

Interplay between Attachment to Peers and Parents in Korean Adolescents' Behavior Problems

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Abstract The present study investigated the relative contribution of style of peer attachment (secure, anxious, avoidant) and quality of attachment to parents on behavior problems in Korean adolescents. In addition, we examined the role of paternal and maternal attachment separately as a potential moderator in the relationship between style of peer attachment and internalizing and externalizing behavior problems. Middle school students (245 males, 209 females) completed the Korean version of the Adolescent Friendship Attachment Scale, Inventory of Parental and Peer Attachment-Revised, and Youth Self-Report. Attachment to peers and parents as predictors of behavior problems were tested via hierarchical multiple regression analyses. Results revealed that anxious peer attachment remained the strongest predictor of behavior problems among adolescents (internalizing behavior problems $\beta = .18$, $p < .01$; externalizing behavior problems $\beta = .21$, $p < .001$), indicating the relative importance of peer relationship compared to attachment to parents. Paternal attachment significantly moderated the relationship between avoidant peer attachment and externalizing behavior problems ($\beta = .15$, $p < .05$), even when the main effect of avoidant peer attachment on externalizing behavior problems was not significant. Results highlight the role of both attachments to peers and parents on adolescents' psychological adjustment.

Keywords Adolescence · Attachment · Internalizing behavior problems · Externalizing behavior problems · Peer

Introduction

There is growing concern regarding behavior problems of adolescents in the Korean society (Heo and Son 2013). Prevalence rates of stress and depressive symptoms were 41.9 and 30.5 %, respectively (Korean Ministry of Health and Welfare 2012), and they are relatively higher than in Western cultures. For example, it has been reported that 18.6 % of adolescents in the United States experience depressive and dysthymic symptoms (Kessler et al. 2012). Furthermore, it is well documented that adolescents' behavior problems are concomitant with serious negative outcomes such as heightened risk of suicide attempts and deliberate self-harm (Kullik and Petermann 2013).

In previous studies focusing on the underlying mechanisms of adolescents' behavior problems, attachment has been assumed to be a vital factor in adolescents' psychological development (Ainsworth and Bowlby 1991; Collins and Feeney 2000). Attachment in children is defined as a long-lasting emotional bond that a child forms with a primary caregiver (Ainsworth 1989). Children with secure attachment relationships regard their attachment figures as a "secure base" from which to explore their environment, and as consistently responsive to their needs (Bowlby 1982). When children interact with responsive and supportive parents, they are likely to formulate self-confidence and can effectively cope with stress stemming from negative events (Kullik and Petermann 2013). If children interact with parents who show deficiencies in sensitivity and responsiveness, they are subsequently vulnerable to maladjustment as well as interpersonal problems (Wei et al. 2005). Attachment theory hypothesized that secure attachment with caregivers generates an "internal working model" which regulates cognition, affect, and behavior of

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individuals, ultimately leading to various developmental outcomes (Carlo et al. 2011).

The concept of attachment has been broadened to include other significant interactions, such as relationships with peers in adolescence (Carlo et al. 2011). By broadening the social environment from the family to the school setting, adolescents learn how to relate with peers and what to expect from others across diverse situations (Freeman and Brown 2000). Research on Korean students have reported that interaction with intimate peers is a crucial factor in school life, affecting interpersonal skills, self-esteem, and emotional regulation in adolescents (Lee and Lee 2005).

Peer relationships are also linked with a number of indices of psychological adjustment (Laursen et al. 2006). Adolescents who are in a stable relationship with peers are likely to evidence higher adaptive functioning and greater stress-buffering potential (Ma and Huebner 2008). Conversely, unstable peer attachments can elicit negative affect, psychological distress, and behavior problems (Kullik and Petermann 2013). Adolescents with unstable peer relationships manifest higher rates of depression and anxiety compared to adolescents who engage in stable peer relationships (Wei et al. 2004).

