

Contributions of Attachment and Self-Concept on Internalizing and Externalizing Problems Among Japanese Adolescents

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Abstract We examined the associations and likely pathways underlying the relationships between peer attachment style, self-concept, and Internalizing/Externalizing Problems among high school students in Japan. A total of 228 senior high school students (186 boys and 82 girls; mean age = 16.4) completed the Attachment Questionnaire for Children, Self-Description Questionnaire II-Short, and Youth Self-Report. The main results were that securely attached adolescents reported fewer mental health problems and more positive self-concept than those who reported insecure attachment. Some patterns of associations among variables appeared to be different across gender. The Structural Equation Modeling provided a support for the mediating role of self-concept in influencing the relationships between Attachment and Internalizing Problems, but not Externalizing Problems. The paths for the model were significant across gender. The results promote understanding of psychological processes that influence the relationships between attachment and psychological well-being among high school adolescents in Japan.

Keywords Attachment · Self-concept · Internalizing and Externalizing Problems · Adolescence

Introduction

The theory of attachment emphasizes the importance of interpersonal attachment relationships between children and their primary caregivers in shaping an individual's views of him- or herself and the world around them during early stages of their lives (Bowlby 1969). It also suggests that anxiety and depression in the child may result from actual or threatened loss of attachment relationships (Bowlby 1973, 1980). Ainsworth et al. (1978) developed a scheme of attachment styles (e.g., secure, anxious/ambivalent, avoidant) in infants, which Hazan and Shaver (1987) applied to romantic relationships among adults. Bartholomew and Horowitz (1991) conceptualized an alternative model of four categories of attachment style (secure, preoccupied, dismissing, fearful), based on two dimensions (working models of self vs. others). Secure individuals have positive models of self and others, and secure attachment leads to confidence and assurance in self, whereas insecure attachment patterns manifested as expectations that others are unworthy and irresponsible, and self is also unworthy and unlovable. Early patterns of interaction with attachment figures become organized into generalized patterns by the time a person reaches late adolescence (Bowlby 1973). The developmental process of exploration focuses on the physical development in infancy. In adolescence, the exploration is more likely to focus on an individual's emotional and cognitive autonomy (Allen et al. 1994), and this is also a time when individuals begin to develop attachment relationships with friends, while continuing strong attachment relationships with their parents (Kerns et al. 2006). Psychological autonomy and parental warmth and responsiveness are important for secure attachment figures among adolescents (Karavasilis et al. 1999). Nelis and Rae (2009) point out the importance of peer attachment and the role and

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functions of peers as attachment figures in adolescence attachment.

Self-concept and self-esteem are constructs that are strongly associated with our personality and identity and also intertwined with our culture. Self-concept is a multifaceted and hierarchical construct that includes sets of self-cognitions in a variety of domains (e.g., physical, appearance, relations with peers and parents, academic). Self-concept is itself important, as is its close relation to other psychological variables such as emotional/behavioral problems. A study in Canada demonstrated a systematic and highly differentiated pattern of associations between domains of self-concept and various aspects of mental health problems (Marsh et al. 2004). This study proposes the usefulness of a multidimensional perspective of self-concept (Shavelson et al. 1976) rather than a single dimension of self-esteem for understanding mental health among adolescents.

Recent studies have indicated associations between different attachment styles and psychopathology (e.g., Allen et al. 2004; Berger et al. 2005; Nishikawa et al. 2009), and consistent patterns of individual differences in attachment styles among adolescents and young adults (e.g., Markiewicz et al. 2006). One series of studies has shown that children and adolescents who classify themselves as avoidant or ambivalently attached display higher levels of Internalizing and Externalizing Problems than adolescents who classify themselves as securely attached (Muris et al. 2000; Muris et al. 2001; Muris et al. 2003). Insecure attachment was a predictor of Internalizing Problems, but not in the case of Externalizing Problems (Muris et al. 2003). There has been a debate about the links between Externalizing Problems and self-esteem. Some researchers suggest that aggression and antisocial behavior in children and adolescents are expression of their low self-esteem (*low self-esteem hypothesis*; e.g., Donnellan et al. 2005), while others suggest that aggression stems from a high self-esteem disputed by others (*disputed self-esteem hypothesis*; e.g., Baumeister et al. 2000). Attachment patterns and indicators of Internalizing and Externalizing Problems remained stable over time during adolescence, although there was a difference in stability between constructs (Buist et al. 2004). Japanese studies show that secure attachment of adolescents is associated with good mental health (Kanemasa and Daibo 2003), learning goal tendency, curiosity, and self-esteem (Matsuoka 2003). It has also been shown that a variety of psychosocial variables (parental care, cooperativeness, family cohesion) are determinants of attachment, as reported by university students (Tanaka et al. 2008), and that female college students report more secure attachment than male students (Matsuoka et al. 2006).

