연구논문

Body Weight and Body Image: A Risk Factor Analysis in Korea*

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The relationship between body weight and body image, an objective and subjective measure of body shape, respectively, has long been a recurrent concern in the area of medical sociology and health−related studies. This concern stems from the argument and findings in the literature indicating that the two are not necessarily likely to be strongly correlated due mostly to the fact that one's own idea or conception about his/her body shape could be pretty different from one's actual shape. This study tries to empirically address the two issues based on the analysis of a national sample survey data in Korea: to what extent body weight and body image are correlated with or deviated from each other, on the one hand, and what factors help to account for the relationship between the two, on the other. The latest(2010) national sample data of KGSS(Korean General Social Survey) is used to evaluate the issues.

Results of data analysis demonstrate that body weight and image have a moderate amount of correlation, and that the correlation tends to vary to a large extent depending on a few major socio−demographic and socio−economic characteristics. Most important, the risk factor analysis attempted in this study could identify several salient risk factors, which include gender, age, chronic diseases, smoking, physical exercises, and medical checkup. To be precise, those who may be best characterized as particularly risky to weight gains are females, who are in their 20's, who have

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chronic diseases, non-smokers, who exercise regularly, and who conduct medical checkups on a regular basis. To extrapolate, the findings suggest that the most typically risky kinds of individuals in Korea are "young women who care very much for their health." The findings are interpreted and discussed with suggesting a recommendation for further studies.

key words: body weight, body image, objective and subjective measures of body shape, KGSS, risk factors

Ⅰ. Research Question

Obesity is becoming an increasingly serious public health problem in Korea as in other countries. In spite of the much smaller proportion of Koreans who are classified as obese when compared to other advanced countries,[1] of major concern is the steady increase in prevalence and the sharp increment rate in recent years. A latest report of the National Institute of Health(2011) in Korea, for instance, indicates that the proportion is increasing fast for the last few decades especially among the youngsters. Obesity or overweight, as an objective measure of body shape, however, tends to have a further far-fetching impact when it comes to a substantial amount of alleged discrepancies between the actual body weight and the perceived body image(Friedman et al. 2002; Paeratakul et al. 2002; Schwatrz and Brownell 2004). Body image, a subjective measure, literally refers to one's own idea or conception about his/her body shape(Cash and Prunzinsky 1990), and hardly is the relationship between the two measures of body shape known to be consistent or compatible. Simply put, ample possibility and evidence exist that an obese person may not regard his/her body shape as it is and, in a similar vein, a slim person may not regard

1) OECD survey(2006-8) indicates that obesity rate, evaluated by the BMI(body mass index) of 30 or higher, is highest in the U.S.(34.3%), followed by, to list a few, Mexico(30%), New Zealand(25%), Switzerland(7.7%), Japan(3.9%), and Korea(3.5%).

his/her shape as it is, either. This discrepancy or incompatibility is likely to complicate the persistent concern with public health since the problem is not necessarily limited to the 'really' obese people but extends, as well, to the 'wrongfully' obese people who tend to perceive and behave similar to the former.

As a matter of fact, the relationship between body weight and body image has long been a recurrent concern in the area of medical sociology and health−related studies. Apparently, this concern stems from the argument and findings in the literature demonstrating that the two, as indicated already, are unlikely to be strongly correlated due mostly to the fact that one's own perception or assessment of body shape can be pretty different from his/her actual shape. As emphasized by the classic claim of Thomas and Znaniecki(1958), perceptions are important in their own right, as they may have important consequences for the perceiver's attitude and behavior. At any rate, the issue of compatibility is the general question underlying the current study. In approaching the issue, however, this study attempts to go beyond previous studies in three important ways and this would probably be the defining characteristics associated with the current study.

First, although the available evidence strongly supports the conclusion that body weight and image are more incompatible than compatible, it would be wrong to conclude that this settles the matter completely and that no additional research is needed. A meta−analysis(Friedman and Brownell 1995), for instance, indicates that, in spite of the non−strong correlation between the two body shape measures, there exist considerable body image heterogeneities among the population. This suggests that the relationship is highly likely to be contingent on different contexts, either societal or individual, and the association would probably be spurious without controlling for such contexts. As a consequence, the question should not be whether the two are compatible or incompatible, but instead should be "how compatible or incompatible?" and "under what conditions?" In dealing with the degree and condition of compatibility, this study tries to focus on two separate aspects of compatibility, intercorrelations and absolute levels. Statistically speaking, intercorrelations refer to correlations, either zero-order or partial, between the two body shape measures, while absolute levels refer simply to mean values of each of the two measures. Granted that correlation differences across some subgroup of individuals(e.g., males and females) are one thing, and mean differences across the same subgroup are entirely another, a scrutinized analysis of both statistics at the same time is required and it would be very interesting, too, to see how the pattern of compatibility differs by the two independent statistics.

Second, this question of "how and what" has not been properly addressed, it should be emphasized, since the studies directed at examining the relationship between the two body shape measures have typically relied on some sample-specific findings. Lack of consistency across research findings on the matter, according to Friedman et al.(2002) and Schwartz and Borwnell(2002, 2004), can be attributed in large part to the nature of data used or sample analyzed. In other words, too frequently have the analyses been relied on some clinical or experimental data(e.g., those who are seeking treatment for obesity) instead of community data, on the one hand, and the focus has been frequently laid on some specific samples(e.g., females) instead of the general population, on the other. What is missing is research on the relationship between the two measures over a full range of nationally inclusive and representative general population. As shown below, this study tries to go beyond past studies by analyzing data from a national sample survey in Korea.

Third, an overwhelming amount of researches reported in the literature for the last several decades has been based on data from Western nations, the United States in particular. There is very little research on non-Western data from national samples that allows for examining how the intercorrelations and absolute levels vary by some contingent factors. In fact, not a single study is available or reported, unfortunately, yet in Korea that is fully committed to the above questions of "how and what" for one thing and the data coverage for another.[2] We are thus left with a void in our

2) The only available study in Korea that tends to approximate the focus of this study is Hong (2006). Unfortunately, however, the study has a major focus on the impact of body weight and image on the self-esteem among adult women of a non-national sample.

understanding of the true and corrected nature of the relationship between the two measures of body shape in Korea. As acknowledged by Crandall and Martinez(1996) and Celio et al.(2002), not merely do cultural norms about ideal body shape, called 'ideal physique', tend to vary across socio-cultural contexts, different societies also endorse different amounts of pressure for and emphasis on such physique. This study thus goes away from previous studies by examining the relationship in the Korean context.

