

The Effects of Health Belief Components on Women's Intentions of Early Cancer Screenings: A Cross-National Analysis

Kyoo-Hoon Han

Sookmyung Women's University, South Korea

Jay (Hyunjae) Yu

Sogang University, South Korea

Abstract

This study investigated the impacts of health belief components on women's illness-related attitudes from a cross-national perspective, focusing on how women's perceptions of women-specific cancers and the early screening procedures for these cancers. Online surveys were administered to a total of 944 females aged 30-59 from three countries: the US, Japan, and South Korea. Participants were asked about their health beliefs (perceived susceptibility, perceived severity, perceived benefits, and perceived barriers) and intentions to take early screenings for women-specific cancers. The results of statistical analyses (MANCOVA and multiple regression) indicated that Japanese and South Korean women were significantly higher in degrees of perceived susceptibility and perceived severity compared to US women. However, Japanese women showed the least positive attitude toward cancer prevention among the three countries. Other results also confirmed cross-national differences in health beliefs and their influence on women's attitudes toward cancer prevention, but many of the results were not consistent with the cultural values traditionally associated with each nation. Implications of the findings point to improvements in health promotion practices that target women.

Key words

Women's health, women's cancer, early cancer screening, health belief model, cross-national analysis

* This research was supported by the Sookmyung Women's University Research Grants 1-1003-0405.

Introduction

Despite ongoing medical advances, cancer remains a leading cause of death worldwide, accounting for approximately eight million deaths each year, and deaths from cancer are projected to rise to over 13.1 million worldwide in 2030 (World Health Organization, 2013). Generally, early screening has been considered one of the most effective ways to decrease the rate of cancer-related deaths (McCracken et al., 2007; Choi et al., 2010). Thus, an increasing number of people have made early cancer screening efforts, with regular medical check-ups to improve their health and longevity (Tang et al., 1999). In addition, governmental organizations or health institutions in many countries are attempting to detect cancer earlier, thereby reducing cancer mortality rates (Han & Jo, 2012; Sharif et al., 2007).

In the area of cancers specific to women (hereafter *women's cancer*), such as breast and cervical cancers, the death rate has steadily decreased in general as examinations for these cancers have become more widely undertaken (Juon, Seo & Kim, 2002; Smith et al., 2010). Especially for breast cancer, the most prevalently diagnosed cancer among women worldwide, public health data suggest that early screening behaviors, including breast self-examination, clinical breast examination, and mammography, help ensure early detection of breast cancer and prompt treatment (Noroozi, Jomand & Tahmasebi, 2010). However, cancer still accounts for nearly one in every five deaths in women. According to a recent report by the American Cancer Society (2013), approximately 300,000 new cases of breast, uterine, and ovarian cancers are expected among women, and about 60,000 US women are projected to die from these cancers in 2013. Considering the effectiveness of early cancer check-ups in reducing the death rate, a substantial number of female cancer patients would survive if their malignancies could be detected earlier through cancer screenings (Flight et al., 2010).

In addition to widespread recognition of the importance of early cancer screenings, researchers have also paid attention to diverse issues related to attitudinal and behavioral characteristics that women exhibit in the early screening process (e.g., Han et al., 2009; Lee et al., 2009; Noroozi, Jomand & Tahmasebi, 2010; Tang et al., 1999). As part of an extensive effort in this academic domain, the present study aimed to investigate cultural effects on women's attitudes and intentions regarding

early cancer screenings. Culture is likely to be a significant factor in health-related cognition and behavior, as people tend to construct meanings from health information based on their own cultural and social experiences (Barg & Grier, 2008; Lee, Kim & Han, 2009; Uskul, Sherman & Fitzgibbon, 2009). For this reason, more research is required to examine the effects of cultural values and identity on people's health behaviors and related attitudes. Considering this research need, the current study explored the influence of culture on women's perception of cancer threat and on behavior adoption, both of which are driven by health belief constructs: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers.

