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# Different Effects of Paternal and Maternal Attachment on Psychological Health Among Chinese Secondary School Students

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**Abstract** Many studies have demonstrated the beneficial effects of parental attachment on adolescent development. However, few studies have specifically investigated the different effects of paternal attachment and maternal attachment on adolescent development. The current study examined the different effects of paternal attachment and maternal attachment on adolescent psychological health (e.g., self-esteem, depression, life-satisfaction), and the moderating roles of gender, age, and one-child status. Participants were 1506 secondary school students (50.2 % male, grades 7–12) from six regions of China. Results suggested that paternal attachment had stronger effects on adolescents' depressive symptoms than did maternal attachment after controlling for all covariates (e.g., family setting, gender, grade, one-child status, father's and mother's education levels). Moreover, multigroup analysis indicated that the stronger impact of paternal attachment on depressive symptoms in comparison to maternal attachment was only evident in high school boys and only children. This study demonstrated the important role of father–adolescent attachment in adolescent psychological health. Future research, clinical implications, and limitations of the present study are discussed.

**Keywords** Paternal attachment · Maternal attachment · Psychological health · Gender and age difference · One-child difference

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## Introduction

Empirical research has supported the continued importance of parental attachment for adolescent psychological health. Many studies have demonstrated that adolescents' attachment to their parents is related to their self-esteem (Armsden and Greenberg 1987; Noom et al. 1999; Papini and Roggman 1992; Paterson et al. 1995; Song et al. 2009; Wilkinson 2004), and is associated with internalizing problems (e.g., anxiety and depression; Brumariu and Kerns 2010), and life-satisfaction (Nickerson and Nagle 2004; Wilkinson and Walford 2001). However, few studies have specifically investigated the different effects of paternal and maternal attachment on adolescent psychological health (e.g., self-esteem, depression, and life-satisfaction).

Researchers have recently underscored the need to separate representations of the father and mother when examining their respective contributions to the evolution of adolescents' depressive symptoms over time (Brumariu and Kerns 2010). In some cultures, such as Chinese culture, children seem to need to be stimulated and motivated as much as they need to be calmed and protected, and they receive such stimulation primarily through physical play with men (Paquette 2004). Fathers seem to play a major role in the process of opening children up to the outside world, which is particularly linked to the development of autonomy and the management of risk-taking during the exploration of physical and social environments, fostering the development of physical and social skills and self-assertiveness (Grossmann et al. 2002; Paquette and Bigras 2010; Paquette et al. 2013). Indeed, research has demonstrated that the attachment quality of fathers may have a different impact than the attachment quality of mothers on social functioning and depressive symptoms for children

and early adolescents (Brumariu and Kerns 2010; Liu 2008).

Gender is a critical individual variable. Gender may affect associations between parental attachment quality and psychological health. One study suggested that for females, maternal attachment quality was more strongly related to self-evaluation (corresponding to self-esteem) than was paternal attachment quality, but for males, the effects of maternal and paternal attachment quality on self-evaluation were similar (Song et al. 2009). However, another study indicated that paternal attachment predicated self-worth (corresponding to self-esteem) better than did maternal attachment for early adolescent girls, and the influence of paternal attachment was greater than maternal attachment on depressive symptoms for both boys and girls in junior high school (Liu 2008). Recently, a longitudinal study found the relationship between perceived paternal attachment quality and generalized anxiety disorder (GAD) symptoms was stronger for boys than for girls (age: 15–16 years and 19–20 years; van Eijck et al. 2012).

As an important developmental characteristic, adolescents' age may also play a key role in the association between adolescent parental attachment quality and psychological health. Parental attachment quality has been found to decrease from early to middle adolescence in China (Song et al. 2009) because adolescents become increasingly autonomous and independent (De Goede et al. 2009). Psychological health and "psychological Suzhi" (Chinese term meaning "psychological quality") were also found to decrease from early to middle adolescence in China (Zhang et al. 2011). The associations between parental attachment quality and psychological health may become weaker over time because the influence of parents may lessen as adolescents grow older (Meeus et al. 2005). However, the influence of paternal attachment on the psychological health of middle adolescents may not decrease relative to early adolescents because the involvement of fathers could help middle adolescents develop social capability and autonomy (Grossmann et al. 2008).