It has been found that children's secure attachment with parents is related to different domains of self-concept, and the associations between attachment and self-esteem are stronger among adolescents as compared to children in middle childhood (Doyle et al. 2000). As children's self-concept becomes more organized and hierarchical during adolescence (Harter 1998), more unique pathways from attachment and self-concept are apparent among adolescents than among younger children (Doyle et al. 2000). Gomez and McLaren (2007) found that self-esteem had additive and mediation effects on both father and mother attachment–aggression relationship, and also moderate the mother attachment–aggression relationship. Kenny et al. (1993) presented a mediating model in which the view of self was a mediator of parental attachment and depressive symptoms among American adolescents. Their model, which assessed indirect influence of attachment and depression through the view of self, showed a good fit. A significant gender difference was found on the path between attachment and view of self, with a stronger relation among boys than girls. To understand more about the psychological mechanisms that mediates relationships between attachment and depressive symptoms among adolescents, Kenny et al. (1993) pointed to the importance of testing causal models that account for these variables and other cognitive processes. With this in mind, our interest in the present study was to model the differential impact of peer attachment on self-concept and a broad range of emotional/behavioral problems among adolescent boys and girls in Japan.

The main aims of the present study were to investigate the hypothesized pathways underlying the relationships between peer attachment as determinants of self-concept and mental health problems defined as Internalizing and Externalizing Problems. Second, we examined the different influence of gender in the pathways in the model. Based on theoretical views, we hypothesized that secure attachment would be significantly associated with a positive self-concept, which in turn would be significantly and negatively associated with mental health problems.

Method

Participants

The study involved 268 healthy adolescents (188 boys and 80 girls) attending a public school in a middle-class neighborhood in a city in Japan (total population 255,765). The mean age was 16.4 years (range = 15–19, SD = .94). Based on information provided by the school director, a majority of the students' socioeconomic background was

from middle-class families. Nineteen students (7.1%) did not complete the questionnaire due to absence from school.

Procedure

The Attachment Questionnaire for Children (AQC) (Sharpe et al. 1998), originally produced in English, was translated into Japanese by the first-mentioned author, whose native language is Japanese. Back translations by a bilingual Japanese researcher and a pilot study with several adolescents were conducted. Following the English version of the Self-Description Questionnaire II-Short (SDQII-S) (Marsh et al. 2005), 51 items in SDQII-S were selected from the 102 items of the Japanese SDQ-II (Nishikawa et al. 2007). The Japanese 1991 version of Youth Self-Report (YSR) had already been translated by the National Institute of Mental Health (National Center of Neurology and Psychiatry) in Japan. The present study is designed and conducted following the World Medical Association Declaration of Helsinki (The World Medical Association 2008) as ethical principles for the participants. All participants gave informed consent. The studies were approved by the director of the school. Confidentiality was secured since data was analysed in coded form and no individual could be identified in the publication. School classes were selected by the school director based on the students' class schedule. The students filled in the questionnaire during regular class hours reserved for the study. It took approximately 30 min to complete. The questionnaires were conducted during the summer of 2005.