One common difficulty in most studies that investigate cultural effects is determining how to operationally define the concept of culture. Culture is conceptually defined as "the collective programming of the mind which distinguishes the members of one category of people from another" (Hofstede, 2001, p.9). As this general definition implies, researchers' criteria to separate cultures tend to be somewhat arbitrary depending on their study's purpose or methodology (e.g., country, race, ethnic group, geographic area, language, institution, etc.). The present study used *country* as the criterion to distinguish cultures, which are also strongly associated with an individual's nationality, because people's perceptions and behaviors about health care are greatly influenced by their country's social schemas and environment. Global data on cancer incidence and mortality presented in the GLOBOCAN 2008 report (World Health Organization, 2008) clarify significant differences across continents and countries, thereby supporting this study's adoption of cross-national comparisons to observe cultural effects on women's health attitudes and behavioral intentions. Thus, three countries were selected on the basis of cultural similarities and dissimilarities: the US, Japan, and South Korea.

There is very little literature on this subject; thus, the unique contribution of this study is its cross-national examination of women's perceptions of health beliefs and their effect on women's attitudes toward health-promoting messages and intentions to follow a suggested behavior. Through this research attempt, the present study aimed to figure out how culture influences women's attitudes and behaviors toward early cancer screenings across countries. The results of this research are expected to

provide significant implications for not only cross-national differences in health attitudes and behaviors but also how to persuade and encourage women to receive early cancer screenings for effective cancer prevention.

Literature Review

Early screenings for women's cancer from a cross-cultural perspective

Early cancer screenings have been considered a highly effective way to reduce cancer mortality rates over the years (Choi et al., 2010; Smith et al., 2010). In case of the US, the American Cancer Society has published yearly reports on cancer screening guidelines and issues, hoping to increase people's awareness of the benefits of regular cancer screenings (Smith et al., 2010). Researchers have reported that cancer mortality rates have dropped because of the remarkable progress in early detection and timely treatment (Juon, Seo & Kim, 2002; Tang et al., 1999). Early cancer screenings among women is particularly important to increase the likelihood of early detection and treatment of women's cancer. For instance, breast cancer could be cured if it is detected during a medical check-up at an early stage (Aiken et al., 1994; Barg & Grier, 2008; Champion, 1985). Apantaku (2000) reported that early detection by regular mammograms can reduce breast cancer mortality by up to 30 percent.

Prior studies have used a cross-national approach to investigate cultural effects on people's different attitudes and behaviors regarding cancer prevention (Han & Jo, 2012; Lee, Kim, & Han 2009; Lee et al., 2009; Tang et al., 1999). Indeed, the rates of incidence and mortality from women's cancer are different across countries, as presented in Table 1 (Jemal et al., 2011; World Health Organization, 2008). For example, about half of breast cancer cases and approximately 60% of the deaths from breast cancer occurred in economically developing countries. However, the incidence rate of breast cancer was higher in Western Europe and North America, compared to Africa and East Asia (Jemal et al., 2011; Kagawa-Singer et al., 2010).¹ In light of this per-

¹ This incongruence of cross-continental differences in the rates of breast cancer incidence and mortality seems to stem largely from discrepancies in reproductive and hormonal factors and the availability of early detection services (Jemal et al., 2011).

spective, Kagawa-Singer and colleagues (2010) stated that cultural variables are linked to cancer outcomes through beliefs, attitudes, and behaviors related to prevention and screening. Accordingly, culture should be taken into account as a potential determinant of an individual's attitudes and behaviors regarding early cancer screenings, and such a direction calls for more empirical research on this issue.