Three different attachment styles (secure, anxious, avoidant) have been applied to represent young adults (Wilkinson 2008). Adolescents with secure peer attachment not only feel comfortable with intimacy, but also can effectively communicate their feelings toward peers (Cassidy 1994). In contrast, anxious peer attachment is characterized as “hyper-activation”, or fear of refusal and abandonment by their peers (Wilkinson 2010). Adolescents experiencing such style of peer attachment exhibit an inconsistent pattern of either excessive dependence or resistance in a peer relationship. Therefore, adolescents with anxious peer attachment have a tendency to experience a high level of psychological distress including anxiety and negative school attitude compared to adolescents with secure peer attachment (Wilkinson 2010).

On the other hand, avoidant peer attachment is regarded as a form of “over-regulation” which represents indifference to intimacy and tendency to underestimate the importance of emotional bonds (Main 2000). It is important for adolescents with avoidant peer attachment to maintain their independence and they feel uncomfortable with too much closeness with others (Mikulincer et al. 2003). In addition, they may not outwardly worry about peer rejection, and feel reluctant to express their emotions to peers (Wei et al. 2005). Avoidant peer attachment was significantly associated with interpersonal problems and depression in adolescents (Wilkinson 2010). In addition, adolescents with anxious and avoidant peer attachment would show less emotional sensitivity that reflects other’s affective state or situation compared to adolescents with secure peer

attachment (Carlo et al. 2011). Given that such lack of empathy response has been empirically associated with aggression as well as behavioral self-control (Carlo et al. 2011), anxious or avoidant style of peer attachment may leave adolescents primed for externalizing behavior problems.

One significant factor that may contribute to the relationship between peer attachment and behavior problems is attachment to parents, a concept that is highly related to psychological adjustment in adolescence (Laible et al. 2000).

Parents still function not only as strong primary care providers, but also remain important attachment figures for adolescents, particularly in stressful situations (Hay and Ashman 2003). Results from previous studies have suggested that lower quality of attachment to parents is significantly related to elevated symptoms of depression and anxiety in adolescents (Wei et al. 2005). Such results indicate that attachment to parents, along with peer attachment, is a crucial factor in ensuring the psychological adjustment of adolescents (Laible et al. 2000).

In regards to behavior problems, a number of empirical studies suggested that peer attachment may play a more significant role for adolescents in psychological adjustment compared to quality of attachment to parents (Hay and Ashman 2003). Adolescents reporting a more secure peer attachment but lower attachment to parents were better adjusted, while adolescents with more secure attachment to parents but less secure peer attachment were more likely to undergo depression, anxiety, and aggressive behaviors (Laible et al. 2000). Thus, peer attachment may play a more significant role in behavior problems among adolescents.

While peer attachment may be a predominant factor, some studies suggest that the quality of attachment to parents exerts not only proximal effects on adolescents’ psychological health but also influences peer attachment (Wilkinson 2008; Zimmermann 2004). Results from such studies have shown that lower quality of attachment to parents is associated with insecure relationship with peers, suggesting attachment to parents may influence each style of peer attachment. In addition, such impact of attachment to parents on peer attachment may subsequently associate with indices of behavior problems in adolescents. For example, Raja et al. (1992) revealed that even when adolescents report more secure peer attachment, they may still show depressive symptoms when they experience lower quality of security in attachment to parents. Given such findings, it is vital to examine not only the relative effect of attachment to parents and peers in predicting behavior problems, but also a potential moderating effect of attachment to parents in the link between peer attachment and behavior problems.

In particular, empirical studies showed that paternal and maternal attachment each represents a different aspect of means of interacting with children as well as the time they are involved in child-rearing (Lucassen et al. 2011). In this vein, paternal and maternal attachment is likely to be formed through independent processes, showing qualitatively different features (Dumont and Paquette 2013; Richaud de Minzi 2010). In addition, previous studies revealed that paternal and maternal attachment uniquely predicts behavior problems (Michal 2014). For example, Richaud de Minzi (2010) found that maternal attachment has a more significant effect on loneliness compared to paternal attachment, while paternal attachment overrides maternal attachment in predicting depressive symptoms. Such results imply the distinctive effect of paternal and maternal attachment on particular behavior problems in adolescents, and that it is necessary to examine paternal and maternal attachment separately as potential moderators. Furthermore, recent studies showed that paternal attachment moderated the link between maternal attachment, peer relational skills, and psychological well-being as well as maternal rejection, depression, and school bullying in children (Papadaki and Giovazolias 2015). Considering such results, a unique moderating effect of either paternal or maternal attachment in the relationship between styles of peer attachment and internalizing and externalizing behavior problems in adolescents may exist.

