

Parental Support for Autonomy and Child Depressive Symptoms in Middle Childhood: The Mediating Role of Parent–Child Attachment

J. Yan¹ · Z. R. Han¹ · Y. Tang¹ · X. Zhang¹

Published online: 4 April 2017

© Springer Science+Business Media New York 2017

Abstract To facilitate understanding of the factors associated with child depressive symptoms in middle childhood, we examined the roles of parental support for autonomy and parent–child attachment in child depressive symptoms among 150 Chinese parent–child dyads. The participating children’s ages ranged from 6 to 12 years old. Parental support for autonomy was coded from a conflict resolution and a cooperation task. Children reported their depressive symptoms and their attachment relationships with the participating parents. After controlling for parent depressive symptoms, parental support for autonomy was associated with fewer child depressive symptoms. The association between parental support for autonomy and child depressive symptoms was mediated by parent–child attachment quality, suggesting that parental support for autonomy was negatively associated with child depressive symptoms through its positive association with parent–child attachment quality. Moreover, the positive association between parental support for autonomy and parent–child attachment quality was stronger for older children. The current study expanded the knowledge on parental support for autonomy in middle-childhood and its association with parent–child relationships and child mental health. Future research is encouraged to pay more attention to the role of parental support for autonomy in various aspects of child development for children in middle-childhood and pre-adolescence.

Keywords Child depressive symptoms · Parental support for autonomy · Parent–child attachment quality · Middle-childhood

Introduction

Parental support for autonomy represents parenting practices that encourage, recognize, and respect children’s perspectives and individuality (Grolnick 2003). It has been consistently documented that children and adolescents with parents displaying higher levels of support for autonomy tended to develop more secure parent–child attachment relationship (Kerns et al. 2011) and fewer depressive symptoms (Soenens et al. 2007). Despite the wide recognition that support for autonomy is critical for adolescents’ socio-emotional adjustment, there is relatively less empirical evidence regarding its influence on the development of psychopathology during middle-childhood. Depressive symptoms, among the most prevalent psychopathological symptoms for school-aged children, could severely hinder children’s optimal development given its association with a series of maladjustment including impaired cognitive development and physical distress (Pinquart and Shen 2011; Yen et al. 2011). Moreover, depressive symptoms during middle-childhood could predict higher risk for depression (Dunn and Goodyer 2006) and other psychiatric disorders (Kasen et al. 1999) in adolescence and adulthood. Hence, it is important to understand whether and how parental support for autonomy is related with children’s depressive symptoms in middle-childhood.

Steinberg (1990) proposed “renegotiating” and “achieving” autonomy to be a central and stage-salient task of

✉ Z. R. Han
rachhan@bnu.edu.cn

¹ Beijing Key Laboratory of Applied Experimental Psychology, Beijing Normal University, Beijing 100875, China

adolescence. Most investigations have been focused on adolescents when studying the correlates of parental support for autonomy. However, children in middle-childhood may also have the desire for autonomy (Wray-Lake et al. 2010). Deprivation from such needs could result in psychological malfunctioning (Ryan and Deci 2000). Moreover, the development of self-concept in middle-childhood allows children to start viewing themselves from the perspectives of other people (Maccoby 1984). Parental support for autonomy in middle-childhood could be crucial because acknowledgements from parents are important resources for children to establish a positive perspective of themselves.

Empirically, extensive studies have linked parental support for autonomy with better psychological functioning among adolescents and young adults. For example, Soenens et al. (2007) found that parental promotion of volitional functioning predicted fewer depressive symptoms during late adolescence. Similarly, Seiffge-Krenke and Pakalnis-kiene (2010) identified the link between adolescent-perceived autonomy-support in family context and active coping behaviors. These results highlighted the potential universal importance of autonomy-support in parenting adolescents. Compared with the vast body of literature concerning adolescents, less work has been focused on the association between parental support for autonomy and child outcomes in middle-childhood or identify the underlying mechanisms.

Depression is one of the most common psychological disorders affecting all age groups (Bromet et al. 2011). Research has showed that children as young as 5 years old could suffer from depressive symptoms (Luby et al. 2006). Although the occurrence of clinical depression is low, approximately 10% of children in middle-childhood in a Western sample reported being depressed and sad, indicating sub-threshold depressive symptoms (Angold and Costello 2001). Approximately 8.2–11.9% (one-point prevalence rate) of elementary school students were depressed in China (Xu et al. 2008).

Most studies on the correlates of depressive symptoms in middle-childhood examined genetic factors (e.g., Eley et al. 1998) and peer status (e.g., Troop-Gordon et al. 2015). Although increasing attention has been paid to parenting practices on children's depression (McLeod et al. 2007; Wilkinson et al. 2013), autonomy support has been relatively neglected. Little research has directly examined the association between child depressive symptoms and parental support for autonomy with robust behavior observational assessments, and our knowledge is limited on the potential mechanisms linking these two constructs.

