. For example, Kitano (1976) surveyed attitudes regarding ethnic identity, means-ends, masculinity and responsibility, individual v. group orientation, passivity, and realistic expectations in first, second, and third generation Japanese Americans. He found an increasing trend toward acculturation across the three generations for each of the attitude types. Kitano (1961) also found considerable differences between first and second generation Japanese Americans in their attitudes regarding parental child-rearing, with first generation subjects endorsing much more "restrictive" and "old fashioned" attitudes. Personality differences between first and second generation Japanese Americans have been reported by Devos (1973), which are congruent with these cultural differences. These findings make it very possible that differences in health related attitudes and values exist between first and second generation Japanese American women.

### OVERVIEW OF THE PRESENT STUDY

The combination of culture and the clinical profile of osteoporosis makes this line of inquiry relevant to clinical work, and to our conceptual understanding of the influence of culture on health. The women, all living in the U.S. and above the age of 55, completed an Osteoporosis Attitudes and Values Assessment and a Social/Family Care Issues Assessment. The first measure assessed four areas of health beliefs and preventive behaviors, while the second measure assessed two areas related to care. We hypothesized that the second generation women would produce an individualistic profile of attitudes and beliefs, centering on facts, pragmatism, individual responsibility and independence. The first generation women, however, would produce a collectivistic profile centering on fate, luck, dependence on others, and obedience to authority figures.

### METHOD

#### Subjects

Subjects were 72 Japanese American women in the San Francisco Bay Area, all over the age of fifty-five (mean = 65.85). The

women were classified into two groups. Thirty-three were born and raised in Japan (mean years in the U.S. 29.03, *sd* = 11.40); Japanese was their primary language, and Buddhism was their primary religion. Thirty-nine were born and raised in the U.S.; English was their primary language, and Christianity was their primary religion. The two groups did not differ on mean years of education (13.37 and 14.39 years, respectively). According to Japanese custom, we called the first group "First Generation" and the second group "Second Generation."

Ads were placed in local English and Japanese language newspapers, recruiting participants in a study of "osteoporosis and diet." Interested women called the laboratory, and interview appointments were made; in exchange for their participation, we provided these women with information about osteoporosis, contact and referral sources. Contacts were also made with staff coordinators in charge of outreach programs in community agencies, and participants were recruited in exchange for a presentation on the topic. The research team made presentations, and the study was introduced. Appointments were made with participants who volunteered at this time. This recruitment process may have skewed the sample; the subjects may have been more open to express themselves and willing to share personal information than those who did not elect to participate. Also, they may have been more interested in self-care and volunteerism. While these possibilities do not speak against finding differences between the groups, generalizations about non-participating Japanese Americans should be made with this caveat.

The two groups differed on some demographic variables (Table 1). To examine whether these differences affected the comparisons between the two groups, product moment correlations were computed between these variables with the attitude, values and care issues (described below) that produced significant results in this study, separately for the two groups. Of the 54 correlations, only 5 were significant. Thus, we concluded the demographic differences between the two groups did not affect the results reported below in this study (see discussion, however, for a more complete description of possible confounds in this type of research). Also, six of the women actually had been diagnosed with osteoporosis (four of the first generation women, two of the second), but the exclusion of

TABLE 1. Demographic Differences Between First and Second Generation Japanese American Women

Continuous Variables (tested by ANOVA)					
(Mean and Standard Deviation)					
Factor	2nd Generation (n = 39)	1st Generation (n = 33)	F	df	p
Age	68.59 (8.20)	60.21 (10.93)	15.05	1,70	<.001
Economic Level <sup>a</sup>	2.13 (.98)	2.88 (.93)	11.04	1,70	<.01
Annual Income <sup>b</sup>	2.87 (1.50)	1.52 (1.00)	17.11	1,70	<.001
Nominal Variables (tested by chi-square)					
(Percentages)					
Factor	2nd Generation (n = 39)	1st Generation (n = 33)	X <sup>2</sup>	df	p
Other Income (yes)	73	9	23.46	1	<.001
Working (yes)	46	24	4.07	1	<.05

<sup>a</sup> 1 = Low Income, 2 = Low Middle Income, 3 = Middle Income, 4 = High Middle Income, 5 = High Income.