Because of the Chinese government's one-child policy since 1979, being an only child is a very common phenomenon among Chinese families. Parental attachment may play a more significant role in an only child's psychological health and "psychological Suzhi" in China. Reports about behavioral problems in the so-called spoiled generation abound, although they often seem trivial when compared with the behavioral problems of Western children (Hesketh and Zhu 1997). Because only children's autonomous and independent abilities were weaker compared to non-only children, paternal attachment might have a greater influence than maternal attachment on their psychological health.

In addition, cultural studies of parental attachment and its impact on adolescent psychological development in non-Western societies could contribute to an understanding of how social values help to define the significance of these relationships with adolescents. Chinese culture is characterized by the shared values of collectivism, filial piety, and emotional control, which is different from Western culture (Oyserman et al. 2002). Cultural differences may be an important factor that influences parental attachment and its impact on adolescents' psychosocial development.

In the present study, we empirically tested the relationship between paternal and maternal attachment and psychological health in a large sample of Chinese secondary school students. We also examined the moderating role of adolescents' gender, age, and one-child status. We hypothesized that (1) paternal attachment would have a greater impact on adolescent psychological health than did maternal attachment; (2) for boys only, paternal attachment would have a greater influence on psychological health compared to maternal attachment; (3) for high school students only, paternal attachment would have more of an impact on psychological health compared to maternal attachment; and (4) among only children, relative to maternal attachment, paternal attachment would have stronger effects on psychological health.

## Method

### Participants

The sample consisted of 1506 students recruited from junior high and high school in six regions of China. Two hundred and forty-seven students were from the East China area, 204 students were from the Northeast area, 299 students were from the Central China area, 275 students were from the North China area, 259 students were from the Northwest area, and 222 students were from the Southwest area. Among them, 266 were in seventh grade, 222 were in eighth grade, 212 were in ninth grade, 273 were in tenth grade, 280 were in eleventh grade, and 253 were in twelfth grade. Most participants (76.96 %; 1159 students) reported living with both parents, 7.37 % (111 students) reported living only with their mothers, 1.86 % (28 students) reported living only with their fathers, and 13.81 % (208 students) did not live with either parent. Participants were 10 to 20 years old ($M = 15.21$ years, $SD = 1.83$). See Table 1 for the characteristics of participants.

### Procedure

We randomly selected one class from each grade (7th to 12th) in every region of China. Before questionnaires were

**Table 1** Characteristics of participants

| Characteristics | % | Characteristics | % |
|---|---|---|---|
| Gender | | Father's education level | |
| Male | 50.2 | Junior high school Diploma or below | 55.7 |
| Female | 49.8 | High school Diploma or above | 44.3 |
| Grade | | Mother's education level | |
| Junior high school | 46.5 | Junior high school Diploma or below | 60.6 |
| High school | 53.5 | High school Diploma or above | 39.4 |
| One-child status | | Household | |
| Only child | 50.3 | 2 parents | 77.0 |
| Non-only child | 49.7 | Single parent or no parents | 23.0 |
| Family setting | | Race | |
| Urban | 52.9 | Han majority | 97.1 |
| Rural | 47.1 | Minority ethnicity | 2.9 |

distributed to students during one of their normal classes, teachers explained and assured the participants that the study was conducted purely for research purposes and that participation was voluntary. The students were free to decline participation without any negative consequences. After finishing the self-report survey anonymously, students handed them into their teachers.

## Measures

### *Parental Attachment*

The attachment relationship between the adolescent and parent was assessed using the parent subscales of the "Inventory of Parent and Peer Attachments" (IPPA) (Armsden and Greenberg 1987). This instrument was designed to assess respondents' perceptions of the quality of their relationships with mothers and with fathers on a 5-point Likert-type scale format (1 = almost never or never true; 5 = almost always or always true). It consists of 25 items assessing the extent of trust (e.g., ''When I am angry about something, my mother tries to be understanding''), communication (e.g., ''My mother encourages me to talk about my difficulties''), and feelings of alienation (e.g., ''I get upset easily around my mother'') from each of the attachment figures, with parallel wordings of items for assessing relationships with mothers and fathers. The IPPA proved to be reliable and valid in previous studies, including Chinese culture (Armsden and Greenberg 1987; Song et al. 2009). Cronbach's alphas in the present study were .85 (trust), .84 (communication), .67 (alienation) for the paternal attachment scores; .85 (trust), .85 (communication), .71 (alienation) for the maternal attachment scores. It is important to note that we conducted a structural equation modeling with latent variables in the present study in order to rule out the measurement errors. The three subscales (trust, communication, alienation) were used as the three measured indicators for the two latent variables, paternal attachment and maternal attachment.