One potential pathway through which support for autonomy is associated with depressive symptoms in middle-childhood is attachment. Attachment has been defined as the long-lasting affective bond that children form

with caregivers (Bowlby 1969, 1982). Ainsworth (1985) emphasized the importance of maintaining dynamic equilibrium between children's exploratory behavioral systems and proximity-seeking behavioral systems, which is critical for forming a secure attachment, during and beyond infancy. Through enhancing the exploratory behavioral systems, parental support for autonomy could facilitate the formation of "attachment-exploration balance" (Ainsworth et al. 1972). Thus, such support has become one of the mostly studied parental correlates of attachment. Many empirical studies have examined such association during infancy, early childhood, adolescence and even young adulthood. For example, Bernier et al. (2014) found in a prospective study that observed parental support for autonomy at 15 months of age predicted parent-child attachment security at 15 months and 2 years. In another short-term intervention study, Shpigel et al. (2012) found maternal autonomy granting to be associated with decreases in attachment-related anxiety and avoidance among suicidal adolescents.

Attachment theory stated that secure attachment relationship enhances the development of children's psychological well-being (Bowlby 1982). Particularly, attachment security has been linked with fewer internalizing problems during childhood and adolescence (for a review, see Brumariu and Kerns 2010). Extensive evidence has indicated that secure parent-child attachment was a consistent predictor of fewer depressive symptoms among children and adolescents (e.g., Brenning et al. 2011; Kerns et al. 2011; Kullik and Petermann 2012).

During middle-childhood, children become increasingly independent and thus require more autonomy granting from their parents. Parents' violation of children's autonomy could hinder the development of secure attachment within the parent-child dyads, and is very likely to be further linked with depressive symptoms (Brenning et al. 2011). Given the important role of attachment security in understanding child psychopathology (Armsden et al. 1990; Cummings and Cicchetti 1990; Kullik and Petermann 2012), we speculate that attachment may function as the mechanism of the association between parental support for autonomy and child depressive symptoms.

Additionally, most of these investigations on parental autonomy support were conducted in Western cultures. Collectivistic cultures, particularly Chinese culture, prioritizes interdependence and social hierarchy over individuality (Markus and Kitayama 1991). Scholars have different opinions on whether parental control and autonomy support will have different effect on children's functioning in different cultures (Wang et al. 2007). Majority of researchers posited that the need for autonomy is universal even in cultures where individuality and independence are less emphasized (Chirkov and Ryan 2001; Cheung et al.

2016). For example, evidence from a Ghanaian sample (sixth graders) suggested that in collectivistic societies, parental support for autonomy was negatively associated with children's depressive symptoms (Marbell and Grolnick 2013), which suggested that parental support for autonomy was also adaptive parenting practice in collectivistic societies. However, our understanding of the role of parental autonomy support in different cultures is still limited, especially given the rapid development of the society and transitions in social and cultural values.

Based on previous literature and theoretical considerations, we examined parent–child attachment security as a potential mediator underlying the association between parental support for autonomy and child depressive symptoms. We tested the following four hypotheses in a Chinese sample of families with children in middle-childhood. First, higher level of parental support for autonomy will be associated with fewer child depressive symptoms. Second, greater parental support for autonomy will be associated with more secure parent–child attachment. Third, parental support for autonomy will be positively associated with parent–child attachment security, which will in turn be negatively associated with child depressive symptoms. Fourth, considering the gradual increase in autonomy over time (Wray-Lake et al. 2010), the effect of parental support for autonomy on parent–child relationships and child-related outcomes might vary by age. Specifically, the association between parental support for autonomy and attachment might be stronger for older children, given the increasing autonomy needs as children grow up.

Method

Participants

A hundred and fifty parent–child dyads were recruited through flyers distributed in a local community of a major city in China. All the children (87 boys and 63 girls) aged between 6 and 12 ($M = 8.54$, $SD = 1.67$). The participating parents (121 biological mothers and 29 biological fathers, aged from 25 to 59, $M = 39.22$, $SD = 4.07$) all identified themselves as the primary caregiver of the participating children. In terms of annual household income, 114 (76.0%) families in the sample have annual income higher than the average of the city (i.e., around \$18,500 annually; National Bureau of Statistics of the People's Republic of China 2015). A hundred and forty-two parents (94.7%) reported being currently married. A hundred and forty-one participating parents (94.0%) had at least an undergraduate degree, and the rest (6.0%) completed high school.