Table 1
Incidence and Mortality Rates of Women's Cancer: A Cross-National Comparison

Country	Breast Cancer		Cervical Cancer	
	Incidence	Mortality	Incidence	Mortality
US	76.0	14.7	5.7	1.7
UK	89.1	18.6	7.2	2.0
Russia	43.2	17.1	13.3	5.9
Japan	42.7	9.1	9.8	2.6
South Korea	38.9	5.3	10.8	2.8
Indonesia	36.2	18.6	12.6	7.0
South Africa	41.0	20.7	26.6	14.5

*Both incidence and mortality rates indicate the absolute number of cases per 100,000 persons per year

Source: GLOBOCAN 2008 (globocan.iarc.fr)

Several studies have addressed the role of cultural variables in women's cancer examinations. They suggest that health professionals responsible for conducting cancer-screening promotion programs should consider variables related to indigenous cultural characteristics (Juon, Seo & Kim, 2002; Tang et al., 1999). Lee, Kim, and Han (2009) reported that women living in the US had early screenings at a higher rate than women with the same ethnic background who were living in a non-US territory. Even among Asian women, significant differences were found in self-examination screening behaviors based on where they lived (e.g., in the US or in their own Asian country) (Tang et al., 1999). These results indicate that cultural differences across countries are likely to influence women's attitudes and behavioral intentions of early cancer screenings. Consequently, despite culture's complicated nature, assessments of its influence could be facilitated if an observed factor is clearly

distinguished by country, a physical area in which unique cultural aspects are shared among its citizens.

The health belief model and its application to women's cancer

The health belief model (hereafter HBM) is perhaps the most widely used and highly influential among the social psychological theories that explain the willingness to engage in preventive health behaviors (Champion, 1985; Glanz, Rimer & Lewis, 2002; Tanner-Smith & Brown, 2010). The underlying concept of this model is that health behavior is determined by an individual's beliefs or perceptions about a particular disease and the means available to decrease its occurrence (Becker, 1974). Since its proposal in the 1950s, the HBM has served as a robust theoretical framework to address the relationship between an individual's health-related beliefs and behaviors. This model suggests that changes in preventive health behaviors are originally based on four components that reflect an individual's perceptions of the disease: *perceived susceptibility* (perceived personal vulnerability to a health condition), *perceived severity* (perceived personal harm due to a health condition), *perceived benefits* (perceived positive outcome of adopting a recommended action), and *perceived barriers* (perceived obstacles to adopting a recommended action) (Rosenstock, 1974). While these original concepts of the HBM were proposed to explain people's readiness to act, *cues to action* was later added to help explain what might activate readiness and stimulate overt behavior.

Although the HBM can be applied to preventive health behaviors in a myriad of ways, it has been particularly useful to researchers studying women's health issues (Tanner-Smith & Brown, 2010). Therefore, the HBM can be naturally employed in the case of women's cancer, which also has distinctive recommended actions such as early cancer screenings. When applying this model to women's cancer, perceived susceptibility indicates a woman's fear of contracting cancer or her sensitivity to the possibility, while perceived severity refers to a woman's perception of the negative consequences of contracting cancer, such as psychological disorders or financial losses. On the other hand, perceived benefits and perceived barriers can be linked to one's decision to undergo early cancer screenings (e.g., mammography or Pap smear test). Perceived benefits might include anxiety relief or a lower probability of

cancer growth, and perceived barriers might include cumbrance or high financial cost. Finally, cues to action include mass media campaigns, published articles, advice from others, and acquaintances who have contracted cancer.

A great deal of previous studies have applied the HBM to women's behaviors regarding early cancer screenings (e.g., Aiken et al., 1994; Champion, 1985; Tanner-Smith & Brown, 2010; Pirzadeh & Mazaheri, 2012). One noticeable finding in Tanner-Smith and Brown's (2010) research, which reviewed studies using the HBM to examine mammographic and/or Pap screenings, revealed strong support for perceived benefits and perceived barriers and weak support for perceived susceptibility and perceived severity in explaining women's preventive health behaviors. Noroozi, Jomand and Tahmasebi's (2010) study also supported the direct and indirect effects of the HBM components on breast self-examinations among Iranian women. Meanwhile, Pirzadeh and Mazaheri (2012) found that designing and executing health education programs based on HBM would facilitate women's willingness to have Pap smear tests for cervical cancer prevention. However, although researchers have often tried to explain women's health-related cognition and behavior using the HBM, little is known about cross-national differences in the influence of factors associated with health beliefs on women's perceptions of cancer and their preventive behaviors. Thus, the present study adopted the HBM and employed cross-national comparisons to investigate the following research questions:

