

# Parenting and Chinese Adolescent Suicidal Ideation and Suicide Attempts: The Mediating Role of Hopelessness

Dongping Li<sup>1</sup> · Xian Li<sup>2</sup> · Yanhui Wang<sup>3</sup> · Zhenzhou Bao<sup>4</sup>

© Springer Science+Business Media New York 2015

**Abstract** Various family factors are risk factors for adolescent suicidality (suicidal ideation and suicide attempts). However, little is known about the role of parenting in adolescent suicidality. The present study examined the unique relations between three parenting dimensions (parental warmth, behavioral control, and psychological control) and adolescent suicidality, as well as the mediating role of adolescent hopelessness among these relations. A total of 1529 Chinese adolescents (52 % male; mean age = 14.74 years,  $SD = 1.48$ ) completed anonymous questionnaires designed to assess three parenting dimensions, hopelessness, suicidal ideation and suicide attempts. After controlling for gender, age, family structure, and socioeconomic status, it was found that parental warmth negatively predicted adolescent suicidality, whereas psychological control positively predicted adolescent suicidality. In addition, parental warmth negatively predicted adolescent hopelessness, whereas psychological control positively predicted adolescent hopelessness, which in turn enhanced adolescent suicidality. Although behavioral control did not predict adolescent suicidality, it did negatively predict adolescent hopelessness, which in turn promoted adolescent suicidality. These

findings revealed the differential roles of different parenting dimensions in adolescent suicidality, and the mediation effect of adolescent hopelessness between parenting and adolescent suicidality. Future practices would benefit from incorporating both parenting and hopelessness for optimal intervention effect.

**Keywords** Suicidal ideation · Suicide attempts · Parenting · Adolescents

## Introduction

Adolescent suicidal behavior is a serious public health problem in the world. It is the second most common cause of death in young people aged 10–24 years worldwide (Hawton et al. 2012). Suicide behavior can be divided into three stages: suicidal ideation (i.e., having thoughts about killing oneself), suicide attempts (i.e., engagement in potentially self-injurious behavior in which there is some intent to die), and completed suicide. Both suicidal ideation and suicide attempts are predictive of future completed suicide. Therefore, the examination of suicidal ideation and suicide attempts (hereafter referred to as “suicidality”) will guide the identification of those at risk for suicide completion, as well as facilitate early prevention and intervention. Ample research has shown that family dysfunction (e.g., marital conflict, poor parent–child relationships) plays an important role in the development of adolescent suicidality (Frey and Cerel 2015; Heilbron et al. 2014; Wagner 1997). However, parenting style, as one important aspect of the family context related to adolescent suicidality, has been underappreciated.

Parenting style refers to “a constellation of attitudes toward the child that are communicated to the child and

---

✉ Dongping Li  
lidongping83@126.com

<sup>1</sup> School of Psychology, Central China Normal University, Wuhan 430079, China

<sup>2</sup> Department of Educational and Counseling Psychology, University at Albany, SUNY, Albany, NY 12222, USA

<sup>3</sup> School of Education Science, Jiaying University, Meizhou 514015, China

<sup>4</sup> School of Psychology, South China Normal University, Guangzhou 510631, China

create an emotional climate in which parents' behaviors are expressed" (Darling and Steinberg 1993, p. 493). Parental warmth and parental control have been confirmed as the key parenting dimensions in the literature (Barber et al. 2005). Researchers have found that negative parenting such as low parental warmth or inappropriate parental control were important risk factors for adolescent suicidality (Cero and Sifers 2013; Cheng et al. 2009; Ruchkin et al. 2003; Xing et al. 2010). For example, in a large representative sample of German adolescents, Donath et al. (2014) found that paternal warmth and maternal warmth in childhood and maternal control in adolescence negatively predicted adolescent suicide attempts. Also, Boeninger et al. (2013) found that observed parenting behaviors (nurturant-involved vs. harsh-uninvolved parenting) predicted change in adolescent suicidal problems even after controlling for parental psychopathology, adolescent psychopathology, and adolescents' effect on parenting.

These findings can be explained by several different theories. For example, attachment theory (Bowlby 1980) postulates that individuals who receive insensitive and inappropriate caregiving are more likely to develop negative working models of the self (e.g., seeing oneself as unlovable, incompetent, and unworthy) and others (e.g., seeing others as untrustworthy and unresponsive). These negative internal working models are risk factors for adolescent suicidality. In addition, the interpersonal theory of suicide argues that adolescents whose parents frequently engage in negative parenting behaviors (such as low warmth or high guilt induction) are more likely to experience thwarted belongingness and perceived burdensomeness, which are well-known risk factors for suicidality (Joiner et al. 2009). Finally, according to self-determination theory (Deci and Ryan 2000), people have fundamental psychological needs for competency, autonomy, and relatedness. When social contexts cannot satisfy these basic psychological needs (for example, experienced negative parenting), adolescents are particularly susceptible for maladjustment (e.g., suicidality).

Although previous empirical studies have yielded valuable information, they also raise important new issues that worth further examination. First, little is known about the unique contribution of each parenting dimension to adolescent suicidality, that is, whether the effect of one parenting dimension remains significant after controlling for the other dimensions. Several studies have combined different parenting dimensions into a global conceptualization of parenting such as negative parenting, without disentangling the effect of specific parenting behaviors (Boeninger et al. 2013; Xing et al. 2010). Meanwhile, for those studies that assessed multiple parenting dimensions, they separately analyzed the parenting dimensions in different models without controlling for each other (Cero and

Sifers 2013; Cheng et al. 2009; Xing et al. 2010). Both practices were problematic, because different parenting dimensions are often interrelated (Li et al. 2015), thus the relation between one parenting dimension and adolescent suicidality might be confounded by the other dimensions, if the latter were not controlled for in statistical analyses (spurious association).