Procedures

Data were drawn from a larger research project focusing on family emotional processes and child adjustment. The parent–child dyads were asked to participate in a series of individual and interaction tasks during a lab visit, including a collaboration task and a conflict discussion task. In the collaboration task, the dyads were asked to draw a house and a tree together in 4 min with an Etch-A-Sketch, which simulated daily cooperation within dyads. During the task, the child could only use one knob to control the vertical movement and the parent could only use the other knob to control the horizontal movement of the drawing point, and they were asked to verbally coordinate with each other to finish the sketch. Following the Etch-A-Sketch task, the dyads were asked to participate in a 4-min conflict discussion task that simulated daily conflict-resolution processes within families. The conflict resolution task enabled us to observe how parents support for their children's autonomy when discussing conflicting issues. All tasks were videotaped. The videotapes were then coded independently by a group of trained assistants for the component of parental support for autonomy, and ten percent of the video recordings were randomly selected and double coded to calculate inter-coder reliability coefficients. All codes were trained to reach satisfactory inter-rater reliability before the formal coding process.

Upon completing the interaction tasks, the parent and child were invited to separate rooms and filled out several questionnaires independently. A research assistant read out all items to the child to make sure that she or he understood the items. Families were compensated for their participation, and children were given a small token of appreciation. All study procedures, including informed consent and child assent, were conducted in accordance with the sponsoring university's Institutional Review Board.

Measures

Parent–child attachment

Parent–child attachment was assessed using children's report on the Inventory of Parent and Peer Attachment (IPPA-45; Armsden and Greenberg, 1987; Wilkinson and Goh 2014) with respect to the participating parent. This scale measured parent–child attachment quality through three subscales (i.e., communication, trust, and alienation), using a 5-point Likert scale (1 = *almost never or never true*, 5 = *almost always or always true*). To measure the overall attachment quality, the trust and communication scores were summed and then the alienation score was subtracted to obtain a composite attachment security score. Thus, a higher score reflected higher quality of parent–child

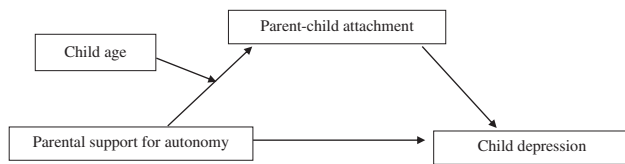


Fig. 1 Proposed moderated mediational model for associations between parental support for autonomy and child depression as mediated by the attachment between parent and child, with the association between parental support for autonomy and parent–child attachment moderated by child age

attachment relationship. Considering the differences in language background, we used a translated version of the IPPA (Song et al. 2009). Reliability and validity of the scale have been tested in father–child and mother–child samples, yielding acceptable internal consistency of .89 (Song et al. 2009). In the current study, Cronbach’s alpha was equal to .71.

Child depressive symptoms

As part of the survey, the children completed the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff 1977), which was a 20-item scale designed to measure the current level of depressive symptoms. The measure includes a list of ways the child may have felt or behaved during the last week (e.g., “Within the last week I was troubled by something which had never troubled me before”, “Within the last week I didn’t want to eat and didn’t feel hungry”). Children were instructed to verbally rate the frequency of occurrence for each symptom on a 4-point Likert scale (from 1 “rarely or none of the time” to 4 “most or all of the time”). The measure has shown good test–retest reliability and high internal consistency with both psychiatric patients and the general population (Radloff 1977). The Chinese version of this scale also demonstrated satisfactory ($\alpha = .91$) internal reliabilities (Chen et al. 2006). The Cronbach’s alpha of this scale in the present study was .83.

Parental support for autonomy

Parental support for autonomy was examined from the observation of parent–child interaction tasks. A group of trained researchers independently coded parents’ display of support from videos of the conflict discussion and the cooperative task separately for all parent–child dyads. Indicators of support for autonomy included supporting and encouraging child’s opinions and problem-solving strategies and allowing the child to lead the conversation/collaboration. The observational scale assessed parents’ expression of support during the parent–child interaction on a seven-point Likert scale (1 = very low/no support, 7 = very high support). At the higher end, a parent could score a 7 if s/he

acknowledged and supported the child’s perspectives, ideas, and opinions as a valid part of the child’s individual identity. In contrast, a parent could score a 1 at the lower end if s/he failed to encourage the child’s individuality or the parent’s behaviors did not acknowledge child’s ideas and opinions as real and valid. An overall parental support for autonomy score was computed by averaging the score for two tasks and the inter-rater reliability for this scale was .89.

Parental depressive symptoms

Parents reported on their own depressive symptoms using the depression scale from the Symptom Checklist-90-Revised (SCL-90-R; Derogatis 1977), which has established psychometric properties in previous studies (Derogatis and Savitz 1999; Derogatis and Unger 2010). The current study incorporated the depression subscale of SCL-90-R in the analysis to control for parental depressive symptoms when considering the association between parenting behaviors and child depressive symptoms. The SCL-90-R Depression scale was a 13-item index measuring the degree to which respondents experienced depressive symptoms such as feeling hopeless about the future, thinking about ending their lives, feeling lonely, crying easily, etc. Each item of the SCL-90-R Depression scale was scored using a 5-point Likert scale (1 = *not at all*, 5 = *extremely*), with higher total score indicating more depressive symptoms. In our sample, Cronbach’s alpha for the parent depressive symptoms scale was .90.