As such, the purpose of our study was to explore the association between adolescents' perceived style of peer attachment, quality of attachment to parents, and behavior problems. Specifically, we hypothesized that the effects of anxious and avoidant peer attachment will be positively related to internalizing and externalizing behavioral problems. Secondly, this study hypothesized that the interaction effect between attachment to peers and parents will be found. That is, the negative effects of anxious or avoidant peer attachment on behavior problems will be different depending on the quality of attachment to parents. We specifically assumed that if there exists lower level of secure paternal or maternal attachment, the negative effect of anxious or avoidant peer attachment on internalizing and externalizing will be greater. Our study, in particular, examined the moderating effect of paternal and maternal attachment separately to see whether a different pattern will emerge in their moderating relationship.

Method

Participants

Participants were recruited from a pool of 517 7th, 8th, and 9th grade students from middle schools from the Seoul

metropolitan area ($n = 212$) and middle schools from a suburban community ($n = 242$) in Korea. Of these participants, 454 adolescents and their parents returned consent forms and provided full data for the analyses. Among the 454 participants (mean age = 13.4 years, $SD = 0.93$), 245 were boys and 209 were girls. The majority of the participants had a religion (65 %) and many adolescents claimed that they had an average family income (53 %). About 35 % of the adolescents responded their grade in the average level, and a majority of parents received college education (Table 1).

Procedure

This study was approved by the Institutional Review Board of the authors' institution. Students were given a booklet with detailed information about the purpose of study, voluntary participation, and confidentiality of their responses. Only students with parental consent completed the self-report measures after school under the supervision of the researcher in a separate classroom.

Measures

Peer attachment

The Korean version of the Adolescent Friendship Attachment Scale (K-AFAS) (Wilkinson 2008) was translated and validated by Choi et al. (2012). This is a 25-item self-report measure designed to assess adolescents' appraisal of peer attachment with the instruction "Think of someone you feel closest to above all others". Each item on the K-AFAS consists of three subscales including secure, anxious, and avoidant peer attachment. Responses are rated on a 5-point Likert scale (1 = *strongly disagree* and 5 = *strongly agree*) and higher scores in each subscale indicate more likelihood of that particular peer attachment style. The overall internal consistency of the original K-AFAS (Choi et al. 2012) was .74 (secure attachment scale Cronbach's $\alpha = .89$; anxious attachment scale Cronbach's $\alpha = .78$; avoidant attachment scale Cronbach's $\alpha = .70$). The overall internal consistency in the current study was .83. Cronbach α values for secure, anxious, and avoidant peer attachment scales were .91, .79, and .74, respectively. With regard to validity, Choi et al. (2012) provided the convergent and criterion-related validity for the three-factor structure of the K-AFAS, and K-AFAS subscale scores showed significantly association with peer attachment subscales of Inventory of Parent and Peer Attachment (IPPA) (Armsden and Greenberg 1987) and depression/anxiety subscales of K-YSR (Oh and Kim 2010).

Table 1 Participants characteristics ($N = 454$)

Variables	Mean	SD
Adolescents ($N = 454$)		
Age (years)	13.4	-0.93
	n	(%)
<i>Gender</i>		
Male	245	-54
Female	209	-46
<i>Residing community</i>		
Seoul metropolitan area	242	-53.3
Suburban community	212	-46.7
<i>Religion</i>		
No religion	150	-33
Christian	246	-54.2
Catholic	20	-4.4
Buddhism	23	-5.1
Other/multiple choices	15	-3.3
<i>Family income</i>		
Low-income	1	-0.2
Low-to mid-income	24	-5.3
Mid-income	240	-52.9
Mid-to high-income	150	-33
High-income	19	-4.2
Other/multiple choices	20	-4.4
<i>Academic performance</i>		
Low-grade	28	-6.2
Low-to mid-grade	68	-15
Mid-grade	160	-35.2
Mid-to high-grade	126	-27.8
High-grade	49	-10.8
Other/multiple choices	23	-5.1
<i>Paternal education level</i>		
Less than high school	5	-1.1
High school diploma	62	-13.7
College school diploma	201	-44.3
More than graduate school	137	-30.2
Other/multiple choices	49	-10.8
<i>Maternal education level</i>		
Less than high school	6	-1.3
High school diploma	71	-15.6
College school diploma	218	-48
More than graduate school	107	-23.6
Other/multiple choices	52	-11.5