Second, studies that examined the two main parenting dimensions (i.e., parental warmth and parental control) on adolescent suicidality have often yielded inconsistent results regarding parental control (Cero and Sifers 2013; Lai and McBride-Chang 2001; Ruchkin et al. 2003; Xing et al. 2010). One possible reason for such contradicting findings is that the concept of parental control has been operationalized differently. Specifically, in the past two decades, researchers have increasingly recognized the multifaceted nature of parental control and emphasized the distinction between behavioral control and psychological control (Barber and Xia 2013). Behavioral control (e.g., setting rules, solicitation) refers to the rules, regulations, and restrictions that parents impose on their children as well as their active monitoring of children's activities and whereabouts. In contrast, psychological control (e.g., guilt induction, love withdrawal, and authority assertion) refers to parental control that intrudes upon child emotional/psychological development and undermines their sense of autonomy (Barber and Xia 2013; Wang et al. 2007). Among extant studies of the relation between parental control and adolescent suicidality, some primarily focused on behavioral control such as parental rule setting/enforcement and parental monitoring (Cero and Sifers 2013; Cheng et al. 2009; Donath et al. 2014), some primarily focused on psychological control such as overprotection (Lai and McBride-Chang 2001; Ruchkin et al. 2003), while others did not distinguish two types of parental control (Xing et al. 2010). In fact, behavioral control and psychological control may have distinct effects on adolescent suicidality. This inference is based on evidence that behavioral control had negative (albeit sometimes non-significant) associations with internalizing problems such as depression (a risk factor for suicidality), whereas psychological control had positive associations with internalizing problems (Barber and Xia 2013; Barber et al. 2005).

Third, most previous research has been conducted in Western countries such as the United States, thus we know little about the relation between parenting and adolescent suicidality in Asian countries such as China. This is an important research question for at least two reasons. On the one hand, Chinese people represent 20 % of the world's population and adolescent suicide is of public health significance in China. In two recent meta-analytic reviews, for example, the prevalence of suicidal ideation, suicide plan, and suicide attempts among Chinese adolescents were 18,

7, and 3 %, respectively (Chang et al. 2013; Dong et al. 2014; Phillips et al. 2002). On the other hand, culture shapes parenting behaviors and the meaning of particular parenting behaviors (especially psychological control) may vary across cultures (Bornstein and Cheah 2006). Specifically, the relativistic cross-cultural perspective proposes that psychological control are more commonly used in collectivistic countries than in individualistic countries, thus the negative impact of psychological control may be absent or even reversed in collectivistic cultures. In other words, the negative impact of psychological control may apply only to individualistic countries where psychological autonomy is highly valued. On the contrary, the universalistic cross-cultural perspective argues that parental psychological control undermines the fundamental human need for autonomy, thus will deteriorate child development independent of cultural orientation (see Soenens et al. 2012 for a review of the two perspectives).

Lastly, few studies have investigated the mediating mechanisms through which parenting dimensions were associated with adolescent suicidality. Over and above the direct links previously explored, we hypothesized that there is a mediational path from parenting to hopelessness, and to adolescent suicidality. On one hand, according to Abramson et al.'s (2002) hopelessness theory of suicidality, the expectation of hopelessness—that highly desired outcomes will not occur or that highly aversive outcomes will occur and that one cannot change these situations—is a proximal sufficient cause of adolescent suicidality. A substantial body of research has demonstrated hopelessness as a cognitive vulnerability factor for adolescent suicidality (Pettit and Joiner 2006). For instance, in a cross-cultural study of Hong Kong Chinese and Caucasian American adolescents, Stewart et al. (2005) found that hopelessness was stronger than self-efficacy and cognitive errors in predicting suicidal ideation in both cultures. On the other hand, parenting may be related to adolescent hopelessness (Mezulis et al. 2006; Schleider et al. 2014). The attachment theory (Bowlby 1980) posits that adolescents whose parents use negative parenting behaviors (e.g., low warmth) are likely to develop a negative internal working model that perceives him- or herself as unlovable, incompetent, and unworthy (model of self) and perceives others to be untrustworthy and unresponsive (model of others). These negative models of self and others are risk factors for hopelessness (Becker-Weidman et al. 2009). In line with this theory, Bolland et al. (2005) found that greater maternal warmth was longitudinally associated with decreased hopelessness among inner-city African American adolescents. Moreover, Shek and Lee (2005) found that parental behavioral control (which may reflect parental care toward children) was negatively associated with adolescent hopelessness,

whereas psychological control was positively associated with adolescent hopelessness.

The purposes of this study are as follows: (a) to examine how parenting dimensions (parental warmth, behavioral control, and psychological control) uniquely contribute to adolescent suicidality; and (b) to explore the mediating role of adolescent hopelessness in the relations between parenting and adolescent suicidality. We propose the following hypotheses: First, there would be significant negative associations between parental warmth, behavioral control and adolescent suicidality, and there would be significant positive association between psychological control and adolescent suicidality (Hypothesis I). Second, the relations between parenting dimensions and adolescent suicidality would be mediated by hopelessness, such that higher parental warmth and behavioral control would be associated with lower hopelessness, higher psychological control would be associated with higher hopelessness, which in turn would contribute to increased suicidality (Hypothesis II). In addition, we include adolescent gender, age, family structure, and family socioeconomic status as control variables.

## Method

### Participants

Participants were 1529 7th to 11th graders (52 % male) from seven middle schools in Wuhan, China. Two classes in each grade of each school were randomly selected to participate in the present study. The mean age of the participants was 14.74 years ( $SD = 1.48$ ), with a range from 11 to 19 years. Reflecting the demographics of this area, 45.1 % of the students' fathers and 54.7 % of their mothers had less than a high school education; 45.3 % of their fathers and 47.1 % of their mothers had an unskilled or semi-skilled occupation. Fewer than 5 % of the students declined to participate. There was <1 % missing data in this study and were handled with mean imputation.

### Procedure

This study was approved by the Research Ethics Committee of the corresponding author's institution. The data were collected in middle school classrooms between March and April of 2014. A training session was performed before the start of the data collection in order to standardize the data collection process. Oral consent was obtained from school administrators and participants before data collection. Students were informed that their participation was completely voluntary and anonymous; they could decline the participation at any time. School counselors were

available for potentially distressed students. This service was not used.