In sum, of major focus in this study is to: (1) examine how compatible or incompatible the relationship(in terms of both intercorrelations and mean levels) between the two body shape measures is under what conditions; (2) analyze the bivariate and multivariate relationships over a full range of national representative population; (3) investigate the relationship in the socio-cultural context of Korea, a non-Western society. It is hoped that this focus could contribute toward remedying the above-indicated deficiencies in the literature in approaching the compatibility issue.

Ⅱ. Theoretical Accounts

Research interests in body shape in the literature may be traced back to three major lines of stream: physiological, psychological, and social. Physiological research is interested in biological or medical outcomes of body shape: excessive body weight usually leads to physical malfunctioning, such as chronic diseases, mortality, eating disorders(e.g., binge eating), and the like. Psychological research tries to focus on some of the most important psychological or psychosocial outcomes associated with body shape, which include depression, distress, discredited self, poor self-esteem, prejudice and discrimination, social exclusion, and so on. Unlike physiological and psychological researches that tend to have a rather intra-individual focus, social research is unique in maintaining the societal or inter-individual focus of classic medical sociology and thus attempts to figure out how body shape, both objective and subjective, varies by socio–demographic and socio–economic characteristics, such as gender, age, educational attainment, occupation, employment, income, health status, substance abuse, and the like. As alluded earlier, this study is obviously prompted by the social interest and purports to provide an empirical answer to the two interrelated 'societal' questions in Korea: how compatible or incompatible the relationship between body weight and image is; what socio–demographic and socio–economic characteristics of the population in Korea help to account for the relationship.

Perhaps, 'global epidemic'(WHO 1998), 'obesity crisis'(Brownell and Horgen, 2003), and 'toxic environment'(Brownell and Horgen 2003) would be single best expressions that succinctly highlight the societal concern with obesity. Although these expressions point out, quite righteously, the overall weight gaining of general population over time in a society, what attracts the attention of medical sociologists is not so much the overall change as the differential pattern of such change varying by socio–demographic and socio–economic characteristics indicated above. A massive bulk of studies conducted primarily in the West(Sobal and Stunkard 1989; Paeratakul et al. 2002; Carr et al. 2007, 2008) demonstrates that obesity is concentrated among males, racial–ethnic minorities, and those who are lower in their socio–economic status. The reason provided for the obesity of these population groups is pretty simple and straightforward: not only are they exposed and accustomed to unhealthy eating habits(e.g., high fat), their socio–economic life also deprive them of time and energy to invest in their own body shape.

Apart from body weight *per se*, ample evidence is provided, as well, concerning the differential pattern of body image or self–perception of body weight, that also varies by socio–demographic and socio–economic characteristics: those who more easily accept their overweight or obesity are typically males, ethnic minorities, and those with a lower SES(Powell and Kahn 1995; McElhone et al. 1999; Rand and Resnick 2000). The reason provided for the greater acceptance of their body shape among them tends to be somewhat complicated: faced with the socio–cultural pressure or unrelenting emphasis on thinness, denigration of excess weight and the ultimate stigmatization of obese individuals(Crandall and Martinez 1996; Puhl and Brownell 2001; Celio et al. 2002), these population groups are less concerned about their weight, experience less pressure, feel less dissatisfied with their weight, and consequently have a greater acceptance of their weight compared to their counterparts (Kemper et al. 1994; Stevens et al. 1994). Scholars arguing for the differential pattern of subjective body image across the population in a society do not have any reservation to emphasize the so–called 'stigmatization.' To reiterate, in spite of the socio–cultural differences, most societies tend to have an anti–fat bias, in which overweight or obese individuals, compared to their slimmer peers, are viewed as physically(and sexually) unattractive, incompetent, undesirable, and even the last group for whom overt bias or outright discrimination are socially acceptable(Puhl and Brownell 2001).

Three varieties of theoretical accounts have also been developed and offered to explain why anti–fat bias is so pervasive and powerful among the populace in most societies. The first is the attribution theory(Crandall 2000; Crandall et al. 2001) and it suggests that obesity, as a highly personalized trait, is attributed to the person's own control and people then assign blame to such trait and justify it. The second is the personality theory(Harris et al. 1982), in which obesity is regarded as an outcome of one's own character flaw or personality trait of being lazy, weak–willed, gluttony, sloppy, incompetent, emotionally unstable, lacking self–control, and even defective as an individual. The third is the modified labeling theory(Link et al. 1989) and suggests that, in the course of socialization, people develop and internalize negative beliefs about the view of others towards obese individuals and consequently become to justify their own attitude. Regardless of theoretical soundness and empirical support concerning each of the three explanations, they do not differ in agreeing to the pervasiveness of such enduring bias and stigmatization from the viewpoint of non–obese individuals. From the point of obese individuals themselves, however, not all obese individuals, as emphasized above, equally suffer from the stigmatization or equally vulnerable to it. This very fact has led the scholars to the road to identify and search the so–called 'risk factors'(Friedman and Brownell 1995).

Indeed, 'risk factor analysis' is the name assigned to such identification or search and, according to Friedman and Brownell(1995), the analysis is the second generation of researches in this area since it moves beyond the first generation that simply tried to compare obese and non–obese individuals. To use statistical terminologies, the second generation of researches employs the multivariate analysis technique, in which body image is treated as a mediating variable that is expected to confound the relationship between body weight and some outcomes(physiological, psychological, and social), while the first generation employs a mere bivariate analysis, in which body image is treated as an either independent or dependent variable. In doing so, a huge amount of risk factor analyses could actually identify a number of such factors and they are normally divided into two categories, physical and individual(Schwartz and Brownell 2004).

Physical risk factor usually refers to the current weight status of BMI, and an argument is made that the correlation between BMI and body image is not consistent across subgroups of population but varies by some different subgroups: for instance, women seeking weight loss or women with BED(binge eating disorder) are more risky, implying that they are likely to be sensitive to their own weight and vulnerable to the possible stigmatization. Unlike the physical risk factor, individual risk factors are much more diverse and complicated and they include such socio–demographic and socio–economic characteristics as gender, race, age, socio–economic status, sexual orientation, BED, history of weight cycling, phantom fat, age of obesity onset and appearance teasing, investment in appearance and the like(Schwartz and Brownell, 2004). To reiterate, risky are females(women in general are less complacent about and less satisfied with their weight unlike heavier men who tend to see themselves as 'big and strong' rather than 'fat'), being white(white people are more concerned and vulnerable), younger people(youngsters are more vulnerable and dissatisfied), people with higher SES(they are more likely to value thinness, diet and exercise), homosexual men(instead of homosexual women), BED(people with BED reveal the highest level of weight and shape concerns), the so−called 'yo−yo dieters' who experience losing and regaining weight repeatedly over time, people with phantom fat (those who have been overweight in the past fail ultimately to possess the same positive body image even when they could lose weight as someone who has never been overweight), those who became overweight as children and who have experienced teasing about their weight and appearance, and those who invest a lot in their appearance and participate in diet or fitness programs.