- RQ 1. How do women's intentions to take early cancer screenings and their attitudes toward the relevant promotive message differ by culture?*
- RQ 2. How do women's perceptions of health belief components regarding women's cancer differ by culture?*
- RQ 3. How do the effects of each of the health belief components on women's intentions to take early cancer screenings differ by culture?*
- RQ 4. How do the effects of each of the health belief components on women's attitudes toward the message promoting early cancer screenings differ by culture?*

Methods

Measures

Critical variables for this study included the four original health belief components—perceived susceptibility, perceived severity, perceived benefits, and perceived barriers—and, as dependent variables, a respondent's intention to undergo early screening for women's cancer² and attitudes toward messages promoting early cancer screenings that target women. Their causal relationships were empirically assessed using comparative analyses by country.

All four health belief components were operationally defined based on Rosenstock's (1974) conceptual definitions and Champion and Scott's (1997) measurement items on a five-point Likert scale. A series of reliability tests verified that the multiple evaluative items for each component were internally consistent. Detailed measures for the four health belief components and the results of the reliability tests are presented in Table 2. Further, the intention to receive an early cancer screening was assessed on a five-point Likert scale by the following question: "How strong is your intent to undergo early screening for women's cancer?" All measurement items administered to Japanese and Korean respondents were translated into their respective languages.

The type of communication used as a cue to action, the fifth and external component of HBM, was a public service advertisement encouraging women to seek regular early screenings for cancer prevention. Three versions of this print advertisement were produced based on the primary language (English, Japanese, and Korean) of each of the selected countries. In addition to language, the advertising model (i.e., a Caucasian woman for the US and Asian women for Japan and South Korea) and the governmental institution sponsoring the message were customized to each country. All other creative components, such as copy, layout, and color tone, were equivalent to minimize any uncontrolled effects of intervening variables.

Attitudes toward the message, another dependent variable, were rated

² In the survey questionnaire, respondents were provided the definition of "women's cancer" as a general term for cancers that primarily affect women, such as breast, cervical, and ovarian cancers.

using seven evaluative items on a five-point Likert scale. These items, adopted from MacKenzie and Lutz's (1989) attitude study, include "the message in the above ad is" *appealing, truthful, reliable, useful, convincing, important, and relevant to me*. These were also proven to be internally consistent through a reliability test (Cronbach's $\alpha = .914$).

Table 2
Evaluative Items for Each Variable and Reliability Test Results

Component	Descriptive Items	Cronbach's α
Perceived Susceptibility	I may be affected with women's cancer.	.720
	I feel anxious about women's cancer.	
	I am sensitive to women's cancer.	
Perceived Severity	If I get women's cancer, I should be shocked.	.726
	If I get women's cancer, I will suffer serious financial consequences.	
	If I get women's cancer, my social life would be wrecked.	
Perceived Benefits	Early screening of women's cancer will remarkably lower the incidence of the disease.	.777
	Early screening of women's cancer will dispel my anxiety and fear about an attack of the disease.	
	An increase in early screening of women's cancer will have a positive effect on our society.	
Perceived Barriers	Early screening of women's cancer is a nuisance.	.819
	Early screening of women's cancer wastes my time.	
	Early screening of women's cancer is costly.	

