

A longitudinal examination of gender differences in body-image dissatisfaction and suicidal ideation in early and middle adolescence

Dong-Sik Kim^{1*}

¹School of Public Health, Seoul National University, Republic of Korea

Abstract

Most longitudinal evidence has shown strong associations of body dissatisfaction with depression and self-esteem among adolescent girls and boys in different stages of development. However, the association between body dissatisfaction and suicidal ideation remains relatively less well known. We investigated trends in these two issues during adolescence, examined whether body dissatisfaction at an early stage affects body dissatisfaction and suicidal ideation at a later stage, and identified a dose–response association between body dissatisfaction and suicidal ideation at follow-up dates. Data were obtained from Korea Youth Panel Survey data sets for early-adolescent boys (n = 1380, Time 1 [T1] mean age 10.9 years) and girls (n = 1209, 10.8 years) and mid-adolescent boys (n = 1429, 14.8 years) and girls (n = 1437, 14.7 years) and from follow-up surveys of the same individuals after 2 years (for early-adolescents) and 3 years (for mid-adolescents; Time 2 [T2]). Body dissatisfaction and suicidal ideation progressively increased until it peaked at mid-adolescence (15–16 years) and slightly

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*School of Public Health, Seoul National University, 28 Yeongun-Dong, Jongro-Ku, Seoul, Korea. Tel.: +82-2-3668-7851. Fax: +82-2-745-9104. E-mail: kimdongsik@empal.com

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decreased thereafter. After controlling for T1 suicide thoughts and other suicide-related factors, the association between T2 body dissatisfaction and T2 suicidal ideation was partially mediated by T1 body dissatisfaction. Indeed, T1 body dissatisfaction prospectively predicted the risk of T2 suicidal ideation in early-adolescent girls and mid-adolescent boys, but not in early-adolescent boys or mid-adolescent girls. Along with the frequency of pre-T2 suicidal ideation and other covariates, the more body dissatisfaction adolescents experienced during the follow-up periods, the more likely they were to think about suicide. The graded relationship between these two issues was clearer in early adolescents than in mid-adolescents. Previous experience of body dissatisfaction is an important mediator and/or predictor of the risk of current suicide thoughts in boys and girls, but in different pubertal stages. Repeated experience of body dissatisfaction strongly places adolescents, particularly early adolescents, at an increased risk of suicidal ideation.

Introduction

Adolescence is an important period of rapid growth and physical change that promote gender-distinct values regarding body ideals. For example, in most industrialized countries, including Korea, thinness in females and muscular build in males are socio-culturally desired. Adolescents whose changing or changed bodies deviate from the socio-cultural ideals of body shape are often vulnerable to body-image dissatisfaction (Meland, Haugland, & Breidablik, 2007).

Although the World Health Organization (WHO, 2002) defines adolescents as persons between 10 and 19 years of age, this group can be further divided into puberty phases of early (10–13 years), middle (14–16 years), and late (17–19 years) adolescence.

The timing and tempo of puberty varies widely according to age, as does the degree of body dissatisfaction, which changes from early to late adolescence (Daniel, 1977; Rogal, Clark, & Roemmich, 2000). A 5-year longitudinal study of U.S. boys and girls showed a rise in body dissatisfaction from middle (15 years) to late (20 years) adolescence (Eisenberg, Neumark-Sztainer, & Paxton, 2006). In contrast, a 1-year longitudinal study of U.S. students in middle (13 years) and high (16 years) school reported that body dissatisfaction of middle school girls increased, but that of high school girls and boys at both ages decreased 1 year later (Jones, 2004). The former study found long-term, but not short-term, temporal changes in body dissatisfaction during middle to late adolescence, although the youth were inclined to differently evaluate their body by age. The latter study revealed various aspects of body image by gender and age during a short-term period. However, because of the small sample size and the follow-up time span of only 1 year, it is difficult to draw generalizable conclusions and to assess the trends in body dissatisfaction after 1 year. To expand our understanding of these trends, a relatively long-term approach involving representative data derived from different pubertal stages is needed.