## Measures

### Parenting

Parenting in this study consists of three dimensions: parental warmth, behavioral control, and psychological control. Parental warmth was measured with nine items adapted from prior research (Robinson et al. 2001; Wang and Chang 2007). These items reflect the level of warmth or acceptance parents express toward their children (e.g., “I can count on my parents to help me out, if I have some kind of problem”). To ensure the conceptual equivalence, these items were first translated into Chinese, then back translated to English by a new bilingual person and finally adapted to Chinese. Participants rated each item on a 5-point scale ranging from 1 (*does not describe my parents at all*) to 5 (*describes my parents very well*). The mean was taken, with higher scores representing higher levels of parental warmth. For the current study, the measure demonstrated good reliability ( $\alpha = 0.86$ ). Parental behavioral control and psychological control were measured by parental control questionnaire developed by Wang et al. (2007) and modified by Li and her collaborators (Li et al. 2012, 2015). The behavioral control subscale consisted of eight items assessing parental solicitation (e.g., “How often do your parents ask you about your activities outside of school?”) and five items assessing parental restriction (e.g., “How often do your parents require you to ask for their permission before you go out after school?”). Participants rated each item on a 5-point scale ranging from 1 (*never*) to 5 (*always*). The mean was taken, with higher scores representing higher levels of behavioral control. The psychological control subscale consisted of eight items assessing guilt induction (e.g., “My parents tell me that I should feel ashamed when I do not behave as they wish”), five items assessing love withdrawal (e.g., “My parents are less friendly with me, if I do not see things their way”) and three items assessing authority assertion (e.g., “My parents tell me that what they want me to do is the best for me and I should not question it”). Participants rated each item on a 5-point scale ranging from 1 (*does not describe my parents at all*) to 5 (*describes my parents exactly*). The mean was taken, with higher scores representing higher levels of psychological control. For the current study, both scales showed good reliability ( $\alpha = 0.86$ ). Confirmatory factor analysis indicated that the three-factor model of parenting dimensions had adequate fit to the data:  $\chi^2(df = 650) = 3135.89$ ,  $p < 0.001$ , NNFI = 0.95, CFI = 0.96, RMSEA = 0.05, SRMR = 0.06.

### Hopelessness

Adolescents’ hopelessness was assessed by the brief Hopelessness Scale developed by Bolland et al. (2001). This scale contained six items. The items were translated and back translated and adapted to Chinese. Adolescents indicated how true each item (e.g., “I don’t have good luck now, and there is no reason to expect that I will when I get older”) was of them on a 6-point scale ranging from 1 (*not at all true*) to 6 (*always true*). Responses across the six items were averaged, with higher scores representing higher hopelessness. In our unpublished data, hopelessness was found to be significantly associated with theoretically-relevant constructs such as self-esteem ( $r = -0.53$ ,  $p < 0.001$ ) and depression ( $r = 0.50$ ,  $p < 0.001$ ). For the current study, the scale demonstrated good reliability ( $\alpha = 0.85$ ).

### Suicidal Ideation and Suicide Attempts

Adolescents’ suicidal ideation and suicide attempts were assessed with two items, which were adapted from the Youth Self-Report questionnaire (Achenbach 1991). The two items were “I thought about killing myself” and “I deliberately tried to kill myself”. Participants were asked to answer each question on a 3-point scale: 0 = *never*, 1 = *sometimes*, and 2 = *often* during the past 6 months. Adolescents who scored 1 or 2 on the first question were considered to have suicidal ideation, and those who scored 1 or 2 on the second question were considered to have attempted suicide. Although only two items were used, this kind of measure has been widely used in the literature (Herba et al. 2008; Kim et al. 2005) and can provide valuable information about adolescent suicidality.

### Data Analyses

First, we conducted regression analysis to reveal the unique associations of parenting with suicidal ideation and suicide attempts. Given the dichotomous nature of suicidal ideation and suicide attempts, we used logistic regression to analyze the data. Second, we followed the two-step procedure proposed by Hayes (2013) and Wen and Ye (2014) to establish the mediation effect of hopelessness, which requires (a) a significant association between the independent variable (i.e., parenting) and the mediator variable (i.e., hopelessness); and (b) a significant association between the mediator variable (i.e., hopelessness) and the dependent variable (i.e., suicidal ideation and suicide attempts) after controlling for the independent variable (i.e., parenting). This two-step procedure achieves high statistical power and maintains reasonable control over the Type I error rate (Wen and Ye 2014). To further illustrate

the mediation paths between parenting dimensions and adolescent suicidality, we conducted structural equation modeling by using the weighted least squares method (WLSMV) in Mplus 7 (Muthén and Muthén 1998–2012). This method was suitable to deal with categorical dependent variables.

## Results

Table 1 presents descriptive statistics (means and standard deviations) and the correlation matrix for all study variables. In the total sample, 17.5 % ( $n = 268$ ) of the adolescents had thought about suicide in the previous 6 months, and 7.3 % ( $n = 112$ ) of the adolescents had attempted suicide in the previous 6 months. These rates are consistent with the national data of China (Chang et al. 2013; Dong et al. 2014) and those of other countries such as the United States (Kann et al. 2014). Among the three parenting variables, parental warmth was negatively associated with both suicidal ideation and suicide attempts; behavioral control was negatively associated with suicidal ideation but not associated with suicide attempts; psychological control was positively associated with both suicidal ideation and suicide attempts. Besides, hopelessness was positively associated with both suicidal ideation and suicide attempts, suggesting that it is a risk factor for adolescent suicidality. Finally, in line with our hypothesis, parental warmth and behavioral control were negatively associated with hopelessness, whereas psychological control was positively associated with hopelessness.