### *Rosenberg Self-Esteem Scale (SES)*

SES is a self-report index of global self-esteem (Rosenberg 1965). It consists of 10 items (e.g., ''On the whole, I am satisfied with myself'') to which respondents indicate their agreement on a 4-point Likert-type scale format (1 = strongly disagree; 4 = strongly agree). After reverse coding the negatively-worded items, high scores on the scale indicate greater self-esteem. The Chinese version of SES has been demonstrated as reliable and valid in Chinese samples (Song et al. 2009). The 8th item "I wish I could have more respect for myself" was found to be not suitable in Chinese culture (Farruggia et al. 2004; Zhou and Wang 2005), so it was deleted in final data analysis. Cronbach's alpha in the present study was .86. We created three measured variables by assigning the 9 items into three sets randomly. These three measures were then used as the three measured indicators of the self-esteem latent variable.

### *Life Satisfaction*

Life satisfaction was measured with the Satisfaction with Life Scale (SWLS) (Diener et al. 1985). The SWLS is a five-item general measure of an individual's global judgment of life satisfaction. A sample item is ''I am satisfied with my life.'' Participants are asked to indicate the extent to which they agree or disagree that the items reflect how they view their lives by using a 7-point Likert-type scale that ranges from 1 (strongly disagree) to 7 (strongly agree). The good internal consistency of SWLS was proved by previous study (Diener et al. 1985). Cronbach's alpha in the present study was .82. The five items were used as the observed indicators of the life satisfaction latent variable.

*Depression*

Depression was measured with the Center for Epidemiological Studies-Depression Scale (Radloff 1977). The CES-D is a 20-item scale that measures current levels of depressive symptoms. Items are rated on a 4-point Likert scale ranging from 0 (*rarely or none of the time* [less than 1 day]) to 3 (*most or all of the time* [5–7 *days*]), based on the frequency with which participants have experienced that item during the past week (e.g., "I feel depressed"). Scores range between 0 and 60, with higher scores indicating higher levels of depressive mood and symptoms. In the present study, the coefficient alpha was .90. Three observed indicators for the latent variables of depression were created by assigning randomly the 20 items into three sets.

*Demographic Measures*

We included demographic variables of adolescent gender, grade, one-child status, family setting and parent education level in the analysis. Gender was coded with 1 = boy; 2 = girl. Grade was coded from 7 to 12, with 7 = 7th grade; 8 = 8th grade; 9 = 9th grade; 10 = 10th grade; 11 = 11th grade; 12 = 12th grade. To investigate age differences, participants were divided into junior high school group (7th to 9th grade, coded with 1) and high school group (10th to 12th grade, coded with 2). One-child status was coded with 1 = only child; 2 = non-only child. Family setting was coded with 1 = urban; 2 = rural. The highest education level of fathers or mothers was coded from 1 to 4, with 1 = Elementary school Diploma or below; 2 = Junior High school Diploma; 3 = High school Diploma; and 4 = College Degree or above.

### Data Analyses

First, descriptive and *ANOVA* analyses were conducted for the variables of interest for the total sample. Next, structural equation modeling (SEM) was carried out to examine the relationships between paternal attachment, maternal attachment, and self-esteem, depression, and life satisfaction, controlling for covariates. The software package Mplus 7 (Muthén and Muthén 1998–2012) was used to fit the proposed model to the data. The SEM analyses were performed using the robust maximum likelihood (MLR) estimator to account for identified non-normality of the data.

Because the Chi square ($\chi^2$) statistic is sensitive to sample size and may result in significance even when the model is minimally mis-specified (Marsh et al. 2004), it was not considered as a fit index. To evaluate the fit of the models to the data, we examined several standard fit indices including the comparative fit index (CFI; Bentler 1990), the Tucker–Lewis index (TLI; Tucker and Lewis 1973), the root mean squared error of approximation (RMSEA; Steiger and Lind 1980), and the standardized root mean square residual (SRMR; Bentler 1995). Values greater than .90 for the CFI and TLI and smaller than .06 for the RMSEA and .08 for the SRMR suggest good model fit (Hu and Bentler 1999). "Model Test" in Mplus 7.0 was used to examine the difference of structural path coefficient (Wang and Wang 2012). To examine gender and age differences, we divided all participants into four groups by gender and age, comprising junior high male ($n = 372$), junior high female ($n = 328$), high school male ($n = 384$) and high school female ($n = 422$) groups.