<sup>b</sup> 1 = < \$10,000, 2 = \$10-20,000, 3 = \$20-30,000, 4 = \$30-50,000, 5 = \$50-75,000, 6 = \$75-100,000, 7 = over \$100,000

their data did not affect the findings; thus, their data were included in this report.

### Instruments

Subjects completed six measures. Two—the Attitudes and Values Assessment and the Social/Family Cares Issues Assessment—were

the focus of this study; the others included assessments of demographics, dietary calcium, health status and risk factors, and medication and vitamins. The two psychological measures were developed from pilot work with other Japanese Americans, and were informed by previous research protocols on osteoporosis. All protocols were developed in English and translated into Japanese; translation accuracy was verified by back-translation, with no problems.

*Osteoporosis Attitudes and Values Assessment.* This measure covered four groups of questions (associated response alternatives given below). Yes/no questions were followed by open-ended probes for more information. Questions with multiple nominal response alternatives were coded dichotomously for each response alternative.

1. Questions about their general knowledge of osteoporosis: Do you know what osteoporosis is? (Yes, No); Do you know the risk factors for osteoporosis? (Yes, No); Do you have family or friends with it? (Yes, No); Do you know what the high risk groups are? (Yes, No)
2. Questions about their perceptions of osteoporosis: How debilitating do you think it is? (Very, Somewhat, A Little); How much of a public concern do you think it is? (Major, Moderate, Minor); How much of a personal concern is it to you? (Major, Moderate, Minor, Not at All); If you were diagnosed with it, how negative would you feel about it? (Very, Moderately, A Little, Not at All, Don't Know); If you were disabled with osteoporosis, who would care for you? (Family, Friends, Other, No One, Don't Know)
3. Questions about their attributions of causality, responsibility, and control: If you were diagnosed with osteoporosis, to what would you attribute the cause of it? (Fate, Chance, Luck, Diet, Other Things); If you were diagnosed with osteoporosis, who do you think would have primary responsibility over its treatment? (You, Family, Doctor, Others); How much control would you have over its treatment? (A Lot, Moderate, A Little, None)
4. Questions about treatment compliance and feelings toward their physicians: How much would you comply with recommendations for invasive treatment (e.g., surgery)? (Faithfully,

Mostly, Somewhat, Never, Depends) (while we recognize that invasive treatment is rarely a prescribed regimen for osteoporosis, we opted for an extreme example to maximize the potential for cultural differences); How do you feel about estrogen therapy? (Positive, Negative, Neither, Don't Know); How would you feel about your degree of compliance? (Positive, Negative, Neither, Don't Know); How do you feel about your physician? (Positive, Negative, Neither, Don't Know); How much do you trust your physician? (Very Much, Moderate, A Little)

*Social/Family Care Issues Assessment.* This measure covered two groups of questions. "Other" responses were followed by requests to specify the nature of their response.

5. The types of services subjects preferred to have: What kind of support services do you hope exist for people diagnosed with osteoporosis? (Institutions, Temporary Homes, Rehabilitation Centers, Nursing Homes, Information Services, Social Service Organizations, Organizations to Find Help, Other)
6. Concerns and problems they would have, should they have to care for someone, or themselves, diagnosed with osteoporosis: If diagnosed with osteoporosis, what kinds of problems do you think you would have? (Financial, Finding Help, Other); If you had to take care of someone with osteoporosis, what problems do you think you would have? (Not Enough Time, Other).

