

A Comparative Study of Permissive Attitudes Toward Suicide : An Analysis of Cross-National Survey in South Korea, Japan, and the United States

C. Hyung Keun Park, MD,^{1,2} Bora Kim, MD,³ Sang Sin Lee, PhD,⁴ Kyooseb Ha, MD,^{1,2}
Chang-Jae Baek, PhD,⁵ Min-Sup Shin, PhD,^{1,2} Yong-Min Ahn, MD^{1,2,6}

¹Department of Neuropsychiatry, Seoul National University Hospital, Seoul, Korea

²Department of Psychiatry and Behavioral Science, Seoul National University College of Medicine, Seoul, Korea

³Department of Psychiatry, University of California at San Francisco, San Francisco, CA, USA

⁴Korean Institute for National Unification, Seoul, Korea

⁵Department of Political Science and International Relations, College of Social Sciences, Seoul National University, Seoul, Korea

⁶Institute of Human Behavioral Medicine, Seoul National University College of Medicine, Seoul, Korea

Objectives There were previous studies which indicated that attitude toward suicide is able to influence the suicide outcome in both individual and group levels. In regard to the highest suicide rate in Korea, our study aims to explore the influence that attitude toward suicide has on suicide by comparing the national attitude towards suicide with a representative sample of the general population.

Methods The target population was 20- to 59-year-old adults from South Korea, Japan, and the United States. The panel data were divided according to gender, age, and residential area of individuals, and an email with a hyperlink to our web survey was sent to the randomly selected participants in each stratum. To measure the perceptual differences about suicide in different cultures, this study adopted the Attitudes Toward Suicide questionnaire.

Results A total of 2247 subjects in three countries participated in this study. According to results from factor analysis, there were different structure of factors and included items within factors in the three countries : five factors with nineteen items in South Korea, five factors with nineteen items in the United States, and five factors with twenty-five items in Japan. With regard to permissive attitude toward suicide, the mean value of permissiveness was not significantly different among countries, but permissiveness according to education level, gender, and marital status was different in each country.

Conclusions This study is the first nationwide comparative study about attitude toward suicide with a representative sample. Our findings suggest that permissive attitude toward suicide influence the suicide phenomenon in each country ; however, its impact is not a mean score of permissiveness, but the detailed difference by various demographics.

Key Words Suicide · Permissiveness · Factor analysis · Comparative study.

Received: August 2, 2016 / **Revised:** August 8, 2016 / **Accepted:** August 12, 2016

Address for correspondence: Yong-Min Ahn, MD

Department of Neuropsychiatry, Seoul National University Hospital, 101 Daehak-ro, Jongro-gu, Seoul 03080, Korea

Tel: +82-2-2072-2457, **Fax:** +82-2-744-7241, **E-mail:** aym@snu.ac.kr

Introduction

How a society perceives suicide influences the suicidal behavior of individuals in that society. Previous studies show that the more permissive toward suicide a society is, the more frequent suicide is in both individual and country levels.¹⁻⁶⁾ If this correlation between permissiveness, in terms of admissibility or acceptability, and suicide rate does in fact exist, then South Korea, which has one of the highest suicide rates in the world,

must have a highly permissive attitude toward suicide.

Our study aims to explore and compare the national attitudes towards suicide with a representative sample of the general population. For this purpose, we carried out a survey in three countries: South Korea, Japan, and the United States. South Korea and Japan share many cultural similarities : strong tradition of Confucianism ; highly homogeneous ethnic demographics ; long history of nationalism ; importance of collectivism, etc. The United States, on the other hand, is a cultural mirror image of

South Korea and Japan with its individualist tradition and pragmatism deeply rooted in the basis of American society.

Suicide is such a complex phenomenon that it needs to be approached from multiple dimensions. Various disciplines cast suicide in their own lights : for psychology suicide is mainly an individual behavior ; for sociology or anthropology it is a socio-cultural problem ; for psychiatrics it is a mental disorder that requires proper treatment. Of course, we need to have multi-disciplinary approaches to truly understand the depth and complexity of suicidal behavior. Psychiatric problems that are considered suicide related are depression, substance abuse, and excessive stress, as well as physical illness and interpersonal relationship, occupational, and economic concerns.⁷⁾⁸⁾ In regard to socio-cultural factors, suicide has been considered as a product of social conditions ever since Emile Durkheim proposed a sociological theory of suicide in *Le Suicide* in 1897. An excess of two main sociological forces, “social integration” and “social regulation,” may result in increased suicide rates. Since then, many sociological studies emerged to explain the difference between countries.⁹⁾¹⁰⁾

Among the various aspects of explanation for suicide between countries, we focus on the effect of the general perception of suicide in a society. For example, South Korea has been under the strong influence of Confucianism since the 14th century, which emphasizes the importance of family value. Such a general culture may influence permissiveness for suicide and affect suicide behaviors. Attitude toward suicide was used as one of methods in order to approach the general thought for suicide.

