



Paternal and Maternal Attachment: A Multifaceted Perspective on Adolescents' Friendship

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Abstract

Objectives This study examined the underpinnings of adolescents' friendship from an attachment perspective, specifically focusing on the role of paternal attachment. In light that individual differences could moderate the association between parental attachment and friendship qualities, adolescent sex and age were also considered.

Methods Participants aged 13–19 ($N = 776$) reported the extent to which they felt anxiously and avoidantly attached to their mother and father. They also reported their perceived relationship with a close friend on three major qualities, including positive qualities, negative interactions, and relative power. Path analysis was first conducted to examine the relative roles of parental attachment and individual differences in predicting friendship qualities. Multi-group analysis was then performed to determine whether maternal and paternal attachment differentially predicted friendship qualities among junior and senior high school boys and girls.

Results Results indicated that maternal attachment avoidance and anxiety were related to friendship qualities among boys. Not only was paternal attachment anxiety positively associated with power issues among junior high school boys, but it was also positively associated with negative interactions among boys and senior high school girls. Neither paternal nor maternal attachment were associated with friendship qualities among junior high school girls.

Conclusions Findings suggest that paternal and maternal attachment underlie friendship qualities in different ways and that fathers assume more than a complementary role in adolescence for both boys and girls.

Keywords Friendship · Peer relationship · Paternal attachment · Maternal attachment · Attachment avoidance · Attachment anxiety

Friends become central to the lives of many adolescents as they gain autonomy from their parents (Buist et al. 2002; Bukowski et al. 2011). Compared with young children, adolescents' friendships are characterized by frequent disclosure of feelings and thoughts, intimacy, closeness, support, and equality (Buhrmester and Furman 1987; Bukowski et al. 2011). Indeed, friends become more than playmates in adolescence by serving as an extra-familial safe-haven (Buhrmester and Furman 1987; Bukowski et al.

2011) and a context within which to practice and enhance different skills critical to healthy development (Rubin et al. 2011), such as negotiating and problem solving (Selfhout et al. 2009). At the same time, however, friends could pave the road for maladaptive outcomes if the relationship is characterized by negative qualities such as conflicts and rivalry (Larsen et al. 2007; Sentse and Laird 2010). A critical factor underlying differences in friendship quality is parental attachment experiences (Furman et al. 2002; Mikulincer et al. 2003; Schneider et al. 2001), with research consistently illustrating the importance of maternal attachment and a comparatively thin literature on paternal attachment (Gorresse and Ruggieri 2012; Groh et al. 2014). The paucity of research on paternal attachment is also especially apparent among the adolescent population, possibly because fathers are generally assumed to play a diminished role in adolescence even by adolescents themselves (Pan et al. 2016; Rosenthal and Kobak 2010). To the extent that fathers play more than a secondary role in

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development despite the assumption that suggests otherwise (Freeman et al. 2010), the lack of understanding on paternal attachment and its relation to adolescents' friendship could potentially limit intervention designs and theory.

Friendship denotes a mutual and dyadic relationship between two individuals who share great levels of similarities, demonstrate a high level of reciprocal liking, and respond effectively to each other's affect and behaviors (Bukowski et al. 2009; Bukowski et al. 2011). As a construct that falls under the umbrella of peer relation, friendship could be distinguished into different qualities that are tied to development in different ways (Zimmermann 2004). To illustrate, healthy qualities such as intimacy, support, validation, commitment, and relatedness (Berndt 2004; Selfhout et al. 2009) have been associated with better social-emotional adjustment (Buhrmester 1990), higher self-esteem, greater school involvement (Keefe and Berndt 1996), and less loneliness among children and adolescents (Kingery et al. 2011). Conversely, negative qualities such as conflict and rivalry (Berndt 2004) have been associated with heightened levels of aggression and anxiety (Larsen et al. 2007), as well as higher prevalence of anti-social behaviors and depressed mood among adolescents (Sentse and Laird 2010). Given that friendship is composed of different qualities and that these qualities have developmental implications, a consideration of what underpins adaptive qualities would be useful in informing interventions aimed to support adolescent development (Erath et al. 2010; Seibert and Kerns 2015).

Individual differences in the experience of friendship could be partly attributed to differences in parental attachment (Furman et al. 2002; Mikulincer et al. 2003; Schneider et al. 2001). According to the attachment theory, infants are innately predisposed to form a bond with a significant other (e.g., parents) on the basis of repeated daily interactions (Ainsworth 1989; Bowlby 1982). Through these experiences, children develop an attachment style, or an internal model of attachment that encompasses not only a set of beliefs and expectations about the responsiveness and sensitiveness of attachment figures, but also an understanding on the extent to which they themselves are worthy of care and protection (Bretherton 1992; Dykas et al. 2008). Conceptually, contemporary researchers suggest that attachment patterns could be represented by the dimensions of anxiety and avoidance (Brennan et al. 1998; Mikulincer et al. 2003; Shaver and Mikulincer 2002). Children with a secure attachment style, as denoted by low scores on the dimensions of anxiety and avoidance, have caregivers who are sensitively attuned to their needs for proximity and comfort; consequently, these children are positive about the caregiver's availability in times of distress and see themselves as valued (Mikulincer et al. 2003; Shaver and Mikulincer 2002). Conversely, children whose caregivers are not

consistently available, or are unresponsive to bids for proximity and comfort come to develop an insecure attachment style, as reflected by a high score on the anxiety or avoidance dimension (Mikulincer et al. 2003; Shaver and Mikulincer 2002). To elaborate, children with an anxious attachment style are fearful of rejection and respond to the caregiver's unavailability by engaging in hyperactivating strategies that promote proximity, such as repeated clinging behaviors (Mikulincer et al. 2003; Shaver and Mikulincer 2002). In contrast, children with an avoidant attachment style value self-reliance and cope with the caregiver's unresponsiveness by holding a detached attitude towards and by distancing from that caregiver (Mikulincer et al. 2003; Shaver and Mikulincer 2002).