### *Procedure*

Subjects were interviewed individually or in small groups of friends in their homes or community centers, at their choice and convenience. Procedural differences did not appear to affect the type or amount of responding, as all subjects had met their interviewers at a prior recruiting session, and had developed a rapport prior to the interviews. The interviewer spoke either English or Japanese, depending on the subject's preference. Interviews lasted approximately one hour, as subjects were encouraged to provide as much information as they wished on open-ended response questions, and were given no time constraint.

## RESULTS

*Osteoporosis Attitudes and Values*

Differences between the two groups on the items in the first instrument were tested using chi-square (when more than one response alternative existed in the contingency table, chi-squares were recomputed after grouping the responses to dichotomous categories for ease of interpretation); significant results are reported below and summarized in Table 2. The two groups differed substantially in their general knowledge about osteoporosis. More second generation women knew what osteoporosis was (97% v. 79%,  $p < .05$ ), had family or friends who were diagnosed with it (54% v. 24%,  $p < .01$ ), and knew what the high risk groups were (79% v. 39%,  $p < .01$ ).

Cultural differences emerged with regard to perceptions about the disease. More second generation women viewed osteoporosis as "Very" debilitating (72% v. 55%,  $p < .05$ ). But, more first generation women viewed osteoporosis as a "Major" personal concern to themselves (82% v. 54%,  $p < .05$ ). In addition, more first generation women reported that they would have "Very" negative feelings if they were diagnosed with osteoporosis (85% v. 36%,  $p < .01$ ); the second generation women had more tempered reactions.

The two groups did not differ in the number of women reporting that either family (55% and 67% for first and second generation, respectively) or friends (6% v. 5%) would care for them if diagnosed with osteoporosis. More second generation women, however, reported that "Others" would care for them (31% v. 3%,  $p < .01$ ), while a greater number of first generation women reported that "No One" would care for them (42% v. 8%,  $p < .001$ ).

There were cultural differences in attributions of causality. If diagnosed with osteoporosis, more second generation women would attribute that cause to diet (74% v. 39%,  $p < .01$ ). More first generation women, however, reported that they would attribute the cause to fate (18% v. 5%,  $p < .08$ ) or luck (18% v. 3%,  $p < .05$ ).

Contrary to our expectations, there were no group differences in attributions concerning personal responsibility or self-control. There was also no difference in their feelings about estrogen therapy.

The two groups differed, however, in their feelings toward their physicians and treatment compliance. More second generation women

TABLE 2. Summary of Significant Findings: Percent Subjects in Each Group Who Gave the Indicated Response

Respondents who . . .	1st Generation (n = 33)	2nd Generation (n = 39)	p-value
knew what osteoporosis is	79	97	< .05
have family or friends diagnosed	24	54	< .01
knew the high risk groups	39	79	< .01
viewed osteoporosis as "very" debilitating	55	72	< .05
viewed osteoporosis as a "major" personal concern	82	54	< .05
would have "very" negative feelings if diagnosed	85	36	< .01
reported that "others" would care for them if diagnosed	3	31	< .01
reported that "no one" would care for them if diagnosed	42	8	< .011
attributed the cause of osteoporosis to diet	39	74	< .01
attributed the cause of osteoporosis to fate	18	5	< .08
attributed the cause of osteoporosis to luck	18	3	< .05
felt positively about their physician	55	74	< .01
felt trusting toward their physician	61	90	< .08
would faithfully comply with recommendations for invasive treatment	79	39	< .001
would want more institutions available	76	33	< .001
would want more temporary homes available	64	21	< .001
would want more rehabilitation centers available	64	15	< .001
would want more nursing homes available	58	15	< .001
would want more information services available	67	29	< .001
would want more social service organizations available	64	21	< .001
would want more referral services available	61	33	< .05
would want "other" services available	9	41	< .01
would have financial problems if diagnosed	30	5	< .01
would have problems finding help if diagnosed	70	15	< .0001
would have "other" problems if diagnosed	3	51	< .0001
would have problems with time to do an adequate job if caring for someone with osteoporosis	24	8	< .06
would have "other" problems if caring for someone with osteoporosis	3	36	< .001

felt positively about (74% v. 55%,  $p < .01$ ) and trusting toward their physician (90% v. 61%,  $p < .08$ ). Yet, a significantly greater number of first generation women reported that they would faithfully comply with recommendations for invasive forms of treatment (79% v. 39%,  $p < .001$ ). Second generation women tended to report that their compliance to invasive treatment would depend on other factors.