Data Analyses

First, preliminary analyses were conducted to examine the descriptive statistics, missing data, correlations among the studied variables, and the possible group differences of the studied variables based on demographic characteristics. Next, we examined a mediation model with the SPSS PROCESS Macro (Hayes 2013) to investigate whether attachment was the mechanism through which parental support for autonomy was associated with depressive symptoms. Finally, a moderated mediation model was tested to examine whether child age moderated such mediation by moderating the association between support for autonomy and parent–child attachment quality. These analytic methods are considered advantageous for testing mediation in smaller samples. Five thousand bootstrap resamples were used to generate 95% confidence intervals that estimated the size and significance of the effects. Based on the theoretical considerations, we examined whether parent–child attachment mediated the relationship between parental support for autonomy and child depression, and whether child age moderated such associations (see Fig. 1).

Table 1 Means (*M*), standard deviations (*SD*), and bivariate correlations of study variables

	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Child gender	0.42	0.50									
2. Child age	8.54	1.67	.00								
3. Parent gender	0.19	0.40	-.07	.15							
4. Parent age	39.22	4.05	-.09	.46**	.24**						
5. Parent education	1.73	0.57	.10	-.07	-.03	-.03					
6. Household income	8.92	1.35	-.07	.07	-.07	.23**	-.44**				
7. Child depression	32.89	8.57	.04	-.10	.01	-.06	-.02	-.03			
8. Parent depression	1.61	0.58	.14	-.04	-.12	-.08	.03	-.09	-.02		
9. Attachment	28.13	9.41	.08	.11	-.08	-.03	.00	.09	-.38**	-.12	
10. Parental SFA	4.18	0.94	.01	.07	.07	.07	-.04	.13	-.18*	.12	.14

Note: Child gender, 0 = female, 1 = male; Parent gender, 0 = female, 1 = male

SFA support for autonomy

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

Results

The rates of missing data ranged from 0 to 2.7%, and all missing data were due to participants not responding to a certain item. The Little's MCAR test showed that the data was missing completely at random (MCAR; $\chi^2(24) = 32.31$, $p > .05$). Missing data were imputed with the expectation maximum (EM) method. We then examined the associations among demographic variables (i.e., child gender, child age, parent gender, parent age, parent education, and household income) and all study variables. No study variables were found to be associated with demographic characteristics. We entered demographic variables and maternal depression as the covariates, yet none of them showed statistical significance. Removing covariates did not change the results.

Means, standard deviations, and bivariate correlations of all study variables and control variables are presented in Table 1. We found that child depressive symptoms were negatively associated with both parental support for autonomy ($r = -.18$, $p = .028$) and parent-child attachment ($r = -.38$, $p < .001$). The positive association between parent-child attachment and parental support for autonomy approached significance ($r = .14$, $p = .083$). We then tested a mediational model to examine the third hypothesis that parental support for autonomy might exert an indirect effect on child depression through parent-child attachment security. After controlling for the covariates, parental support for autonomy was positively and marginally associated with parent-child attachment ($B = 1.53$, $p = .067$), which was in turn negatively associated with child depression ($B = -.35$, $p < .001$). The indirect effect of parental support for autonomy on child depression through child attachment was statistically different from zero (*indirect effect point estimate* = $-.53$, $SE = .33$, $95\% BCa CI = -1.29$ to $-.002$).

Finally, we tested a moderated mediation model to examine the fourth hypothesis that such mediation might be moderated by child age. As shown in Table 2, we took two steps to enter the predictors. At the first step (Model 1), only study variables were entered into the model with no covariates included. At the second step (Model 2), demographic variables were controlled as covariates. All unstandardized coefficients, p values, point estimates and bootstrapped confidence intervals of the total indirect effects and conditional indirect effects are presented in Table 2. In general, the parental support for autonomy was indirectly related to child depression via the attachment between parent and child, such that a higher level of support for autonomy was associated with more parent-child attachment, which in turn was related to fewer child depressive symptoms. Child age moderated the positive association between parental support for autonomy and parent-child attachment. The estimates of indirect effect were greater for older children.