Instruments

Attachment Questionnaire for Children (AQC)

AQC is a simplified age-downward version of Hazan and Shaver's (1987) single-item measure of attachment style, developed by Sharpe et al. (1998). It assesses the three basic patterns of attachment as "secure," "avoidant," and "ambivalent" attachment. Using the AQC, students are provided with three descriptions concerning their feelings about and perception of relationships with their friends and peers. The AQC has adequate reliability and validity by showing theoretically meaningful relations with other attachment indexes and psychopathology in youth (Muris et al. 2003; Sharpe et al. 1998). In the present study, the word "children" in the AQC was changed to "students" to make it more suitable to adolescents. In the Japanese AQC, secure attachment was negatively associated with avoidant ($r = -.45$) and ambivalent attachment ($r = -.31$), while ambivalent and avoidant were positively associated ($r = .30$), which is consistent with Muris et al. (2003).

Self-Description Questionnaire II-Short (SDQII-S)

The SDQII-S (Marsh et al. 2005) is a 51-item self-report inventory which has been modified from the original 102-item SDQII (Marsh 1992) to measure junior and senior high school age self-concept in the following areas: Non Academic Self (Physical, Appearance, Same-sex Relations, Opposite-Sex Relations, Parent Relations, Emotional Stability, Honesty-Trustworthiness, Academic-Self (Math, Verbal, and School), and Self-esteem. The total self-concept score is the sum of the different subscales. The participants respond on a six-point Likert response scale ranging from 1 = *false* to 6 = *true*. The psychometric properties of the original SDQII-S were sufficient, with good reliability and higher order confirmatory factor models applied in Australia (Marsh et al. 2005). Higher scores indicate better self-concept. The reliability coefficient for each Japanese SDQII-S factor was acceptable (range = .56–.90, median = .77), which can be compared with the original scores of .80–.90 (median = .76) (Marsh et al. 2005). Internal consistency for total self-concept was .86, while the original scored .90. Table 1 shows mean score and standard deviations of the main scales used in the present study.

Youth Self-Report (YSR)

YSR (Achenbach 1991) is a widely used self-report mental health questionnaire designed for use with adolescents between the ages of 11 and 18. YSR contains 112 items that measure (a) eight narrowband sub-scales (Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Aggressive Behavior, Delinquent Behavior), (b) two broadband scales: Internalizing Problems (Withdrawn, Somatic Complaints, Anxious/Depressed), and Externalizing Problems

Table 1 Mean score and standard deviations of the SDQII-S and YSR

	All (<i>N</i> = 254)		Boys (<i>N</i> = 176)		Girls (<i>N</i> = 81)	
	<i>M</i>	SD	<i>M</i>	SD	<i>M</i>	SD
SDQII-S						
Self-esteem	18.10	4.95	18.73	4.90	16.63	4.77
Total Self	181.53	26.15	184.01	25.57	174.57	26.72
Academic	40.66	11.25	41.47	11.02	38.74	11.61
Non Academic	105.39	15.35	106.66	15.18	101.98	15.42
YSR						
Internalizing	14.42	9.93	14.08	10.29	15.25	9.01
Externalizing	11.33	8.34	11.45	8.65	11.05	7.59
Total Problems	39.04	21.95	38.66	23.02	40.05	18.92

(Aggressive and Delinquent Behavior). Items which are not included in any of the subscales are collected under the heading of “Other Problems.” The Total Problems score measures the overall behavioral and emotional functioning of the adolescents. The participants score their response on a three-point scale from 0 (not true) to 2 (very true or often true). This instrument has already been validated in Japan (Kuramoto et al. 2002). Higher scores indicate more mental health problems. The reliability coefficient for YSR factors in the present study was sufficient (range .65–.85, median = .73; see Table 1), which can be compared with the manual, which had scores from .59–.87 (Achenbach 1991).

Statistical Analysis

SPSS (The Statistical Package for Social Sciences) version 16.0 (2008) was used for computing descriptive statistics, correlations, and analysis of variance (ANOVAs). Structural Equation Models (SEM) was analyzed using AMOS 16 (SPSS 2008) to evaluate the mediating effects of the variables specified by models with path diagrams. This software performs analyses of moment structures through maximum likelihood estimation. To investigate whether a variable X (self-concept) is a mediator between independent variable A (Attachment) and dependent variable B (Mental Health) in the path analysis, a direct path from A to B is drawn in a first analysis. In the next analysis, two paths are added, one from A to X and the other from X to B. If X is a significant mediator, the weight of the path from A to B will decrease in the second analysis in comparison to the first one (Baron and Kenny 1986).