Along with body dissatisfaction, adolescents also experience psychological and emotional changes during puberty. Suicide and suicidal behaviors (thoughts, plan, and attempts), which are very rare before puberty, rise considerably after the onset of puberty (Gelfand, Jenson, & Drew, 1988). It has been reported that body image, which plays an important part in the evaluation of the self and others in the context of social interaction, is often used as a social-comparison standard; “social-comparison jealousy,” which involves being envied by others and feeling envy toward others, is one significant cause of suicide (Jung & Lee, 2006; Bers & Rodin, 1984). According to a report

compiled by the Korea National Statistical Office (2005), the suicide rate among adolescents aged 10–19 years has increased steadily in recent years (e.g., 0.5, 3.5, and 4.2 per 100,000 people in 1999, 2002, and 2005), making suicide the second leading cause of death for this age group. Despite this situation, there has been insufficient research on the relationship between body dissatisfaction and suicidal behaviors among adolescents in Korea. Because suicidal ideation is a main precursor for suicide and/or other suicidal behaviors, and because suicidal ideation in adolescence has been identified as a predictor of suicide behaviors in adulthood (Herba, Ferdinand, van der Ende, & Verhulst, 2007), greater attention should be paid to adolescent suicide ideation to prevent suicide in both adolescent and adult populations.

Much evidence obtained from diverse racial and ethnic groups has pointed to a strong relationship between body dissatisfaction and suicidal ideation (Brausch & Muehlenkamp, 2007; Eaton, Lowry, Brener, Galuska, & Crosby, 2005; Whetstone, Morrissey, & Cummings, 2007). However, a casual relationship between these two issues cannot be drawn based on such evidence because of the cross-sectional designs of previous studies. To our knowledge, only one internationally published study has reported on body dissatisfaction and suicide, suggesting that body dissatisfaction at age 13 (Time 1 [T1]) predicts the risk of suicidal attempts 2 years later (Time 2 [T2]), controlling for pre-existing suicidal ideation/attempts and several risk factors associated with suicidal behaviors (Rodríguez-Cano, Beato-Fernández, & Llarío, 2006). This study is noteworthy, but did not separately analyze these issues by gender and pubertal stage, even though body-image concerns are expected to differ distinctly by gender at the early, middle, and late pubertal stages. In addition, the study did not consider T2 body dissatisfaction as a confounding factor between T1 body dissatisfaction and T2

suicidal attempts. Furthermore, because adolescents who are currently dissatisfied with their bodies or think about suicide may be at least partially influenced by their previous experience of body dissatisfaction, the current relationship between body dissatisfaction and suicidal thinking may be even more prevalent in those who had previous experience of body dissatisfaction. However, research on this issue is lacking, as is the understanding of how repeated exposure to body dissatisfaction during adolescence is associated with an increased risk of suicidal ideation and how suicidal thinking differs by gender at each pubertal stage. It is thus valuable to understand adolescents' multiple experiences of body dissatisfaction and suicide thoughts.

Using a representative sample of Korean adolescents, we examined trends in body dissatisfaction and suicidal ideation from early through late adolescence. By classifying two pubertal stages (early and mid-adolescence) according to gender, we aimed to identify the mediating effect of body dissatisfaction at each early stage (T1) on the relationship between body dissatisfaction and suicidal ideation at each later stage (T2), controlling for conventional suicide-related factors, including T1 suicidal ideation and T2 body dissatisfaction. Furthermore, the frequency of body dissatisfaction experienced by boys and girls in the first and follow-up surveys was used to assess the dose–response relationship between these two issues, controlling for the total frequency of previous suicide thoughts before T2.