Discussion

We examined whether and how parental support for autonomy would be associated with child depressive symptoms in middle-childhood. Specifically, we tested parent-child attachment as a potential mediator underlying such association. Our results indicated that children whose parents recognized and respected the validity of their individuality (i.e., supported for children's autonomy) across two interaction tasks seemed to show fewer depressive symptoms. Further, the current study empirically identified the role of attachment between parent-child dyads as the mediating mechanism between parental support for autonomy and child depressive symptoms. Moreover, the association between parental support for autonomy and

Table 2 Conditional indirect effect of parental support for autonomy in association with child depressive symptoms through parent–child attachment

	Model 1			Model 2		
	<i>B</i>	<i>t</i>	<i>p</i>	<i>B</i>	<i>t</i>	<i>p</i>
Mediator model (DV = Parent–child attachment)						
Constant	63.84***	3.72	<.001	61.18**	3.25	.001
Parental SFA	−9.55*	−2.42	.02	−8.30*	−2.05	.04
Child age	−4.95*	−2.46	.02	−4.18*	−1.99	.05
Parental SFA × Child age	1.30*	2.28	.01	1.17*	2.48	.01
Parental depression	–	–	–	−2.24	−1.69	.09
Child gender	–	–	–	1.05	0.68	.50
Parent gender	–	–	–	−2.40	−1.20	.23
Parent age	–	–	–	−0.17	−0.78	.44
Parent education	–	–	–	0.75	0.51	.61
Household income	–	–	–	0.51	0.77	.44
Dependent variable model (DV = Child depressive symptoms)						
Constant	47.08***	14.15	<.001	53.44***	6.08	<.001
Parent–child attachment	−0.33***	−4.78	<.001	−0.35***	−4.85	<.001
Parental SFA	−1.16	0.70	.10	−1.07	−1.48	.14
Parental depression	–	–	–	−0.97	−0.83	.41
Child gender	–	–	–	1.33	0.98	.33
Parent gender	–	–	–	0.15	0.08	.93
Parent age	–	–	–	−0.15	0.87	.38
Parent education	–	–	–	0.41	−0.31	.75
Household income	–	–	–	0.15	0.27	.79
	Indirect effect	<i>Boot LLCI</i>	<i>Boot ULCI</i>	Indirect effect	<i>Boot LLCI</i>	<i>Boot ULCI</i>
Total indirect effect	−0.43	−0.92	−0.09	−0.41	−0.93	−0.04
Conditional Indirect effects of moderator (Moderator = Child age)						
−1 SD Child age (6.87)	0.21	−0.53	0.88	0.09	−0.63	0.83
Mean child age (8.54)	−0.51	−1.2	−0.01	−0.6	−1.39	−0.06
+1SD Child age (10.21)	−1.24	−2.46	−0.35	−1.28	−2.66	−0.31

Note: 0 = female, 1 = male; Parent gender, 0 = female, 1 = male

SFA support for autonomy, *Boot LLCI* 95% Bootstrapped Lower Limit Confidence Intervals, *Boot ULCI* 95% Bootstrapped Upper Limit Confidence Intervals

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

parent–child attachment depended on children’s age. For older children, the associations between parental support for autonomy and more secure parent–child attachment were stronger. These findings suggested that parental support for autonomy played a pivotal role in children’s psychological adjustment, not only during adolescence but also across middle-childhood especially for older children at this developmental stage.

We first hypothesized that parental support for autonomy would be negatively associated with child depressive symptoms in middle-childhood Chinese sample. Our results demonstrated that children with parents who showed higher

level of recognition of children’s autonomy and individuality demonstrated fewer depressive symptoms. This finding was consistent with our hypothesis, as well as with findings from previous studies in which parental support for autonomy was linked with better psychological functioning (e.g., Soenens et al. 2007; Seiffge-Krenke and Pakalnis-kiene 2010).

Second, our findings were also consistent with previous studies in demonstrating that parental support for autonomy was positively associated with parent–child attachment (e.g., Kerns et al. 2011; Shpigel et al. 2012; Whipple et al. 2011). Children in middle-childhood begin to seek for

independence, while still expecting the attachment figures to be available to help them cope with internal and external challenges (Kerns 2008). Thus, parents' autonomy-granting in a responsive and supportive way might facilitate the "exploration-attachment equilibrium", and thereby enhance the formation of secure attachment relationship (Ainsworth 1985).

Furthermore, we found that that parent-child attachment security was negatively linked to children's depressive symptoms, which was consistent with previous literature (e.g., Brenning et al. 2011; Kerns et al. 2011; Kullik and Petermann 2012). Children who have insecure attachment with their caregivers might develop negative schemas through which they interpret surrounding social stimuli (Cummings and Cicchetti 1990). Notably, when compared to maternal depression and economic risk, which were historically regarded as robust correlates of child depression, attachment accounted for the greatest proportion of variability in youth depression scores (Graham and Eastbrooks 2000).

Third, consistent with our hypothesis, the current study found that enhanced parent-child attachment security might be one of the possible mechanisms through which parental support for autonomy help protect children from depressive symptoms. Previous research has showed that attachment quality could be continuously shaped by changes in specific parenting behaviors (e.g., support for autonomy) and developmental goals in certain stages (Cummings and Cummings 2002; Waters et al. 2000). Our finding further suggest that specific elements of parenting may influence children's psychological adjustment through their effects on attachment security, which accounts for the more general emotional atmosphere within parent-child dyads. However, as this mediational effects may only hold true for certain parenting behaviors or child outcomes (Doyle and Markiewicz 2005), more evidence will be needed for generalizing this finding.