The Goodness of Fit Index (GFI) is considered a reasonable statistic method for evaluating the model and assesses the fit between the hypothesized model and the data. AMOS calculates all measures that capture model evaluation which were selected based on the different theoretical perspectives such as: CMIN/df (the minimum value of sample discrepancy divided by its degree of freedom, smaller values preferable; Holmes-Smith 2000); GFI (The Goodness of Fit Index, the measure of the relative amount of variance and covariance, close to 1, over 0.9 is preferable; Jöreskog and Sörbom 1993); AGFI (the adjusted Goodness of Fit Index larger value, over 0.9

preferable; Jöreskog and Sörbom 1993); and RMSEA (the root mean square error of approximation based on population discrepancy, smaller values, below .08 preferable; Browne and Cudeck 1993).

Results

Descriptive Analysis

Table 1 presents means and standard deviations for the self-concept (SDQII-S) and Internalizing/Externalizing Problems (YSR) for boys and girls separately. Univariate *F*-test showed significant gender effects for SDQII-S; Physical, $F(1, 222) = 13.50, p < .001$; Appearance, $F(1, 222) = 10.09, p < .01$; Math, $F(1, 222) = 4.56, p < .01$; Self-esteem, $F(1, 222) = 4.60, p < .05$; and Total Self, $F(1, 222) = 4.51, p < .05$ (with *Eta*²s between 0.02 and 0.20). Boys scored significantly higher on these scales compared to the girls. There were no significant effects on age or gender × age interaction. Univariate *F*-test showed no significant effects of gender, age, or gender × age interactions for either the YSR eight subscales or Internalizing and Externalizing Problems. The mean scores of YSR, Total Problems (38.7 for boys, 40.0 for girls), seemed to be similar to the US norm of non-referred sample (37.3 for boys, 39.6 for girls) (Achenbach 1991).

Attachment Style

A secure attachment was reported by 63.3% of the adolescents ($n = 152$), with 15.8% ($n = 38$) as avoidant and 20.8% ($n = 50$) as ambivalently attached. Series of 2 (gender) × 3 (age) analyses of variance (ANOVAs) were carried out for AQC. Univariate *F*-test showed no significant effects on gender, age, or gender × age interactions for the AQC.

Effects of Attachment Style on Internalizing and Externalizing Problems

Table 2 shows the mean YSR scores of adolescents who classified themselves as either secure, avoidant, or

Table 2 Mean YSR scores (SDs) of adolescents who classified themselves as either Securely, Avoidant, or Ambivalently Attached

YSR	AQC			Post-hoc comparisons		
	Secure ($n = 152$)	Avoidant ($n = 38$)	Ambivalent ($n = 50$)			<i>F</i>
Internalizing	11.92 (8.64)	19.17 (11.01)	18.05 (8.69)	8.98	<.001	Secure < Avoidant, Ambivalent
Externalizing	11.06 (8.52)	11.34 (9.02)	12.82 (7.01)	0.37	NS	
Total Problems	35.30 (20.70)	46.14 (26.39)	47.24 (18.93)	4.09	<.05	Secure < Avoidant, Ambivalent

YSR Youth Self-Report, AQC Attachment Questionnaire for Children, NS non significant

ambivalently attached. Univariate F -test showed significant effects of attachment style on the following YSR scales: Internalizing, $F(2, 193) = 8.98, p < .001$, and Total Problems, $F(2, 193) = 4.09, p < .05$, including the subscales Withdrawn, $F(2, 193) = 9.98, p < .001$; Anxious/Depressed, $F(2, 193) = 9.95, p < .001$, and Social Problems, $F(2, 193) = 5.83, p < .05$ (with Eta^2 's between 0.04 and 0.09). Post-hoc comparisons revealed that insecurely attached (i.e., Avoidant and Ambivalent) adolescents had higher levels of Internalizing and Social Problems than securely attached adolescents. There was no effect of attachment style on Externalizing Problems, and there was no significant gender \times attachment interaction ($p < .05$).