Methods

Data and participants

Data were obtained from the Korea Youth Panel Survey (KYPS) conducted by the Korea Institute for Youth Development using a stratified multistage cluster sampling

method in 15 administrative areas, excluding Jeju Island, Korea. The survey was conducted annually from October through December in 2003, 2004, 2005, and 2006. The KYPS data were derived from two groups at different pubertal phrases (early and mid-adolescents). The initial groups were early-adolescent boys (mean age of 10.9 years at T1) and girls (10.8 years) and mid-adolescent boys (14.8 years) and girls (14.8 years); follow-up surveys were conducted for 2 years (early adolescents, 2004–2006) and 3 years (mid-adolescents, 2003–2006), respectively. Experienced, well-trained interviewers implemented the surveys using two methods: face-to-face surveys for adolescents and telephone surveys for their parents. A total of 2844 early adolescents (1524 boys and 1320 girls) from 84 schools and 3449 mid-adolescents (1725 boys and 1724 girls) from 104 schools around the country and their parents gave their consent and completed the questionnaire at T1. Of the early adolescents, 95.2% and 94.0% continuously participated in the second and third survey waves; of the mid-adolescents, 90.1%, 90.6%, and 90.5% continuously participated in the second, third, and fourth waves, respectively. The parental response rates were slightly lower than those of their children (93.9% and 92.2% for early adolescents and 90.1%, 89.3%, and 89.2% for mid-adolescents). The last wave of each study population was used as T2 in the analysis. Further details regarding the survey design and methods are provided elsewhere (Rhee, Yun, & Khang, 2007).

Respondents were excluded from the study if follow-up data were missing for important questions such as body dissatisfaction, suicidal ideation, and parental socioeconomic status (SES) or if an individual had dropped out of the study by moving to a new school. Even after this process, there were no significant differences by gender or geographical area for all waves of the study. The final data set used for

analysis contained data for 2589 early adolescents (1380 boys and 1209 girls) and 2866 mid-adolescents (1429 boys and 1437 girls), representing 91.0% and 83.1% follow-up rates for early and mid-adolescents.

Measures

Suicidal ideation at Time 2

Self-reported suicidal ideation at T2 as an dependent variable was ascertained by the statement “I have thought of killing myself for no particular reason during the past year,” which respondents answered on a five-point Likert scale ranging from “*strongly disagree*” to “*strongly agree*.” Answers were classified as “suicidal ideation” if the answer was “agreed” or “strongly agreed” and “non-suicidal ideation” for the other categories.

Suicidal ideation at Time 1

Responses indicating T2 suicidal ideation as one of the independent variables were also dichotomized as classified above. For mid-adolescents, suicidal ideation was questioned starting from the second wave of surveys. Thus, in the analysis, suicidal ideation at that wave was regarded as suicidal ideation at T1 because of higher correlations between previous and current/future suicide thoughts.

Frequency of suicidal ideation before Time 2

Individual waves provided information about suicide thoughts, and a “yes” answer for a wave was counted as “one time.” Two waves for early adolescents and three waves for mid-adolescents were conducted before T2. However, as mentioned above, because there was no question about mid-adolescent suicidal ideation in the first wave, the maximum frequency for both study populations was two times.

Body-image dissatisfaction at Time 1 and Time 2

Three items of the KYPS asked about participants' stress as related to body image: "How often do you feel stressed about (1) being underweight or overweight, (2) being short or tall in height, and (3) your appearance?" The respondents could choose the following answers: never, almost never, neutral, fairly often, and very often. Body-shape preference not only varies by gender, but also changes as boys and girls pass through adolescence (McCabe & Ricciardelli, 2004). Indeed, because body dissatisfaction can be caused by various aspects of body shape and parts (e.g., weight, height, appearance) (Wright, 1989), the three items used here should be summed to not only comprehend the mixed picture of body dissatisfaction, but also to accurately reflect the levels of body dissatisfaction. Regardless of gender, Cronbach's alpha was 0.71 and 0.77 at T1 and T2 in early adolescents and 0.68 and 0.76 in mid-adolescents at T1 and T2, respectively. The responses were divided into "body dissatisfaction" if the average value was > 3.0 (fairly or very often stressed) and "body satisfaction" if the average value was ≤ 3.0 .

Frequency of body-image dissatisfaction during follow-up

The other wave(s) showed the same ranges of Cronbach's alpha as those presented above for both early and mid-adolescent boys and girls. The maximum frequency was three times for early-adolescents and four times for mid-adolescents during follow-up. However, among the early-adolescent boys, none experienced body-image dissatisfaction three times; in that group, the maximum was two times.