Sampling and Data Collection

The current study's sample consisted of women from three different countries: the US, Japan, and South Korea. North American and East Asian countries have often been chosen for cross-national comparative studies that investigate cultural effects (e.g., Han & Jo, 2012; Lee & Shinkai, 2005; Nomura et al., 2005; Paek, Yu & Bae, 2009). In terms

of individualism-collectivism, uncertainty avoidance, long-term orientation, neutrality-affectivity, universalism-particularism, etc., these nations exemplify proper cases of cultural differences (Hofstede, 2001; Trompenaars & Hampden-Turner, 1998).

Respondents were females aged 30-59 because women in this age group are vulnerable to cancer on the whole and thus are typically the primary target of promotions to prevent cancer-related illness and death. Participants in the survey were randomly sampled from a worldwide online research agency's registered lists of US, Japanese, and Korean consumer panelists. Gender, age, and nationality, according to the panelists' personal profiles within the online database, were determining factors in sample selection.³ Sample sizes and respondent demographics were roughly equivalent across the three countries. An e-mail was sent to more than 4,000 consumer panelists inviting them to participate in the survey; 944 recipients agreed to complete the online survey. These respondents consisted of 330 US women, 297 Japanese women, and 317 Korean women. Table 3 shows the demographic profiles of the survey respondents. A chi-square test ensured that the respondents were equivalent in the distribution of age across the three nations ($\chi^2 = 5.903$, $df = 4$, $p = ns$).

Data Analysis

All research questions were tested using statistical analysis. Since cross-national comparisons were employed for this study, mean values among the three selected countries were compared and verified for any significant differences in respondents' early screening intentions, message attitudes, and perceptions of health belief components. In the statistical analysis process, it was necessary to control the potential effects of some demographic variables since these confounding variables might influence a respondent's health beliefs and consequences. Thus, MANCOVA (multivariate analysis of covariance), which treated a respondent's age, marital status, and educational level as covariate, was used to test research question 1 and 2. For research question 3 and 4,

³ All survey respondents were female. Also, survey e-mail recipients were equally drawn from three age groups (30-49/40-49/50-59) and three countries (US/Japan/South Korea) based on their age and nationality.

multiple regression was used to cross-nationally assess individual effects of the four health belief components.

Table 3
Demographic Profiles of Survey Respondents

Category	US	Japan	South Korea	Total	Percent
Age Group					
30-39	109	111	110	330	35.0
40-49	110	111	105	326	34.5
50-59	111	75	102	288	30.5
Marital Status					
Married	197	218	265	680	72.0
Unmarried	103	67	46	216	22.9
Other	30	12	6	48	5.1
Educational Level (last formal schooling)					
High school	124	133	99	356	37.7
Undergraduate school	151	146	189	488	51.5
Graduate school	37	4	21	62	6.6
Other	18	14	8	38	4.2
Occupation					
Housewife	96	144	148	388	41.1
Company employee	96	72	78	246	26.1
Self-employed	32	15	26	73	7.7
Profession	32	15	35	82	8.7
Service	23	22	17	62	6.6
Other	51	29	13	93	9.8
Total	330	297	317	944	100.0

* All respondents are female.

Results

Early Screening Intention and Message Attitude (RQ 1)

Korean women showed the highest level of intention, followed by US women and Japanese women ($F = 10.672, p < .001$; Table 4). However,

a subsequent post-hoc test revealed that this statistical significance of MANCOVA was caused by notable differences between the US and Japan ($t = 3.163, p < .01$) and between South Korea and Japan ($t = 5.329, p < .001$), whereas differences between the US and South Korea were insignificant ($t = -1.613, p = ns$).

Concerning women’s attitudes toward the message promoting early cancer screening, an identical pattern in cross-national differences was found. That is, Korean women showed the most positive attitude toward the message, followed by US women; Japanese women presented the least positive attitude ($F = 7.258, p < .01$; Table 4). A post-hoc test also revealed significant differences between the US and Japan ($t = 3.180; p < .01$) and between South Korea and Japan ($t = 4.022, p < .001$), but not between the US and South Korea ($t = -.483, p = ns$). For all three countries, however, results suggest that both early screening intention and message attitude are relatively positive, as the mean values for the three countries were above 3.5 out of 5.