## Results

### Gender and Age Differences on Paternal and Maternal Attachment and Psychological Health

Tables 2 and 3 summarize the means and standard deviations for the variables of interest by gender, age, and one-child status. Prior to investigating hypothesised differences in covariation, one MANOVA and one repeated measures ANOVA were conducted in order to explore differences in mean levels of parental attachment and psychological health. First, self-esteem, depression, and life-satisfaction were specified as dependent variables in relation to gender (boys vs. girls) and age (junior high vs. high school groups) using the MANOVA. We controlled for family setting, one-child status, and fathers' and mothers' education levels as covariates in the analyses. The results indicated significant differences between boys and girls, $F(3, 1496) = 4.12$, $p = .006$, Wilks' Lambda = .99, partial $\eta^2 = .008$, and between junior high and high school students, $F(3, 1496) = 35.04$, $p < .001$, Wilks' Lambda = .93, partial $\eta^2 = .07$. No other main and interaction effects were found. The follow-up $F$ tests revealed that the girls' life-satisfaction scores were higher ($M = 4.75$) than the boys' scores ($M = 4.61$, $F(1, 1498) = 4.36$, $p = .037$, partial $\eta^2 = .003$), and junior high school students reported significantly greater life-satisfaction ($M = 5.00$) than did high school students ($M = 4.35$, $F(1, 1498) = 88.19$, $p < .001$, partial $\eta^2 = .06$).

In the Repeated Measures ANOVA, parental attachment (paternal and maternal) was entered as the within-subjects variable with gender (boys vs. girls) and age (junior high vs. high school groups) as the between-subjects factors, and family setting, one-child status, and fathers' and mothers' education levels as the covariates. Results showed that there were significant differences between paternal ($M = 3.64$) and maternal ($M = 3.88$) attachment, $F(1, 1498) = 12.57$, $p < .001$, partial $\eta^2 = .01$. There also

**Table 2** Means and Standard Deviations for variables of interest by gender, by age, by one-child status and for all samples

| Variable | Male (756) | | Female (750) | | Junior high school (700) | | High school (806) | | Only child (757) | | Non-only child (749) | | All samples (1506) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD | M | SD |
| P_attachment | 3.61 | .66 | 3.66 | .72 | 3.71 | .72 | 3.57 | .65 | 3.69 | .71 | 3.58 | .66 | 3.63 | .69 |
| M_attachment | 3.81 | .64 | 3.94 | .68 | 3.91 | .67 | 3.84 | .65 | 3.94 | .66 | 3.81 | .65 | 3.87 | .66 |
| Self-esteem | 3.00 | .57 | 2.95 | .55 | 2.98 | .59 | 2.98 | .53 | 3.04 | .58 | 2.92 | .53 | 2.98 | .56 |
| Depression | 1.04 | .52 | 1.02 | .49 | 1.00 | .55 | 1.05 | .46 | .98 | .53 | 1.07 | .48 | 1.03 | .51 |
| Life-satisfaction | 4.60 | 1.44 | 4.71 | 1.32 | 5.01 | 1.36 | 4.34 | 1.32 | 4.75 | 1.40 | 4.56 | 1.35 | 4.65 | 1.38 |

P_attachment: paternal attachment; M_attachment: maternal attachment

**Table 3** Means and Standard Deviations for paternal attachment, maternal attachment, self-esteem, depression, and life-satisfaction by age and gender

| Variable | Junior high school students | | | | High school students | | | |
|---|---|---|---|---|---|---|---|---|
| | Male (372) | | Female (328) | | Male (384) | | Female (422) | |
| | M | SD | M | SD | M | SD | M | SD |
| P_attachment | 3.68 | .68 | 3.74 | .77 | 3.54 | .63 | 3.60 | .67 |
| M_attachment | 3.85 | .66 | 3.98 | .68 | 3.76 | .61 | 3.91 | .68 |
| Self-esteem | 2.98 | .58 | 2.99 | .61 | 3.03 | .56 | 2.93 | .50 |
| Depression | 1.04 | .56 | .97 | .54 | 1.04 | .48 | 1.06 | .45 |
| Life-satisfaction | 4.95 | 1.40 | 5.08 | 1.31 | 4.26 | 1.39 | 4.42 | 1.25 |