Previous studies showed that attitude toward suicide is affected by a number of factors such as sex, age, religion, prior contact with suicidal individuals, and one’s own history of suicidality. But the outcomes of those studies are not consistent.²⁾¹¹⁻¹⁷⁾ In terms of the association between permissive attitude toward suicide and suicidality, some studies have shown a significant correlation.¹⁻³⁾⁵⁾¹⁸⁾ Despite these results, some other studies have argued that countries with more permissive attitudes toward suicide are more likely to have lower suicide rates. The common limitation of these previous research efforts is that they do not have samples that can represent the general population of a society. Usually these studies only have specific and limited samples such as health care workers, medical school students, nurses, or university students. As a result, samples from almost all previous research were not representative and were limited in large scale comparisons, such as difference between countries. The discrepancy among previous literatures may be caused by this problem of partial samples.

Methods

Procedures

The data for this study was gathered by a multi-stage stratified sampling method. The target population was 20- to 59-year-old adults from South Korea, Japan, and the United States. The panel data was divided according to gender, age, and residential area of individuals, and an email with a hyperlink to our web survey was sent to the randomly selected participants in each stratum. The surveys were conducted by three survey companies – Macromill Embrain in South Korea, Global Mapping International in the United States, and Micromill in Japan. The web survey questionnaire contained a self-administered questionnaire and information about the purpose of the research. The total number of the respondents was 2247 (790 from South Korea, 730 from the United States, and 727 from Japan). The web-questionnaire was designed to not allow a respondent to skip an item, so that there were no missing values in the dataset. The only exception was an item that measured the level of suicidal ideation of a respondent. But only a small number of respondents chose not to answer this question (10 missing values from South Korea, 15 from Japan, and 9 from the United States).

This survey was monitored and approved by the Institutional Review Board of Seoul National University. Any questions that could reveal the identity of individuals were dropped from the questionnaire. Through a filter question that appeared before the main body of the questionnaire, individuals who had sought professional help for their mental problems or attempted suicide were excluded from the survey.

Measurement

To measure the perceptual differences on suicide in different cultures, this study adopted the Attitudes Toward Suicide questionnaire (ATTS). The ATTS was originally developed by Swedish researchers.¹⁹⁾ Compared to other questionnaires that are being widely used such as Suicide Opinion Questionnaire (SOQ) or Suicide Attitude Questionnaire (SUIATT), the ATTS has the advantage in its relative simplicity and conciseness, so it is better equipped for large-scale public survey.²⁰⁾²¹⁾ Out of the forty items from the 2008 version of ATTS, thirty-seven items were employed in this study. The ATTS items were measured with a five-point Likert Scale, which ranged from Strongly Agree to Strongly Disagree. The ATTS had been translated into Japanese by Japanese researchers,²⁰⁾ and this study utilized this version of the Japanese translation. The Korean version of ATTS was translated by Park and Kim.²²⁾

Data analysis

Exploratory factor analysis is performed with the data from the three countries. Parallel analysis method is employed to determine the number of factors in each analysis, which is considered to be the most accurate way of estimating factors.²³⁻²⁵⁾ Parallel analysis reveals that the ATTS items converge into five factors in all three countries. After deciding the number of factors, exploratory factor analysis with maximum likelihood extraction method and promax rotation is performed. The items for which the factor loading value are smaller than 0.35 were discarded. Also the items with high factor loading value (> 0.35) for multiple factors are excluded from the analysis. Cronbach's α is calculated for each factor.

The exploratory factor analysis of ATTS in each country shows that the permissiveness factor in all three countries is comprised of very similar items (Table 1–3). Also, among all the factors the permissiveness explains the most variance (11.0% in South Korea, 11.1% in Japan, 16.8% in the United States). To compare permissiveness in the three countries, a summation scale is constructed by adding up five items that commonly are part of the permissiveness factor (e.g., suicide is an acceptable means to terminate an incurable disease ; would consider sui-

cide if I suffer from a severe, incurable disease).