Although previous research has established an association between maternal attachment and social outcomes among children, less is known about the role of paternal attachment and among adolescents (Cassidy et al. 2013; Gorresse and Ruggieri 2012; Groh et al. 2014). Inconsistent findings also exist among the limited studies. For instance, Doyle et al. (2009) found that insecure paternal attachment longitudinally (2 years) and uniquely predicted sense of insecurity with best friends among Canadian adolescents even after accounting for maternal attachment. Another study involving Korean adolescents demonstrated that paternal attachment, but not maternal attachment, moderated the association between avoidant peer attachment and externalizing behaviors (Lee and Park 2017). The unique role of paternal attachment, however, has been challenged by other studies. For instance, Nie et al. (2016) did not observe a direct association between paternal attachment and prosocial behaviors among Chinese adolescents although such association was evident with maternal attachment.

Individual differences (e.g., sex and age) might contribute to differences in the association between interpersonal relationships and development outcomes (Nickerson and Nagle 2005). For instance, boys and girls might experience friendship outcomes differently. In this contention, issues concerning power and dominance among friends are more prevalent among boys than girls during mid-adolescence (De Goede et al. 2009). Furthermore, girls tend to perceive their friendship quality more positively than boys (Gorresse and Ruggieri 2012; Kenny et al. 2013; Selfhout et al. 2009), such as more closeness, affection, nurturance, security, trust and self-disclosure (Brown and Larson 2009; Rose and Rudolph 2006; Rose et al. 2012). Sex differences might also be evident in the extent to which parental attachment underlies development. To elaborate, some studies suggest that attachment experiences tend to be more strongly associated with developmental outcomes between same-sex (e.g., father and son) compared with opposite-sex dyads (e.g., father and daughter) (Buist

et al. 2002; Pan et al. 2016; Schoppe-Sullivan et al. 2006). Yet, other studies found significant associations only between opposite-sex dyads; for example, Liu (2008) found that insecure maternal attachment was related to negative social expectations among boys but not girls. Beyond sex differences, age is another individual factor that might contribute to differences in friendship outcomes. For instance, while some studies (Way and Greene 2006; Zhou et al. 2012) suggest that older adolescents tend to share more positive experiences with friends, others (e.g., Noakes and Rinaldi 2006) suggest that they tend to report higher rates of conflicts. Furthermore, similar to sex, age might moderate the association between parental attachment and friendship qualities. Specifically, given that parental reliance declines over the course of adolescence as adolescents become more autonomous (Harter 1999; Kerns et al. 2006; Larsen et al. 2007; Song et al. 2009), the importance of parental attachment in predicting friendship might be weaker for older adolescents.

To summarize, the present study examined the extent to which paternal and maternal attachment differentially predicted adolescents' friendship while accounting for potential individual differences (i.e., sex and age). Guided by contemporary studies (e.g., Moretti et al. 2015), parental attachment was conceptualized as attachment anxiety and avoidance in the present study. Friendship was operationalized as different qualities to capture the distinctions that adolescents draw on friendship (Brown and Bakken 2011; Bukowski et al. 2011). Age was evaluated with school level because friendships are more likely to be formed with peers of the same grade. For instance, an adolescent who enters school early is more likely to befriend peers who are of the same grade but older than those who are of the same age but in a lower grade. Based on previous studies (Dwyer et al. 2010; Liu 2008; Newland et al. 2010), parental attachment was hypothesized to predict friendship qualities; these associations would nonetheless differ depending on the sex and age of the adolescent. Specifically, paternal attachment would be more strongly related to boys' friendship qualities while maternal attachment would be more strongly related to girls' friendship qualities.

Method

Participants

Students from four secondary schools located in Southern British Columbia were invited to participate in this study, with an overall participation rate of 78%. Participating students were in Grades 8–12 ($N = 776$; 379 boys) and were aged between 13 to 19 years ($M = 15.2$, $SD = 1.58$). The distribution of the participants was considered to be

representative of the respective school level and student sex, as followed: Grades 8 (113 boys, 97 girls), 9 (46 boys, 46 girls), 10 (67 boys, 73 girls), 11 (91 boys, 88 girls), and 12 (62 boys, 93 girls). Participants were of different ethnic heritages (53.6% Asian Canadian, 20% European Canadian, 7.5% South-Asian Canadian, 2.4% Middle-Eastern Canadian, 1.4% Latino Canadian, 0.8% First Nations, 0.8% African/Caribbean Canadian, 10.2% Mixed, and 3.4% "Other"), reflecting the general ethnic composition of the four secondary schools.

Procedure

Ethics approval was obtained from the University. Informed assents and consents were collected from students and their parents prior to the implementation of the study. Participants completed a set of measures in a single group-testing session under the attention of research assistants. Teachers also remained in the classroom to monitor student discipline but were otherwise uninvolved in the study.

Measures

Attachment

The Comprehensive Adolescent-Parent Attachment Inventory (CAPAI; Moretti et al. 2000) was used to evaluate attachment anxiety (e.g., "I worry a lot about my relationship with my mother") and attachment avoidance (e.g., "I prefer not to be too close to my mother"). Participants were asked to complete the inventory for both parents. The CAPAI consisted of two subscales that measured attachment anxiety and avoidance. Each subscale included 18 items that were rated on a 7-point Likert scale (1 = *disagree strongly* to 7 = *agree strongly*). Items from each subscale were then averaged to create an overall (i.e., mean) index for the corresponding attachment dimension, with higher scores reflecting greater levels of attachment anxiety or attachment avoidance. The reliability and construct validity of the CAPAI have been demonstrated in previous studies (McKay and Moretti 2000; Steiger 2003; Steiger & Moretti 2005). In this study, the CAPAI had a strong internal consistency for maternal avoidance ($\alpha = 0.90$) and anxiety ($\alpha = 0.84$), as well as paternal avoidance ($\alpha = 0.94$) and anxiety ($\alpha = 0.86$).