P_attachment: paternal attachment; M_attachment: maternal attachment

were significant differences between boys ($M = 3.70$) and girls ($M = 3.81$, $F(1, 1498) = 12.45$, $p < .001$, partial $\eta^2 = .008$), and between junior high ($M = 3.80$) and high school ($M = 3.71$) students, $F(1, 1498) = 9.59$, $p = .002$, partial $\eta^2 = .006$. Importantly, there was a significant interaction between parental attachment and gender, $F(1, 1498) = 6.55$, $p = .011$, partial $\eta^2 = .004$. Simple effect analysis revealed that, for maternal attachment, girls ($M = 3.95$) scored higher than did boys ($M = 3.80$, $F(1, 1498) = 19.58$, $p < .001$, partial $\eta^2 = .01$), but for paternal attachment, there was no significant difference between girls ($M = 3.67$) and boys ($M = 3.61$, $F(1, 1498) = 3.07$, $p = .080$, partial $\eta^2 = .002$). Furthermore, for paternal attachment, junior high school students ($M = 3.70$) scored higher than did high school students ($M = 3.58$, $F(1, 1498) = 12.28$, $p < .001$, partial $\eta^2 = .008$), but for maternal attachment, the difference between junior high students ($M = 3.91$) and high school students ($M = 3.84$) was not significant, $F(1, 1498) = 3.37$, $p = .067$, partial $\eta^2 = .002$. No other main or interaction effects were found.

## Different Effects of Paternal and Maternal Attachment on Psychological Health

Prior to conducting the SEM analysis, the measurement model was tested through confirmatory factor analysis (CFA). Additionally, the measurement model provides a correlation matrix such that the relationships among each of the latent factors can be assessed. We also determined the paths from the observed covariates for each of the latent factors. Parameter estimates from the measurement model are presented in Table 4. Model fit indices showed a good fit for the measurement model: $\chi^2$ (177) = 625.46, $p < .001$; CFI = .964; TLI = .952; RMSEA = .041 (confidence interval [CI] = .038, .045); and SRMR = .034. The residuals for trust, communication, and alienation between paternal attachment and maternal attachment were correlated. The residuals for 4th and 5th items of the SWLS were also correlated.

A structural equation model was used to examine the associations between parental attachment and self-esteem, depression, and life satisfaction, controlling for observed covariates (family setting, gender, grade, one-child status, and fathers' and mothers' education levels) for the entire sample (see Table 5). The model provided a good fit to the data, $\chi^2$ (189) = 681.13, $p < .001$, CFI = .957; TLI = .945; RMSEA = .042 (CI = .038, .045); SRMR = .056. To test whether any associations in the model were stronger for paternal or maternal attachment, corresponding parameter estimates were constrained to be equal and the "Model Test" was conducted. Results indicated that the predictive effect of paternal attachment ($\beta = -.346$, $p < .001$) on depression was stronger compared to maternal attachment ($\beta = -.219$,

**Table 4** Measurement model correlation matrix for latent factors

| | Latent factor | | | | |
|---|---|---|---|---|---|
| | Paternal attachment | Maternal attachment | Self-esteem | Depression | Life-satisfaction |
| *Latent factor correlations* | | | | | |
| Maternal attachment | .519*** | | | | |
| Self-esteem | .405*** | .389*** | | | |
| Depression | −.456*** | −.395*** | −.683*** | | |
| Life-satisfaction | .430*** | .430*** | .466*** | −.475*** | |
| *Correlations between observed covariates and latent factors* | | | | | |
| Family setting | .032 | .002 | −.016 | .006 | .054 |
| Gender | .048 | .112*** | −.042 | −.029 | .076** |
| Grade | −.089** | −.047 | .018 | .018 | −.242*** |
| One-child status | −.012 | −.045 | −.024 | .034 | −.036 |
| Father's education level | .084* | .031 | .118** | −.101** | .017 |
| Mother's education level | .152*** | .174*** | .130** | −.076* | .207*** |