One-way ANOVA is conducted to test the group difference for permissiveness (Table 5). The demographic variables that are employed in ANOVA are gender, age, level of education, employment status, and marital status. In addition, the national characteristics of the items in the permissiveness factor that were not shared by all three countries were examined using one-way ANOVA and Tukey's post hoc test.

For significant test results, 5% level of p values is used for two-tailed tests. All the statistical analysis of this research are conducted using STATA version 13.1 (StataCorp., College Station, TX, USA) and SPSS for Windows version 21.0 for PC (SPSS Inc., Chicago, IL, USA).

Results

Table 4 summarizes the characteristics of sample demographics for the three countries. Table 1–3 present the result of factor analysis of ATTS in each country. In the case of South Korea, five factors are found which consisted of nineteen items. Likewise, the American ATTS model has five factors with nineteen items, but each factor is constructed with different

Table 1. Factors obtained from exploratory factor analysis of South Korean survey data

Factors and items from South Korean data		Explained variance (%)	Factor loading	Cronbach's α
Factor 1	Permissiveness	11.0		0.78
	Want to get help to die if I suffer from a severe, incurable disease.		0.76	
	Can understand why people with a severe, incurable disease commit suicide.		0.73	
	Would consider suicide if I suffer from a severe, incurable disease.		0.61	
	Should get help to die if people suffer from a severe, incurable disease.		0.60	
	Suicide is an acceptable means to terminate an incurable disease.		0.41	
Factor 2	Imcomprehensibility	7.1		0.63
	Do not understand how people can take their lives.		0.63	
	Suicide can never be justified.		0.62	
	Suicides among young people are particularly puzzling.		0.51	
	Most suicide attempts are impulsive.		0.36	
Factor 3	Preventability	6.0		0.57
	Suicide can be prevented.		0.59	
	Should not interfere if someone wants to commit suicide.		-0.46	
	People who talk about suicide do not commit suicide.		0.46	
	A suicide attempt is a cry for help.		0.43	
Factor 4	Responsibility	5.5		0.54
	It is a duty to stop suicide.		0.67	
	Always possible to help a suicidal person.		0.42	
	Suicide is the worst thing to do to relatives.		0.35	
Factor 5	Tabooing	3.9		0.46
	Loneliness could be a reason to suicide.		0.57	
	I could say that I would take my life without meaning it.		0.43	
	Might evoke suicidal thoughts if you ask about it.		0.34	

Items are abbreviated

Table 2. Factors obtained from exploratory factor analysis of Japanese survey data

Factors and items from Japanese data	Explained variance (%)	Factor loading	Cronbach's a
Factor 1 Permissiveness	11.1		0.82
Can understand why people with a severe, incurable disease commit suicide.		0.74	
Would consider suicide if I suffer from a severe, incurable disease.		0.71	
Suicide is an acceptable means to terminate an incurable disease.		0.68	
Should get help to die if people suffer from a severe, incurable disease.		0.53	
Want to get help to die if I suffer from a severe, incurable disease.		0.50	
People do have the right for suicide.		0.47	
May be situations where suicide is the only resolution.		0.37	
Factor 2 Responsibility	10.4		0.78
Once a person has made up mind no one can stop him.		-0.67	
Should not interfere if someone wants to commit suicide.		-0.63	
It is a duty to stop suicide.		0.62	
Suicide can be prevented.		0.53	
Suicide is the worst thing to do to relatives.		0.48	
Always possible to help a suicidal person.		0.42	
Suicide can never be justified.		0.40	
People who have suicidal thoughts will never let them go.		-0.40	
A suicide attempt is a cry for help.		0.36	
Factor 3 Incomprehensibility	6.4		0.57
Do not understand how people can take their lives.		0.66	
Suicides among young people are particularly puzzling.		0.63	
Suicide is a subject that one should rather not talk about.		0.38	
People who talk about suicide do not commit suicide.		0.35	
Factor 4 Loneliness	4.6		0.54
Loneliness could be a reason to suicide.		0.67	
Loneliness drives people to suicide.		0.66	
Factor 5 Noncommunication	4.6		0.47
Most people avoid talking about suicide.		0.59	
Relatives do not know when a person is thinking of suicide.		0.52	
Anybody can commit suicide.		0.36	

Items are abbreviated

items in two countries. The Japanese factor model also has five factors, but those factors contain twenty-five items.