Taken together, the massive list of risk factors reported in the literature suggests that as many risk factors as possible be included in the analysis. Granted that this is almost impossible, however, due not only to the unavailability of all such factors in a given data set but also to the expected redundancy in the analysis, this study will introduce some of the most important correlates, as possible risk factors, including BMI, socio−demographic, and socio−economic characteristics of the general populace in Korea.

Ⅲ. Methods

1. Data

The 2010 Korean General Social Survey(KGSS) is the source of data used to evaluate the relationship between the two body shape measures, net of the relevant correlates. The KGSS, a national sample survey implemented every year since 2003, has the target population of all Korean adults aged 18 or over who live in households of Korea. A representative sample is drawn from this population by means of multi−stage area probability sampling procedures. Structured face−to−face, in−depth interviews, which are administered ordinarily by a trained group of interviewers, are then conducted for the selected sample.[3] The 2010 KGSS, in particular, includes two major topical modules, the International Social Survey Programme(ISSP) 2010 module for Environment III and the East Asian Social Survey(EASS) 2010 module for Health. Data from the EASS Health module, especially when it comes to body weight and body image, are the primary source analyzed in this study. The survey, in the field from June to August 2010, has yielded a valid sample of 1,576 out of 2,500, for a response rate of 64.0%(excluded from the initial sample are 39 ineligible cases due to illness, literacy limitation, and old age).[4] All this valid sample is included in the analysis.

2. Measurement

Table 1 contains the measurement information and descriptive statistics for body shape variables, along with the correlates, used in the analysis. Measurement of BMI, an objective measure of body shape, is simple and straightforward: it is calculated by the formula in which BMI equals weight in kilograms divided by height in meters squared. The subjective measure of body image is operationalized by the question, “What do you think about your body shape?” Answer categories vary from (1) a lot overweight to (5) a lot underweight. Each of the five categories has subsequently been reverse-coded in order to make its comparison with BMI equivalent and consistent.

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3) Further details on the KGSS, plus the internationally-coordinated module surveys of the ISSP and EASS in Korea, are available in Kim(2004) and Kim et al.(2010).

4) One of the most important criteria to assess the representativeness of the sample obtained from the survey would probably be the response rate. The 64 percent, which is actually a conservatively estimated figure, suggests a proper representation of the target population, thereby allowing to rule out the possibility that the findings in this study are because of the characteristics unique to the sample analyzed.

Table 1. Descriptive Statistics for the Variables (N=1,576)

Variables	Valid N^a	Mean	Min-Max	Std. Dev.	Skewness
Body Shape					
BMI(Body Mass Index)[b]	1,556(20)	22.7803	13.33~48.61	3.2045	.843
Body Image[c]	1,573(3)	3.1996	1~5	.9021	-.289
Correlates					
Gender[d]	1,576	.5279	0~1	.4994	-.112
Age[e]	1,569(7)	45.20	18~92	16.5770	.483
Years of Schooling[f]	1,576	11.8896	0~21	4.3157	-1.076
Occupation[g]	922[654][h]	-	-	-	-
Employment Status[i]	1,575(1)	-	-	-	-
Household Income[j]	1,378(198)	370.7199	0~10,000	428.4894	10.753
LN[Household Income]	-	5.4305	0~9.21	1.2683	-2.035
Residential Area[k]	1,576	.4448	0~1	.4971	.222
Marital Status[l]	1,571(5)	.6410	0~1	.4799	-.588
Physical Health[m]	1,575(1)	3.3994	1~5	1.2286	-.402
Mental Health[n]	1,573(3)	3.4957	1~5	.9286	-.279
Chronic Diseases[o]	1,576	.3071	0~1	.4614	.837
Smoking[p]	1,572(4)	.2774	0~1	.4478	.996
Drinking[p]	1,574(2)	.6760	0~1	.4682	-.753
Physical Exercises[p]	1,566(10)	.7190	0~1	.4496	-.976
Medical Checkup[p]	1,574(2)	.7186	0~1	.4499	-.973

[a] In parentheses are non−system missing cases.
[b] Weight(kg)/{height (m)}^{2}.
[c] Subjective assessment: 1 = A lot underweight; 5 = A lot overweight.
[d] 0 = Male; 1 = Female.
[e] In years.
[f] In cumulative years.
[g] ISCO88(ILO): Administrative/Professionals = 111; Semi−Professionals = 221; Clerical = 130; Service/Sales = 175; Manual = 285.
[h] 654 cases are system missing, refering to those who have no occupations.
[i] Wage worker = 648; self employee = 295; unemployed = 632.
[j] Monthly average total household income. The unit is 10,000 *won* in Korean currency, with 10,000 *won* in 2010 being equivalent to 8.33 U.S. dollars approximately.
[k] 0 = Non−Metropolitan; 1 = Metropolitan.
[l] 0 = Without a spouse; 1 = With a spouse.
[m] Self−rated: 1 = Poor; 5 = Good.
[n] Composite measure of three items: 1 = Poor; 5 = Good. Cronbach's α = .732.
[o] Included are such diseases as hyperetension, diabetes, heart disease, respiratorty problem, etc. 0 = Nay ; 1 = Yea.
[p] 0 = Nay; 1 = Yea.

Measurement of the correlates in Table 1 tends to be relatively straightforward and self−explanatory. Suffice it to mention only about occupation, however. The occupational categories are based on the International Standard Classification of Occupations 1988(ISCO−88)(ILO 1990).[5] Apart from the measurement of occupation, the continuous measure of household income has been log−transformed to accommodate its skewed distribution as observed in the sample. Additional descriptive statistics on each of the correlates, which are broken down into each of their categories, are contained in Table 4.