Other covariates

Categorizations of other covariates, such as age, living with both parents (yes/no), parental SES ((1) educational attainments (middle school or less/high school/college or more), (2) household income (low/middle/upper), and (3) occupational status (non-

manual/manual/unemployed)), open conversation with parents/peers/teachers about his/her concerns (yes/no), and perceived neighborhood social capital (good/poor) at T2 were considered in the analysis due to their higher correlations with T2 suicidal ideation. For further details regarding the measurements are described in Kim (2007).

Statistical analysis

The data sets were derived from adolescents in two different pubertal phases and information on body dissatisfaction at age 14 and on suicidal ideation at ages 14 and 15 was not available because of data limitations. However, the two populations were regarded as one population to examine the patterns of boys and girls in relation to body dissatisfaction and suicidal ideation as they progressed from early to late adolescence (Figure 1). For our second and third objectives, boys and girls were analyzed separately by early- and mid-adolescence because distributions and changes of body dissatisfaction and suicidal ideation varied by gender and pubertal stage (Table 1). More specifically, to investigate a mediating role of T1 body dissatisfaction in the relationship between T2 body dissatisfaction and T2 suicidal ideation, the methods proposed by Baron and Kenny (1986) and Holmbeck (1997) were employed. They noted that the following four conditions should be accepted: (1) T1 body dissatisfaction is associated with T2 body dissatisfaction (Table 2); (2) T2 body dissatisfaction is associated with T2 suicidal ideation (see Model 1 of Table 3); (3) T1 body dissatisfaction is associated with T2 suicidal ideation, controlling for T2 body dissatisfaction; and (4) the association between T2 body dissatisfaction and T2 suicidal ideation is weaker when T1 body dissatisfaction is added than when T1 body dissatisfaction is not considered (see Model 2 of Table 3). As previous studies (Rodríguez-Cano et al., 2006; Holsen, Kraft, & Røysamb, 2001), T1 suicidal ideation

was also controlled to avoid the overestimation of the relationship between two issues at T2. Furthermore, to determine the dose-response relationship between body dissatisfaction and suicidal ideation, the total frequency of suicidal ideation before T2 that may function as a confounder was also controlled (Figure 2). Other covariates (age, living with parents, parental SES, emotional supports from parents/teacher/peers, and neighborhood social capital) were basically controlled in the analyses. Weights originally provided by the KYPS were used to estimate the population parameters in both descriptive and multivariate analyses. All analyses were done using SAS (version 9.1).

Results

Trend results by gender

Overall, girls were more likely to be dissatisfied with their bodies and to think about suicide than boys at all ages, except for the non-significant gender difference in suicidal ideation at ages 11 and 12 ($p > 0.05$; Figure 1). For boys and girls, body dissatisfaction progressively increased until it peaked at 16 years for boys and 15 years for girls (mid-adolescence) and then slightly decreased and/or became stable, in an A-shaped curve (Figure 1). Notably, the pattern of suicide thoughts was similar among all groups except early adolescent boys, for whom the pattern was reversed.

--Figure 1 about here--

Descriptive results by gender and pubertal stage

T1 and T2 body dissatisfaction and T1 suicidal ideation were each associated significantly with an elevated risk of T2 suicidal ideation (Table 1). In addition, the more dissatisfaction boys and girls had with their bodies and the more they thought

about suicide, the greater their risk of T2 suicidal ideation, regardless of pubertal stage.