The permissiveness factor, which is the major concern of this article, is found in all three countries. The Korean permissiveness factor has five items, and these items are also commonly found in the Japanese and American models. Based on these factor analyses, a summation scale for permissiveness of suicide is constructed with the five common items that all three country models shared. Cronbach's alpha for this permissiveness scale is 0.75 in South Korea, 0.79 in Japan 0.79, and 0.84 in the United States.

Table 5 presents the results of the one-way ANOVA of permissiveness. The national mean value of permissiveness was not significantly different between countries, but permissiveness according to various demographic variables was different

in each country. In South Korea, none of the demographic variables has significant association with permissiveness. Basically, for all the Korean groups in each demographic, variables have more or less the same level of permissiveness of suicide. But in the case of Japan, statistically significant group differences are found in gender, education, and marital status : Japanese male respondents are more permissive than female respondents; the level of education has a non-linear relationship with permissiveness—while college graduates have more permissive attitudes than those with lower education levels, the people with graduate level education have the most intolerant attitudes toward suicide. If we divide into two groups, less than high school education and more than college graduation, people with higher education levels were more significantly permissive than people with relatively lower education levels in

Table 3. Factors obtained from exploratory factor analysis of the U.S. survey data

Factors and items from the U.S. data	Explained variance (%)	Factor loading	Cronbach's α
Factor 1 Permissiveness	16.8		0.88
Would consider suicide if I suffer from a severe, incurable disease.		0.81	
Want to get help to die if I suffer from a severe, incurable disease.		0.78	
Can understand why people with a severe, incurable disease commit suicide.		0.76	
Should get help to die if people suffer from a severe, incurable disease.		0.69	
Suicide is an acceptable means to terminate an incurable disease.		0.68	
People do have the right for suicide.		0.50	
Factor 2 Inevitability	7.9		0.72
Should not interfere if someone wants to commit suicide.		0.80	
Once a person has made up mind no one can stop him.		0.40	
Suicide is a subject that one should rather not talk about.		0.39	
People who have suicidal thoughts will never let them go.		0.37	
Factor 3 Incomprehensibility	10.6		0.76
Do not understand how people can take their lives.		0.73	
Suicide is the worst thing to do to relatives.		0.62	
Suicides among young people are particularly puzzling.		0.59	
It is a duty to stop suicide.		0.52	
Suicide can never be justified.		0.51	
Factor 4 Loneliness	6.2		0.59
Loneliness could be a reason to suicide.		0.81	
Loneliness drives people to suicide.		0.48	
Factor 5 Preventability	5.2		0.59
Always possible to help a suicidal person.		0.77	
Want to get help to die if I suffer from a severe, incurable disease.		0.47	

Items are abbreviated

Table 4. Demographic variables between the three countries, South Korea, Japan, and the United States

	South Korea (%)	Japan (%)	U.S. (%)
Gender			
Male	51.5	49.7	49.5
Female	48.5	50.3	50.6
Age			
20s	20.6	21.1	25.6
30s	25.6	27.8	23.7
40s	28.2	25.9	25.5
50s	25.6	25.3	25.2
Education			
High school or less	18.9	29.3	44.7
College	71.0	65.3	42.9
Graduate school	10.1	5.4	12.5
Marital Status			
Married	60.9	60.5	59.3
Previously married	3.3	4.8	8.4
Never married	35.8	34.7	32.3
Employment			
Employed	69.5	67.3	81.7
Unemployed	4.1	6.3	5.4
Homemaker or student	26.5	26.4	12.9
Total sample number	790	727	730

Korea and the United States [mean 13.94 (SD 0.32) in less than high school education and 14.69 (SD 0.15) in college graduate or higher education in Korea ; mean 14.00 (SD 0.29) in less than high school education and 15.06 (SD 0.25) in college graduate or higher education in the United States]. Finally, the experience of marriage significantly reduces the tendency of permissive attitude toward suicide. But employment status and age do not have significant impact on permissiveness. The ANOVA of American data reveals that gender and education are statistically significant : American males are more permissive than females ; and American respondents with college level education have the most permissive attitude than other education level groups, which is the same as the Japanese model.