The first aim of this study was to determine the unique associations between parenting and adolescent suicidality. We hypothesized that the three parenting dimensions would uniquely associate with suicidal ideation and suicide attempts. The results of logistic regression analyses (suicidality serves as the criterion variable; see Equation 1 of Tables 2, 3) showed that after controlling for demographic variables, parental warmth negatively predicted both suicidal ideation ( $OR = 0.49$ ,  $p < 0.001$ ) and suicidal attempts ( $OR = 0.43$ ,  $p < 0.001$ ), whereas psychological control positively predicted both suicidal ideation ( $OR = 1.53$ ,  $p < 0.001$ ) and suicide attempts ( $OR = 2.00$ ,  $p < 0.001$ ). Behavioral control did not predict suicidal ideation ( $OR = 0.94$ ,  $p = 0.579$ ) or suicide attempts ( $OR = 0.98$ ,  $p = 0.907$ ). Therefore, parental warmth and psychological control were uniquely associated with suicidal ideation and suicide attempts, whereas behavioral control was not associated with suicidal ideation or suicide attempts. Hypothesis I was partially supported.

To examine whether hopelessness mediated the links between parenting dimensions and suicidal ideation and suicide attempts, we followed the two-step procedure

(Hayes 2013; Wen and Ye 2014) to establish the model. In the first step, after controlling for demographic variables, multiple regression analyses (hopelessness serves as the criterion variable; see Equation 2 of Tables 2, 3) revealed that both parental warmth ( $\beta = -0.21$ ,  $p < 0.001$ ) and behavioral control ( $\beta = -0.12$ ,  $p < 0.001$ ) negatively predicted hopelessness, whereas psychological control positively predicted hopelessness ( $\beta = 0.24$ ,  $p < 0.001$ ). In the second step, logistic regression analyses (see Equation 3 of Tables 2, 3) indicated that after controlling for demographic variables and parenting variables, hopelessness positively predicted suicidal ideation ( $OR = 1.82$ ,  $p < 0.001$ ) and suicide attempts ( $OR = 1.67$ ,  $p < 0.001$ ). Thus, hopelessness mediated the links between the three parenting variables and suicidal ideation and suicide attempts. This model also demonstrated sufficient fit to the data,  $\chi^2(df = 8) = 6.05$ ,  $p > 0.05$ , CFI = 1.00, NNFI = 1.01, RMSEA = 0.01, SRMR = 0.01 (see Fig. 1). Hypothesis II was supported.

In addition, we examined the quadratic term of behavioral control to rule out the possibility of potential non-linear (quadratic) relationship between behavioral control and suicidality. Also, we investigated the product terms among the three parenting dimensions (Warmth  $\times$  Behavioral Control, Warmth  $\times$  Psychological Control, Behavioral Control  $\times$  Psychological Control), but did not find significant interaction effects.

## Discussion

Family factors play critical roles in adolescent suicidality. However, it was not until recently that researchers have begun to investigate the role of parenting in adolescent suicidality (Boeninger et al. 2013; Cero and Sifers 2013; Cheng et al. 2009; Donath et al. 2014; Xing et al. 2010). In this study, we focused on the unique associations of parental warmth and parental control with suicidality in a sample of Chinese adolescents. More importantly, we made a distinction between behavioral control and psychological control to examine their differential effects on adolescent suicidality. Also, we explored the mediating role of adolescent hopelessness among these relations. We discuss each of our research questions in the following sections.

First, by examining the unique contribution of three parenting dimensions, we revealed heterogeneous pattern of relationships between parenting dimensions and adolescent suicidality. Specifically, parental warmth was negatively associated with adolescent suicidality, whereas psychological control was positively associated with adolescent suicidality. Our findings are in line with previous research which showed that parental warmth (Cero and Sifers 2013; Cheng et al. 2009; Donath et al. 2014) is a

**Table 1** Univariate and bivariate statistics for all study variables

Variables	1	2	3	4	5	6	7	8	9	10
1. Gender	–									
2. Age	0.04	–								
3. Family structure	0.02	0.05	–							
4. SES	–0.01	0.06*	–0.00	–						
5. Warmth	–0.04	0.08**	0.08**	0.11***	–					
6. Behavioral control	–0.18***	–0.12***	0.11***	0.14***	0.40***	–				
7. Psychological control	0.06*	–0.17***	–0.05	–0.07**	–0.38***	0.08***	–			
8. Hopelessness	0.04	–0.02	–0.05*	–0.08**	–0.34***	–0.19***	0.30***	–		
9. Suicidal ideation	–0.06*	–0.12***	–0.08**	0.00	–0.29***	–0.07**	0.21***	0.30***	–	
10. Suicide attempts	–0.07**	–0.12***	–0.05*	–0.03	–0.27***	–0.05	0.21***	0.24***	0.54***	–
<i>M</i>	0.52	14.74	0.89	0.00	3.68	3.35	3.46	2.15	0.18	0.07
<i>SD</i>	0.50	1.48	0.31	1.00	0.85	0.75	0.72	1.03	0.38	0.26

*N* = 1529. SES = socioeconomic status, which is a factor score of parental education, occupation, and family economic status, with higher scores representing higher levels of family socioeconomic status. Gender was dummy coded such that 1 = *male* and 0 = *female*. Family structure was dummy coded such that 1 = *intact family* and 0 = *nonintact family*

\*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < 0.001$

**Table 2** Regression analyses predicting suicidal ideation (Equations 1 and 3) and Hopelessness (Equation 2)

Predictors	Equation 1: Suicidal ideation			Equation 2: Hopelessness			Equation 3: Suicidal ideation		
	<i>B</i>	<i>SE</i>	OR	<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	OR
Gender	–0.40	0.15	0.67**	–0.01	0.05	–0.01	–0.43	0.15	0.65**
Age	–0.16	0.05	0.85**	0.04	0.02	0.06**	–0.20	0.05	0.82***
Family structure	–0.37	0.21	0.69	–0.05	0.08	–0.01	–0.38	0.21	0.69
SES	0.11	0.08	1.12	–0.03	0.02	–0.03	0.15	0.08	1.16
Warmth	–0.71	0.10	0.49***	–0.25	0.04	–0.21***	–0.62	0.10	0.54***
Behavioral control	–0.06	0.11	0.94	–0.16	0.04	–0.12***	0.05	0.12	1.05
Psychological control	0.42	0.11	1.53***	0.34	0.04	0.24***	0.21	0.12	1.24
Hopelessness							0.60	0.07	1.82***
	$R^2 = 0.168$			$R^2 = 0.165$			$R^2 = 0.233$		
	$\chi^2(df = 7) = 163.63, p < 0.001$			$F(7, 1521) = 43.08, p < 0.001$			$\chi^2(df = 8) = 232.25, p < 0.001$		