--Table 1 about here--

Mediator effect of Time 1 body image dissatisfaction

To test whether T1 body dissatisfaction functioned as a mediator between T2 body dissatisfaction and T2 suicidal ideation, we used multivariate logistic regression analyses to determine whether the four conditions of mediation proposed by Baron and Kenny (1986) and Holmbeck (1997) were met. Even controlling for T1 suicidal ideation, as well as other covariates, T1 body dissatisfaction was associated significantly with T2 body dissatisfaction in all adolescents (Table 2). That is, compared to boys and girls who were satisfied with their bodies at T1, boys and girls who were dissatisfied with their bodies at T1 appeared more likely to be dissatisfied with their bodies at T2, which supports the first condition of mediation. As observed in the descriptive analysis, Model 1 (without T1 body dissatisfaction) showed that regardless of gender and pubertal stage, adolescents with T2 body dissatisfaction were more than two times more likely than those without T2 body dissatisfaction to act on suicide thoughts at T2 (i.e., the second condition was accepted; Table 3). Model 2 (with T1 body dissatisfaction) showed that the association between T1 body dissatisfaction and T2 suicidal ideation among early-adolescent girls and mid-adolescent boys was still significant, but that among mid-adolescent girls became non-significant when T2 body dissatisfaction was controlled (i.e., the third condition was accepted only for early-adolescent girls and mid-adolescent boys). In other words, the body dissatisfaction of girls at age 11 and of boys at age 15 (T1) predicts the risk of suicidal ideation two (former) and three (latter) years later (T2), even controlling for T2 body dissatisfaction. As expected, the odds ratios for the association between T2 body

dissatisfaction and T2 suicidal ideation among the early-adolescent girls and mid-adolescent boys in particular decreased by 12% when T1 body dissatisfaction was considered. This suggests that 12% of T2 suicidal ideation among these populations with T2 body dissatisfaction is attributable to their dissatisfaction with body image at T1 (i.e., the last condition was accepted).

--Table 2 & 3 about here--

Dose-response relationship between body image dissatisfaction and suicidal ideation

Without controlling for the frequency of suicidal ideation before T2, the patterns of the frequency of body dissatisfaction during the follow-up stages and T2 suicidal ideation were similar to those discussed for the descriptive analysis: The more body dissatisfaction adolescents experienced, the more likely they were to think about suicide (see Square in Figure 2). The graded patterns decreased, but remained significant, among early-adolescent boys and girls and mid-adolescent boys, but not among mid-adolescent girls, when the frequency of suicidal ideation before T2 was considered (see Circle in Figure 2). Interestingly, the graded relationship was more clearly observed in early adolescents than in mid-adolescents.

--Figure 2 about here--

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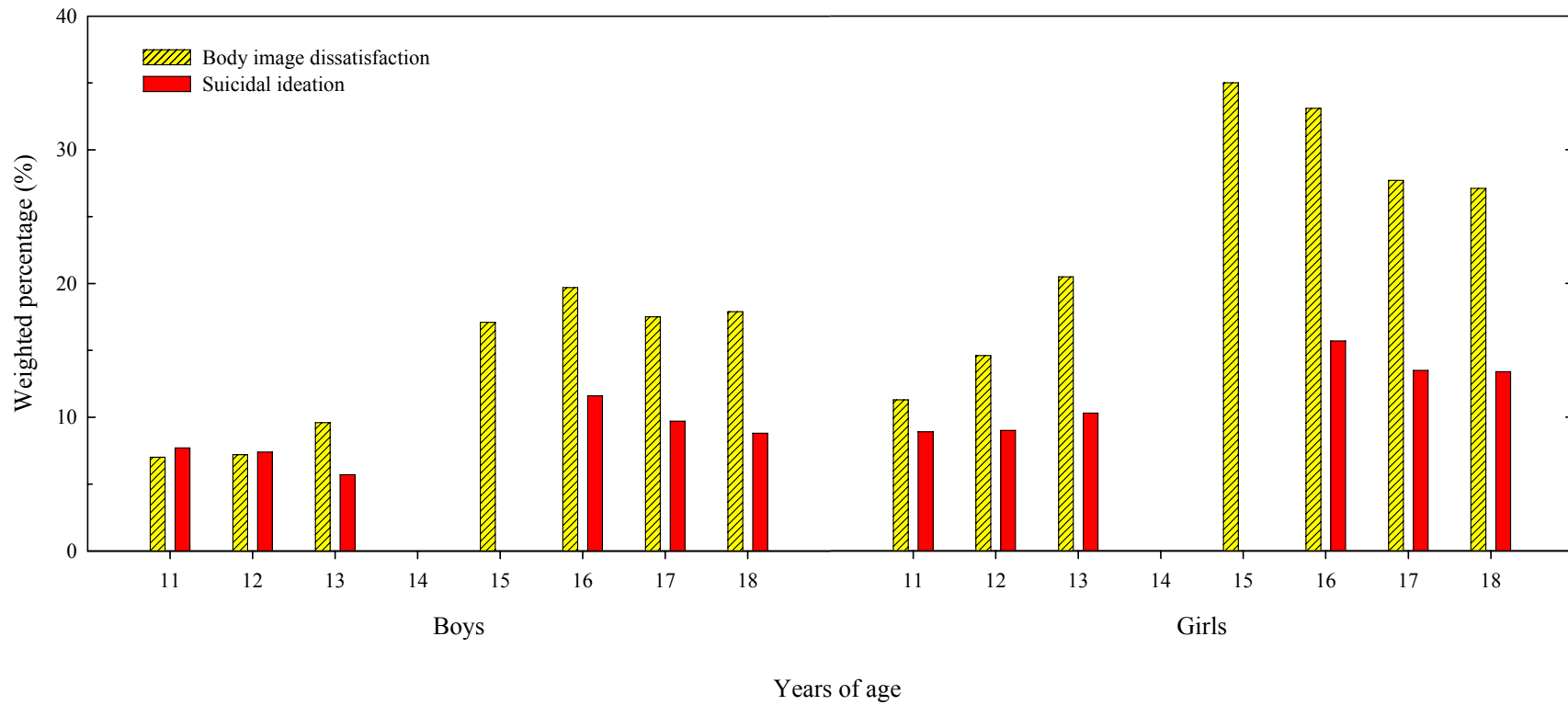