Friendship

The quality of adolescents' friendship was evaluated with the Network of Relationships Inventory-Social-Provision Version (NRI-SPV; Buhrmester, personal communication, November 2006; Furman and Buhrmester 1985), which has been validated with children, adolescents and adults

(Buhrmester and Furman 1987; Furman and Buhrmester 1985). Participants were asked to respond to the NRI-SPV based on their relationship with a *close* or *best* friend. The NRI-SPV evaluated different features of a relationship with critical members of the social network (e.g., parents, friends; Furman and Buhrmester 1985). These features included companionship (e.g., “How much do you play around and have fun with this person?”), conflict (e.g., “How much do you and this person get upset with or mad at each other?”), instrumental aid (e.g., “How much does this person teach you how to do things that you don’t know?”), antagonism (e.g., “How much do you and this person get on each other’s nerves?”), intimacy (e.g., “How much do you talk about things with this person?”), nurturance (e.g., “How much do you protect and look out for this person?”), affection (e.g., “How much does this person like or love you?”), reassurance of worth (e.g., “How much does this person treat you like you’re admired and respected?”), relative power (e.g., “In your relationship with this person, who tends to take charge and decide what should be done?”), and reliable alliance (e.g., “How sure are you that your relationship will continue in the years to come?”). Each feature was assessed with three items. All items were evaluated on a 5-point scale (1 = *Little or None* to 5 = *The Most*) except those pertinent to the scale of relative power, which were measured with a 5-point scale (1 = *She always does* to 5 = *I always do*). Items of each subscale were averaged to create an overall index for that subscale, with higher scores indicating greater occurrence. These subscales were then combined and averaged to form three main qualities, including positive qualities (i.e., companionship, intimacy, instrumental aid, nurturance, reassurance of worth, reliable alliance, and affection), negative interaction (i.e., conflict and antagonism), and relative power. The reliabilities for these subscales were good, respectively $\alpha_s = 0.92, 0.90, 0.78$.

Data Analyses

Preliminary analyses were conducted with SPSS 23. Following this, path analysis was performed with SPSS AMOS 21 to determine whether parental attachment and individual differences predicted friendship qualities. Several indices were used to assess model fit, including the absolute chi-square fit, Comparative Fit Index (CFI) and root mean square error of approximation (RMSEA). A *p* value larger than .05 for the chi-square would indicate a better fit as compared with the null model (Byrne 2010). Good model fit was reflected by values larger than 0.95 for the CFI and smaller than 0.06 for RMSEA (Hu and Bentler 1999). To examine the moderating effects of sex and age, participants were divided into four groups with references to previous studies (e.g., Pan et al. 2016),

including junior high (Grades 8–9) school boys ($n = 159$) and girls ($n = 143$), as well as senior high (Grades 10–12) school boys ($n = 220$) and girls ($n = 254$). A multi-group analysis was then performed with AMOS to determine whether the model was equivalent across the four sex \times age groups. AMOS provided model test of invariances of the unconstrained model, structural weights, structural intercepts, structural means, structural covariances, and structural residuals. Guided by Byrne (2010), the unconstrained model where paths were tested without constraints across groups was compared with the constrained model where each path was constrained to be equal across groups. To elaborate, the unconstrained model was compared with the constrained structural weights model for the purpose of this study. First, the chi-square difference test was examined, where a significant score would indicate a difference between models. Second, the CFI value of each model was examined; differences that were smaller than or equal to -0.01 suggested that the null hypothesis of invariance should not be rejected (Cheung and Rensvold 2002). Third, to determine which path contributed to the significant differences, each path was constrained to be equal one at a time.

Results

Table 1 presents the bivariate correlations among parental attachment and friendship qualities. The four parental attachment variables were significantly correlated, with attachment avoidance and anxiety with father being the weakest, $r(761) = 0.12$, and attachment anxiety with mother and father being the strongest, $r(775) = 0.67$. Maternal attachment avoidance was weakly correlated with positive

Table 1 Summary of intercorrelations, means, and standard deviations for parental attachment and friendship qualities

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1)	–						
(2)	0.13***	–					
(3)	0.48***	0.19***	–				
(4)	0.13***	0.67***	0.12**	–			
(5)	–0.16**	0.05	–0.13**	0.02	–		
(6)	0.09*	0.12**	0.07	0.20**	–0.09*	–	
(7)	0.01	0.03	–0.01	0.05	0.03	–0.02	–
<i>M</i>	3.21	2.56	3.73	2.59	3.77	2.19	3.08
<i>SD</i>	1.18	0.84	1.32	0.93	0.61	0.81	0.54

(1) Maternal attachment avoidance; (2) Maternal attachment anxiety; (3) Paternal attachment avoidance; (4) Paternal attachment anxiety; (5) Positive qualities; (6) Negative interactions; (7) Relative power

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 2 Standardized and unstandardized estimates from path analysis

Path	β	<i>b</i>	SE
Sex → relative power	−0.01	−0.01	0.04
Sex → positive qualities	−0.28***	−0.34***	0.04
Sex → negative interactions	0.09*	0.15*	0.06
School level → relative power	0.06	0.07	0.04
School level → positive qualities	−0.03	−0.04	0.04
School level → negative interactions	0.13***	0.22***	0.06
Maternal attachment avoidance → relative power	0.01	0.01	0.02
Maternal attachment avoidance → positive qualities	−0.08*	−0.04*	0.02
Maternal attachment avoidance → negative interactions	0.04	0.03	0.03
Maternal attachment anxiety → relative power	0.00	0.00	0.03
Maternal attachment anxiety → positive qualities	−0.02	−0.01	0.03
Maternal attachment anxiety → negative interactions	−0.03	−0.03	0.05
Paternal attachment avoidance → relative power	−0.03	−0.01	0.02
Paternal attachment avoidance → positive qualities	−0.10*	−0.05*	0.02
Paternal attachment avoidance → negative interactions	0.02	0.01	0.03
Paternal attachment anxiety → relative power	0.04	0.03	0.03
Paternal attachment anxiety → positive qualities	0.01	0.01	0.03
Paternal attachment anxiety → negative interactions	0.22***	0.19***	0.04