$N = 1506$; All paths are standardized

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

**Table 5** Standardized coefficients obtained in structural equation modeling of self-esteem, depression and life-satisfaction regressed on paternal and maternal attachment and covariates

| Variable | Self-esteem | | Depression | | Life-satisfaction | |
|---|---|---|---|---|---|---|
| | β | *p* | β | *p* | β | *p* |
| Family setting | −.025 | .391 | .016 | .552 | .047 | .099 |
| Gender | **−.078** | **.001** | .007 | .764 | .039 | .116 |
| Grade | **.049** | **.039** | −.017 | .483 | **−.215** | **<.001** |
| One-child status | −.012 | .655 | .021 | .390 | −.022 | .398 |
| Father's education level | **.092** | **.010** | **−.071** | **.037** | −.010 | .766 |
| Mother's education level | .057 | .108 | .003 | .923 | **.132** | **<.001** |
| Paternal attachment | **.277** | **<.001** | **−.346$_a$** | **<.001** | **.277** | **<.001** |
| Maternal attachment | **.245** | **<.001** | **−.219$_b$** | **<.001** | **.278** | **<.001** |
| $R^2$ | .242 | | .258 | | .301 | |

Bold is significant; Model Test$_{(a\ b)}$: Wald $\chi^2$ (1) = 3.92, $p = .048$

$p < .001$, Wald $\chi^2$ (1) = 3.92, $p = .048$). However, differences in the effects of paternal and maternal attachment on self-esteem (β = .277 vs. .245) and life satisfaction (β = .277 vs. .278) were not significant.

## Different Effects of Paternal and Maternal Attachment on Depression for Boys in High School

Subsequently, we used multi-group analyses with four groups (gender × age) for the dependent variables (self-esteem, depression, and life satisfaction) within paternal and maternal attachment to examine differences between boys and girls, and junior high and high school students (see Table 6). Family setting, one-child status, and fathers' and mothers' education level were included in the model as covariates in the analyses of age and gender differences. The model provided a good fit to the data, $\chi^2$ (716) = 1123.48, $p < .001$, CFI = .955, TLI = .949, RMSEA = .039 (CI = .034, .043), SRMR = .071.

We conducted a "Model test" to examine the differences in path coefficients from paternal attachment and maternal attachment to the dependent variables, gender and

**Table 6** Standardized coefficients obtained in structural equation modeling of self-esteem, depression and life-satisfaction regressed on paternal and maternal attachment and covariates by gender and age

| Variable | Self-esteem | | | | Depression | | | | Life-satisfaction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Junior students | | High students | | Junior students | | High students | | Junior students | | High students | |
| | Male (372) | Female (328) | Male (384) | Female (422) | Male (372) | Female (328) | Male (384) | Female (422) | Male (372) | Female (328) | Male (384) | Female (422) |
| Family setting | –.033 | – .043 | –.011 | –.015 | –.088 | .037 | .077 | .041 | .116* | .030 | .043 | –.017 |
| One-child status | .017 | – .051 | –.061 | .053 | .009 | .033 | .091* | –.060 | – .030 | .043 | – .130** | .039 |
| Father's education level | .016 | .053 | .121 | .105 | –.217** | – .032 | –.054 | .059 | – .048 | 120 | – .006 | –.065 |
| Mother's education level | .149* | .067 | –.003 | .023 | .069 | .018 | .050 | –.096 | .131 | .215** | .058 | .166** |
| Paternal attachment | .351*** | .187* | .346*** | .191** | –.342*** *a | – .380*** | **–.406*** *a** | **–.242*** *b** | .271*** | .335*** | .301*** | .285*** |
| Maternal attachment | .237*** | .383*** | .151* | .244** | –.233*** | – .288*** | **–.128c** | –.221** * | .357*** | .244** | .180* | .299*** |
| $R^2$ | .298 | .299 | .224 | .153 | .285 | .371 | .258 | .165 | .322 | .354 | .205 | .266 |

$N = 1506$. * $p < .05$; ** $p < .01$; *** $p < .001$

**Table 7** Standardized coefficients obtained in structural equation modeling of self-esteem, depression and life-satisfaction regressed on paternal and maternal attachment and covariates by one-child status

| Variable | Self-esteem | | Depression | | Life-satisfaction | |
|---|---|---|---|---|---|---|
| | Only child (757) | Non-only child(749) | Only child (757) | Non-only child(749) | Only child (757) | Non-only child(749) |
| Family setting | – .050 | –.003 | .019 | .013 | .079* | .010 |
| Gender | – .090** | –.067* | .032 | – .026 | .014 | .068* |
| Grade | .007 | .090** | – .019 | – .019 | –.219*** | – .216*** |
| Father's education level | .095 | .068 | – .111* | – .020 | .042 | – .049 |
| Mother's education level | .068 | .022 | .016 | .003 | .087 | .148*** |
| Paternal attachment | .201*** | .358*** | **– .358*** *a** | – .329*** | .257*** | .290*** |
| Maternal attachment | .267*** | .219*** | **– .154*** *b** | – .296*** | .296*** | .260*** |
| $R^2$ | .207 | .283 | .221 | .309 | .297 | .307 |