Each column is a regression model that predicts the criterion at the top of the column. Equations 1 and 3 are logistic, and Equation 2 is linear. *N* = 1529. SES = socioeconomic status. Gender was dummy coded such that 1 = *male* and 0 = *female*. Family structure was dummy coded such that 1 = *intact family* and 0 = *nonintact family*

\*\*  $p < 0.01$ . \*\*\*  $p < 0.001$

protective factor while psychological control (Lai and McBride-Chang 2001; Ruchkin et al. 2003) is a risk factor for adolescent suicidality. These findings support the attachment theory (Bowlby 1980) which proposes that parent-adolescent relationships play a pivotal role in adolescent suicidality. High parental warmth is conducive to the development of adaptive internal working models of self and others, which in turn is related to adolescent suicidality. Similarly, the self-determination theory (Deci and Ryan 2000) assumes that human beings will suffer from maladjustment when their basic psychological needs (relatedness, competence, and autonomy) were thwarted.

Accordingly, high parental psychological control interferes with adolescents' basic psychological needs satisfaction (Soenens and Vansteenkiste 2010). Suicidal behaviors become a coping mechanism that provides escape from agony when alternative means of relief are not available (Wagner 1997).

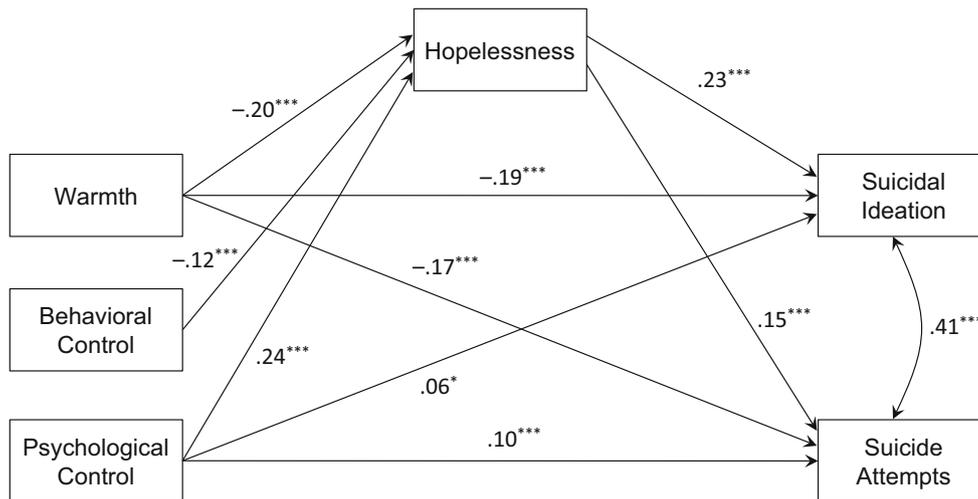
Although the zero-order correlation between behavioral control and adolescent suicidal ideation was significant ( $r = -0.07, p < 0.01$ ), parental behavioral control was not uniquely associated with adolescent suicidality. This finding is not surprising given that previous research has found inconsistent relations between behavioral control and

**Table 3** Regression analyses predicting suicide attempts (Equations 1 and 3) and hopelessness (Equation 2)

Predictors	Equation 1: Suicide attempts			Equation 2: Hopelessness			Equation 3: Suicide attempts		
	B	SE	OR	B	SE	β	B	SE	OR
Gender	-0.66	0.22	0.52**	-0.01	0.05	-0.01	-0.71	0.23	0.49**
Age	-0.25	0.08	0.78**	0.04	0.02	0.06**	-0.27	0.08	0.77***
Family structure	-0.27	0.30	0.77	-0.05	0.08	-0.01	-0.27	0.30	0.76
SES	-0.04	0.12	0.96	-0.03	0.02	-0.03	-0.02	0.13	0.98
Warmth	-0.85	0.14	0.43***	-0.25	0.04	-0.21***	-0.78	0.14	0.46***
Behavioral control	-0.02	0.16	0.98	-0.16	0.04	-0.12***	0.09	0.16	1.09
Psychological control	0.69	0.16	2.00***	0.34	0.04	0.24***	0.48	0.17	1.62**
Hopelessness							0.51	0.10	1.67***
	$R^2 = 0.221$ $\chi^2(df = 7) = 144.19, p < 0.001$			$R^2 = 0.165$ $F(7, 1521) = 43.08, p < 0.001$			$R^2 = 0.260$ $\chi^2(df = 8) = 171.31, p < 0.001$		

Each column is a regression model that predicts the criterion at the top of the column. Equations 1 and 3 are logistic, and Equation 2 is linear.  $N = 1529$ . SES = socioeconomic status. Gender was dummy coded such that 1 = male and 0 = female. Family structure was dummy coded such that 1 = intact family and 0 = nonintact family

\*\*  $p < 0.01$ . \*\*\*  $p < 0.001$



**Fig. 1** The structural equation model predicting adolescent suicidal ideation and suicide attempts. Standardized coefficients are presented. All the parameter estimates in this figure were significant ( $ps < 0.05$ ).