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 3 Goodness-of-Fit indices for models tested for junior high and high school boys and girls

Model	χ^2	<i>df</i>	CFI	RMSEA	$\Delta\chi^2$	Δdf
Unconstrained model	15.67	12	0.995	0.020	–	–
Structured weights	67.42*	48	0.975	0.023	51.75*	36
Structured intercepts	153.47***	57	0.877	0.047	137.80***	45
Structured means	207.04***	69	0.824	0.051	191.37***	57
Structured covariances	323.48***	99	0.713	0.054	307.82***	87
Structured residuals	366.04***	108	0.670	0.056	350.38***	96

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

qualities $r(775) = -0.16$, $p < 0.001$ and negative interactions $r(775) = 0.09$, $p = 0.014$. Maternal attachment anxiety was positively correlated with negative interactions, $r(775) = 0.12$, $p < 0.001$. Paternal attachment avoidance and anxiety were respectively negatively and positively associated with positive qualities, $r(762) = -0.13$, $p < 0.001$ and negative interactions, $r(761) = 0.20$, $p < 0.001$. Positive qualities was also related to negative interactions, $r(776) = -0.09$, $p = 0.018$. No issues of multicollinearity were found, tolerance values ranged from 0.53 to 1.00 and VIF values ranged from 1.00 to 1.89, which fit with most acceptable guidelines (O'Brien 2007).

Path analysis revealed that the model provided a good fit to the data, $\chi^2(3) = 4.059$, $p = 0.255$. CFI = 0.99; RMSEA = 0.021 (CI = 0.00, .068). Results are presented in Table 2. Sex (1 = girls, 2 = boys) was significantly associated with positive qualities ($\beta = -0.28$, $p < 0.001$) and negative interactions ($\beta = 0.09$), $ps = 0.012$, after controlling for school level, maternal attachment and paternal attachment.

School level (1 = junior high, 2 = senior high) was positively associated with negative interactions ($\beta = 0.13$, $p < 0.001$) after holding other variables constant. When controlling for all other variables, maternal and paternal attachment avoidance were negatively associated with positive qualities, respectively $\beta = -0.08$, $p = 0.043$ and $\beta = -0.10$, $p = 0.012$. Paternal attachment anxiety was positively associated with negative interactions $\beta = 0.22$, $p < 0.001$ after holding other variables constant.

Multi-group analysis with four groups (sex \times age) was conducted to examine differences in the extent to which paternal and maternal attachment predicted friendship qualities among different age groups and sex. When assuming the unconstrained model to be correct, a significant chi-square change was found between the unconstrained and structural weights model, $\Delta\chi^2 = 51.751$, $p = .043$, indicating significant differences among the four groups. Results also indicated that the fully unconstrained model provided the best fit across the four

groups compared with the cumulatively constrained models (see Table 3).

To identify which path significantly varied across groups, each path was constrained one at a time. Results indicated that when the path between maternal attachment avoidance and relative power was constrained ($\beta = 0.001$, $p = 0.978$), significant differences were found across groups ($\Delta\chi^2 = 19.485$, $p < 0.001$). Specifically, maternal attachment anxiety and maternal attachment avoidance were significantly associated with only one type of friendship quality, respectively less negative qualities among junior high school boys ($\beta = -0.25$, $p = 0.035$) and less positive qualities among senior high school boys ($\beta = -0.18$, $p = 0.028$). Paternal attachment avoidance predicted less positive qualities among senior high school girls only ($\beta = -0.16$, $p = 0.016$). Paternal attachment anxiety predicted more power issues among junior high school boys ($\beta = 0.29$, $p = 0.013$), but not among junior high school girls ($\beta = 0.04$, $p = 0.758$) nor senior high school boys ($\beta = 0.05$, $p = 0.647$) and girls ($\beta = -0.03$, $p = 0.705$). In addition, paternal attachment anxiety was more strongly predictive of negative interactions among junior high school boys ($\beta = 0.42$, $p < 0.001$) compared with senior high school boys ($\beta = 0.22$, $p = 0.038$) and girls ($\beta = 0.17$, $p = 0.020$). Neither maternal nor paternal attachment predicted friendship qualities among junior high school girls (see Table 4).

Discussion

This study examined the unclear role of paternal attachment in predicting adolescents' friendship while accounting for the moderating roles of sex and age. Overall, current findings corroborate the notion that individual differences in friendship quality might be partly due to differences in attachment patterns (Zimmermann 2004). Specifically, both paternal and maternal attachment have implications on adolescents' friendship despite the general assumption that fathers play a diminished role during

adolescence. Nonetheless, contrary to the hypothesis that stronger associations would be observed between same-sex dyads, paternal attachment predicted friendship qualities among boys and senior high school girls whereas maternal attachment predicted friendship qualities among boys only.

Results from path analysis indicated that parental attachment and individual differences were significantly predictive of friendship qualities. Adolescents who demonstrated attachment avoidance towards their mother and father reported less positive qualities, which could potentially be explained by the nature of the attachment pattern and the specific friendship quality under examination. For instance, to the extent that the internal model of attachment transfers to other relationships (Ainsworth 1989; Bowlby 1982), adolescents who are avoidantly attached to their parents would also be avoidantly attached to their friends; this avoidance would, in turn, reduce the likelihood of experiencing the positive aspects of friendship. Furthermore, consistent with previous studies that have associated insecure paternal attachment with problematic behaviors that could disrupt relationships (Liu 2008; Lee and Park 2017), adolescents with paternal attachment anxiety were more likely to report negative interactions with friends. With respect to age differences, current findings suggest that older adolescents are more likely to report negative interactions, which are consistent with previous findings (Noakes and Rinaldi 2006). With regard to sex differences, present findings suggest that boys not only tend to experience friendship less positively but also have more negative interactions. These findings are consistent with previous studies that indicated more negative peer outcomes among boys compared with girls (De Goede et al. 2009, Kenny et al. 2013).