### *Social and Family Care Issues*

Cultural differences between the two groups on the social and family care issues assessment were tested using chi-square. When asked to select the types of support services they would want available to help people diagnosed with osteoporosis, more first generation women selected each alternative provided: institutions (76% v. 33%,  $p < .001$ ), temporary homes (64% v. 21%,  $p < .001$ ), rehabilitation centers (64% v. 15%,  $p < .001$ ), nursing homes (58% v. 15%,  $p < .001$ ), information services (67% v. 29%,  $p < .001$ ), social service organizations (64% v. 21%,  $p < .001$ ), and referral services (61% v. 33%,  $p < .05$ ). More second generation women reported "Other" services (41% v. 9%,  $p < .01$ ). Their open-ended responses indicated that their modal concern was the availability of medical care; additional concerns included someone to help care for their homes, money, support groups, mobility, preventive information, and transportation.

When asked what kinds of problems or concerns they would have if diagnosed with osteoporosis, more first generation women reported financial problems (30% v. 5%,  $p < .01$ ) or problems finding help (70% v. 15%,  $p < .0001$ ). More second generation women, on the other hand, reported "Other" problems (51% v. 3%,  $p < .0001$ ). Their open-ended responses indicated that the modal concern for this group was mobility; additional concerns included emotional and psychological concerns, dependence on others, pain, fear and worry, and work.

Subjects listed the kinds of problems they would have if they were to care for someone with osteoporosis. More first generation women reported that they would not have enough time to do an adequate job for themselves and the person they were caring for (24% v. 8%,  $p < .06$ ). More second generation women, however,

reported "Other" concerns (36% v. 3%,  $p < .001$ ). The modal concern in their open-ended responses was their physical ability to be a care-giver; additional concerns included not knowing what to do, depression, age, emotional support and stress, energy, and lifestyle interference.

### *DISCUSSION*

The results provided some support for the hypothesis that the second generation women would be relatively individualistic, while the first generation women would be more collectivistic. For example, the second generation women tended to view osteoporosis as more debilitating than did the first generation women, but the latter tended to view it more as a major personal concern, and had more negative feelings if diagnosed. That is, the second generation women viewed the disease in terms of its practical impact to them (i.e., debilitating), but were less emotionally upset because of a more pragmatic view of treatment, as discussed below.

The two groups differed in their attributions of causality, with more second generation women attributing the cause to diet, and more first generation women to fate or luck. This difference is similar to previous findings in attributions of the cause of negative events. Japanese tend to be more fatalistic, attributing causes more often to fate, luck, nature, or superstition. The second generation women's attributions to diet reflected this culture's emphasis on logical determinism. Better education about the underlying mechanics of the disease, itself a byproduct of our logical pragmatism, contributes to this cultural difference.

We predicted that the two groups would differ in attributions concerning personal responsibility or self-control, but this was not supported. At least two reasons may explain this non-finding. First, the link between causality and responsibility or control may be weaker than we previously thought. Differences on one variable may be unrelated to differences on another. Second, the first generation women may have lived in the U.S. for a sufficiently long time that their responses to these questions may have been influenced by an American culture that reinforces personal responsibility and self-control over negative events. However, this would not explain why

these acculturation effects would be observed on these variables (i.e., responsibility and control) and not others.

The degree of compliance despite the relative lack of positive feelings and trust about their physicians on the part of the first generation women may be attributable to the Japanese culture's emphasis on obedience to authority figures. Physicians are revered in the Japanese culture; thus, Japanese people would be more willing to simply comply with their recommendations without question, and regardless of their own personal feelings about the recommendations or about the physicians. In the American culture, it is not uncommon to obtain second opinions; this would be inappropriate for a Japanese person.