Parental attachment

The Inventory of Parent and Peer Attachment-Revised (IPPA-R; Armsden and Greenberg 1987) was translated by Ok (1998) and this version was used in the present study to

assess quality of paternal and maternal attachment. The questionnaire assesses communication, trust, and alienation. Items are scored on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*), with higher scores indicating a more secure paternal and maternal attachment. The Korean version of the IPPA-R displayed good internal consistency for paternal attachment (Cronbach's $\alpha = .93$) and maternal attachment (Cronbach's $\alpha = .92$). This study also revealed good reliability coefficients and support the factorial validity of the questionnaire (paternal attachment scale Cronbach's $\alpha = .95$; maternal attachment scale Cronbach's $\alpha = .94$). Ok (1998) provided initial construct validity for the structure of the IPPA-R. In paternal attachment scale, the correlation between 1–2 factors and 1–3 factors were $r = .72$, $r = .73$ and the correlation between 1–2 factors and 1–3 factors in maternal attachment scale were $r = .78$ and $r = .71$. In addition, IPPA-R subscale scores have been associated with the Parental Bonding Inventory (Parker et al. 1979) and the Coopersmith Self-Esteem Inventory in youth between the ages of 9 and 15 years (Robinson and Gullone 2005).

Behavior problems

Participants completed the Korean version of the Youth Self-Report (YSR; Achenbach and Rescorla 2001), a measure of adolescents' internalizing and externalizing behavior problems with well-established reliability and validity. The YSR is a 119-item measure that is assessing general psychological adjustments (i.e., social, thought, and attention problems) and internalizing/externalizing behavior problems in adolescents. Participants rated on a 3-point Likert scales (0 = *absent* to 2 = *occurs often*) of their behaviors in the past 6 months, with larger numbers indicating higher levels of behavior problems. Of these total items, 63 items of the internalizing (i.e., anxiety/depression, withdrawn, and somatic symptoms) and externalizing syndromes (i.e., aggressive and violative behaviors) were employed in this study. The Korean version of the YSR (Oh and Kim 2010) reports Cronbach's α of .87 for internalizing behavior problems and .84 for externalizing behavior problems in the standardization study. For this study, self-reports of externalizing and internalizing symptoms showed good internal consistency (internalizing behavior problems scale Cronbach's $\alpha = .89$; externalizing behavior problems scale Cronbach's $\alpha = .86$). Convergent validity of the YSR was demonstrated through high correlations between each of its subscales. Each of the correlation between internalizing behavior problems and anxiety/depression, withdrawn, and somatic symptoms were $r = .90$, $r = .81$, $r = .71$, and the correlation between externalizing behavior problems and aggressive and violative behaviors were $r = .82$ and $r = .94$, respectively. Furthermore, YSR effectively distinguished

between clinical and nonclinical groups (Oh and Kim 2010), thereby demonstrating discriminant validity.

Data Analyses

SPSS 21.0 was used to analyze the data for this study. Descriptive statistics including means and standard deviations were conducted for demographic variables and main variables. Demographic differences between variables were tested using analysis of variance for continuous variable and Fisher’s exact tests for categorical variables. Independent *t*-test and analysis of covariance were conducted to control for the influence of demographic variables on peer attachment, attachment to parents, and internalizing/externalizing behavior problems. Religion, grade, economic status, and parental education were entered as covariates due to statistical differences depending on residing community of the sample. As for an interrelation amongst those variables of interest, a correlation analysis was examined. Lastly, multiple hierarchical regression analyses were conducted to explore not only the relative effects of attachment to peers and parents, but also the moderating effect of attachment to parents on the link between peer attachment and internalizing and externalizing behavior problems. Simple slope analysis was conducted to detail the interaction effects in our post hoc analyses.