Findings from multi-group analysis revealed differences in the extent to which paternal and maternal attachment predicted friendship qualities among junior and senior high school boys and girls. First, findings indicated that senior high school boys with maternal attachment avoidance

Table 4 Standardized coefficients for the associations between parental attachment and friendship qualities by sex and age

	Positive qualities				Negative interactions				Relative power			
	Junior high		Senior high		Junior high		Senior high		Junior high		Senior high	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Maternal attachment avoidance	-0.04	-0.08	-0.18*	-0.01	0.06	-0.04	0.00	0.08	0.00	0.00	0.00	0.00
Maternal attachment anxiety	-0.01	-0.17	-0.01	0.07	-0.25*	0.12	0.01	-0.06	-0.11	-0.09	0.02	0.04
Paternal attachment avoidance	-0.17	0.08	-0.09	-0.16*	0.07	-0.01	0.03	0.02	-0.08	0.02	-0.02	-0.03
Paternal attachment anxiety	0.00	0.10	-0.02	-0.00	0.42***	0.09	0.22*	0.17*	0.29*	0.04	0.05	-0.03

Standardized coefficients obtained after multi-group analysis, with the association between maternal attachment avoidance and relative power constrained to be equal across groups

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

reported less positive friendship qualities compared with their junior counterparts and girls of all ages. Similarly, paternal attachment avoidance was negatively associated with positive friendship qualities among senior high school girls only. These findings are congruent with previous studies indicating that opposite-sex attachment (e.g., fathers and daughters) might have more developmental implications relative to same-sex attachment (Pan et al. 2016; Schoppe-Sullivan et al. 2006). Second, the positive association between paternal attachment anxiety and relative power was only evident among junior high school boys, suggesting that boys are more likely to experience power imbalances with their friends if they are anxiously attached to their father at this age. Furthermore, as higher ratings on the subscale of relative power implies a more dominating role on the part of the respondent, these findings suggest that junior high school boys might redirect their proximity-seeking behaviors originally intended to the father into more dominant practices with their friends. Interestingly, results also suggest that junior high school boys with maternal attachment anxiety tend to report less negative interactions with their friends, suggesting that boys whom seek proximity with their mothers at this age might be less inclined to demonstrating maladaptive behaviors that might damage friendships. Further studies are needed to clarify the differential roles of paternal and maternal attachment anxiety on friendship outcomes among junior high school boys. Third, findings indicated that maternal attachment did not predict neither junior nor senior high school girls' friendship qualities. Conversely, paternal attachment anxiety was associated with *more* negative interactions among junior and senior high school boys, as well as senior high school girls. On the one hand, these findings corroborate the notion that mothers and fathers assume different roles and that fathers play more than a complementary role in development (Freeman et al. 2010). On the other hand, these findings contradict the assumption that same-sex attachment would have stronger implications on developmental outcomes (e.g., perceived peer support; Buist et al. 2002; Liu 2006). Additional research is needed to clarify the relative contribution of maternal and paternal attachment on peer-related outcomes as a function of adolescent sex.

Limitations and Future Directions

A few limitations in the present study need to be addressed. First, although adolescents' self-reports are more determinative of developmental outcomes (e.g., perceived support) than those of others (Branje et al. 2002), future studies would benefit from including both parental and friends' reports to reduce potential biases

related to social desirability effects. Second, adolescents' reports of friendship qualities were based on a close or best friend, whose information (e.g., sex) was unknown. Given that same-sex and cross-sex friendships might differ in quality for adolescents (Gorresse and Ruggieri 2012; Saferstein et al. 2005), future studies should solicit relevant information. Third, the correlational nature of the present study precludes interpretations about possible causal influences of maternal and paternal attachment on different indices of friendship. Longitudinal studies are needed to consider the importance of parental attachment, and in particular, to clarify the extent to which paternal attachment affords more than a complementary, or even a stronger role, in development (Freeman et al. 2010; Michiels et al. 2010).

Notwithstanding these limitations, the present study has several strengths. First, participants included students of different ethnic backgrounds, thus providing an extension to the literature that has mainly studied attachment and peer-related outcomes with Western samples (Pallini et al. 2014). Second, this study provides insights to the relatively unexplored role of paternal attachment on adolescent's social-emotional development (Cassidy et al. 2013) by suggesting that fathers assume a prominent role in friendship quality. Third, this study considered potential sex and age differences in the examined associations. To elaborate, current findings suggest that while maternal attachment has implications for boys' friendship, paternal attachment has implications for boys and senior high school girls.

Findings from the present study offer several directions for future research. To better ascertain the association between parental attachment and friendship qualities, future studies would benefit from accounting for additional covariates. For example, interpersonal characteristics such as trait anxiety (Oberle et al. 2010) and personality traits (e.g., agreeableness; Wilson et al. 2015) might be potential candidates given their associations with peer- and friendship-related outcomes (e.g., peer acceptance and friendship satisfaction). In addition, as friends might become attachment figures during adolescence, especially among girls, and that peer attachment has implications on adolescents' development (Song et al. 2009), future studies would benefit from considering the role of peer or friend attachment in predicting friendship outcomes. To conclude, current findings underscore parents' continuing influence on their adolescent-child (Harter 1999; Kerns et al. 2006; Larsen et al. 2007) by suggesting that maternal and paternal attachment have differential functions on adolescents' friendship and that these variations are linked to the sex and age of the adolescent.