3. Analysis

As indicated above, the relationship between body weight and body image is assessed by two different criteria, intercorrelations and absolute levels. Inter−correlations between the two body shape measures are obtained across each category of correlates. As shown in Table 3, two kinds of intercorrelation coefficients have been obtained, zero−order and partial correlation. Partial correlation differs from zero−order correlation in that it introduces statistical controls for all the rest correlates, besides one of an impending consideration. Comparison of such inter−correlations across the categories of each correlate is expected to demonstrate how the bivariate or multivariate associations between the two measures vary by different subgroups of the correlates. Aside from these correlation differences, mean values of the two body shape measures across each category of correlates are compared and

5) The first digit of the ISCO−88 four digit codes, which consist of 390 unit groups in total, hierarchically distinguishes a total of nine major categories: (1) legislators, senior officials, and managers; (2) professionals; (3) technicians and associate professionals; (4) clerks; (5) service workers and shop and market sales workers; (6) skilled agricultural and fishery workers; (7) craft and related trades workers; (8) plant and machine operators and assemblers; (9) elementary occupations. This categorization differentiates skills acquired through education and training, rather than other differences such as industry or employment status(Ganzeboom and Treiman 1996). Categories (1) and (2) are top−layer occupations and grouped together with naming them administrative/professionals. In addition, categories (6) through (9) are all clearly manual occupations(ILO 1990) and are grouped together accordingly(The ANOVA results for these four manual categories indicated no significant mean differences in either of the two body shapes). The remaining categories are all distinct occupational categories and each of them is retained as it is.

test, too. As shown in Table 4, multiple tests for the differences, if any, across the categories are going to exhibit specifically how the two measures deviate from each other. Taken together, a close examination of intercorrelations, for one thing, and absolute levels, for another, at the same time would provide an important clue to the primary question raised in this study: i.e., an identification of the degree and pattern of compatibility that is prone to be contingent on the potential risk factors. Note that typical multivariate analysis techniques, which estimate the impacts of correlates on the body shape measures, such as the OLS regression, are not attempted in this study since the focus is not on such impacts but on the compatibility that is expected to vary by the suggested correlates.

Ⅳ. Results

Prior to delving directly into the mean and correlation differences, some preliminary accounts are in order with respect to some of the most important descriptive statistics of body shape variables. Judging from the overall mean level of actual body weight(Table 1), ordinary people in the sample have a normal weight (BMI = 22.78).[6] An overwhelming proportion(70.2%) indeed has a normal weight, followed by overweight or obese(22.7%) and underweight(7.1%). Judging from the overall mean of body image, however, a larger proportion of people feels they are overweight or obese(35.9%), the rest feeling normal weight(46.7%) or underweight (17.4%). In short, this means that there are more people who indeed overestimate their body weight than those who underestimate it. As such, this is evidence, albeit being univariate, to demonstrate a substantial amount of discrepancy or disparity between the two body shape measures in Korea.

6) The categories to classify different groupings of body weight, which have been initially defined by the NHLBI(National Heart, Lung, and Blood Institute) in the United States(1998) and widely adopted and used worldwide subsequently, include underweight(BMI of 18.5 or lower), normal weight(BMI between 18.5 and 24.9), overweight(BMI between 25 and 29.9), and obese(BMI 30 or over).

Table 2. Zero-Order Correlations among the Variables (N=1,576) [a]

Variables[b]	1	2	3	4	5	6	7	8	9	10	11	12
1. BMI	1.00											
2. Body Image	.58***	1.00										
3. Female	-.24***	.16***	1.00									
4. Age	.21***	-.05	.02	1.00								
5. Years of Schooling	-.12***	.01	-.16***	-.59***	1.00							
6. Occ_Administrative/ Professionals[c]	-.02	.02	-.02	-.06	.32***	1.00						
7. Occ_Semi-Professionals[c]	.02	-.00	-.14***	-.16***	.26***	-.21***	1.00					
8. Occ_Clerical[c]	-.16***	-.01	.12***	-.28***	.15***	-.15***	-.23***	1.00				
9. Occ_Service/Sales[c]	.00	.06	.18***	-.01	-.05	-.18***	-.27***	-.20***	1.00			
10. Emp. Status_Wage Worker[d]	-.03	-.01	-.12***	-.28***	.27***	.07*	-.01	.24***	-.17***	1.00		
11. Emp. Status_Self Employee[d]	.12***	-.01	-.14***	.12***	-.02	-.07*	.01	-.24***	.17***	-.40***	1.00	
12. LN [Household Income]	-.06*	.01	-.09***	-.41***	.52***	.20***	.19***	.06	.01	.24***	.13***	1.00
13. Metropolitan Area	-.02	.01	.03	-.07***	.12***	.01	.03	.02	.05	.06*	-.06*	.06*
14. With Spouse	.09***	.04	.00	.22***	.10***	.04	-.01	-.11***	-.03	-.02	.15***	.22***
15. Physical Health	-.11***	-.02	-.12***	-.42***	.40***	.08*	.08*	.07*	.01	.17***	.03	.32***
16. Mental Health	.05	.04	-.15***	-.09***	.22***	.08*	.06	-.01	-.05	.08**	.04	.23***
17. Chronic Diaseases	.17***	.06*	.07**	.43***	-.34***	-.02	-.12***	-.07*	-.01	-.15***	-.03	-.24***
18. Smoking	.07**	-.16***	-.52***	-.12***	.11***	-.03	.08*	-.09**	-.06	.11***	.09***	.03
19. Drinking	-.05	-.03	-.26***	-.32***	.29***	.03	.10**	.02	-.00	.20***	.05*	.24***
20. Physical Exercises	.05*	.08**	-.15***	-.31***	.36***	.07*	.13***	.12***	-.05	.13***	-.05	.26***
21. Medical Checkup	.12***	.06*	-.03	.24***	-.02	.06	.02	-.01	-.05	.13***	-.02	.04

	13	14	15	16	17	18	19	20	21
13. Metropolitan Area	1.00								
14. With Spouse	-.02	1.00							
15. Physical Health	.04	-.02	1.00						
16. Mental Health	.02	.07**	.42***	1.00					
17. Chronic Diseases	-.07**	.02	-.50***	-.23***	1.00				
18. Smoking	-.01	-.04	.05	.00	-.12***	1.00			
19. Drinking	.05*	-.03	.20***	.06*	-.21***	.23***	1.00		
20. Physical Exercises	.08**	.00	.30***	.20***	-.18***	.03	.23***	1.00	
21. Medical Checkup	-.01	.18***	-.10***	.09***	.11***	-.06*	-.04	.03	1.00

[a] Pairwise deleted. See Table 1 for valid *N's* for each variable.
[b] See Table 1 for detailed measures.
[c] Omitted is the manual.
[d] Omitted is the unemployed.
* ($p < .05$), two-tailed test. ** ($p < .01$), two-tailed test. *** ($p < .001$), two-tailed test.

Table 2 displays zero-order correlations among all variables. Of primary interest is the correlation between BMI and body image and it turns out to be .580($p < .001$). After controls for the correlates, partial correlation between the two becomes .666 ($p < .001$)(Table 3). With this amount of correlations, assessed by either type of coefficients, the relationship might be best characterized as 'moderate.'

Results of testing for correlation differences and mean differences, respectively, for each subgroup of the correlates are presented in Table 3 and 4. Note that results for correlation and mean differences, albeit being distinct and independent, are going to be discussed altogether for each correlate in order to facilitate an understanding.