Evaluation of SEM

Before testing the models, intercorrelations among the measures were analyzed (presented separately for boys and girls in Table 3). Some variation was found in patterns of gender, such as between attachment style, self-concept, and mental health problems. Boys' Academic Self was associated with Internalizing, Externalizing, and Total Problems ($r =$ between $-.17$ and $-.23, p < .001$ and $.05$), while it was

associated only with Internalizing Problems among girls ($r = -.32, p < .05$). Non Academic Self was associated with Internalizing Problems and Total Problems across gender ($r = -.31$ to $-.48, p < .001$). However, for boys, Externalizing Problems was associated with Non Academic Self ($r = -.23, p < .001$). Boys' Externalizing Problems was associated with Ambivalent Attachment ($r = .23, p < .001$), and Total Problems was associated with all attachment styles ($r =$ between $-.17$ and $.34, p < .001$ and $.05$), while girls' attachment styles showed no associations with Externalizing or Total Problems.

The subscales from the SDQII-S and YSR (Internalizing and Externalizing Problems) and three attachment styles from AQC were used for the SEM. Figure 1 presents the standardized solution for the SEM, specifying attachment as a direct determinant of self-concept and Mental Health. The pathway shown in Fig. 1 assesses a role of self-concept as mediating the relationship between Attachment and Mental Health. The pathway between Attachment and self-concept was significant ($p < .001$). However, the pathway between self-concept and Mental Health was not significant, and Internalizing and Externalizing did not evaluate a shared variance of Mental Health.

Table 3 Correlations among measure factors of AQC, SDQII-S, and YSR for boys and girls

Factors	1	2	3	4	5	6	7	8	9	10
Boys										
Secure ATT	–									
Avoidant ATT	–.47**	–								
Ambivalent ATT	–.28**	.31**	–							
Self-esteem SC	.23**	–.26**	–.34**	–						
Academic SC	–.04	–.03	–.06	.43**	–					
Non Academic SC	.41**	–.42**	–.35**	.52**	.30**	–				
Total Self	.29**	–.34**	–.37**	.73**	.70**	.84**	–			
Internalizing MH	–.22**	.28**	.29**	–.27**	–.17*	–.31**	–.40**	–		
Externalizing MH	–.04	.02	.23**	–.06	–.19*	–.23**	–.28**	.54**	–	
Total Problems MH	–.17*	.18*	.35**	–.22**	–.23**	–.34**	–.43**	–.90**	.84**	–
Girls										
Secure ATT	–									
Avoidant ATT	–.41**	–								
Ambivalent ATT	–.39**	–.28*	–							
Self-esteem SC	.39**	–.19	–.35**	–						
Academic SC	.02	.00	–.13	.52**	–					
Non Academic SC	.64**	–.38**	–.35**	.62**	.15	–				
Total Self SC	.57**	–.32*	–.42**	.82**	.65**	.81**	–			
Internalizing MH	–.39**	.25*	.41**	–.45**	–.32*	–.48**	–.65**	–		
Externalizing MH	.13	–.30	.04	–.30*	–.17	–.15	–.27	.56**	–	
Total Problems MH	–.18	.09	.18	–.38**	–.25	–.44**	–.55**	.91**	.78**	–