Table 4
Comparisons of Early Screening Intention and Message Attitude by Country

Dependent Variable	Country	Mean	Std. Dev.	F	P
Early Screening Intention	US	3.876	1.089	10.672	.000***
	Japan	3.609	1.011		
	South Korea	3.994	.746		
Message Attitude	US	3.831	.673	7.258	.001**
	Japan	3.671	.592		
	South Korea	3.854	.536		

*** $p < .001$, ** $p < .01$

Levels of Health Belief Components (RQ 2)

The four original components of the HBM were individually assessed to verify any cross-national differences. First, for both perceived susceptibility and perceived severity, the two Asian countries were significantly higher than the US (South Korea was the highest, followed by Japan) (Table 5). On the other hand, the results for perceived benefits and perceived barriers revealed fairly different patterns. The benefits

of early cancer screenings were perceived to be highest by the Korean respondents, followed by the US and then Japan, while barriers to early examinations were perceived to be the strongest by Japan, followed by South Korea and then the US. These results indicate that Japanese women are least likely to undergo early cancer screenings, as they ranked lowest in perceived benefits (a positive indicator) and highest in perceived barriers (a negative indicator) among the three nationalities.

Table 5
Comparisons of the Levels of Health Belief Components by Country

Component	Country	Mean	Std. Dev.	F	P
Perceived Susceptibility	US	3.344	.738	22.741	.000***
	Japan	3.600	.703		
	South Korea	3.715	.613		
Perceived Severity	US	2.983	.829	161.557	.000***
	Japan	3.806	.764		
	South Korea	4.071	.690		
Perceived Benefits	US	3.737	.772	24.923	.000***
	Japan	3.600	.683		
	South Korea	3.997	.583		
Perceived Barriers	US	2.167	.847	119.652	.000***
	Japan	3.130	.716		
	South Korea	2.997	.845		

*** $p < .001$

Effects of Health Belief Components (RQ 3 and RQ 4)

Statistical analysis results uncovered a very similar pattern across the nations. For all three countries, perceived susceptibility, perceived benefits, and perceived barriers had significant impacts on the intention to receive early cancer screenings; only the effect of perceived severity was not significant (Table 6). The predicted negative impact of perceived barriers was also verified. Regarding the effect strengths of individual components, cross-national differences were found. For US and Korean women, the impact of perceived susceptibility was weaker than that of perceived benefits and perceived barriers, whereas the effect of per-

ceived susceptibility was strongest among Japanese women.

With regard to the effects of health belief components on attitude toward the message promoting early cancer screenings, the results did not much differ from those of the previous analysis. In general, across all three countries, only the impact of perceived severity was not statistically significant, whereas the other three components—perceived susceptibility, perceived benefits, and perceived barriers—had significant effects on message attitude (Table 7). The only exception was the insignificant effect of perceived barriers among Japanese women. As to the effect strengths, dissimilar patterns were found between the Asian countries and the US. Specifically, for Japanese and Korean women, the relative impacts of perceived susceptibility and perceived benefits were stronger than that of perceived barriers; on the other hand, for US women, the effects of perceived susceptibility and perceived barriers were much stronger than that of perceived benefits.

Table 6
Effects of Health Belief Components on Early Screening Intention

Country	Component	B	Std. Error	Beta	t	P
US	Perceived Susceptibility	.251	.062	.170	3.527	.000***
	Perceived Severity	-.051	.348	-.039	-.821	.412
	Perceived Benefits	.442	.071	.313	6.095	.000***
	Perceived Barriers	-.447	.072	-.347	-7.318	.000***
Japan	Perceived Susceptibility	.514	.084	.357	6.132	.000***
	Perceived Severity	-.040	.073	-.031	-.555	.580
	Perceived Benefits	.373	.077	.252	4.876	.000***
	Perceived Barriers	-.374	.065	-.278	-5.798	.000***
South Korea	Perceived Susceptibility	.329	.066	.270	4.943	.000***
	Perceived Severity	.079	.060	.073	1.301	.194
	Perceived Benefits	.344	.069	.269	4.989	.000***
	Perceived Barriers	-.210	.043	-.238	-4.839	.000***