Fourth, we did find a significant moderation effect of child age on the mediational model. The positive association between parental support for autonomy and parent-child attachment security was only significant for older children in our sample. In addition to expanding the literature by documenting the positive effect of parental support for autonomy during middle-childhood, our findings also suggested that child age was still a critical factor when discussing the potential effects of parental support for autonomy on parent-child attachment and child depressive symptoms. Although the cross-sectional nature of the current study restrained us from making causal inference, our findings suggested that older children could benefit more from parental support for autonomy.

In sum, the current study contributed to a better understanding of the association between parental support for

autonomy and child depressive symptoms during middle-childhood in Chinese families. Our findings expanded previous literature by indicating that the association between parental support for autonomy and fewer child depressive symptoms also stood for children in later stages of middle-childhood, and this association was mediated by parent-child attachment security. This finding emphasized the importance for parents of middle-childhood children to recognize and encourage their children's individuality.

Additionally, the current findings suggested that parental support for autonomy is also important for parent-child relationship quality and child adjustment in Chinese culture that values relatedness (e.g., Bush et al. 2002). Such findings supported the notion that the need for autonomy exists cross-culturally throughout individuals' development (Helwig 2006). Although adolescents from collectivist cultures might expect less autonomy in family context compared to their peers from individualist cultures (Fulgini 1998), the need for autonomy may still be salient when they approach adolescence and start to seek for individuality. As a primary developmental context, family plays an important role in the development of autonomy-relatedness balance in children (Kagitcibasi 2005), and the lack of parental autonomy support could have detrimental effects despite cultural differences. In a cross-cultural examination, Wang et al. (2007) found that although the effects were stronger in U.S. than in China, parental autonomy support predicted better emotional and academic functioning for adolescents in both countries. In the current sample, the Chinese culture may account for the small effect sizes observed for autonomy support relative to Western samples (Wang et al. 2007).

Despite of its contribution, the current study was not without limitations. Although majority of children in our sample were in their middle-childhood, 6 children were slightly older (i.e., 12-year-old). Besides, due to the cross-sectional design, we could not make causal inference based on current results. While we supposed that parental support for autonomy cultivated a child with fewer depressive symptoms, it is also possible that better child psychological functioning has elicited more adaptive parenting (i.e., parental autonomy support). The association between parental support for autonomy and child depressive symptoms were also very likely to be bi-directional and transactional. Further research with longitudinal design is encouraged to examine the direction of this association.

Further research efforts could also be devoted into understanding the autonomy support outside family contexts. For example, it would be intriguing to find out how teachers' support for their elementary school students' autonomy influence children's psycho-social adjustment. Moreover, we noticed in our sample that not all children with parents showing low levels of autonomy support had depressive symptoms. What factors could potentially buffer

the negative effects of low levels of autonomy support? Future studies are encouraged to further investigate these questions.

Acknowledgements This research received support from National Natural Science Foundation of China (31500898).

Conflict of interest The authors declare that they have no competing interests.