The last row of Table 5 reports the national mean of permissiveness for each country. The United States has the most permissive attitude toward suicide (14.59), while South Korea and Japan have relatively smaller values of permissiveness (14.55 and 14.52, respectively). T-test showed that the differences of permissiveness among the three countries are not significant. Overall, we can conclude that the three countries of this research, even with their cultural differences, have more or less the same level of permissive attitude toward suicide.

Table 5. Difference of permissiveness by demographic variables in the three countries using ANOVA

	South Korea			Japan			United States			Combined		
	Mean (SD)	n	F	Mean (SD)	n	F	Mean (SD)	n	F	Mean (SD)	n	F
Gender												
Male	14.48 (3.82)	407	0.29	14.9 (3.64)	361	8.02 [†]	15.22 (5.05)	361	11.17 [‡]	14.85 (4.21)	1129	11.48 [‡]
Female	14.62 (3.7)	383		14.15 (3.47)	366		13.97 (5.04)	369		14.25 (4.13)	1118	
Age												
20s	14.58 (3.77)	163	0.39	14.94 (3.83)	153	2.04	14.56 (5.11)	187	0.19	14.68 (4.33)	503	1.42
30s	14.77 (3.81)	202		14.76 (3.55)	202		14.77 (5.27)	173		14.77 (4.21)	577	
40s	14.45 (3.73)	223		14.33 (3.51)	188		14.66 (4.88)	186		14.48 (4.06)	597	
50s	14.41 (3.74)	202		14.1 (3.41)	184		14.38 (5.11)	184		14.30 (4.14)	570	
Education												
High school or less	13.95 (3.9)	149	2.4	14.16 (3.9)	213	3.10*	14.00 (5.17)	326	4.22 [†]	14.04 (4.54)	688	7.86 [‡]
College	14.68 (3.7)	561		14.75 (3.39)	475		15.16 (4.88)	313		14.81 (3.91)	1349	
Graduate school	14.79 (3.86)	80		13.69 (3.66)	39		14.74 (5.29)	91		14.56 (4.51)	210	
Employment												
Employed	14.60 (3.73)	549	1.16	14.53 (3.64)	489	2.38	14.50 (5.04)	595	1.01	14.54 (4.23)	1633	0.97
Unemployed	13.56 (3.73)	32		15.54 (3.80)	46		15.69 (5.49)	39		15.05 (4.48)	117	
Homemaker or student	14.56 (3.83)	209		14.27 (3.32)	192		14.62 (5.16)	94		14.45 (3.94)	495	
Marital status												
Married	14.49 (3.68)	481	0.55	14.21 (3.29)	440	6.31 [†]	14.56 (5.14)	433	2.39	14.42 (4.10)	1354	4.50*
Previously married	15.27 (4.21)	26		13.86 (4.77)	35		13.36 (4.74)	61		13.91 (4.66)	122	
Never married	14.58 (3.85)	283		15.15 (3.78)	252		14.95 (5.03)	236		14.88 (4.23)	771	
National mean	14.55 (3.76)	790		14.52 (3.57)	727		14.59 (5.08)	730		14.55 (4.18)	2247	

* : p < 0.05, † : p < 0.01, ‡ : p < 0.001

In the permissiveness factor, one item, “May be situations where suicide is the only resolution,” was found only in Japan, and the other item, “People do have the right for suicide,” appeared only in Japan and the United States. For the former, significantly higher agreement was observed in Japan than in both South Korea and the United States (p < 0.001, one-way ANOVA, Tukey’s post hoc test), between which there was no significant difference, and, for the latter, significantly higher agreement was shown in the United States than in Japan (p < 0.001, one-way ANOVA, Tukey’s post hoc test) and in Japan than in South Korea (p < 0.001, one-way ANOVA, Tukey’s post hoc test).

Discussion

We aimed two goals : the exploration of the difference of structure of attitude in three different countries and the relationship between permissive attitude toward suicide and national suicide rate. First, the results of our study show that there exist differences in the composition of factors for the attitudes toward suicide in the three countries. This is the first report to compare the attitude toward suicide between countries with a large number of representative sample and a full 37 items of the ATTS Scale. Next, with regard to permissive attitude toward suicide, the mean value of permissiveness was not significantly different between countries, but permissiveness according to

education level, gender, and marital status was different in each country. This result seems to be a little different than we expected, in part, regarding higher permissiveness toward suicide in countries with high suicide rates. However, it is affecting the culture of each country by the difference between the configuration of each demographic factors of attitude rather than simply the overall attitude. This result makes it possible to understand a little more in-depth about the concept of suicide.