Adolescents’ gender, age, family structure, and socioeconomic status were included in the equations as statistical controls but are not presented for reasons of simplicity

adolescent suicidality (Cero and Sifers 2013; Cheng et al. 2009; Donath et al. 2014; King et al. 2001). There are several plausible explanations. First, as pointed out by Kincaid et al. (2011), it may be difficult for parental behavioral control to be protective against internalizing problems (including suicidality) which are less noticeable than externalizing problems. Second, although several studies found significant negative associations between behavioral control and adolescent suicidality (e.g., King et al. 2001), they often measure behavioral control using parents’ knowledge of adolescents’ daily activities (e.g., “Do they [your parents] know where you are on weekends?”). However, Kerr et al. (2010) criticized that this

measure does not represent parental behavioral control efforts (i.e., monitoring, as defined by parents’ active monitoring efforts). In fact, when behavioral control was measured by parental active monitoring efforts (e.g., “Before you go out on a Saturday night, do your parents require you to tell them where you are going and with whom?”), the relationships between behavioral control and problem behaviors were much weaker than those when behavioral control was measured by parental knowledge (Kerr et al. 2010). For example, Perkins and Hartless (2002) found that parental active monitoring was not significantly associated with adolescent suicidal ideation. Third, although some researchers found significant

negative associations between parental behavioral control and adolescent suicidality, they did not examine the unique association of behavioral control with adolescent suicidality (e.g., Cero and Sifers 2013). Accordingly, it remains unknown whether the significant associations between behavioral control and adolescent suicidality in these studies still hold when parental warmth and psychological control were controlled for. Therefore, more studies are needed to further clarify the unique association between behavioral control and adolescent suicidality in the future.

In contrast with the vast majority of adolescent suicidality research which focused on the amount (level) of parental control, the present study advances our knowledge by making a distinction between behavioral control and psychological control. We found that the two forms of parental control have differential associations with adolescent suicidality. Parental psychological control was positively related to adolescent suicidality, whereas the relation between parental behavioral control and adolescent suicidality was weak and non-significant after controlling for the other parenting dimensions. These findings help demystify the controversy about the role of parental control in adolescent suicidality.

Also, the present study represents an important extension of previous Western research by examining the relationship between parenting (especially psychological control) and suicidality in a sample of Chinese adolescents. Our results suggest that the detrimental impact of psychological control on adolescent suicidality is not culture-bounded, that is, not only specific to individualistic cultures, but also may generalize to collectivistic cultures. In other words, our findings do not confirm the relativistic cross-cultural perspective, but support the universalistic cross-cultural perspective (Soenens et al. 2012). According to the latter perspective, although psychological control is viewed as normative in collectivistic cultures such as China, it may impair the satisfaction of basic psychological needs such as autonomy and thus may worsen Chinese adolescents' suicidality. Overall, our findings and those of others (Li et al. 2015) suggest that psychological control is not an optimal parenting practice even in Chinese culture.

In addition, no studies to date have examined hopelessness as a pathway linking parenting to adolescent suicidality. This study addresses this gap by showing that adolescent hopelessness accounts for a significant proportion of the associations between parenting and adolescent suicidality. Thus, adolescent hopelessness may be an important mechanism underlying the relationships between parenting and adolescent suicidality. In addition to the overall mediation results, each of the individual links in our mediation model is noteworthy. For the links between parenting dimensions and adolescent hopelessness, our findings provide empirical support for theoretical

perspectives which postulate that parenting behaviors shape the development of adolescent hopelessness. Specifically, attachment theory (Bowlby 1980) posits that parental warmth promotes the development of positive internal working models such as "I am good enough" (model of self) and "people are available or can be trusted" (model of others). These positive internal working models of self and others are important protective factors against hopelessness (Becker-Weidman et al. 2009). Consistent with self-determination theory (Deci and Ryan 2000), parental psychological control thwarts the satisfaction of children's psychological needs such as relatedness, competency, and autonomy, and therefore is a significant risk factor for hopelessness (i.e., highly desired outcomes will not occur or highly aversive outcomes will occur and one cannot change these situations). In contrast, parental behavioral control reflects the provision of regulation, guidance, and structure on child's behavior and may be viewed as parental care and love to their children. In Chinese culture, "strictness is love, indulgence is harm" (Wang 2011). Recent evidence suggests that parental behavioral control may help adolescents acquire necessary problem-solving skills (Arim et al. 2010) and protect them from undesirable situations such as violence exposure and peer victimization (Li et al. 2015). These, in turn, may contribute to less hopelessness. Also, for the link between adolescent hopelessness and suicidality, our findings add to the existing empirical studies (McMillan et al. 2007; Pettit and Joiner 2006; Stewart et al. 2005) in supporting the hopelessness theory of suicidality (Abramson et al. 2002), which posits that the feelings of hopelessness are the primary driving force of adolescent suicidality. Our mediation model integrated both the attachment theory and the hopelessness theory of suicidality, it also illuminated the underlying mechanisms by which parenting are associated with adolescent suicidality and offer additional insights that each theory alone cannot provide.

Our mediation model also underscores the importance of distinguishing different forms of parental control and examining their differential effects on adolescent suicidality. Specifically, although parental behavioral control and psychological control were (modestly) positively correlated ( $r = 0.08$ ,  $p < 0.001$ ), they were (indirectly) associated with adolescent suicidality in opposite directions. It is important to note that the indirect link between behavioral control and adolescent suicidality through hopelessness is a "distal mediation"—there is a non-significant relationship between the predictor and outcome variables (Shrout and Bolger 2002). This mediation suggests that although the overall association is non-significant, parental behavioral control does indirectly impact adolescent suicidality through the mediating role of hopelessness. Nevertheless, we should not overstate the relevance of

behavioral control via hopelessness in adolescent suicidality, because it has no overall unique association with adolescent suicidality. In addition, consistent with the self-determination theory (Deci and Ryan 2000; Soenens and Vansteenkiste 2010), psychological control intrudes into adolescents' emotional autonomy and thwarts the developmental task of individuation, and thus impose risk for adolescent hopelessness and suicidality.