The relatively greater concern for mobility on the part of the second generation women if caring for someone is also related to the underlying emphasis on individualism in the American culture. Mobility is a symbol of autonomy and self-reliance, cornerstones of individualism. Our great dependence and love of cars, the importance placed on obtaining a driver's license, and our relative intolerance of mass transportation speak to its importance. Mobility is associated with freedom, while the tolerance for the lack of such individual mobility is a characteristic of Japanese culture that is influenced by collectivism.

The Japanese culture's emphasis on collectivism fosters a greater sense of responsibility for others, which possibly contributed to other group differences in concerns about caring for someone else with osteoporosis. In the Japanese collectivistic culture, others are viewed as a fundamental part of oneself in an interdependent framework (Markus & Kitayama, 1991). Thus, their primary concern would be whether or not they were doing an adequate job for the person they were caring for. The individualistic American culture, however, fosters greater concerns about member's own sense of self, via their physical abilities to do the job (i.e., the caregiving).

The greater number of services desired by the first generation women may be related to their sense of *amae* on the medical profession and/or the government to take care of them in times of need. This dependence is a central concept in the Japanese culture, with individuals relying to a greater extent on other people and organizations to care for their needs. The greater number of second genera-

tion women requesting the availability of adequate medical care again may reflect their pragmatic and specialized focus toward the problem and its solution.

These cultural differences have implications for broadening our understanding of the role of culture in health-related behaviors. As the baseline operating system of the mind, people of different cultures will have different operating systems which produce differences in health-related attitudes and beliefs, like those observed in this study. Those differences in beliefs, in turn, lead to differences in preventive behaviors, and the use of services, as implied in this study.

At the same time, it is impossible in real life to disentangle the interrelationships among culture, attitudes, values, and beliefs. There is little doubt that these variables are all related in an intricate and complex fashion, reinforcing each other. While the analyses reported earlier on demographics do not suggest a role for other potential confounding variables in this study, their possible role in mitigating the relationship between culture, attitudes, values, and beliefs with actual health-related behaviors cannot be ruled out entirely. In particular, we would like to draw attention to three issues regarding possible mediating variables that are not only related to this study, but also have implications for future research in this area.

First, we need to give serious consideration to a systematic assessment of acculturation and individual differences in cultural values, attitudes, and beliefs, which remains a pivotal assumption in this study. While it is convenient for the purpose of theory and research to divide the world into simple components as we did, we must at the same time recognize that what we have observed is due to a large extent to our methods, and may not be entirely reflective of the complexity of the culture-behavior system. Without having a fuller assessment of cultural values on the psychological level in each of the individual subjects in our study, this important gap in our methods cannot be closed. Also, degree of acculturation may be related to age and length of stay in the U.S.; the lack of significant findings for these variables in assessing confounds despite significant differences between the groups on age does not preclude the



possibility of these types of indices of acculturation to produce findings with more sensitive and direct measures.

Second, we believe that education, both in terms of quantity and type, may play a major role in mediating knowledge, attitudes, and beliefs about osteoporosis. Educational level did not differ between the groups in this study and thus could not have confounded the significant results reported. Nevertheless, more sensitive and comprehensive measures of education, especially including curricular coverage in regard to health, disease, and issues related to determinism and pragmatics, may prove to be an important mediator of health related attitudes.

Finally, we cannot ignore the possibility that interrelationships among the dependent variables measured in this study themselves may have contributed to spurious significant differences among them. That is, it is possible that the groups truly differed on fewer of the dependent variables that we reported earlier, and that significance was found on other variables merely because of the correlation of these latter variables with the former ones (that produced significant differences). Unfortunately, we were not able to control for these effects because the resulting sample sizes in such analyses would have yielded unreliable findings. Future studies with larger samples sizes that allow for meaningful methodological or statistical control of these possible interrelationships are necessary to tease out these effects.