First, we focus on the structures of items, especially the number of factors and consistent concept of suicide. Items of ATTS were divided with five factors in all three countries ; however, the composition of each item was different in Korea, Japan, and the United States. It is difficult to compare the results of previous factor analysis studies directly because they used different versions of ATTS. For instance, there was a factor analysis study with a 20 item Korean version of ATTS⁽²⁶⁾ and another analysis performed in Sweden, Norway, and Russia with a 40 item of ATTS.⁽²⁰⁾ In a 37 item version study performed in Japan, it was analyzed with six factors and there was little difference of composition in the included items. This is due to the fact that the subjects enrolled in the survey were different : The subjects of the previous Japanese study were specialists that participated in one seminar; on the other hand, our sample is representative of the general population. Therefore, our results may be representative of the structure of ATTS in each country.

Second, with regard to permissive attitude, it is understandable on the basis of contradictory results from previous researches. There were several researches about association with more permissive attitudes toward suicide and suicide as an outcome in individual aspects⁽¹²⁾ and international comparison between countries.⁽³⁻⁶⁾ Overall, the more permissive attitude towards suicide was interconnected with higher prevalence of suicide ; however, some results have shown more permissive attitudes in countries with lower suicide rates. Our results were also not correlated with suicide rate and permissive attitude toward suicide, uniformly. According to the Organization for Economic Cooperation and Development (OECD) Health Statistics report of 2016,⁽²⁷⁾ the South Korean suicide rate was 28.7 per 100000 population in 2013, and in Japan in 2013 it was 18.7. But the American suicide rate in 2013 was 13.1, which is distinctively lower than the other two countries and more or less the same with the OECD average suicide rate (12.1 in 2014 or nearest year). This result suggests that the suicide rate in a country could not be understood simply by comparing one aspect and should be considered comprehensively with a number of related factors.

Additionally, we analyzed the permissiveness toward suicide with several demographic variables. Males were more permissive about suicide in Japan and the United States ; however, there

was no significant difference in Korea. In previous researches, women were reported to be more likely to disapprove of one's right to suicide⁽¹⁴⁾ and tended to believe that rational suicide should be allowed under certain conditions.⁽¹⁵⁾ The results about gender difference of Japan and the United States in our study are consistent with previous studies, but only the result from Korea was inconsistent. Likewise, our study further showed that this gender difference of permissive attitude also differ in countries.

In regard to age in our study, age did not affect the attitudes about suicide in all three countries. About permissive attitude by aging, there were different previous results. It was reported that older subjects tended to be more empathetic toward suicidal patients⁽¹¹⁾ ; on the contrary, older subjects were reported to be more condemnatory toward the right to suicide⁽¹²⁾ or to be more comprehensible than younger subjects in another researches.⁽¹³⁾ Our results were not inconsistent with previous researches.

Additionally, permissive attitude was related with education level and marital status. In Korea and the United States, people with higher education levels had more permissive attitudes, but there was no significant difference in Japan. Influence of marital status on permissive attitude was different for each country : Those who never married in the United States were more permissive about suicide than married people, and people who were previously married had lower permissive attitudes. On the contrary, married people in Japan were less permissive than people without marriage experience. This complex demographic difference of attitude toward suicide in each country may come from the cultural differences between countries, so it needs to combine other various cultural factors in order to explain attitude toward suicide. On examples of other cultural factors, it has revealed the association between attitude toward suicide and religion, such as Christianity and Judaism.⁽¹⁶⁾ There were reports about another factors relating individual experience or psychiatric problems ; subjects with a history of suicide crisis were more accepting of the idea of suicide than subjects without such history.⁽²⁾ Likewise, it is possible to explain about attitude after considering a number of factors, social, cultural, and individual.