*** $p < .001$

Table 7
Effects of Health Belief Components on Message Attitude

Country	Component	B	Std. Error	Beta	t	P
US	Perceived Susceptibility	.249	.046	.273	5.417	.000***
	Perceived Severity	.067	.040	.083	1.676	.095
	Perceived Benefits	.164	.047	.188	3.501	.001**
	Perceived Barriers	-.233	.039	-.293	-5.904	.000***
Japan	Perceived Susceptibility	.324	.048	.384	6.692	.000***
	Perceived Severity	.034	.042	.044	.817	.415
	Perceived Benefits	.281	.044	.324	6.351	.000***
	Perceived Barriers	-.021	.037	-.026	-.553	.580
South Korea	Perceived Susceptibility	.213	.049	.244	4.316	.000***
	Perceived Severity	.026	.045	.033	.573	.567
	Perceived Benefits	.266	.051	.289	5.185	.000***
	Perceived Barriers	-.112	.032	-.176	-3.458	.001**

*** $p < .001$, ** $p < .01$

Discussion

General Conclusions

Although the HBM is the most commonly utilized theory in health education and health promotion by far, little effort has been made to investigate its application to women's cancer from a cross-national perspective. This study explored the relative magnitudes of health belief components and their individual impacts on intentions to undergo early screenings for women's cancer by comparisons among three countries-the US, Japan, and South Korea-where intercultural similarities and dissimilarities coexist. All of these countries have relatively high rates of early cancer screening (American Cancer Society, 2008). A total of 944 females from the three countries participated in the survey, and their responses were statistically analyzed based on the four research questions drawn.

The statistical analysis of the survey data yielded some important findings about the effects of cultural value and identity on women's cancer-related attitudes and behavioral intentions. Above all, the present

study found cross-national discrepancies in several investigative items. For instance, the US and South Korea shared similar tendencies in early screening intention and message attitude, and their levels in these two barometers for early cancer examination were significantly higher than those of the Japanese respondents. On the other hand, for the cognitive components of the HBM excluding perceived barriers (i.e., perceived susceptibility, perceived severity, and perceived benefits), Japanese and Korean participants demonstrated similar levels, which were significantly higher than those of the US participants. The results include more meaningful findings that provide both theoretical and practical insights for effective health promotion, especially in culture-specific contexts.

Theoretical and Practical Implications

Cross-national differences were slight regarding the effects of each health belief component. For all three countries, perceived susceptibility, perceived benefits, and perceived barriers significantly influenced both early screening intentions and attitudes toward the message encouraging early screening; only the effect of perceived severity on the two dependent variables was not statistically significant, with the exception of message attitude for the Japanese respondents. It is difficult to infer why the perception of cancer's seriousness did not affect these women's preventive behavior and motivation. If the results were consistent with the prediction, perceived severity would have positively influenced both early screening intention and message attitude. One possible explanation is that the negative consequences of cancer might be so well established and so universally perceived that they simply cannot trigger an attitude change. However, because the true reason cannot be revealed without an in-depth empirical investigation, this finding could be an interesting topic for future research.