Still, it is important to consider culture, and other social characteristics, in theories and formulations involving the interaction between psychology and health. Different cultures will produce profound and fundamentally different psychologies, which naturally lead to differences in health outcomes. Culture is itself a socio-psychological phenomenon, not necessarily linked to race or nationality, parameters we usually use to operationalize culture. By using concepts such as individualism v. collectivism, status differentiation, or *amae*, we begin an evolution in our thinking about culture that improves on the inflexibility afforded previous approaches. Should culture play a major role in health-related psychology, we need to give serious consideration to the education of our health professionals to these roles. While the influence of psychological factors on standard medical practice is increasing, we suggest that

sociocultural factors be included as part of the patient management picture. Their addition will further enhance our understanding of a total patient management perspective.

At the same time, we need to educate different cultural groups about health care delivery systems. These programs can be based in community organizations that have direct access to the target groups. Accommodation needs to occur on both sides for movement toward a more responsive health care system with a more responsible patient population. Future studies combining psychosocial issues such as those included in this study with data on actual health outcomes (e.g., bone mineral density scans) and treatment outcomes over time will vastly improve our understanding of the interaction between psychology, culture, and disease.

## REFERENCES

- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.
- Becker, M. (1974). The health belief model and personal health behavior. *Health Education Monograph*, 2, 324-473.
- Becker, M., & Maiman, L. (1975). Sociobehavioral determinants of compliance with health and medical care recommendations. *Medical Care*, 13, 10-23.
- Benedict, R. (1946). *The chrysanthemum and the sword: Patterns of Japanese culture*. Boston: Houghton Mifflin.
- Bundek, N. I., Marks, G., & Richardson, J. L. (1993). Role of health locus of control beliefs in cancer screening of elderly Hispanic women. *Health Psychology*, 12, 193-199.
- DeVos, G. *Socialization for achievement: Essays on the cultural psychology of the Japanese*. Berkeley: University of California Press.
- Doi, T. (1973). *The anatomy of dependence*. Tokyo: Kodansha.
- Erdstieck, R. J., Pols, H. A. P., Van Kuijk, C., Birkenhager-Frenkel, D. H., Zeelenberg, J., Kooy, P. P. M., Mulder, P., Birkenhager, J. C. (1994). Course of bone mass during and after hormonal replacement therapy with and without addition of nandrolone decanoate. *Journal of Bone Mineral Research*, 9, 227-283.
- Ettinger, B., Genant, H. K., & Cann, C. E. (1987). Postmenopausal bone loss is prevented by treatment with low dosage estrogen with calcium. *Annals of Internal Medicine*, 106, 40-45.
- Feist, J., & Brannon, L. (1988). *Health psychology: An introduction to behavior and health*. Belmont, CA: Wadsworth, 1988.
- Fisher, J. D., Fisher, W. A., Williams, S. S., & Malloy, T. E. (1994). Empirical tests of an information-motivation-behavioral skills model of AIDS-preventive