Reference

- Ainsworth, M. D. (1985). Patterns of infant-mother attachments: Antecedents and effects on development. *Bulletin of the New York Academy of Medicine*, *61*, 771–791.
- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. J. (1972). Individual differences in the development of some attachment behaviors. *Merrill-Palmer Quarterly of Behavior and Development*, *18*, 123–143.
- Angold, A., & Costello, E. J. (2001). The epidemiology of depression in children and adolescents. In I. M. Goodyer (Ed.), *The depressed children and adolescents*. 2nd edn (pp. 143–178). New York, NY: Cambridge University Press.
- Armsden, G. C., & Greenberg, M. T. (1987). The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence*, *16*, 427–454.
- Armsden, G. C., McCauley, E., Greenberg, M. T., Burke, P. M., & Mitchell, J. R. (1990). Parent and peer attachment in early adolescent depression. *Journal of Abnormal Child Psychology*, *18*, 683–697.
- Bernier, A., Matte-Gagné, C., Bélanger, M. È., & Whipple, N. (2014). Taking stock of two decades of attachment transmission gap: Broadening the assessment of maternal behavior. *Child Development*, *85*, 1852–1865.
- Bowlby, J. (1969). *Attachment and loss: Attachment (vol. 1)*. New York, NY: Basic Books.
- Bowlby, J. (1982). Attachment and loss: Retrospect and prospect. *American Journal of Orthopsychiatry*, *52*, 664–678.
- Brenning, K. M., Soenens, B., Braet, C., & Bosmans, G. (2011). Attachment and depressive symptoms in middle childhood and early adolescence: Testing the validity of the emotion regulation model of attachment. *Personal Relationships*, *19*, 445–464.
- Bromet, E., Andrade, L. H., Hwang, I., Sampson, N. A., Alonso, J., De Girolamo, G., De Graaf, R., Demyttenaere, K., Hu, C., Iwata, N., Karam, A. N., Kaur, J., Kostyuchenko, S., Lepine, J. P., Levinson, D., Matschinger, H., Mora, M. E., Browne, M. O., Posada-Villa, J., Viana, M. C., Williams, D. R., & Kessler, R. C. (2011). Cross-national epidemiology of DSM-IV major depressive episode. *BMC Medicine*, *9*, 90–105.
- Brumariu, L. E., & Kerns, K. A. (2010). Parent-child attachment and internalizing symptoms in childhood and adolescence: A review of empirical findings and future directions. *Development and Psychopathology*, *22*, 177–203.
- Bush, K. R., Peterson, G. W., Cobas, J. A., & Supple, A. J. (2002). Adolescents' perceptions of parental behaviors as predictors of adolescent self-esteem in mainland China. *Sociological Inquiry*, *72*, 503–526.
- Chen, J., Dunne, M. P., & Han, P. (2006). Child sexual abuse in Henan province, China: Associations with sadness, suicidality, and risk behaviors among adolescent girls. *Journal of Adolescent Health*, *38*, 544–549.
- Cheung, C. S., Pomerantz, E. M., Wang, M., & Qu, Y. (2016). Controlling and autonomy-supportive parenting in the United States and China: Beyond children's reports. *Child Development*, *87*, 1992–2007.
- Chirkov, V. I., & Ryan, R. M. (2001). Parent and teacher autonomy-support in Russian and US adolescents: Common effects on well-being and academic motivation. *Journal of Cross-Cultural Psychology*, *32*, 618–635.
- Cummings, E. M., & Cicchetti, D. (1990). Toward a transactional model of relations between attachment and depression. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, research, and intervention* (pp. 339–372). Chicago: University of Chicago Press.
- Cummings, E. M., & Cummings, J. S. (2002). Parenting and attachment. In M. H. Bornstein (Ed.), *Handbook of parenting* (pp. 35–58). Mahwah, NJ: Lawrence Erlbaum Associates, Inc. Vol. 5.
- Derogatis, L. R. (1977). *SCL-90-R: Administration, scoring and procedures manual I*. Baltimore: Clinical Psychometrics Research.
- Derogatis, L. R., & Savitz, K. L. (1999). The SCL-90-R, brief symptom inventory, and matching clinical rating scales. In M. E. Maruish (Ed.), *The Use of psychological testing for treatment planning and outcomes assessment*. 2nd edn. Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Derogatis, L. R., & Unger, R. (2010). Symptom checklist-90-revised. *Corsini Encyclopedia of Psychology*, 1–2.
- Doyle, A. B., & Markiewicz, D. (2005). Parenting, marital conflict and adjustment from early-to mid-adolescence: Mediated by adolescent attachment style? *Journal of Youth and Adolescence*, *34*, 97–110.
- Dunn, V., & Goodyer, I. M. (2006). Longitudinal investigation into childhood-and adolescence-onset depression: Psychiatric outcome in early adulthood. *The British Journal of Psychiatry*, *188*, 216–222.
- Eley, T. C., Deater-Deckard, K., Fombonne, E., Fulker, D. W., & Plomin, R. (1998). An adoption study of depressive symptoms in middle childhood. *Journal of Child Psychology and Psychiatry*, *39*, 337–345.
- Fulgini, A. J. (1998). Authority, autonomy, and parent-adolescent conflict and cohesion: A study of adolescents from Mexican, Chinese, Filipino, and European backgrounds. *Developmental Psychology*, *34*, 782–792.
- Graham, C. A., & Easterbrooks, M. A. (2000). School-aged children's vulnerability to depressive symptomatology: The role of attachment security, maternal depressive symptomatology, and economic risk. *Development and Psychopathology*, *12*, 201–213.
- Grolnick, W. S. (2003). *The psychology of parental control: How well-meant parenting backfires*. Mahwah, NJ: Erlbaum.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.
- Helwig, C. C. (2006). The development of personal autonomy throughout cultures. *Cognitive Development*, *21*, 458–473.
- Kagitcibasi, C. (2005). Autonomy and relatedness in cultural context implications for self and family. *Journal of Cross-Cultural Psychology*, *36*, 403–422.
- Kasen, S., Cohen, P., Skodol, A. E., Johnson, J. G., & Brook, J. S. (1999). Influence of child and adolescent psychiatric disorders on young adult personality disorder. *American Journal of Psychiatry*, *156*, 1529–1535.
- Kerns, K. A. (2008). Attachment in middle childhood. In J. Cassidy, & P. R. Shaver (Eds.), *Handbook of attachment* (pp. 366–382). New York, NY: The Guilford Press.
- Kerns, K. A., Brumariu, L. E., & Seibert, A. (2011). Multi-method assessment of mother-child attachment: Links to parenting and child depressive symptoms in middle childhood. *Attachment & Human Development*, *13*, 315–333.