Among the three nations investigated, Japan appeared to have the lowest level of early screening intention and message attitude; this result is a red flag for cancer prevention among Japanese women. Not only was their level of perceived benefits lower than the US and South Korea, but their level of perceived barriers was also higher than the other two. Looking at the case of Japan exclusively, the influence of perceived benefits and barriers on women's adoption of recommended

health behaviors is apparent. In contrast to Japanese women, US and Korean women were similar in their levels of early screening intentions and message attitudes, as well as the individual effects of the four health belief components. These results indicate that, despite common predictions based on traditional cultural expectations, Eastern and Western cultures are not necessarily dissimilar in their perceptual and behavioral tendencies; on the other hand, even countries in the same geographical area (e.g., Japan and South Korea in East Asia) can differ considerably in various attitudinal aspects. In fact, these findings are not exceptional, considering a substantially high variation in the predictive powers of traditional cultural dimensions by country or research subjects, as Taras, Kirkman, and Steel's (2010) meta-analytic review on Hofstede's cultural framework revealed. Geographical distance may also become a less critical factor in categorizing cultural zones in current society where massive information is quickly transmitted and widely shared beyond national borders via online networks. In consequence, cultural segmentation by geographic area would require greater departmentalization (e.g., by country or other combination of criteria) than in the past.

Results from this study point to several practical implications. First of all, health promoters should consider the effects of health belief components when developing a message strategy to encourage a suggested health behavior, particularly when targeting women for cancer prevention. In many countries, for example, a promotional message that emphasizes the benefits or ease of early cancer examination is likely to be more persuasive to women than a message that underscores the threat of fatal cancers. Before application, however, the findings of this study should not be aggregated; differences between the countries are of paramount importance. The underlying premise is that health information tailored to a specific cultural group is likely to increase the possibility that the target audience will not only understand the information but also follow the recommended behavior. As any campaign for health promotion needs to consider the life experiences and cultural backgrounds of its target audience, cautiously tailored messages that account for cultural values and identity are likely to be more effective.

Study Limitations and Directions for Future Research

The limited scope of the present study suggests directions for future research. First, aside from the health belief components of the HBM, other factors—such as an individual’s medical interest, past experience, information source, and demographic status—could be tested as potential determinants of women’s health behavior and factors influencing communication effectiveness. Second, because of the various criteria required to distinguish one culture from another, further assessments on cultural effects need more specific investigation, accounting not only for country or nationality but also for race, language, immigrational status, health care infrastructure, and so on.⁴ Third, future research could expand the media type used for investigation (the current study only used print media), considering currently available media for health promotion and people’s changing patterns in media usage. Finally, although the study’s participants were randomly sampled from a global online consumer panel, this might be another source of bias since some exogenous variables, such as web accessibility and motivation for survey participation, might be involved in the sampling process. Therefore, researchers’ efforts to enhance data reliability would be required for further studies.

Today, cultural effects are becoming more difficult to predict than ever; thus, empirical investigations of cross-national phenomena are crucial to improving health-related practices and discussions. It is hoped that the current study’s contributions can provide a basis for these research initiatives.

⁴ For example, the US, a country assumed to be equivalent to one culture in this study, might be a multi-cultural nation from a racial diversity standpoint, thus encouraging further examination of cultural effects based on racial differences in that country.

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Biographical Note: **Kyoo-Hoon Han**, Ph. D. (University of Georgia, 2004), is an associate professor at the Department of Public Relations and Advertising at Sookmyung Women's University, South Korea. His research interests include health communication, consumer psychology, cross-cultural analysis, advertising effectiveness, etc. His academic articles have been published in many South Korean and international journals. He has worked as an advertising practitioner before becoming a university professor and served as the director of the Public Relations Division at Sookmyung Women's University. E-mail: hanque@sookmyung.ac.kr

Biographical Note: **Jay (Hyunjae) Yu**, Ph. D. (University of Georgia, 2007), is an associate professor at the School of Communication at Sogang University, South Korea. He was an assistant professor at the Manship School of Mass Communication, Louisiana State University. His research includes diverse issues about advertising and health communication. He has published more than 30 academic articles in the US and South Korea including *Journal of Advertising*, *Journal of Consumer Affairs*, *International Journal of Consumer Studies*, *Appetite*, *Internet Research*, *Asian Journal of Communication*, *Korean Journal of Advertising*, etc. He has been a copywriter at advertising agencies in South Korea, before coming to academia. E-mail: bus89@sogang.ac.kr