Results

Attachment and Behavior Problems in Male and Female Adolescents

The means and standard deviations across style of peer attachment, attachment to parents, and behavior problems for each sex are presented in Table 2. Independent *t*-tests found significant gender differences in style of peer attachment and behavior problems. Specifically, females

reported higher scores on the secure attachment scale than males ($t = -4.97, p < .001$), while males reported higher scores on the avoidant attachment scale than females ($t = 5.52, p < .001$). Also, females scored higher on the internalizing subscale than males ($t = -3.01, p < .05$). Furthermore, there were community-based differences in other background variables including religion ($F = 31.92, p < .001$), grade ($F = 6.81, p < .05$), economic status ($F = 13.44, p < .001$), paternal ($F = 19.64, p < .001$), and maternal education ($F = 22.74, p < .001$). Therefore, those demographic variables were entered into the following analyses as covariates and there were significant differences in the externalizing behavior problems according to each residing community ($F = 4.21, p < .05$). Based on the result, gender, religion, grade, economic status, and parental education were controlled for regression analyses. Meanwhile, compared to the total clinical cut-off score (60T, 85th percentile) of YSR scale, the mean T score of the entire sample was 50.3 (SD = 9.9), and among them 75 adolescents in the present study fell in the above the clinical cut-off range.

Peer and Parent Attachment and Behavior Problems in Adolescents

Pearson correlation coefficients for variables of interest are presented in Table 3. As expected, anxious peer attachment was positively related to indices of behavior problems. Avoidant peer attachment showed a significant correlation with internalizing behavior problems, but not with externalizing behavior problems. Secure peer attachment was negatively associated with internalizing behavior problems, whereas its association with externalizing behavior problems was not significant. Meanwhile, the quality of attachment to parents showed weak to moderate correlations with internalizing behavior problems and externalizing behavior problems. For the relationship between attachment to peers and parents, anxious peer attachment and avoidant peer attachment showed negative correlations with quality

Table 2 Means (standard deviations) for descriptive variables

Variables	Total (N = 454)	Male (n = 245)	Female (n = 209)	t	df
Secure peer attachment	51.67 (9.72)	49.62 (10.02)	54.06 (8.81)	-4.97***	451.56
Anxious peer attachment	17.25 (5.87)	17.18 (5.97)	17.34 (5.75)	-.29	452
Avoidant peer attachment	8.56 (3.34)	9.33 (3.36)	7.65 (3.07)	5.52***	452
Paternal attachment	92.95 (20.21)	92.84 (20.50)	92.97 (19.91)	-.02	452
Maternal attachment	97.51 (18.49)	96.28 (18.56)	98.95 (18.36)	-1.54	452
Internalizing problems	8.70 (7.88)	7.68 (7.40)	9.90 (8.27)	-3.01*	452
Externalizing problems	7.58 (6.23)	7.65 (6.76)	7.49 (5.56)	.27	451.40
YSR total (T scores)					
Means	50.30 (9.97)	49.70 (10.08)	50.90 (9.85)	-1.78	452

* $p < .05$, *** $p < .001$

Table 3 Correlation between variables

	1	2	3	4	5	6	7
1. Secure peer attachment	1						
2. Anxious peer attachment	-.33***	1					
3. Avoidant peer attachment	-.45***	.48***	1				
4. Paternal attachment	.27***	-.35***	-.19***	1			
5. Maternal attachment	.39***	-.31***	-.24***	.56***	1		
6. Internalizing problems	-.14**	.29***	.14**	-.32***	-.25***	1	
7. Externalizing problems	-.08	.24***	.08	-.31***	-.28***	.55***	1

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

of attachment to parents, while secure peer attachment showed a positive correlation with quality of attachment to parents.

Effects of Peer and Parent Attachment on Behavior Problems

In order to explore the predictive effects of attachment to peers and parents on behavior problems, hierarchical multiple regression analyses were conducted. Prior to the analyses, each variable was centered and behavior problems were categorized into internalizing and externalizing behavior problems. Demographic variables were controlled in the first Step of regression to exclude shared associations with the independent and dependent variables. Next, paternal attachment, maternal attachment, and three styles of peer attachment were all entered into the second Step. The interaction term of each style of peer attachment and attachment to parents were then entered into the third step to examine the moderating role of attachment to parents. The results of the hierarchical regression analyses for internalizing and externalizing behavior problems are presented in Tables 4 and 5. Before categorizing into internalizing and externalizing behavior problems, the overall F test for regressions was conducted ($F = 6.384$, $p < .001$).