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Author Contributions T.W. initiated the research questions, performed the statistical analyses and interpretation of the results, and led the writing of the manuscript at all stages. C.K. developed the original study and its design, led the data collection, as well as assisted in the conceptualization of the study. C.K. also provided constructive feedback on subsequent drafts. S.C. assisted T.W. in the first draft of the manuscript by conducting relevant literature review and drafting a portion of the literature background. S.C. also cross-checked the references and gave constructive feedback on the manuscript. All authors read and approved the final manuscript.

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Compliance with Ethical Standards

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

Ethical Approval This study has been approved by the Research Ethics Committee at the University of British Columbia. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consents Informed parental consents and adolescents' assents were obtained prior to data collection.

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References

- Ainsworth, M. D. S. (1989). Attachments beyond infancy. *American Psychologist*, 44(4), 709–716. <https://doi.org/10.1037/0003-066X.44.4.709>.
- Berndt, T. J. (2004). Children's friendships: shifts over a half-century in perspectives on their development and their effects. *Merrill-Palmer Quarterly*, 50(3), 206–223. <https://doi.org/10.1353/mpq.2004.0014>.
- Bowlby, J. (1982). Attachment and loss: 1. Attachment (2nd ed.). New York: Basic Books. (Original work published 1969).
- Branje, S. J. T., van Aken, M. A. G., & van Lieshout, C. F. M. (2002). Relational support in families with adolescents. *Journal of Family Psychology*, 16(3), 351–362. <https://doi.org/10.1037/0893-3200.16.3.351>.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: an integrative overview. In J. A. Simpson & W. S. Rholes (Eds), *Attachment theory and close relationships* (pp. 46–76). New York: Guilford Press.
- Bretherton, I. (1992). The origins of attachment theory: John Bowlby and Mary Ainsworth. *Developmental Psychology*, 28(5), 759–775. <https://doi.org/10.1037/0012-1649.28.5.759>.
- Brown, B. B., & Bakken, J. P. (2011). Parenting and peer relationships: Reinvigorating research on family–peer linkages in adolescence. *Journal of Research on Adolescence*, 21(1), 153–165. <https://doi.org/10.1111/j.1532-7795.2010.00720.x>.
- Brown, B. B., & Larson, J. (2009). Peer relationships in adolescence. In R. M. Lerner & L. D. Steinberg (Eds), *Handbook of adolescent psychology*. 3rd ed (pp. 74–103). Hoboken, NJ: John Wiley & Sons. <https://doi.org/10.1002/9780470479193.adlpsy002004>.
- Buhrmester, D. (1990). Intimacy of friendship, interpersonal competence, and adjustment during preadolescence and adolescence. *Child Development*, 61(4), 1101–1111. <https://doi.org/10.2307/1130878>.
- Buhrmester, D., & Furman, W. (1987). The development of companionship and intimacy. *Child Development*, 58(4), 1101–1113. <https://doi.org/10.2307/1130550>.
- Buist, K. L., Deković, M., Meeus, W., & van Aken, M. A. (2002). Developmental patterns in adolescent attachment to mother, father and sibling. *Journal of Youth and Adolescence*, 31(3), 167–176. <https://doi.org/10.1023/A:1015074701280>.
- Bukowski, W. M., Motzio, C., & Meyer, F. (2009). Friendship as process, function, and outcome. In K. H. Rubin, W. M. Bukowski & L. Brett (Eds), *Handbook of peer interactions, relationships, and groups* (pp. 217–231). New York, NY: Guilford Press.
- Bukowski, W. M., Simard, M., Dubois, M. E., & Lopez, L. S. (2011). Representations, process, and development: A new look at friendship in early adolescence. In E. Amsel & J. G. Smetana (Eds), *Adolescent vulnerabilities and opportunities: Developmental and constructivist perspectives* (pp. 159–181). New York: Cambridge University Press. <https://doi.org/10.1017/CBO9781139042819.010>.
- Byrne, B. M. (2010). *Structural equation modelling with AMOS: Basic concepts, applications and programming*. 2nd ed New York: Routledge.
- Cassidy, J., Jones, J. D., & Shaver, P. R. (2013). Contributions of attachment theory and research: a framework for future research, translation, and policy. *Development and Psychopathology*, 25(4), 1415–1434. <https://doi.org/10.1017/S0954579413000692>.
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, 9(2), 233–255. https://doi.org/10.1207/S15328007SEM0902_5.
- De Goede, I. H., Branje, S. J., & Meeus, W. H. (2009). Developmental changes and gender differences in adolescents' perceptions of friendships. *Journal of Adolescence*, 32(5), 1105–1123. <https://doi.org/10.1016/j.adolescence.2009.03.002>.
- Doyle, A. B., Lawford, H., & Markiewicz, D. (2009). Attachment style with mother, father, best friend, and romantic partner during adolescence. *Journal of Research on Adolescence*, 19(4), 690–714. <https://doi.org/10.1111/j.1532-7795.2009.00617.x>.
- Dwyer, K. M., Fredstrom, B. K., Rubin, K. H., Booth-LaForce, C., Rose-Krasnor, L., & Burgess, K. B. (2010). Attachment, social information processing, and friendship quality of early adolescent girls and boys. *Journal of Social and Personal Relationships*, 27(1), 91–116. <https://doi.org/10.1177/0265407509346420>.
- Dykas, M. J., Ziv, Y., & Cassidy, J. (2008). Attachment and peer relations in adolescence. *Attachment & Human Development*, 10(2), 123–141. <https://doi.org/10.1080/14616730802113679>.
- Erath, S. A., Flanagan, K. S., Bierman, K. L., & Tu, K. M. (2010). Friendships moderate psychosocial maladjustment in socially anxious early adolescents. *Journal of Applied Developmental Psychology*, 31(1), 15–26. <https://doi.org/10.1016/j.appdev.2009.05.005>.
- Freeman, H., Newland, L. A., & Coyl, D. D. (2010). New directions in father attachment. *Early Child Development and Care*, 180, 1–8. <https://doi.org/10.1080/03004430903414646>.
- Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships in their social networks. *Developmental*