### Limitations and Implications

The findings in the present study have several limitations that suggest further lines of research. First, our study was cross-sectional and cannot establish causality, in particular the direction of the associations between parenting and adolescent suicidality that could be potentially bi-directional. However, one cross-lagged longitudinal study found that adolescent suicidality did not predict subsequent parenting behaviors, but parenting behaviors did predict subsequent adolescent suicidality (Boeninger et al. 2013). Nonetheless, future research should use longitudinal designs to seek more evidence for the causality. Second, the data were based on adolescent self-reported measures. Although there are good theoretical reasons—adolescents may be the best informants of psychological control, hopelessness, and suicidality because of the internal, personal, and covert nature of these constructs (Loukas 2009); and adolescents' perceptions of parenting may be more important than their parents' actual parenting when examining adolescent adjustment (Stone et al. 2013), future studies would benefit from multi-informant approach of data collection. Third, although the overall sample size was relatively large in the current study, there were not enough participants with suicidality in subgroups (e.g., males vs. females), given the low base rate of suicidality in the general population. We followed the suggestion of Sun et al. (2010) and did not conduct subgroup analyses. However, future research should use larger sample sizes to investigate the subgroup differences. What's more, adolescents in this study ranged from 7th graders to 11th graders—developmentally a broad range. Further knowledge will be gained by breaking it down into different stages (early adolescence vs. mid-adolescence), and examining whether the parenting for one developmental stage may also be appropriate for another. Finally, although our dependent measures of suicide ideation and attempts are sufficient, they may not be robust. Future research should include items to capture other aspects of suicidality such as lifetime suicidal ideation and attempts.

Despite these limitations, this study has important practical implications. First, our findings indicate the merit of including parents in adolescent suicidality interventions. Our study suggest that interventions aims at increasing

positive parenting (e.g., parental warmth) and reducing negative parenting (e.g., psychological control) may be particularly meaningful in preventing adolescent suicidality. For example, practitioners should advise parents about the negative consequences of psychological control and equip them with positive parenting skills. It is worth noting that although behavioral control was not directly associated with adolescent suicidality, it can indirectly decrease suicidality by reducing adolescent hopelessness. Second, our findings suggest that hopelessness is an important mediator between parenting and adolescent suicidality. Therefore, cognitive-behavior therapy targeting adolescent hopelessness might be effective in reducing adolescent suicidality (Daniel and Goldston 2012). Finally, given that our mediation model integrated both the parenting and hopelessness variables, we believe that the two intervention approaches should be incorporated to maximize the effects of interventions.

In summary, although further replication and extension are needed, findings from the current study advance the literature by uncovering the unique associations between different parenting dimensions (parental warmth, behavioral control, and psychological control) and adolescent suicidality as well as the underlying mechanisms of these associations. We find that low parental warmth and high parental psychological control are unique risk factors for adolescent suicidality. Moreover, adolescent hopelessness may be an important mechanism underlying the relations between all three parenting dimensions and adolescent suicidality. These findings demonstrate the importance of including the hopelessness theory into understanding the relations between parenting and adolescent suicidality.

### References

- Abramson, L. Y., Alloy, L. B., Hogan, M. E., Whitehouse, W. G., Gibb, B. E., Hankin, B. L., & Cornette, M. M. (2002). The hopelessness theory of suicidality. In T. Joiner & M. D. Rudd (Eds.), *Suicide science: Expanding the boundaries* (pp. 17–32). New York: Kluwer Academic Publishers.
- Achenbach, T. M. (1991). *Manual for the youth self-report and 1991 profile*. Burlington, VT: Department of Psychiatry, University of Vermont.
- Arin, R. G., Marshall, S. K., & Shapka, J. D. (2010). A domain-specific approach to adolescent reporting of parental control. *Journal of Adolescence*, *33*, 355–366.
- Barber, B. K., Stolz, H. E., & Olsen, J. A. (2005). Parental support, psychological control, and behavioral control: Assessing relevance across time, culture, and method. *Monographs of the Society for Research in Child Development*, *70*, 1–137.
- Barber, B. K., & Xia, M. (2013). The centrality of control to parenting and its effects. In R. E. Larzelere, A. S. Morris, & A. W. HARRIST (Eds.), *Authoritative parenting: Synthesizing nurturance and discipline for optimal child development* (pp. 61–87). Washington, DC: American Psychological Association.