According to the results of Table 4, the quality of attachment to parents (paternal attachment scale $\beta = -.17$, $p < .01$; maternal attachment scale $\beta = -.11$, $p < .05$) as well as anxious ($\beta = .18$, $p < .01$) and avoidant peer attachment ($\beta = .15$, $p < .01$) significantly predicted internalizing behavior problems. In particular, the main effect of anxious peer attachment on internalizing behavior problems contributed more compared to quality of paternal and maternal attachment. The effect of secure peer attachment ($\beta = -.04$, $p > .05$) on internalizing behavior problems was not significant. Meanwhile, there were no significant interaction effects of each style of peer attachment and quality of attachment to parents. In other words, the effect of each style of peer attachment on internalizing behavior problems

was not moderated by the quality of paternal and maternal attachment.

In case of externalizing behavior problems, the main effect was significant for attachment to parents (paternal attachment scale $\beta = -.18$, $p < .01$; maternal attachment scale $\beta = -.13$, $p < .05$), and anxious peer attachment ($\beta = .21$, $p < .001$). On the other hand, avoidant ($\beta = -.07$, $p > .05$) and secure ($\beta = .09$, $p > .05$) peer attachment did not significantly predict externalizing behavior problems. As for the relative contribution of attachment to peers and parents, the predictive power of anxious peer attachment on externalizing behavior problem was the strongest compared to the effects of paternal and maternal attachment. An interaction effect was found in the relationship between avoidant peer attachment and paternal attachment ($\beta = .15$, $p < .05$), indicating a significant moderating effect of paternal attachment. While, no other interaction effects were found between attachment to peers and parents. When the degree of security in paternal attachment was high, the negative effect of avoidant peer attachment on externalizing behavior problems was not significant. Meanwhile, with less secure paternal attachment, the negative effect of avoidant peer attachment on externalizing behavior problems was significant. On the other hand, the interaction effect between avoidant peer attachment and maternal attachment was not significant.

Discussion

We explored the relationship between attachment to peers and parents and behavioral problems in a sample of Korean middle school students. In particular, our study aimed to delineate the relative contribution of each style of peer attachment and quality of attachment to parents on internalizing and externalizing behavior problems. Also, the role of paternal and maternal attachment was examined separately as a potential moderator in the association between peer attachment and behavior problems.

Table 4 Moderating effect of parent attachment on the relationship between peer attachment and internalizing behavior problems

Variables	Step 1 (β)	Step 2 (β)	Step 3 (β)
Gender	.14**	.16**	.15**
Religion	.03	.03	.03
Grade	-.03	-.01	-.01
Economic status	.09	.02	.02
Parental education	-.05	-.05	-.06
Secure peer attachment		-.04	-.04
Anxious peer attachment		.18**	.18**
Avoidant peer attachment		.01	-.01
Paternal attachment		-.17**	-.15*
Maternal attachment		-.11*	-.13*
Secure peer attachment \times paternal attachment			.01
Secure peer attachment \times maternal attachment			.03
Anxious peer attachment \times paternal attachment			-.10
Anxious peer attachment \times maternal attachment			.06
Avoidant peer attachment \times paternal attachment			.09
Avoidant peer attachment \times maternal attachment			.02
R^2	.03	.16	.17
R^2 change	.03	.13	.01
Adj. R^2	.02	.14	.14
F	2.55*	8.06***	5.32***
F change	2.55*	13.22***	.79
df	438	433	427

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 5 Moderating effect of parent attachment on the relationship between peer attachment and externalizing behavior problems