- Psychology*, 21(6), 1016–1024. <https://doi.org/10.1037/0012-1649.21.6.1016>.
- Furman, W., Simon, V. A., Shaffer, L., & Bouchev, H. A. (2002). Adolescents' working models and styles for relationships with parents, friends, and romantic partners. *Child Development*, 73(1), 241–255. <https://doi.org/10.1111/1467-8624.00403>.
- Gorresse, A., & Ruggieri, R. (2012). Peer attachment: A meta-analytic review of gender and age differences and associations with parent attachment. *Journal of Youth and Adolescence*, 41(5), 650–672. <https://doi.org/10.1007/s10964-012-9759-6>.
- Groh, A. M., Fearon, R. P., Bakermans-Kranenburg, M. J., van IJzendoorn, M. H., Steele, R. D., & Roisman, G. I. (2014). The significance of attachment security for children's social competence with peers: a meta-analytic study. *Attachment & Human Development*, 16(2), 103–136. <https://doi.org/10.1080/14616734.2014.883636>.
- Harter, S. (1999). *The construction of the self: A developmental perspective*. New York: Guilford Press.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55. <https://doi.org/10.1080/10705519909540118>.
- Keefe, K., & Berndt, T. J. (1996). Relations of friendship quality to self-esteem in early adolescence. *Journal of Early Adolescence*, 16(1), 110–129. <https://doi.org/10.1177/0272431696016001007>.
- Kenny, R., Dooley, B., & Fitzgerald, A. (2013). Interpersonal relationships and emotional distress in adolescence. *Journal of Adolescence*, 36(2), 351–360. <https://doi.org/10.1016/j.adolescence.2012.12.005>.
- Kerns, K. A., Tomich, P. L., & Kim, P. (2006). Normative trends in children's perceptions of availability and utilization of attachment figures in middle childhood. *Social Development*, 15, 1–22. <https://doi.org/10.1111/j.1467-9507.2006.00327.x>.
- Kingery, J. N., Erdley, C. A., & Marshall, K. C. (2011). Peer acceptance and friendship as predictors of early adolescents' adjustment across the middle school transition. *Merrill-Palmer Quarterly*, 57(3), 215–243. <https://doi.org/10.1353/mpq.2011.0012>.
- Larsen, H., Branje, S. J. T., van der Valk, I., & Meeus, W. H. J. (2007). Friendship quality as a moderator between perception of interparental conflicts and maladjustment in adolescence. *International Journal of Behavioral Development*, 31(6), 549–558. <https://doi.org/10.1177/0165025407080578>.
- Lee, J. Y., & Park, S. H. (2017). Interplay between attachment to peers and parents in Korean adolescents' behavior problems. *Journal of Child and Family Studies*, 26(1), 57–66. <https://doi.org/10.1007/s10826-016-0552-0>.
- Liu, Y. L. (2006). Paternal/maternal attachment, peer support, social expectations of peer interaction, and depressive symptoms. *Adolescence*, 41(164), 705–721.
- Liu, Y. L. (2008). An examination of three models of the relationships between parental attachments and adolescents' social functioning and depressive symptoms. *Journal of Youth and Adolescence*, 37(8), 941–952. <https://doi.org/10.1007/s10964-006-9147-1>.
- McKay, S., & Moretti, M. M. (2001). *Comprehensive Adolescent-Parent Attachment Inventory (CAPAI): Preliminary validation*. Poster presented at the American Psychological Association annual convention, San Francisco.
- Michiels, D., Grietens, H., Onghena, P., & Kuppens, S. (2010). Perceptions of maternal and paternal attachment security in middle childhood: Links with positive parental affection and psychosocial adjustment. *Early Child Development and Care*, 180(1–2), 211–225. <https://doi.org/10.1080/03004430903415064>.
- Mikulincer, M., Shaver, P. R., & Pereg, D. (2003). Attachment theory and affect regulation: The dynamics, development, and cognitive consequences of attachment-related strategies. *Motivation and Emotion*, 27(2), 77–102. <https://doi.org/10.1023/A:1024515519160>.
- Moretti, M. M., McKay, S., & Holland, R. (2000). *The Comprehensive Adolescent-Parent Attachment Inventory. Unpublished measure and data*, Simon Fraser University, Burnaby, British Columbia, Canada.
- Moretti, M. M., Obsuth, I., Craig, S. G., & Bartolo, T. (2015). An attachment-based intervention for parents of adolescents at risk: Mechanisms of change. *Attachment & Human Development*, 17(2), 119–135. <https://doi.org/10.1080/14616734.2015.1006383>.
- Newland, L. A., Coyl, D., & Chen, H. (2010). Fathering and attachment in the USA and Taiwan: contextual predictors and child outcomes. *Early Child Development and Care*, 180(1–2), 173–191. <https://doi.org/10.1080/03004430903415049>.
- Nickerson, A. B., & Nagle, R. J. (2005). Parent and peer relations in middle childhood and early adolescence. *The Journal of Early Adolescence*, 25(2), 223–249. <https://doi.org/10.1177/0272431604274174>.
- Nie, Y. G., Li, J. B., & Vazsonyi, A. T. (2016). Self-control mediates the associations between parental attachment and prosocial behavior among Chinese adolescents. *Personality and Individual Differences*, 96, 36–39. <https://doi.org/10.1016/j.paid.2016.02.077>.
- Noakes, M. A., & Rinaldi, C. M. (2006). Age and gender differences in peer conflict. *Journal of Youth and Adolescence*, 35(6), 881–891. <https://doi.org/10.1007/s10964-006-9088-8>.
- Oberle, E., Schonert-Reichl, K. A., & Thomson, K. C. (2010). Understanding the link between social and emotional well-being and peer relations in early adolescence: gender-specific predictors of peer acceptance. *Journal of Youth and Adolescence*, 39(11), 1330–1342. <https://doi.org/10.1007/s10964-009-9486-9>.
- Pallini, S., Baiocco, R., Schneider, B. H., Madigan, S., & Atkinson, L. (2014). Early child–parent attachment and peer relations: a meta-analysis of recent research. *Journal of Family Psychology*, 28(1), 118–123. <https://doi.org/10.1037/a0035736>.
- O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity*, 41(5), 673–690. <https://doi.org/10.1007/s11135-006-9018-6>.
- Pan, Y., Zhang, D., Liu, Y., Ran, G., & Teng, Z. (2016). Different effects of paternal and maternal attachment on psychological health among Chinese secondary school students. *Journal of Child and Family Studies*, 25(10), 2998–3008. <https://doi.org/10.1007/s10826-016-0463-0>.
- Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: Potential trade-offs for the emotional and behavioral development of girls and boys. *Psychological Bulletin*, 132(1), 98–131. <https://doi.org/10.1037/0033-2909.132.1.98>.
- Rose, A. J., Schwartz-Mette, R. A., Smith, R. L., Asher, S. R., Swenson, L. P., Carlson, W., & Waller, E. M. (2012). How girls and boys expect disclosure about problems will make them feel: Implications for friendships. *Child Development*, 83(3), 844–863. <https://doi.org/10.1111/j.1467-8624.2012.01734.x>.
- Rosenthal, N. L., & Kobak, R. (2010). Assessing adolescents' attachment hierarchies: differences across developmental periods and associations with individual adaptation. *Journal of Research on Adolescence*, 20(3), 678–706. <https://doi.org/10.1111/j.1532-7795.2010.00655.x>.
- Rubin, K. H., Coplan, R., Chen, X., Bowker, J. C., & McDonald, K. L. (2011). Peer relationships in childhood. In M. E. Lamb & M. H. Bornstein (Eds.), *Social and personality development: An advanced textbook* (pp. 309–360). New York: Psychology Press.
- Saferstein, J. A., Neimeyer, G. J., & Hagans, C. L. (2005). Attachment as a predictor of friendship qualities in college youth. *Social Behavior and Personality*, 33(8), 767–776. <https://doi.org/10.2224/sbp.2005.33.8.767>.
- Schneider, B. H., Atkinson, L., & Tardif, C. (2001). Child–parent attachment and children's peer relations: A quantitative review. *Developmental Psychology*, 37(1), 86–100. <https://doi.org/10.1037/0012-1649.37.1.86>.