ATT attachment, SC self-concept, MH mental health

* $p < .05$; ** $p < .001$

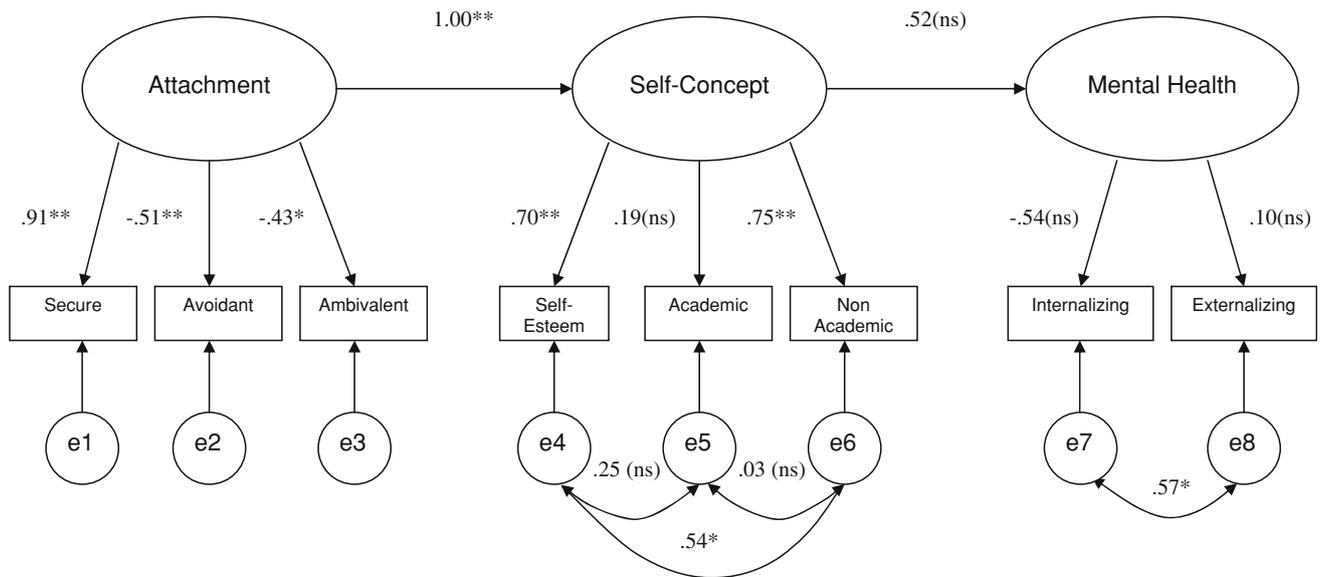


Fig. 1 Structural Equation Model 1. *Note:* All paths significant (** $p < .001$, * $p < .05$) unless indicated (ns). X^2 (df16) = 11.63; CMIN/DF = 0.73; GFI = 0.94; AGFI = 0.86; RMSEA = 0.00