Variables	Step 1 (β)	Step 2 (β)	Step 3 (β)
Gender	-.01	-.04	-.04
Religion	-.01	-.00	.01
Grade	-.07	-.07	-.06
Economic status	.08	.03	.02
Parental education	-.02	-.03	-.02
Secure peer attachment		.09	.09
Anxious peer attachment		.21***	.23***
Avoidant peer attachment		-.07	-.09
Paternal attachment		-.18**	-.18**
Maternal attachment		-.13*	-.16**
Secure peer attachment \times paternal attachment			-.02
Secure peer attachment \times maternal attachment			.06
Anxious peer attachment \times paternal attachment			-.07
Anxious peer attachment \times maternal attachment			-.02
Avoidant peer attachment \times paternal attachment			.15*
Avoidant peer attachment \times maternal attachment			.07
R^2	.01	.13	.16
R^2 change	.01	.12	.03
Adj. R^2	.00	.11	.13
F	1.06	6.58***	4.97***
F change	1.06	11.97***	2.10
df	438	433	427

* $p < .05$, ** $p < .01$, *** $p < .001$

First, results demonstrated that anxious and avoidant peer attachment showed positive correlations with internalizing behavior problems, while secure peer attachment and attachment to parents showed negative correlations with internalizing behavior problems. Avoidant and secure peer attachment did not show a significant association with externalizing behavior problems. Such finding supports the contradictory findings from previous studies which indicated a nonsignificant correlation between quality of peer attachment and externalizing behavior problems including smoking, cannabis use, and aggressive behaviors (Carter et al. 2007). Further research is needed to examine the underlying mechanism in the association between style of peer attachment and externalizing behavior problems.

As for the relationship between attachment to peers and parents, anxious and avoidant peer attachment showed negative correlations with quality of attachment to parents, while secure peer attachment showed a positive correlation

with quality of attachment to parents. Such findings are similar to previous studies that suggested significant correlations between feelings toward parents and peers during adolescence (Laghi et al. 2015). Results also support the continuity/cognitive models of attachment theory, which suggests that peer relationship is an extension of the form and quality of parent relationship that has been developed within the family (Cooper and Cooper 1992). This seems to be in line with previous research indicating that the quality of attachment to parents not only exerts proximal effects on psychological health, but also can influence styles of peer attachment in adolescents (Zimmermann 2004). Given the strong link between attachment to peers and parents, it may be vital to examine whether adolescents with anxious or avoidant peer attachment also experience attachment problems or difficulties with parents in the home environment.

In examining the relative contributions of style of peer attachment and quality of attachment to parents on behavior

problems, we found that the negative effect of anxious peer attachment on internalizing and externalizing behavior problems was still significant after controlling for the effects of attachment to parents. In other words, the effect of anxious peer attachment on behavior problems contributed more in predicting behavior problems compared to quality of paternal and maternal attachment. Results thus support previous findings, in which peer attachment plays more significant role in psychological adjustment in adolescents as the influence of attachment to parents becomes relatively smaller during the period (Hay and Ashman 2003).

This finding is also similar to a recent study which showed that anxious and avoidant peer attachment each had a greater impact on psychological adjustment in adolescents compared to the relative effect of attachment to parents (Wilkinson 2010). The result of our study suggests that adolescents who experience more anxious attachment with peers may develop internalizing and externalizing behavior problems although they may perceive security in attachment to parents. Thus, interventions that promote and enhance peer attachment may be an important focus when targeting behavior problems in adolescents.

Meanwhile, we found that avoidant peer attachment did not significantly predict internalizing and externalizing behavior problems in adolescents. This is not consistent with a previous study which found that avoidant peer attachment was a significant predictor of depression, low self-esteem, and negative school attitude (Wilkinson 2010). One possible reason may be due to the particular characteristics of the adolescent sample in a cultural context. For instance, adolescents with avoidant peer attachment have the tendency to be not outwardly concerned about peer rejection or detachment as well as show indifference to intimate relationships with others (Main 2000; Wei et al. 2005). In particular, such adolescents who spend most of their time concentrating on apparently non-interpersonal tasks may be regarded as relatively healthy in Korea. In other words, adolescents who experience avoidant style of peer attachment in Korea may be representative of a subset of students who focus more on academic performance, a characteristic which may diminish the likelihood of internalizing and externalizing behavior problems within the Korean cultural context.