(1) Gender: To begin with the first correlate of gender, the correlation between BMI and body image, in terms of either zero-order or partial coefficients, is much lower among females than males(Table 3). In order to figure out how come this correlation difference occurs by gender, mean levels of each body shape measures are compared with each other separately for females and males. As shown in Table 4, it turns out that, while females(22.061), quite expectedly, have significantly lower level of BMI than males(23.569), they in fact feel they are heavier(3.334) than their male counterparts(3.050). A further cross-tabulation of each category of BMI and body image, respectively, exhibits that females indeed tend to overestimate(32.6%), rather than underestimate(8.5%), their weight, whereas males tend to underestimate(41.7%), rather than over estimate(8.4%), it(This result is not presented to conserve space). In short, this is evidence indicating that the two body shape measures are more likely to be independent from each other among females, and that, as a result, those who are risky(i.e., who are more sensitive and vulnerable to weight gains) are females.

Table 3. Zero-Order and Partial Correlations between BMI and Body Image by Sub-Groups of the Correlates (N=1,576)

Variables [a]	Zero-Order Correlations	Partial Correlations [b]
Total Sample	.580($p <$ .001)	.666($p <$ .001)
Gender		
1) Male	.743($p <$ .001)	.746($p <$ .001)
2) Female	.565($p <$ .001)	.617($p <$ .001)
Age		
1) 20's -	.579($p <$ .001)	.729($p <$ .001)
2) 30's	.594($p <$ .001)	.723($p <$ .001)
3) 40's	.600($p <$ .001)	.708($p <$ .001)
4) 50's	.721($p <$ .001)	.749($p <$ .001)
5) 60's	.683($p <$ .001)	.646($p <$ .001)
6) 70's +	.513($p <$ .001)	.508($p <$ .05)
Educational Attainment		
1) Elementary or below	.553($p <$ .001)	.538($p <$ .001)
2) Junior High	.570($p <$ .001)	.650($p <$ .001)
3) High	.607($p <$ .001)	.696($p <$ .001)
4) 2-yr. College	.596($p <$ .001)	.732($p <$ .001)
5) 4-yr. University	.564($p <$ .001)	.729($p <$ .001)
6) Graduate School	.643($p <$ .001)	.740($p <$ .001)
Occupation		
1) Admin./Prof.	.627($p <$ .001)	.759($p <$ .001)
2) Semi-Prof.	.576($p <$ .001)	.699($p <$ .001)
3) Clerical	.393($p <$ .001)	.588($p <$ .001)
4) Service/Sales	.625($p <$ .001)	.715($p <$ .001)
5) Manual	.661($p <$ .001)	.678($p <$ .001)
Employment Status		
1) Wage Worker	.554($p <$ .001)	.691($p <$ .001)
2) Self Employee	.649($p <$ .001)	.705($p <$ .001)
3) Unemployed [c]	.588($p <$ .001)	.645($p <$ .001)
Household Income		
1) 99 ~	.580($p <$ .001)	.598($p <$ .001)
2) 100~199	.623($p <$ .001)	.700($p <$ .001)
3) 200~299	.621($p <$ .001)	.717($p <$ .001)
4) 300~399	.570($p <$ .001)	.691($p <$ .001)
5) 400~499	.469($p <$ .001)	.612($p <$ .001)

(*continued*)

Table 3. (*continued*)

Variables [a]	Zero-Order Correlations	Partial Correlations [b]
6) 500~699	.622($p < .001$)	.745($p < .001$)
7) 700 +	.636($p < .001$)	.778($p < .001$)
Residential Area		
1) Non-Metropolitan	.605($p < .001$)	.696($p < .001$)
2) Metropolitan	.554($p < .001$)	.625($p < .001$)
Marital Status		
1) Without Spouse	.536($p < .001$)	.614($p < .001$)
2) With Spouse	.613($p < .001$)	.700($p < .001$)
Physical Health		
1) Poor	.578($p < .001$)	.620($p < .001$)
2) Middle	.649($p < .001$)	.744($p < .001$)
3) Good	.539($p < .001$)	.673($p < .001$)
Mental Health		
1) Poor	.627($p < .001$)	.701($p < .001$)
2) Middle	.595($p < .001$)	.710($p < .001$)
3) Good	.564($p < .001$)	.663($p < .001$)
Chronic Diseases		
1) Nay	.579($p < .001$)	.699($p < .001$)
2) Yea	.584($p < .001$)	.628($p < .001$)
Smoking		
1) Nay	.569($p < .001$)	.644($p < .001$)
2) Yea	.691($p < .001$)	.735($p < .001$)
Drinking		
1) Nay	.576($p < .001$)	.613($p < .001$)
2) Yea	.582($p < .001$)	.699($p < .001$)
Physical Exercises		
1) Nay	.568($p < .001$)	.613($p < .001$)
2) Yea	.584($p < .001$)	.690($p < .001$)
Medical Checkup		
1) Nay	.582($p < .001$)	.685($p < .001$)
2) Yea	.576($p < .001$)	.657($p < .001$)

[a] See Table 1 and 3, respectively, for detailed measures and valid *N's*.
[b] Controlled variables include all correlates(or covariates) except for the variable under consideration. Covariates are deleted pairwise.
[c] Occupation is not included as a covariate since they are not employed.
* ($p < .05$), two–tailed test. ** ($p < .01$), two–tailed test. *** ($p < .001$), two–tailed test.

Table 4. Mean Levels of BMI and Body Image by Sub-Groups of the Correlates (N=1,576)