Figure 1. Trends in body image dissatisfaction and suicidal ideation over time by gender

Table 1. Weighted percentage distributions and unadjusted odds ratios (ORs) (95% confidence intervals (CIs)) of Korean early and middle adolescent boys and girls reporting suicidal ideation at Time 2 by body image dissatisfaction at Time 1 and Time 2, frequency of body image dissatisfaction during follow-up, suicidal ideation at Time 1, and frequency of suicidal ideation before Time 2

	Early adolescents (n=2589)								Middle adolescents (n=2866)							
	Boys (n=1380)				Girls (n=1209)				Boys (n=1429)				Girls (n=1437)			
	N	% ¹	OR	(95% CI)	N	%	OR	(95% CI)	N	%	OR	(95% CI)	N	%	OR	(95% CI)
Body image dissatisfaction at Time 1																
No	1284	5.3	1.00		1072	8.6	1.00		1184	7.4	1.00		934	10.4	1.00	
Yes	96	9.4	1.88	(0.91-3.90)	137	23.7	3.33**	(2.13-5.21)	245	16.3	2.46**	(1.65-3.67)	503	18.8	2.01**	(1.47-2.73)
Body image dissatisfaction at Time 2																
No	1248	4.4	1.00		961	6.8	1.00		1173	6.4	1.00		1048	9.8	1.00	
Yes	132	17.1	4.54**	(2.66-7.73)	248	23.8	4.27**	(2.90-6.28)	256	21.0	3.92**	(2.67-5.75)	389	22.4	2.66**	(1.94-3.63)
Frequency of body image dissatisfaction during follow-up																
Never	1122	3.9	1.00		832	5.6	1.00		833	5.1	1.00		637	7.8	1.00	
one time	200	9.3	2.52**	(1.43-4.44)	228	16.0	3.23**	(2.04-5.13)	333	8.5	1.73*	(1.06-2.84)	336	14.5	2.02**	(1.32-3.07)
two times	58	24.1	7.77**	(3.96-15.27)	113	23.9	5.30**	(3.13-8.97)	162	20.6	4.87**	(2.97-7.98)	233	15.2	2.14**	(1.35-3.38)
three times	NR	NR	NR	NR	36	39.8	11.19**	(5.40-23.21)	64	22.0	5.27**	(2.72-10.22)	108	24.9	3.95**	(2.33-6.68)
Four times									37	26.7	6.81**	(3.12-14.89)	123	24.8	3.91**	(2.36-6.47)
Suicidal ideation at Time 1																
No	1274	4.7	1.00		1102	8.5	1.00		1264	6.6	1.00		1212	9.1	1.00	
Yes	106	16.0	3.90**	(2.19-6.96)	107	28.5	4.29**	(2.68-6.88)	165	27.1	5.23**	(3.45-7.90)	225	34.5	5.46**	(3.90-7.64)
Frequency of suicidal ideation before Time 2																
Never	1194	4.0	1.00		1029	7.0	1.00		1169	5.4	1.00		1106	7.9	1.00	
one time	164	11.9	3.22**	(1.85-5.59)	144	24.2	4.24**	(2.70-6.65)	216	21.7	4.85**	(3.21-7.32)	243	21.9	3.25**	(2.24-4.72)
two times	22	40.6	16.23**	(6.49-10.58)	36	47.8	12.48**	(6.09-24.34)	44	41.8	12.5**	(6.47-24.32)	88	55.6	14.56**	(9.07-23.36)
Total number of suicidal ideation at Time 2 (%)			78 (5.7%)				125 (10.3%)				126 (8.5%)				193 (13.4%)	