One reason why the main effect of avoidant peer attachment on behavior problems was not significant may be due to the particular feature of the adolescent sample. For instance, avoidant peer attachment is characterized by the tendency not only to undergo hesitance when forming intimate relationship with others, but also tendency to suppress their emotions to keep complete independence from others (Wallin 2007). Such adolescents may isolate themselves and not consider their situation as problematic on self-report measures, or even when experiencing distress,

they may be reluctant to reveal their feelings. They may thus underexpress emotions, a tendency that lies in contrast to adolescents with insecure peer attachment who may express their needs more outwardly.

Finally, the present study found that paternal attachment moderated the relationship between avoidant peer attachment and externalizing behavior problems. This is interesting because the main effect of avoidant peer attachment on externalizing behavior problems was not significant. Such results suggest that paternal attachment may be a key underlying factor which enhances or buffers the effect of avoidant peer attachment on externalizing behavior problems. This is similar to Roelofs et al. (2006) study, in which children's appraisals of insecure attachment and negative rearing behaviors of father were significant factors in predicting more aggressive symptoms.

We did not find a moderating effect of maternal attachment in the relationship between peer attachment and behavior problems. One possible explanation for such a result may reflect a cultural influence. Comparative studies of fatherhood have shown that Korean fathers differed in their time use, attitude, and functions from fathers in Western cultures (Lamb 2004). For instance, Korean fathers were relatively uninvolved in childrearing as well as housework chores and family activities compared to Western fathers (Kwon and Roy 2007). In addition, a previous study indicated that Korean children generally perceived their fathers as being busy, coming home late, and working extremely hard and such children reported minimal concern regarding lack of communication with their fathers (Lamb 2004). Considering such results, Korean adolescents may not only perceive their paternal attachment as less consistent and stable, but for those adolescents reporting a more secure paternal attachment, such a relationship may serve as a significant buffer. This suggests the relative importance of paternal attachment in child and adolescent development in Korea.

Another factor may involve the indirect influence of the father's role in the broader familiar context (Lamb 2004). Previous literatures have underscored that fathers play multiple roles in the family and that secure relationships with fathers significantly affect their children's psychological adjustment. According to previous studies, the quality of paternal attachment may not only influence children's development in the context of interparental relationship, but may also affect children's exposure to marital conflict and the overall family atmosphere (Oh et al. 2011). Thus, further study is needed to examine whether the moderating effect of paternal attachment in the current study indicates the multiple influence of fathers in adolescence. Furthermore, current findings also suggest that paternal attachment, in particular, may play an pivotal role in adolescents' peer relational skills and social competence, which may be

related to behavior problems during this developmental period (Lamb and Lewis 2010).

In the meantime, results of our study also reveal the potential risk of avoidant peer attachment especially when paternal attachment is less secure. Considering the characteristics of adolescents with avoidant peer attachment, the only source of support for them may be the family. Thus, it seems that the moderating effect turned out to be significant in regard to avoidant peer attachment. Future interventions that consider the parent–children relationship will thus benefit adolescents who particularly experience avoidant style of attachment with their peers.

Several limitations are present in this study. First, the participants were community-dwelling adolescents reporting relatively low levels of behavior problems. Thus, it remains to be seen whether the current findings of our study can be replicated in a sample adolescents with clinical manifestations of behavior problems. Second, data from our study were obtained solely from self-reports of adolescents. In particular, in case of internalizing and externalizing symptoms, it is possible that adolescents may underestimate or incorrectly report their behavior problems. As such, incorporation of several sources of information is needed to gather more objective data regarding adolescent's attachment pattern and behavior problems. Lastly, this present study did not see other internal factors that may be involved in the pathogenesis of behavior problems. For example, researchers have revealed the significant effects of temperament or emotional regulation on psychological adjustment of adolescents (Wachleski et al. 2008).

Despite certain limitations, this study demonstrated the relative contributions of attachment to peers and parents which function as critical social supports for adolescents. We shed light on the separate pathways by which father or mother may have a unique moderating impact on the potential effects of style of peer attachment on the development of internalizing and externalizing behavior problems in Korean adolescents. What is clear from this study is that Korean adolescents, much like Western samples, are affected by both attachment to peers and parents and such attachment style and quality are related to indices of behavior problems. Further investigations using a clinical sample may provide useful information for future prevention as well as intervention programs, and this lends itself to a client-centered approach that target adolescents' behavior problems.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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