Variables [a]	Mean [b]	t or F	Multiple Comparisons						
Gender									
BMI									
1) Male(n_1= 742)	23.569(2.867)	9.600							
2) Female(n_2= 814)	22.061(3.326)	($p<.001$)							
Body Image									
1) Male(n_1= 743)	3.050(.899)	6.303							
2) Female(n_2= 830)	3.334(.885)	($p<.001$)							
Age									
BMI			1)	2)	3)	4)	5)	6)	
1) 20's -(n_1= 293)	21.423(2.929)		–	–	–	–	–	–	
2) 30's(n_2= 367)	22.381(3.065)		**	–	–	–	–	–	
3) 40's(n_3= 359)	23.077(3.020)	21.033	***	n.s.	–	–	–	–	
4) 50's(n_4= 219)	23.740(2.786)	($p<.001$)	***	***	n.s.	–	–	–	
5) 60's(n_5= 156)	23.695(2.737)		***	**	n.s.	n.s.	–	–	
6) 70's +(n_6 = 156)	23.364(4.284)		***	n.s.	n.s.	n.s.	n.s.	–	
Body Image									
1) 20's -(n_1= 295)	3.136(.987)		–	–	–	–	–	–	
2) 30's(n_2= 370)	3.254(.926)		n.s.	–	–	–	–	–	
3) 40's(n_3= 359)	3.248(.864)	3.810	n.s.	n.s.	–	–	–	–	
4) 50's(n_4= 219)	3.256(.812)	($p<.01$)	n.s.	n.s.	n.s.	–	–	–	
5) 60's(n_5= 155)	3.271(.792)		n.s.	n.s.	n.s.	n.s.	–	–	
6) 70's +(n_6 = 168)	2.946(.949)		n.s.	*	*	*	n.s.	–	
Educational Attainment									
BMI			1)	2)	3)	4)	5)	6)	
1) Elementary or below(n_1= 217)	22.574(3.980)		–	–	–	–	–	–	
2) Junior High(n_2= 137)	23.843(2.734)		n.s.	–	–	–	–	–	
3) Hig(n_3= 523)	22.710(3.043)	9.300	*	*	–	–	–	–	
4) 2-yr. College(n_4= 287)	22.330(3.127)	($p<.001$)	**	***	n.s.	–	–	–	
5) 4-yr. Univ.(n_5= 313)	22.207(2.933)		***	***	n.s.	n.s.	–	–	
6) Graduate School(n_6 = 79)	23.135(3.097)		n.s.	n.s.	n.s.	n.s.	n.s.	–	
Body Image									
1) Elementary or below(n_1= 228)	3.118(.929)		–	–	–	–	–	–	
2) Junior High(n_2= 138)	3.377(.776)		n.s.	–	–	–	–	–	
3) High(n_3= 525)	3.219(.901)	1.935	n.s.	n.s.	–	–	–	–	
4) 2-yr. College(n_4= 288)	3.201(.938)	($p>.05$)	n.s.	n.s.	n.s.	–	–	–	
5) 4-yr. Univ.(n_5= 314)	3.131(.907)		n.s.	n.s.	n.s.	n.s.	–	–	
6) Graduate School(n_6 = 80)	3.263(.853)		n.s.	n.s.	n.s.	n.s.	n.s.	–	

(*continued*)

Table 4. (*continued*)

Variables [a]	Mean [b]	t or F	Multiple Comparisons						
Occupation									
BMI			1)	2)	3)	4)	5)		
1) Admin./Prof.(n_1 = 111)	22.778(3.054)	7.279 ($p < .001$)	–	–	–	–	–		
2) Semi-Prof.(n_2 = 220)	23.093(3.014)		n.s.	–	–	–	–		
3) Clerical(n_3 = 129)	21.796(2.685)		n.s.	**	–	–	–		
4) Service/Sales(n_4 = 175)	22.980(3.403)		n.s.	n.s.	*	–	–		
5) Manual(n_5 = 283)	23.484(7.794)		n.s.	n.s.	***	n.s.	–		
Body Image									
1) Admin./Prof.(n_1 = 111)	3.234(.797)	1.290 ($p > .05$)	–	–	–	–	–		
2) Semi-Prof.(n_2 = 221)	3.186(.898)		n.s.	–	–	–	–		
3) Clerical(n_3 = 130)	3.177(.802)		n.s.	n.s.	–	–	–		
4) Service/Sales(n_4 = 175)	3.297(.866)		n.s.	n.s.	n.s.	–	–		
5) Manual(n_5 = 284)	3.120(.815)		n.s.	n.s.	n.s.	n.s.	–		
Employment Status									
BMI			1)	2)	3)				
1) Wage Worker(n_1 = 646)	22.662(3.034)	11.504 ($p < .001$)	–	–	–				
2) Self Employee(n_2 = 293)	23.573(2.959)		***	–	–				
3) Unemployed(n_3 = 616)	22.525(3.430)		n.s.	***	–				
Body Image									
1) Wage Worker(n_1 = 647)	3.193(.856)	.217 ($p > .05$)	–	–	–				
2) Self Employee(n_2 = 295)	3.176(.835)		n.s.	–	–				
3) Unemployed(n_3 = 630)	3.216(.977)		n.s.	n.s.	–				
Household Income									
BMI			1)	2)	3)	4)	5)	6)	7)
1) 99 -(n_1 = 200)	23.438(3.499)	2.317 ($p > .05$)	–	–	–	–	–	–	–
2) 100～199(n_2 = 194)	22.680(3.115)		n.s.	–	–	–	–	–	–
3) 200～299(n_3 = 214)	22.914(3.165)		n.s.	n.s.	–	–	–	–	–
4) 300～399(n_4 = 239)	22.692(3.060)		n.s.	n.s.	n.s.	–	–	–	–
5) 400～499(n_5 = 176)	22.402(2.723)		n.s.	n.s.	n.s.	n.s.	–	–	–
6) 500～699(n_6 = 183)	22.521(3.079)		n.s.	n.s.	n.s.	n.s.	n.s.	–	–
7) 700 +(n_7 = 157)	22.805(2.952)		n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	–
Body Image									
1) 99- (n_1 = 210)	3.195(.872)	.499 ($p > .05$)	–	–	–	–	–	–	–
2) 100～199(n_2 = 195)	3.128(1.015)		n.s.	–	–	–	–	–	–
3) 200～299(n_3 = 215)	3.251(.877)		n.s.	n.s.	–	–	–	–	–
4) 300～399(n_4 = 238)	3.198(.871)		n.s.	n.s.	n.s.	–	–	–	–
5) 400～499(n_5 = 177)	3.226(.882)		n.s.	n.s.	n.s.	n.s.	–	–	–
6) 500～699(n_6 = 184)	3.156(.892)		n.s.	n.s.	n.s.	n.s.	n.s.	–	–
7) 700 +(n_7 = 157)	3.217(.901)		n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	–

(*continued*)