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

age. Results indicated that for boys in high school, paternal attachment ($\beta = -.406$) had a greater influence on depression than did maternal attachment ($\beta = -.128$, $p > .05$, Wald $\chi^2$ (1) = 4.30, $p = .038$); for high school students, paternal attachment had a greater influence on depression in boys ($\beta = -.406$) than in girls ($\beta = -.242$, Wald $\chi^2$ (1) = 4.46, $p = .035$).

## Different Effects of Paternal and Maternal Attachment on Depression for Only Children

We used multi-group analyses with two groups (only child and non-only child) for the dependent variables (self-esteem, depression, and life satisfaction) within paternal and maternal attachment to examine differences between only

children and non-only children (see Table 7). We also controlled for family setting, gender, grade, and fathers' and mother's education levels in the model as covariates in the analyses of one-child differences. The model provided a good fit to the data, $\chi^2$ (374) = 803.28, $p < .001$, CFI = .959, TLI = .951, RMSEA = .039 (CI = .035, .043), SRMR = .058.

We also used a "Model Test" to examine the differences in path coefficients from paternal and maternal attachment to the dependent variable for only children or non-only children. Results showed that for only children, paternal attachment ($\beta = -.358$) had a greater influence on depression than did maternal attachment ($\beta = -.154$, Wald $\chi^2$ (1) = 5.52, $p = .019$).

## Discussion

The present study examined different effects of paternal and maternal attachment on psychological health among Chinese secondary school students and tested the moderating roles of gender, age, and one-child status. We found the characteristics of adolescents' paternal and maternal attachment and psychological health in Chinese culture. Importantly, we found that paternal attachment had a greater effect on adolescents' depressive symptoms than did maternal attachment after controlling for the covariates (i.e., family setting, gender, grade, one-child status, and fathers' and mothers' education levels). Furthermore, compared to maternal attachment, the stronger effect of paternal attachment on depressive symptoms was only evident in high school boys and only children.

First, the results of the ANOVA analyses indicated that students in high school scored lower than did students in junior high school on paternal attachment and life-satisfaction. High school is when Chinese youth face increasingly competitive academic pressures for entry into desirable universities and experience intense pressure to perform in school. The results also showed girls scored higher than did boys on maternal attachment and life-satisfaction. The authoritarian structure of the Chinese family and the traditional gender role expectations are likely to each strengthen mother–daughter ties in adolescence, especially in light of the societal preference for sons before, and especially after, the one-child policy was adopted in China. The results also indicated that all participants scored higher on maternal attachment than paternal attachment. In Chinese traditional culture, mothers have the primary responsibility to take care of their children, so children might form more intimate mother–child relationships than father–child relationships.

Second, we found that, compared to maternal attachment, paternal attachment had a stronger effect on adolescents' depressive symptoms, although adolescents perceived lower levels of paternal attachment. This result was consistent with previous studies with students in junior high school (Liu 2008), 8- to 12-year-old children (de Minzi 2010), and ninth- to twelfth-grade students (Grych et al. 2004). This result supports the theory regarding the important role that the involvement of fathers plays in children's development (Bretherton 2010; Lamb 2004; Pleck 2007). Fathers' involvement could help children develop social capability and autonomy (Grossmann et al. 2008; Rice et al. 1997). High social competence and autonomy could prevent adolescents from suffering depressive symptoms. Thus, paternal attachment had a greater effect on adolescents' depressive symptoms compared to maternal attachment. It should be noted that this finding might be valid only in Chinese culture, because culture could influence the relationships between parental attachment and adolescents' psychological health. In Chinese traditional culture, fathers had greater authority than did mothers in families. Additionally, the finding of a previous longitudinal study contradicted our result. That study showed that only secure attachment to the mother predicted a lower risk for the worsening of depressive symptoms after age 12 (Duchesne and Ratelle 2014). Certain methodological particularities could explain this discrepancy. We adopted a cross-sectional study design among a large national sample, while Duchesne and Ratelle (2014) used a longitudinal study design and conducted the group-based trajectory modeling analyses. They mainly concerned the effects of parental attachment on the odds of belonging to some groups (e.g. Moderate and increasing depression group, High and decreasing depression group), while we focused on the different predictive effects of paternal and maternal attachment on adolescents' psychological health. Another reason for this discrepancy might be difference about the sample, the sample in present study was from China, while the sample in the Duchesne and Ratelle study was from Canada.