* p<0.05; ** p<0.01

¹Percentage of non-suicidal ideation was not presented in this table because the answer category is either "suicidal ideation" or "non-suicidal ideation".

Note: NR = no response

Table 2. Adjusted odds ratios (ORs) and 95% confidence interval (CIs)¹ for the association between Time 1 body image dissatisfaction and Time 2 body image dissatisfaction among Korean early and middle adolescent boy and girls

	Body image dissatisfaction at Time 1 among early adolescents				Body image dissatisfaction at Time 1 among middle adolescents			
	Boys		Girls		Boys		Girls	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Body image dissatisfaction at T2								
No	1.00		1.00		1.00		1.00	
Yes	3.38**	(2.01-5.70)	4.67**	(3.16-6.90)	3.05**	(2.23-4.19)	4.21**	(3.28-5.41)

* p<0.05; ** p<0.01

¹Adjusted for age, living with both parents, parental SES (education/income/occupation), open conversation with parents, teachers, and peers, perceived neighborhood social capital, and suicidal ideation at T1

Table 3. Adjusted odds ratios (ORs) and 95% confidence intervals (CIs)¹ for the effects of body image dissatisfaction at Time 1 and Time 2 and suicidal ideation at Time 1 on suicidal ideation at Time 2 among Korean early and middle adolescent boys and girls

	Early adolescents				Middle adolescents			
	Boys		Girls		Boys		Girls	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Model 1¹								
Suicidal ideation at Time 1								
No	1.00		1.00		1.00		1.00	
Yes	3.08**	(1.67-5.70)	3.29**	(1.97-5.48)	4.83**	(3.12-7.47)	5.02**	(3.53-7.16)
Body image dissatisfaction at Time 2								
No	1.00		1.00		1.00		1.00	
Yes	4.43**	(2.54-7.73)	3.41**	(2.26-5.16)	3.93**	(2.61-5.90)	2.46**	(1.76-3.45)
Model 2²								
Suicidal ideation at Time 1								
No	1.00		1.00		1.00		1.00	
Yes	3.08**	(1.65-5.73)	3.05**	(1.82-5.13)	4.76**	(3.07-7.37)	4.87**	(3.41-6.97)
Body image dissatisfaction at Time 2								
No	1.00		1.00		1.00		1.00	
Yes	4.43**	(2.52-7.79)	2.99**	(1.94-4.61)	3.48**	(2.29-5.29)	2.29**	(1.60-3.28)
Body image dissatisfaction at Time 1								
No	1.00		1.00		1.00		1.00	
Yes	1.01	(0.46-2.23)	1.81*	(1.08-3.33)	1.93**	(1.24-2.99)	1.24	(0.87-1.77)