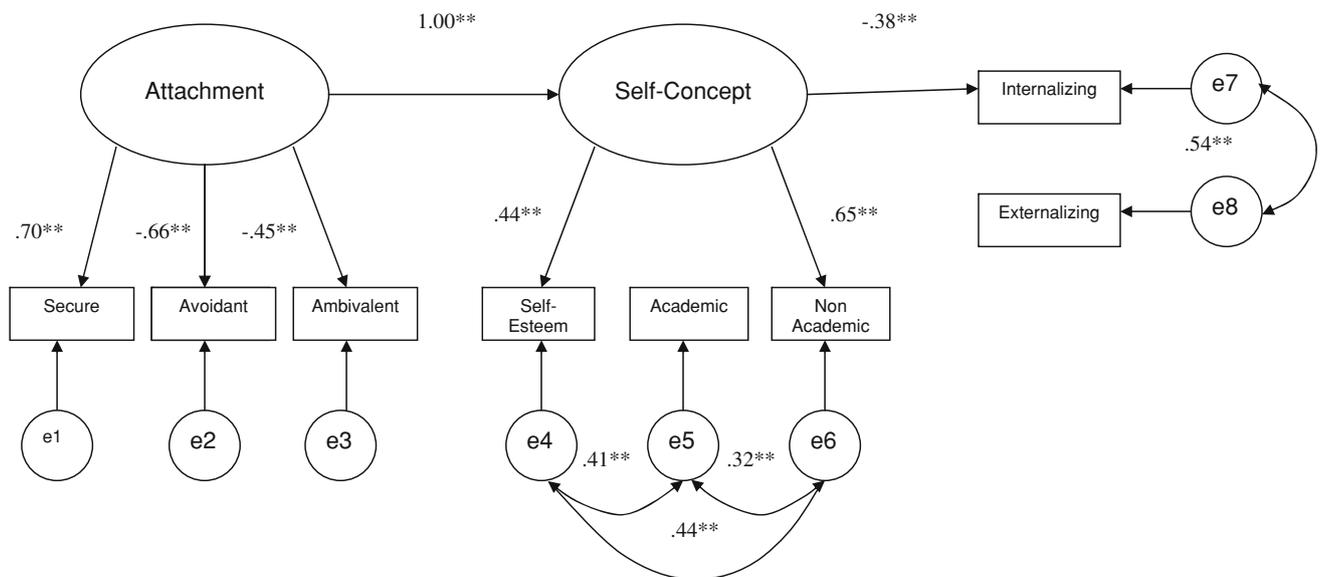


Fig. 2 Structural Equation Model 2. *Note:* All paths significant (** $p < .001$) unless indicated (ns). X^2 (df18) = 33.16; CMIN/DF = 1.84; GFI = 0.96; AGFI = 0.92; RMSEA = 0.67

The second possibility is explored in the model illustrated in Fig. 2. Because pathways between self-concept and Mental Health and between Non Academic Self and self-concept were not significant in model 1, the second model was evaluated, which eliminated these pathways. Mental Health was divided into Internalizing and Externalizing Problems. Model 2 assesses the indirect influence of attachment on Internalizing Problems through self-concept, but not Externalizing Problems. The pathways linking Attachment with self-concept and self-concept with

Internalizing Problems were both significant ($p < .001$). The relationships between all constructs and their indicators were positive and statistically significant ($p < .001$). Indices of goodness of fit indicated an acceptable fit between model 2 and the data (CMIN/df = 1.842, GFI = .958, AGFI = .916, RMSEA = .067; see Table 3). Model 2 was also evaluated separately for boys and girls. All paths in model 2 were significant across gender ($p < .001$ and $p < .05$; Table 3). Indices of goodness of fit were: CMIN/df = 1.804, GFI = .948, AGFI = .896,

Table 4 Comparisons among the pathways from attachment to self-concept and mental health, using various measures of model fit

Model	X ² (df)	CMIN/df	GFI	AGFI	RMSEA
Model 1 (All)	11.63 (16)	.73	.958	.86	.000
Model 2 (All)	33.16 (18)	1.84	.958	.916	.067
(Boys)	32.48 (18)	1.80	.948	.896	.075
(Girls)	13.46 (18)	13.458	.930	.860	.000

RMSEA = .075 for boys, and CMIN/df = .748, GFI = .930, AGFI = .860, RMSEA = .000 for girls, indicating an acceptable fit for both boys and girls (Table 4).

Discussion

We examined the associations and pathways underlying the relationships between peer attachment, self-concept, and mental health problems among high school students in Japan. Our main results were that securely attached adolescents reported less mental health problems and more positive self-concept than those who reported insecure attachment. The Structural Equation Modeling provided tentative support for the mediating role of the self-concept in which attachment is viewed as a determinant of self-concept, which in turn contributes to the level of Internalizing Problems, but not Externalizing Problems.

The high standard deviation of the YSR subscales showed that there are individuals with mental health problems; even mean scores are similar with the US norm (Achenbach 1991).

The overall associations provided in our study seem to be in agreement with various Western studies showing links between self-concept/self-esteem and Internalizing/Externalizing Problems (e.g., Garaigordobil et al. 2005; Lekkou et al. 2006; Marsh et al. 2004) and that insecurely attached adolescents report more Internalizing and Externalizing Problems than securely attached adolescents (Muris et al. 2003; Rönnlund and Karlsson 2006). There were no gender differences on syndrome scales, which were reported in the studies in the West (e.g., Achenbach 1991; Broberg et al. 2001; Lekkou et al. 2006). Similarly, recent study in China had no gender differences (Tepper et al. 2008), which suggests different aspects of gender in syndromes of non-Western countries. Also, in contrast to the results of Marsh et al. (2005), there were gender-specific associations between self-concept and mental health problems. Associations between Academic Self and mental health problems were stronger among boys than girls. A possible explanation for this result could be terms of gender socialization in Japan, such as higher parental expectation for boys regarding higher education (Yamaoka et al. 2003). However, another possibility may be the case

of less significance obtained in the correlational analysis of the small size of the sample of girls.