Third, we found that the stronger impact of paternal attachment on depressive symptoms compared to maternal attachment was only evident in boys during the high school period. From the results, we could determine that as boys moved from junior high to high school, paternal attachment had a greater or similar influence on depressive symptoms, but the impact of maternal attachment on depressive symptoms became non-significant. Moreover, relative to high school girls, paternal attachment had a greater impact on depressive symptoms for high school boys. As a result, for high school boys, paternal attachment had more of an impact on depressive symptoms relative to maternal attachment. Boys in high school become autonomous and their awareness of gender roles increases. They no longer desire close contact with their mothers, but would like to communicate with their fathers (Böels and Phares 2008;

Grossmann et al. 2008). Therefore, if fathers communicate less with their sons during this period, the boys are vulnerable to depressive symptoms.

Finally, the results indicated that compared to maternal attachment, paternal attachment had a stronger impact on depressive symptoms among only children. To our knowledge, this study was the first to examine the moderating role of one-child status on the relationship between parental attachment quality and depressive symptoms. In Chinese culture, only children generally grow up in a relatively advantaged environment. Parents, especially mothers, give more attention to only children; therefore, only children are likely to form a more dependent character. The strong involvement of mothers may hinder only children's development of social competence and autonomy. However, the involvement of fathers could help only children develop social capability and autonomy (Grossmann et al. 2008). High social competence and autonomy could prevent individuals from suffering depressive symptoms. Therefore, compared to maternal attachment, paternal attachment had a stronger impact on depressive symptoms among only children.

This study has important implications for adolescent education. Previous studies have demonstrated the prominent role of maternal attachment quality in child development. However, this study suggests that paternal attachment quality had more of an impact on adolescent depressive symptoms compared to maternal attachment quality. Therefore, fathers should develop intimate father–adolescent attachment relationships by communicating more with their children. Moreover, compared to maternal attachment, the stronger effect of paternal attachment on depressive symptoms was most evident for high school boys and only children. Fathers should give relatively more attention to these children than do their mothers. In this way, we could help prevent adolescents from suffering depressive symptoms.

Although the present study represents an important advancement, it is not without certain limitations. Three limitations are most notable. First, we only collected cross-sectional data for the variables of interest, which can reveal correlations between variables, but could not demonstrate the direction of the correlations. Future research should consider collecting longitudinal data for these variables. Second, we used self-reported measures for all variables. Future research could use multiple methods, such as observational data and parent or teacher reports to measure adolescent psychological health. Additionally, parental attachment could also be assessed by interviews, such as an adolescent version adapted from the Adult Attachment Interview (AAI). Third, peer attachment also has an important influence on adolescents' psychological development, and examining cultural differences in peer attachment may prove important. We did not consider the effect of peer attachment because we focused on the different impact of paternal and maternal attachment on adolescents' psychological health. Future study could examine the different effects of parental and peer attachment on adolescents' psychological health in Chinese culture.

The strengths of the current study help to extend previous research on adolescent parental attachment and psychological health in several ways. A primary strength is that we examined the different impact of paternal and maternal attachment, highlighting the important role of paternal attachment in adolescent psychological health. Furthermore, we investigated the moderating roles of gender, age, and one-child status on the relationship between parental attachment quality and adolescent psychological health and found some interesting results. Another strength of the current study is that we controlled for some covariates, including family setting, and fathers' and mothers' education levels, which increases the internal validity of our findings. Finally, the current sample was drawn from six regions of China and the sample size was relatively large, both of which increase the ecological validity and practical implications of our findings.

Our results suggest that paternal attachment has more beneficial effects on adolescent depressive symptoms compared to maternal attachment in Chinese culture, especially for high school boys and only children. These findings extend the prior literature on parental attachment and psychological health (Liu 2008; Song et al. 2009; Wilkinson 2006) by directly comparing the effects of paternal and maternal attachment. Our findings also synthesize and extend earlier research on paternal and maternal attachment and children's psychological health (de Minzi 2010) by expanding the age range of participants. Future prevention and intervention strategies could target fathers. The aim would be to help fathers understand that improving father–adolescent attachment relationship quality could benefit adolescent psychological health.

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