- Kullik, A., & Petermann, F. (2012). Attachment to parents and peers as a risk factor for adolescent depressive disorders: The mediating role of emotion regulation. *Child Psychiatry & Human Development, 44*, 537–548.
- Luby, J. L., Belden, A. C., & Spitznagel, E. (2006). Risk factors for preschool depression: The mediating role of early stressful life events. *Journal of Child Psychology and Psychiatry, 47*, 1292–1298.
- Maccoby, E. E. (1984). Middle childhood in the context of the family. In W. A. Collins (Ed.), *Development during middle childhood: The years from six to twelve*. Washington, DC: National Academy Press.
- Marbell, K. N., & Grolnick, W. S. (2013). Correlates of parental control and autonomy support in an interdependent culture: A look at Ghana. *Motivation and Emotion, 37*, 79–92.
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224.
- McLeod, B. D., Weisz, J. R., & Wood, J. J. (2007). Examining the association between parenting and childhood depression: A meta-analysis. *Clinical Psychology Review, 27*, 986–1003.
- National Bureau of Statistics of the People's Republic of China. (2015). *Beijing Statistical Yearbook*. Beijing, China: China Statistics Press.
- Pinquart, M., & Shen, Y. (2011). Depressive symptoms in children and adolescents with chronic physical illness: An updated meta-analysis. *Journal of Pediatric Psychology, 36*, 375–384.
- Radloff, L. S. (1977). The CES-D scale a self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68–78.
- Seiffge-Krenke, I., & Pakalniskiene, V. (2010). Who shapes whom in the family: Reciprocal links between autonomy support in the family and parents' and adolescents' coping behaviors. *Journal of Youth and Adolescence, 40*, 983–995.
- Shpigel, M. S., Diamond, G. M., & Diamond, G. S. (2012). Changes in parenting behaviors, attachment, depressive symptoms, and suicidal ideation in attachment-based family therapy for depressive and suicidal adolescents. *Journal of Marital and Family Therapy, 38*, 271–283.
- Soenens, B., Vansteenkiste, M., Lens, W., Luyckx, K., Goossens, L., Beyers, W., & Ryan, R. M. (2007). Conceptualizing parental autonomy support: Adolescent perceptions of promotion of independence versus promotion of volitional functioning. *Developmental Psychology, 43*, 633–646.
- Song, H., Thompson, R. A., & Ferrer, E. (2009). Attachment and self-evaluation in Chinese adolescents: Age and gender differences. *Journal of Adolescence, 32*, 1267–1286.
- Steinberg, L. (1990). Autonomy, conflict, and harmony in the family relationship. In S. S. Feldman, & G. R. Elliott (Eds.), *At the threshold: The developing adolescent* (pp. 255–276). Cambridge, MA: Harvard University Press.
- Troop-Gordon, W., Rudolph, K. D., Sugimura, N., & Little, T. D. (2015). Peer victimization in middle childhood impedes adaptive responses to stress: A pathway to depressive symptoms. *Journal of Clinical Child & Adolescent Psychology, 44*, 432–445.
- Wang, Q., Pomerantz, E. M., & Chen, H. (2007). The role of parents' control in early adolescents' psychological functioning: A longitudinal investigation in the United States and China. *Child Development, 78*, 1592–1610.
- Waters, E., Weinfield, N. S., & Hamilton, C. E. (2000). The stability of attachment security from infancy to adolescence and early adulthood: General discussion. *Child development, 71*, 703–706.
- Whipple, N., Bernier, A., & Mageau, G. A. (2011). A dimensional approach to maternal attachment state of mind: Relations to maternal sensitivity and maternal autonomy support. *Developmental Psychology, 47*, 396–403.
- Wilkinson, R. B., & Goh, D. Y. L. (2014). Structural, age, and sex differences for a short form of the inventory of parent and peer attachment: The IPPA-45. *Journal of Relationships Research, 5*, 1–11.
- Wilkinson, P. O., Trzaskowski, M., Haworth, C., & Eley, T. C. (2013). The role of gene–environment correlations and interactions in middle childhood depressive symptoms. *Development and Psychopathology, 25*, 93–104.
- Wray-Lake, L., Crouter, A. C., & McHale, S. M. (2010). Developmental patterns in decision-making autonomy across middle childhood and adolescence: European American parents' perspectives. *Child Development, 81*, 636–651.
- Xu, J., Lin, D., Wang, J., Hu, W., Zhang, H., & Xu, G. (2008). Comparison of influential factors for depressive symptoms among primary school students in Hefei and Shenzhen. *Chinese Mental Health Journal, 22*, 246–248.
- Yen, Y. C., Rebok, G. W., Gallo, J. J., Jones, R. N., & Tennstedt, S. L. (2011). Depressive symptoms impair everyday problem-solving ability through cognitive abilities in late life. *The American Journal of Geriatric Psychiatry, 19*, 142–150.