We evaluated the two models regarding both direct and indirect relationships between Attachment Style and Mental Health Problems via self-concept. Model 1 provided a reasonable fit with the data. However, the path for the Academic Self did not reflect shared variance in self-concept. Academic Self, which reflects the school area of self-concept, seems to have less influence on Total Self compared to Self-esteem and Non Academic Self. In model 1, the path between self-concept and Mental Health was not significant, and Internalizing and Externalizing Problems failed to explain a shared variance of Mental Health. Theoretically, Internalizing and Externalizing Problems are different constructs (see Achenbach 1991). The non-significant path between self-concept and Externalizing may be the case of different patterns of associations in gender. Externalizing Problems was associated with ambivalent attachment and other self-concept scales among boys. However, only Self-esteem was associated with Externalizing Problems among the girls. According to the Psychodynamic Diagnostic Manual (PDM Task Force 2006), antisocial behavior is maladaptive, but antisocial adolescents may be more likely to achieve success in enhancing relationships. The link between antisocial behavior and self-esteem is complicated, as it was found that either low or exaggerated but disputed self-esteem is related to children's aggression (Diamantopoulou et al. 2008). Externalizing Problems are disruptive for the family (Buist et al. 2004), and this problem behavior may be more related to parent-adolescent relationships than peer attachment. The poor self-concept is related to adolescent perceptions of maladaptive family functioning, which in turn was related to more Externalizing Problems (Gomez and McLaren 2007; Henderson et al. 2006). In the case of Internalizing Problems, attachment is connected to self-concept, and when adolescents perceive their social world as untrustworthy and undependable, they are more likely to develop depression, anxiety, and withdraw from social interaction.

The paths of model 2 were all significant and showed a good fit between the hypothesized model and data across gender. Model 2 is comparable with the models evaluated by Kenny et al. (1993), which showed attachment as determinants of the view of self and depressive symptoms. The strength of the present study is that the dimensional mental health assessment (YSR) was used in the model, while Kenny et al. (1993) used a single assessment of depressive symptom (Children's Depression Inventory) (Beck 1967). Using different areas of psychological problems makes it possible to determine whether the model fits equally in explaining a broad range of psychological symptoms. In the present study, it seems that self-concept

plays a mediating role through attachment style only for Internalizing Problems, while Internalizing and Externalizing Problems were still associated in the model.

It is important to acknowledge the limitation in our study. First, as mentioned above, the sample size was relatively small and there were more boys than girls. Second, the AQC may be sensitive to underreporting of attachment patterns (Muris et al. 2003), and does not assess the four major attachment styles, i.e., secure, fearful avoidant, ambivalent, and dismissing avoidant (Bartholomew and Horowitz 1991). On the other hand, the percentage of the Japanese adolescents who rated themselves as neither avoidantly or ambivalently attached (32.9%) was comparable with the 32% reported by Sharpe et al. (1998). In addition, the present study was designed to be cross-sectional and hence does not provide directions of causal effects. It is equally plausible that a higher degree of Internalizing Problems was contributed to negative self-concept and insecure attachments, and depressed adolescents elicit negative evaluations from their surroundings. Buist et al. (2004) found that attachment and Internalizing Problems seem to affect each other longitudinally. Other factors (e.g., genetic, cognitive, life stress, and gender role) may be involved in emotional and behavioral problems among adolescents. Third, the present study is based on self-reports of non-clinical adolescents. In the future, it is important to include other sources of measurements than self-report questionnaires, such as in-depth interviews from both non-clinical and clinical-referred adolescents.

Despite these limitations, our study represents an initial effort in examining the psychological processes that influence relationships between attachment and psychological well-being among Japanese adolescents. Adolescents' actual perception of their relationships plays a role in how they feel about themselves and emotional/behavioral problems. The model provided in the present study seems to be valuable for choosing a focus in intervention and prevention in counseling practice. In the future, however, it is important to include other sources of measurements than self-report questionnaires, such as in-depth interviews.

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