The results from the study can also be understood by the notion of the suicidal process, which begins with suicidal ideation, proceeds with suicidal plan, and ends with completed suicide.⁽²⁸⁾ Permissive attitude can be considered to belong to the stage of suicidal ideation whereas the suicide rate marks the terminal point of the process ; therefore, permissive attitude and suicide rate do not necessarily have to correlate. The result that the national mean of permissiveness reveals no significant difference may imply that, in South Korea, suicidal ideation including permissive attitude toward suicide can evolve through suicidal

plan or attempt without less difficulty. Moreover other factors such as predictors and protectors of suicide might intervene in and affect the suicidal process resulting in the difference in the suicide rate. To clarify such element, we further investigated two items found in the permissiveness factor of only one to two countries-one item, "May be situations where suicide is the only resolution," found only in Japan, was more strongly agreed in Japan than in both South Korea and the United States. This item asks about "the resolution." It may show that the Japanese are accustomed to pondering about an adverse situation and devising a means to overcome it with, and thus they are likely to find an alternative resolution rather than suicide. The other item, "People do have the right for suicide," found in Japan and the United States, was more strongly agreed in the United States than in Japan and in Japan than in South Korea. This item inquires about "the right." It may imply that, whereas, in Japan and the United States, people do have the right to make a decision, in South Korea, they have relative difficulty in standing on one's right possibly due to its interdependent culture²⁹⁾ and thus are likely to use suicide as a remedy in despair.

In addition, individual factors, such as psychiatric problem and experience contacting suicidal people, should also be considered. Our follow up study plan is to build an integrated model combined with those elements based on this study. Our study has several important implications and strengths. First, we selected subjects that is representative of the general population. To overcome the limitations of subjects in previously performed researches, we selected a large number and distributed evenly by age and sex of the general population. Second, our study is an international comparative study between three countries. Suicide problem in Korea can be understood through this comparison study with Japan and the United States, and at the same time, the influence of attitude toward suicide on suicide rate in each country can be also understood.

Our study also has several limitations. First, because of our web-survey method, the adult population over 60 was excluded from the sampling, due to their lack of internet access and skills. This is an unavoidable shortcoming of web-surveys. However, we distributed sex and age evenly in the three countries and used a large number of subjects in order to minimize these limitations. Moreover, the level of education of subjects was higher than the general population since people accessing the web-based survey may have relatively higher education levels. Lastly, there might have been some limitations in explaining the related attitude toward suicide and suicide rate in different countries because it should be explained through an integrated model including factors influencing general thought or attitude, such as sex, age, income, religion, and relative's or familial expe-

rience of suicide. In this study, we performed a cross-sectional analysis and plan further research for an integrated model.

In conclusion, this study explored the comparison of the national attitudes toward suicide with a representative sample of the general population in three countries, Korea, Japan and the United States. The structure of factors and composed items in ATTS were different in each country. Overall mean score of permissiveness was not correlated with the suicide rate of each of the three countries. However, permissive attitude by gender, education level, and marital status was different in each country. Our findings suggest that attitude toward suicide is able to influence the suicide phenomenon in each country ; however, it correlates many different aspects, cultural and social factors, and need to explore a combined integrated model in order to understand the suicide phenomenon. Our results which can represent the three countries may be the basis for that.

Acknowledgments

This work was supported by the Brain Fusion Research Grant from Seoul National University.

Conflicts of interest

The authors have no financial conflicts of interest.

REFERENCES

- 1) **Zemaitiene N, Zaborskis A.** Suicidal tendencies and attitude towards freedom to choose suicide among Lithuanian schoolchildren: results from three cross-sectional studies in 1994, 1998, and 2002. *BMC Public Health* 2005;5:83.
- 2) **McAuliffe C, Corcoran P, Keeley HS, Perry IJ.** Risk of suicide ideation associated with problem-solving ability and attitudes toward suicidal behavior in university students. *Crisis* 2003;24:160-167.
- 3) **Dervic K, Gould MS, Lenz G, Kleinman M, Akkaya-Kalayci T, Velting D, et al.** Youth suicide risk factors and attitudes in New York and Vienna: a cross-cultural comparison. *Suicide Life Threat Behav* 2006;36:539-552.
- 4) **Domino G, Leenaars AA.** Attitudes toward suicide: a comparison of Canadian and U.S. college students. *Suicide Life Threat Behav* 1989;19:160-172.
- 5) **Domino G, Takahashi Y.** Attitudes toward suicide in Japanese and American medical students. *Suicide Life Threat Behav* 1991;21:345-359.
- 6) **Skruibis P, Gailiene D, Hjelmeland H, Fartacek R, Fekete S, Knizek BL, et al.** Attitudes towards suicide among regional politicians in Lithuania, Austria, Hungary, Norway and Sweden. *Suicidol Online* 2010;1:79-87.
- 7) **Arsenault-Lapierre G, Kim C, Turecki G.** Psychiatric diagnoses in 3275 suicides: a meta-analysis. *BMC Psychiatry* 2004;4:37.
- 8) **Mann JJ, Apter A, Bertolote J, Beautrais A, Currier D, Haas A, et al.** Suicide prevention strategies: a systematic review. *JAMA* 2005; 294:2064-2074.
- 9) **Shneidman ES.** Suicidology and the university: a founder's reflections at 80. *Suicide Life Threat Behav* 2001;31:1-8.
- 10) **Chen J, Choi YJ, Mori K, Sawada Y, Sugano S.** Socio-economic studies on suicide: a survey. *J Econ Surv* 2012;26:271-306.
- 11) **Samuelsson M, Sunbring Y, Winell I, Asberg M.** Nurses' attitudes to attempted suicide patients. *Scand J Caring Sci* 1997;11:232-237.
- 12) **Botega NJ, Reginato DG, da Silva SV, Cais CF, Rapeli CB, Mauro**