Table 4. *(continued)*

Variables[a]	Mean[b]	t or F	Multiple Comparisons						
Residential Area									
BMI									
1) Non-Metropolitan(n_1= 856)	22.828(3.053)	.655 ($p > .05$)							
2) Metropolitan(n_2= 700)	22.722(3.382)								
Body Image									
1) Non-Metropolitan(n_1= 873)	3.194(.911)	.296 ($p > .05$)							
2) Metropolitan(n_2= 700)	3.207(.891)								
Marital Status									
BMI									
1) Without Spouse(n_1= 551)	22.402(3.547)	3.227 ($p < .001$)							
2) With Spouse(n_2= 1,001)	22.985(2.979)								
Body Image									
1) Without Spouse(n_1= 562)	3.153(.943)	1.486 ($p > .05$)							
2) With Spouse(n_2= 1,006)	3.224(.879)								
Physical Health									
BMI			1)	2)	3)				
1) Poor(n_1= 365)	23.479(3.893)	12.191 ($p < .001$)	-	-	-				
2) Middle(n_2= 382)	22.715(3.253)		**	-	-				
3) Good(n_3= 808)	22.942(2.763)		***	n.s.	-				
Body Image									
1) Poor(n_1= 374)	3.246(1.009)	.777 ($p > .05$)	-	-	-				
2) Middle(n_2= 385)	3.203(.974)		n.s.	-	-				
3) Good(n_3= 813)	3.176(.811)		n.s.	n.s.	-				
Mental Health									
BMI			1)	2)	3)				
1) Poor(n_1= 381)	22.531(3.403)	1.465 ($p > .05$)	-	-	-				
2) Middle(n_2= 173)	22.921(3.527)		n.s.	-	-				
3) Good(n_3= 1,000)	22.826(2.956)		n.s.	n.s.	-				
Body Image									
1) Poor(n_1= 383)	3.146(1.053)	1.035 ($p > .05$)	-	-	-				
2) Middle(n_2= 176)	3.250(.935)		n.s.	-	-				
3) Good(n_3= 1,011)	3.212(.832)		n.s.	n.s.	-				
Chronic Diseases									
BMI									
1) Nay(n_1= 1,082)	22.414(2.933)	6.374 ($p < .001$)							
2) Yea(n_2= 474)	23.616(3.618)								
Body Image									
1) Nay(n_1= 1,090)	3.166(.885)	2.172 ($p < .05$)							
2) Yea(n_2= 483)	3.275(.936)								

(continued)

Table 4. (*continued*)

Variables [a]	Mean [b]	*t* or *F*	Multiple Comparisons						
Smoking									
BMI									
1) Nay(n_1 = 1,119)	22.642(3.251)	2.858							
2) Yea(n_2 = 433)	23.158(3.045)	($p < .01$)							
Body Image									
1) Nay(n_1 = 1,134)	3.290(.869)	6.460							
2) Yea(n_2 = 435)	2.966(.946)	($p < .001$)							
Drinking									
BMI									
1) Nay(n_1 = 496)	23.002(3.515)	1.869							
2) Yea(n_2 = 1,058)	22.676(3.048)	($p > .05$)							
Body Image									
1) Nay(n_1 = 508)	3.244(.933)	1.338							
2) Yea(n_2 = 1,063)	3.178(.887)	($p > .05$)							
Physical Exercises									
BMI									
1) Nay(n_1 = 425)	22.506(3.660)	1.812							
2) Yea(n_2 = 1,121)	22.866(3.001)	($p > .05$)							
Body Image									
1) Nay(n_1 = 438)	3.085(1.001)	3.101							
2) Yea(n_2 = 1,125)	3.242(.858)	($p < .01$)							
Medical Checkup									
BMI									
1) Nay(n_1 = 434)	22.164(3.366)	4.575							
2) Yea(n_2 = 1,120)	23.017(3.111)	($p < .001$)							
Body Image									
1) Nay(n_1 = 442)	3.111(.973)	2.449							
2) Yea(n_2 = 1,129)	3.235(.872)	($p < .05$)							

[a] See Table 1 for detailed measures and valid *N*'s.
[b] In parenthese are standard deviations.
* ($p < .05$), two-tailed test. ** ($p < .01$), two-tailed test. *** ($p < .001$), two-tailed test.

(2) Age: Turning now to the second correlate of age, correlations tend to be lowest among the 20's and 70's and highest among the 50's and 60's(Table 3). Multiple comparison tests for mean level differences in each body shape measure reveal a few age-specific differences: (1) the 20's, in spite of their lowest BMI

(21.423) among all age brackets, do not tend to feel they are slim(3.136); (2) the 50's and 60's, despites their highest BMI's(23.740 and 23.695), on the other hand, do not tend to feel, either, they are heavy(3.256 and 3.271); (3) the 70's, despites their relatively high BMI(23.364), do not tend to feel they are heavy, to the extent higher than the 50's and 60's(Table 4). In sum, this is evidence illustrating that the 20's are the most risky group, while the 50's, 60's, and especially the 70's, are the non−risky, or immune, group.

(3) Educational attainment: Although the correlations tend to be relatively higher among the graduates of high school, junior college, and graduate school, no consistent pattern of correlation differences appears to exist across the categories of education(Table 3). Viewed from mean differences, on the other hand, while BMI tends to be different between the graduates of elementary/junior high school and high school/college, body image does not differ at all across any categories of education(Table 4). In short, no consistent pattern of differences, either in correlations or mean levels, and incompatibility is observed for educational attainment.

(4) Occupation: Correlations tend to be lowest among clerical workers(Table 3). Comparison of mean levels of both body shape measures across each occupational category(Table 4) indicates that clerical workers have the lowest BMI among all occupational categories while they do not necessarily feel like big or slim compared to other occupational categories. To sum, no consistent pattern of incompatibility is observed, either, for occupation.

(5) Employment status: Correlations tend to be relatively higher for self−employees than wage workers or the unemployed(Table 3). Comparison of mean levels across the three categories shows that self−employees have the highest BMI(23.573), while they do not necessarily feel like they are big or slim(Table 4). In short, the result about employment status is very similar to occupation: no outstanding pattern of incompatibility is found across its categories.

(6) Household income: It appears that those who make 300 to 499 million won a month tend to have relatively lower correlations as compared to other income

brackets(Table 3). Mean levels in both measures of body shape, however, do not differ at all across any categories of income brackets(Table 4). Again, no incompatibility is observed for household income.

(7) Residential area: Although residents in metropolitan areas tend to reveal lower correlations compared to those in non-metropolitan areas(Table 3), mean differences are not significant, either in terms of BMI or body image, across the two groups of residents(Table 4).

(8) Marital status: Those who have a spouse turn out to show higher correlations (Table 3). Mean difference tests show that these people are actually bigger than those who do not have a spouse, although no systematic difference is observed between the two groups in terms of body image(Table 4).

(9) Physical health status: Correlations tend to be weaker for those who are in good health status than for those who are in poor or middle status(Table 3). Mean difference tests show that healthy people tend to have a lower BMI compared to unhealthy people, while the differences in body image are not significant across the three categories of physical health status(Table 4).

(10) Mental health status: Similar to the case with physical health, correlations tend to be weaker for mentally healthy people compared to the rest two groups of people(Table 3). No systematic differences are observed, however, across the three categories either in BMI or body image(Table 4).

(11) Chronic diseases: Correlations tend to be weaker for those without such diseases(Table 3). Tests for mean level differences between the two groups of people, interestingly enough, reveal that people with such diseases feel they are heavy, although they are not necessarily heavier than those without such diseases(Table 4). This is evidence suggesting that people with chronic diseases are the risky group.

(12) Smoking: In terms of smoking, the first instantiation of substance abuse, smokers turn out to show higher correlations than non-smokers(Table 3). Tests for mean differences between the two groups, interestingly enough, reveal that smokers are in fact heavier than non-smokers, on the one hand,

and that the former does not feel they are heavy compared to the latter, on the other hand(Table 4). As such, this is evidence to suggest that a substantial amount of incompatibility between the two body shape measures exists between smokers and non−smokers, and that smokers are the pretty much non−risky or immune group.