* p<0.05; ** p<0.01

¹Adjusted for age, living with both parents, parental SES (education/income/occupation), open conversation with parents, teachers, and peers, and perceived neighborhood social capital

²Adjusted for Model 1 and body image dissatisfaction at Time 1

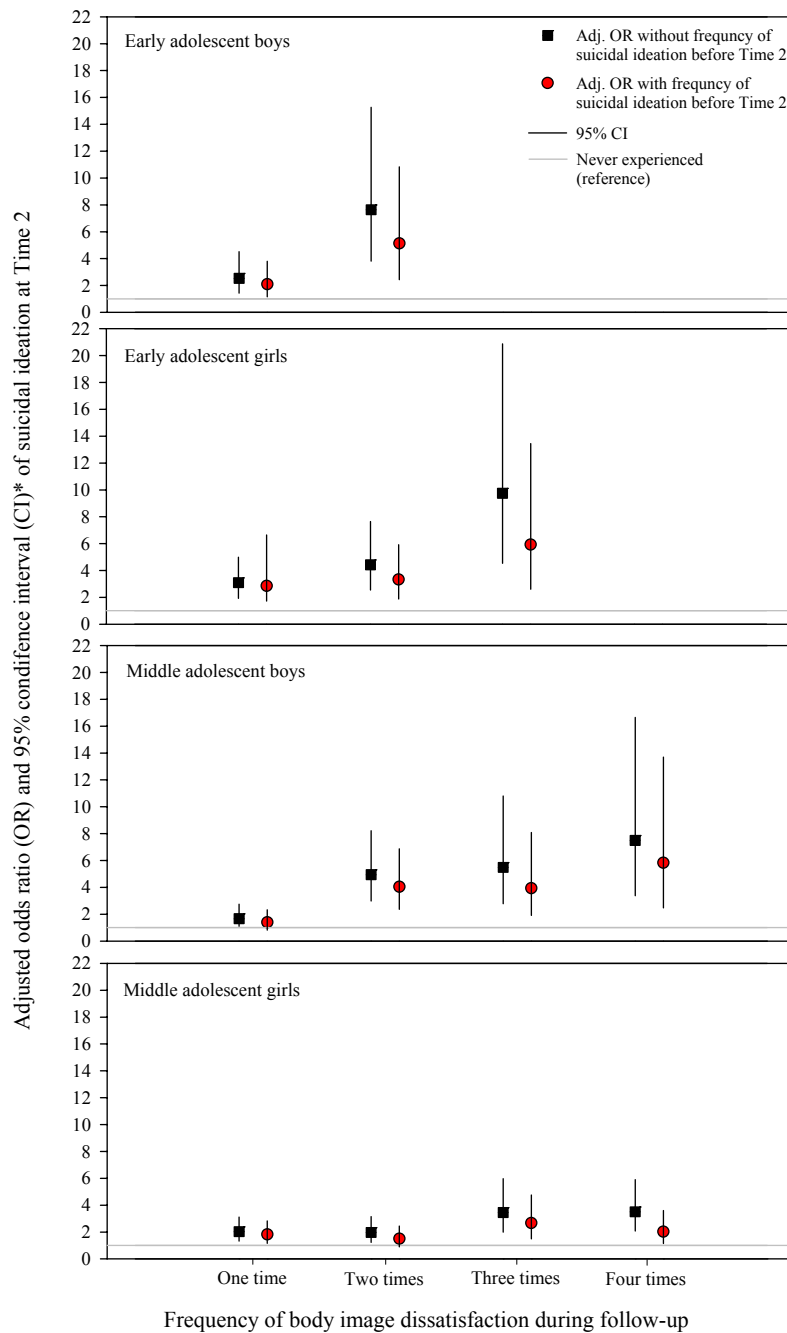


Figure 2. The relationship between frequency of body image dissatisfaction and suicidal ideation

Note: Adjusted for age, living with both parents, parental socioeconomic status (education/income/occupation), open conversation with parents, teachers, and peers, and perceived neighborhood social capital