- behavior with gay men and heterosexual university students. *Health Psychology*, 13, 238-250.
- Hassager, C., Jensen, S. B., & Christiansen, C. (1994). Non-responders to hormone replacement therapy for the prevention of postmenopausal bone loss: Do they exist. *Osteoporosis International*, 4, 36-41.
- Hofstede, G. (1980). *Culture's consequences*. Newbury Park, CA: Sage.
- Kitano, H. (1961). Differential child rearing attitudes between first and second generation Japanese in the United States. *Journal of Social Psychology*, 61, 13-16.
- Kitano, H. (1976). *Japanese Americans*. Englewood Cliffs, NJ: Prentice Hall.
- Linden, W., Chambers, L., Maurice, J., & Lenz, J. W. (1993). Sex differences in social support, self-deception, hostility, and ambulatory cardiovascular activity. *Health Psychology*, 12, 376-380.
- Markus, H. R., & Kitayama, S. (1991). Culture and self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98, 224-253.
- Matsumoto, D. (in press). *Culture and psychology*. Pacific Grove, CA: Brooks Cole.
- Matsumoto, D. (1994). *People: Psychology from a cultural perspective*. Pacific Grove, CA: Brooks Cole.
- Matsumoto, D., Kudoh, T., Scherer, K., & Wallbott, H. (1988). Emotion antecedents and reactions in the US and Japan. *Journal of Cross-Cultural Psychology*, 19, 267-286.
- Matsumoto, D., Pun, K. K., Nakatani, M., Kadowaki, D., Weissman, M., McCarter, L., Fletcher, D., & Takeuchi, S. (1994). *Differences in dietary calcium and other osteoporosis risk factors between Japanese and Japanese American women*. Manuscript submitted for publication.
- Mrozcek, D. K., Spiro, A., Aldwin, C. M., Ozer, D. J., & Bosse, R. (1993). Construct validation of optimism and pessimism in older men: Findings from the normative aging study. *Health Psychology*, 12, 406-409.
- Nakane, C. (1970). *Japanese society*. Berkeley: University of California Press.
- Pun, K. K., Chan, L. W. L., Chung, V., & Wong, F. H. W. (1990). Calcium and other dietary constituents in Hong Kong Chinese in relation to age and osteoporosis. *Journal of Applied Nutrition*, 42, 12-17.
- Pun, K. K., & Yeung, R. T. T. (1987). Osteoporosis—the silent epidemic. *Journal of the American Medical Association (South East Asian Edition)*, 3, 5-6.
- Reischauer, E. (1988). *The Japanese today*. Cambridge, MA: Harvard University Press.
- Ryde, S. J. S., Bowens-Simpkins, K., Bowen-Simpkins, P., Evans, W. D., Morgan, W. D., and Compston, J. E. (1994). The effect of oestradiol implants on regional and total bone mass: A three year longitudinal study. *Clinical Endocrinology*, 40, 33-38.
- Suchman, E. (1964). Sociomedical variations among ethnic groups. *American Journal of Sociology*, 70, 319-331.
- Triandis, H. C., Bontempo, R., Villareal, M. J., Asai, M., & Lucca, N. (1988). Individualism and collectivism: Cross-cultural perspectives on self-ingroup relationships. *Journal of Personality and Social Psychology*, 4, 323-338.
- Wisneski, L. A. (1991). Choosing the best regimen in postmenopausal osteoporosis. *Journal of Musculoskeletal Medicine*, 6, 33-46.

---

## BRIEF COMMUNICATION

---

### Feedback for Participants in a Health Survey: Feasible and Useful

Ilka Kangas, LicSSci  
Päivi Topo, MSSci  
Elina Hemminki, MD

**ABSTRACT.** The use of quantitative methods has often limited the communication between researchers and research participants to being one-sided. Use of feedback in survey-oriented research is one possibility for creating a more communicative relationship.

After doing a postal survey of 2000 Finnish 45 to 64-year-old women about their climacterium we produced a feedback leaflet about the main results of the study and about climacterium in general and sent it to all respondents (n = 1713). Later a postal questionnaire concerning the feedback leaflet was sent to a consecutive sample of every eighth (n = 200) woman, of whom 153 (76%) responded. Most

---

Ilka Kangas is affiliated with the University of Helsinki, Department of Sociology. Päivi Topo is affiliated with the National Research and Development Centre for Welfare and Health, Health Research Unit. Elina Hemminki is affiliated with the National Research and Development Centre for Welfare and Health, Health Research Unit.

Address correspondence to Ilka Kangas, Department of Sociology/Research Unit, P.O. Box 33 (Aleksanterinkatu 7), 00014 University of Helsinki, Finland.

Women & Health, Vol. 23(4) 1995

© 1995 by The Haworth Press, Inc. All rights reserved.

57