(13) Drinking: Similar to smoking, drinkers tend to show higher correlations than non−drinkers(Table 3). No systematic differences in mean levels of both body shape measures, however, are observed between the two groups of people (Table 4).

(14) Physical exercises: Correlations tend to be higher among those who exercise regularly(Table 3). Interestingly enough, these people tend to feel they are heavy as compared to non−exercising people, although the former is not actually heavier than the latter(Table 4). It turns out that risky are those who exercise on a regular basis.

(15) Medical checkup: Those who conduct medical checks regularly tend to show lower correlations than those who fail to do so(Table 3). The former, quite interestingly, feel they are heavy, although they are, in fact, not necessarily heavier than the latter(Table 4). Once again, risky are those who conduct medical checkups on a regular basis.

Taken together, the long list of tests for correlation and mean differences across each category of the correlates serves to identify a total of six risk factors out of fifteen correlates. They include gender, age, chronic diseases, smoking, physical exercises, and medical checkup. Specifically, those who could be characterized as risky to weight gains are females, who are in their 20’s, who have chronic diseases, non−smokers, who exercise regularly, and who conduct medical checkups on a regular basis. By contrast, those who may be best characterized as non−risky or immune are the age group of the 50’s, 60’s, and especially 70’s.

Ⅴ. Discussion and Conclusions

This study has been prompted by a rather simple research question, how compatible or incompatible the relationship between body weight and body image, an objective and subjective measure of body shape, respectively, is under what conditions. The question, as such, is not entirely new or fascinating, recalling that it has long been a recurrent concern in a massive bulk of health-related researches due mostly to the expected discrepancy between one's actual body shape and his/her own assessment. What was found to be missing in previous researches, however, and thereby making this study struggle to move beyond the simple research question, was three-fold: investigation of the relationship in multivariate, instead of bivariate, ways; analysis over a full range of a large and representative community-level general populace, instead of some sample-specific clinical or experimental groups; approaching the matter in the socio-cultural context of Korea, a non-Western society. In doing so, the societal focus of classic medical sociology is maintained and the so-called risk factor analysis, which targets to search for socio-cultural and socio-economic correlates responsible for differential acceptability or vulnerability among the populace to the pervasive stigmatization or anti-fat bias in a society, is conducted on the basis of the national sample survey data of KGSS.

Results of data analysis by testing for both correlation and mean differences across several categories of each of the proposed correlates exhibited a few interesting findings. First, despites a prevailing normality of their actual body weight, a lot of people in Korea were indeed overestimating their body size. Second, the two focal variables of body weight and body image turned out to maintain a moderate amount of correlation, either without or with statistical controls for the correlates. Third and most important, several salient risk factors were identified in Korea, which include gender, age, chronic diseases, smoking, physical exercises, and medical checkup, suggesting that particularly risky to weight gains and the possible stigmatization are females, those who are in their 20's, who have chronic diseases, non-smokers, who exercise regularly, and who conduct medical checkups on a regular basis.

A scrutinized interpretation of the findings in this study renders a few conclusive remarks. First of all, it should be emphasized that a considerable amount of disparities or discrepancies is indeed observed between body weight and body image in Korea. Innumerable reports, as indicated, have already been made about the incompatibility in the West, but not much is known as to the issue in Korea, particularly when it comes to potentially confounding impacts observed from the analysis of nationally representative community-level data. Although it is not easy to ascertain if and to what extent the incompatibility is more or less pronounced in Korea than Western societies due primarily to the different nature of samples involved, statistical controls introduced, or measurement conducted, it appears that the incompatibility is not necessarily less severe and less salient in Korea. At a minimum, it could be said that body weight and image are likely to be incompatible with each other as much as the case in the West. Presumably, this characterization carries an added implication and warrants a special attention, as well, recalling that Korean populace, on the average, is not overweight or obese at all when compared to the populace in the West. As claimed by Carr and Friedman(2005), what is important to an individual's self-perception of body weight and the consequently becoming or failing to become targets of stigmatization in a society is not so much the relative obesity level of the society compared to other societies as the overall level of obesity in the society, since self-perception and stigmatization is always relative to others(or significant others) within a specific society. Simply put, biases or stigmas would be reduced when more people in a society become obese. A more conclusive answer to this question cannot be offered, of course, until when a cross-national comparative research is conducted.[7]

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7) In some sense, the incompatibility and the consequent sensitivity to weight gains observed in Korea might be attributed to the excessively high social pressure for thinness. As a matter of fact, Korea looks extraordinary in its very prevalent and pervasive emphasis on physical appearances in everyday lives. The plastic surgery rates, for instance, is known to be the highest all over the world, with 1.324 out of 100 persons performing such surgery in Korea(International Society of Aesthetic Plastic Surgery 2010).

Another crucial observation stemming from this study, and more important, concerns the finding that particularly risky are females, those who are in their 20's, who have chronic diseases, non−smokers, who exercise regularly, and who conduct medical checkups on a regular basis. To extrapolate, the finding suggests that the most typically risky kinds of people in Korea are "young women who care very much for their health." These people are especially risky because socio−cultural consequences of body weight perception, such as depression, prejudice, discrimination, stigma, and the like, tend to be more acute to them. Not surprisingly, the distinctive risk factors identified in this study tend to be consistent with those in the West, and this study provides evidence to suggest that not much heterogeneity tends to exist between Korea and Western societies in terms of the risk or resilience factors. Even if an equivalent comparison of the commonality and divergence of the risk factors across different societies certainly calls for a cross−national comparative research design, the available evidence in this study tends to support for a portrayal of factors that are more universal than unique to the Korean society.

To conclude, it is hoped that this study could work as an important springboard to provoke a series of related researches in the future. Perhaps, the virtue of this study, if any, needs to be sought in its first full−fledged, comprehensive attempt in Korea that tries to remedy the deficiencies in past studies. As indicated already, not a single study like this has yet been reported in Korea and we are left with a void in our understanding the compatibility issue. No argument is made, of course, that this study is generalizable to other societies. Although the findings in this study tend to suggest some homogeneity and heterogeneity at the same time in the way body weight and body image are related with each other after controls for several critical correlates, an appropriate answer to the specificity or generality of the findings in this study cannot be provided until a truly cross−cultural comparative study is conducted. To our great relief, however, such a study is indeed an actual scenario that can be accomplished in the very near future, recalling that the data analyzed in this study is, in fact, part of the Health module of the EASS, a survey network of four GSS−type surveys in Korea, Japan, China, and Taiwan.

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