- Schoppe-Sullivan, S. J., Diener, M. L., Mangelsdorf, S. C., Brown, G. L., McHale, J. L., & Frosch, C. A. (2006). Attachment and sensitivity in family context: the roles of parent and infant gender. *Infant and Child Development*, *15*(4), 367–385. <https://doi.org/10.1002/icd.449>.
- Seibert, A., & Kerns, K. (2015). Early mother–child attachment: longitudinal prediction to the quality of peer relationships in middle childhood. *International Journal of Behavioral Development*, *39*(2), 130–138. <https://doi.org/10.1177/0165025414542710>.
- Selfhout, M. H. W., Branje, S. J. T., & Meeus, W. H. J. (2009). Developmental trajectories of perceived friendship intimacy, constructive problem solving, and depression from early to late adolescence. *Journal of Abnormal Child Psychology*, *37*(2), 251–264. <https://doi.org/10.1007/s10802-008-9273-1>.
- Sentse, M., & Laird, R. D. (2010). Parent–child relationships and dyadic friendship experiences as predictors of behavior problems in early adolescence. *Journal of Clinical Child & Adolescent Psychology*, *39*(6), 873–884. <https://doi.org/10.1080/15374416.2010.517160>.
- Shaver, P. R., & Mikulincer, M. (2002). Attachment-related psychodynamics. *Attachment & Human Development*, *4*(2), 133–161. <https://doi.org/10.1080/14616730210154171>.
- Song, H., Thompson, R. A., & Ferrer, E. (2009). Attachment and self-evaluation in Chinese adolescents: Age and gender differences. *Journal of Adolescence*, *32*(5), 1267–1286. <https://doi.org/10.1016/j.adolescence.2009.01.001>.
- Steiger, A. R. (2003). *Preliminary validation of the Comprehensive Adolescent-Parent Attachment Inventory*. Unpublished master's thesis, Simon Fraser University, Burnaby, British Columbia, Canada.
- Steiger, A. R., & Moretti, M. M. (2005). *Convergent and discriminant validity of the Comprehensive Adolescent-Parent Attachment Inventory*. Poster presented at the annual meeting of the Canadian Psychological Association. Montreal, Canada.
- Way, N., & Greene, M. L. (2006). Trajectories of perceived friendship quality during adolescence: The patterns and contextual predictors. *Journal of Research on Adolescence*, *16*(2), 293–320. <https://doi.org/10.1111/j.1532-7795.2006.00133.x>.
- Wilson, R. E., Harris, K., & Vazire, S. (2015). Personality and friendship satisfaction in daily life: Do everyday social interactions account for individual differences in friendship satisfaction? *European Journal of Personality*, *29*(2), 173–186. <https://doi.org/10.1002/per.1996>.
- Zhou, H., Li, Y., Zhang, B., & Zeng, M. (2012). The relationship between narcissism and friendship qualities in adolescents: Gender as a moderator. *Sex Roles*, *67*(7–8), 452–462. <https://doi.org/10.1007/s11199-012-0169-8>.
- Zimmermann, P. (2004). Attachment representations and characteristics of friendship relations during adolescence. *Journal of Experimental Child Psychology*, *88*(1), 83–101. <https://doi.org/10.1016/j.jecp.2004.02.002>.