- ML, et al. Nursing personnel attitudes towards suicide: the development of a measure scale. *Rev Bras Psiquiatr* 2005;27:315-318.
- 13) **Oncü B, Soyka C, Ihan IO, Sayil I.** Attitudes of medical students, general practitioners, teachers, and police officers toward suicide in a Turkish sample. *Crisis* 2008;29:173-179.
 - 14) **Hjelmeland H, Akotia CS, Owens V, Knizek BL, Nordvik H, Schroeder R, et al.** Self-reported suicidal behavior and attitudes toward suicide and suicide prevention among psychology students in Ghana, Uganda, and Norway. *Crisis* 2008;29:20-31.
 - 15) **Seidlitz L, Duberstein PR, Cox C, Conwell Y.** Attitudes of older people toward suicide and assisted suicide: an analysis of Gallup Poll findings. *J Am Geriatr Soc* 1995;43:993-998.
 - 16) **Domino G, Cohen A, Gonzalez R.** Jewish and Christian attitudes on suicide. *J Relig Health* 1981;20:201-207.
 - 17) **Domino G.** Attitudes toward physician assisted suicide: Poland and the United States. *Omega (Westport)* 2002-2003;46:105-115.
 - 18) **Renberg ES, Jacobsson L.** Development of a questionnaire on attitudes towards suicide (ATTS) and its application in a Swedish population. *Suicide Life Threat Behav* 2003;33:52-64.
 - 19) **Renberg ES, Hjelmeland H, Kuposov R.** Building models for the relationship between attitudes toward suicide and suicidal behavior: based on data from general population surveys in Sweden, Norway, and Russia. *Suicide Life Threat Behav* 2008;38:661-675.
 - 20) **Kodaka M, Inagaki M, Yamada M.** Factors associated with attitudes toward suicide: among Japanese pharmacists participating in the Board Certified Psychiatric Pharmacy Specialist Seminar. *Crisis* 2013;34:420-427.
 - 21) **Kodaka M, Postuvan V, Inagaki M, Yamada M.** A systematic review of scales that measure attitudes toward suicide. *Int J Soc Psychiatry* 2011;57:338-361.
 - 22) **Park JI, Kim YJ.** Factor structure of Korean version of attitudes toward suicide (ATTS-20). *Ment Health Soc Work* 2014;42:92-114.
 - 23) **Dinno A.** Implementing Horn's parallel analysis for principal component analysis and factor analysis. *Stata J* 2009;9:291-298.
 - 24) **Horn JL.** A rationale and test for the number of factors in factor analysis. *Psychometrika* 1965;30:179-185.
 - 25) **Glorfeld LW.** An improvement on Horn's parallel analysis methodology for selecting the correct number of factors to retain. *Educ Psychol Meas* 1995;55:377-393.
 - 26) **Kim K, Park JI.** Attitudes toward suicide among college students in South Korea and the United States. *Int J Ment Health Syst* 2014;8:17.
 - 27) **OECD** [homepage on the Internet]. *OECD Health Statistics* 2016. Paris: Organisation for Economic Co-operation and Development [updated 2016 June 30; cited 2016 July 28]. Available from: <http://www.oecd.org/els/health-systems/health-data.htm/>.
 - 28) **Portzky G, Audenaert K, van Heeringen K.** Adjustment disorder and the course of the suicidal process in adolescents. *J Affect Disord* 2005;87:265-270.
 - 29) **Kwon SY.** Well-being and spirituality from a Korean perspective: Based on the study of culture and subjective well-being. *Pastoral Psychology* 2008;56:573-584.