- Becker-Weidman, E. G., Reinecke, M. A., Jacobs, R. H., & Martinovich, Z. (2009). Predictors of hopelessness among clinically depressed youth. *Behavioural and Cognitive Psychotherapy, 37*, 267–291.
- Boeninger, D. K., Masyn, K. E., & Conger, R. D. (2013). Testing alternative explanations for the associations between parenting and adolescent suicidal problems. *Journal of Research on Adolescence, 23*, 331–344.
- Bolland, J. M., Lian, B. E., & Formichella, C. M. (2005). The origins of hopelessness among inner-city African-American adolescents. *American Journal of Community Psychology, 36*, 293–305.
- Bolland, J. M., McCallum, D. M., Lian, B., Bailey, C. J., & Rowan, P. (2001). Hopelessness and violence among inner-city youths. *Maternal and Child Health Journal, 5*, 237–244.
- Bornstein, M. H., & Cheah, C. S. L. (2006). The place of “culture and parenting” in the ecological contextual perspective on developmental science. In K. H. Rubin & O. B. Chung (Eds.), *Parenting beliefs, behaviors, and parent-child relations* (pp. 3–34). New York: Psychology Press.
- Bowlby, J. (1980). *Attachment and loss* (Vol. 3). New York: Basic Books.
- Cero, I., & Sifers, S. K. (2013). Parenting behavior and the interpersonal-psychological theory of suicide: A mediated moderation analysis with adolescents. *Journal of Affective Disorders, 150*, 987–992.
- Chang, W., Yao, Y., Yuan, H., Chen, B., Liang, Y., Chen, Y., et al. (2013). Prevalence of suicide ideation among middle school students in China: A systematic analysis of studies between 2000 and 2012. *Chinese Journal of Epidemiology, 34*, 515–519.
- Cheng, Y., Tao, M., Riley, L., Kann, L., Ye, L., Tian, X., et al. (2009). Protective factors relating to decreased risks of adolescent suicidal behaviour. *Child: Care, Health and Development, 35*, 313–322.
- Daniel, S. S., & Goldston, D. B. (2012). Hopelessness and lack of connectedness to others as risk factors for suicidal behavior across the lifespan: Implications for cognitive-behavioral treatment. *Cognitive and Behavioral Practice, 19*, 288–300.
- Darling, N., & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin, 113*, 487–496.
- Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227–268.
- Donath, C., Graessel, E., Baier, D., Bleich, S., & Hillemacher, T. (2014). Is parenting style a predictor of suicide attempt in a representative sample of adolescents? *BMC Pediatrics, 14*, 113.
- Dong, Y., Liu, Y., Liu, L., He, W., Peng, G., Yin, Y., & Mao, X. (2014). Reported rate of suicide-related behaviors among Chinese adolescents: A meta-analysis. *Chinese Journal of School Health, 35*, 532–536.
- Frey, L. M., & Cerel, J. (2015). Risk for suicide and the role of family: A narrative review. *Journal of Family Issues, 36*, 716–736.
- Hawton, K., Saunders, K. E. A., & O’Connor, R. C. (2012). Self-harm and suicide in adolescents. *Lancet, 379*, 2373–2382.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: The Guilford Press.
- Heilbron, N., Franklin, J. C., Guerry, J. D., & Prinstein, M. J. (2014). Social and ecological approaches to understanding suicidal behaviors and nonsuicidal self-injury. In M. K. Nock (Ed.), *The oxford handbook of suicide and self-injury* (pp. 206–234). New York: Oxford.
- Herba, C. M., Ferdinand, R. F., Stijnen, T., Veenstra, R., Oldehinkel, A. J., Ormel, J., & Verhulst, F. C. (2008). Victimization and suicide ideation in the TRAILS study: Specific vulnerabilities of victims. *Journal of Child Psychology and Psychiatry, 49*, 867–876.
- Joiner, T. E., Jr, Van Orden, K. A., Witte, T. K., & Rudd, M. D. (2009). *The interpersonal theory of suicide: Guidance for working with suicidal clients*. Washington, DC: American Psychological Association.
- Kann, L., Kinchen, S., Shanklin, S. L., Flint, K. H., Hawkins, J., Harris, W. A., & Zara, S. (2014). Youth risk behavior surveillance—United States, 2013. *Morbidity and Mortality Weekly Report, 63*(4), 1–168.
- Kerr, M., Stattin, H., & Burk, W. J. (2010). A reinterpretation of parental monitoring in longitudinal perspective. *Journal of Research on Adolescence, 20*, 39–64.
- Kim, Y. S., Koh, Y. J., & Leventhal, B. (2005). School bullying and suicidal risk in Korean middle school students. *Pediatrics, 115*, 357–363.
- Kincaid, C., Jones, D. J., Cuellar, J., & Gonzalez, M. (2011). Psychological control associated with youth adjustment and risky behavior in African American single mother families. *Journal of Child and Family Studies, 20*, 102–110.
- King, R. A., Schwab-Stone, M., Flisher, A. J., Greenwald, S., Kramer, R. A., Goodman, S. H., et al. (2001). Psychosocial and risk behavior correlates of youth suicide attempts and suicidal ideation. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*, 837–846.
- Lai, K. W., & McBride-Chang, C. (2001). Suicidal ideation, parenting style, and family climate among Hong Kong adolescents. *International Journal of Psychology, 36*, 81–87.
- Li, D., Zhang, W., Li, D., & Wang, Y. (2012). Parental behavioral control, psychological control, and aggression and social withdrawal in early adolescents. *Psychological Development and Education, 28*, 201–209.
- Li, D., Zhang, W., & Wang, Y. (2015). Parental behavioral control, psychological control and Chinese adolescents’ peer victimization: The mediating role of self-control. *Journal of Child and Family Studies, 24*, 628–637.
- Loukas, A. (2009). Examining temporal associations between perceived maternal psychological control and early adolescent internalizing problems. *Journal of Abnormal Child Psychology, 37*, 1113–1122.
- McMillan, D., Gilbody, S., Beresford, E., & Neilly, L. (2007). Can we predict suicide and non-fatal self-harm with the Beck Hopelessness Scale? A meta-analysis. *Psychological Medicine, 37*, 769–778.
- Mezulis, A. H., Hyde, J. S., & Abramson, L. Y. (2006). The developmental origins of cognitive vulnerability to depression: Temperament, parenting, and negative life events in childhood as contributors to negative cognitive style. *Developmental Psychology, 42*, 1012–1025.
- Muthén, L. K., & Muthén, B. O. (1998–2012). *Mplus user’s guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.
- Perkins, D. F., & Hartless, G. (2002). An ecological risk-factor examination of suicide ideation and behavior of adolescents. *Journal of Adolescent Research, 17*, 3–26.
- Pettit, J. W., & Joiner, T. E. (2006). Cognitive vulnerability to suicide. In L. B. Alloy & J. H. Riskind (Eds.), *Cognitive vulnerability to emotional disorders* (pp. 125–154). Mahwah, NJ: Erlbaum.
- Phillips, M. R., Li, X., & Zhang, Y. (2002). Suicide rates in China, 1995–99. *Lancet, 309*, 835–840.
- Robinson, C. C., Mandlesco, B., Olsen, S. F., & Hart, C. H. (2001). The parenting styles and dimensions questionnaire (PSDQ). In B. F. Perlmutter, J. Touliatos, & G. W. Holden (Eds.), *Handbook of family measurement techniques: Vol. 3. Instrument & Index* (pp. 319–321). Thousand Oaks: Sage.

- Ruchkin, V. V., Schwab-Stone, M., Koposov, R. A., Vermeiren, R., & King, R. A. (2003). Suicidal ideations and attempt in juvenile delinquents. *Journal of Child Psychology and Psychiatry*, *44*, 1058–1066.
- Schleider, J. L., Vélez, C. E., Krause, E. D., & Gillham, J. (2014). Perceived psychological control and anxiety in early adolescents: The mediating role of attributional style. *Cognitive Therapy and Research*, *38*, 71–81.
- Shek, D. T., & Lee, T. Y. (2005). Hopelessness in Chinese adolescents in Hong Kong. In J. Merrick & G. Zalsman (Eds.), *Suicidal behavior in adolescence: An international perspective* (pp. 105–118). London, Israel: Freund.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, *7*, 422–445.
- Soenens, B., Park, S. Y., Vansteenkiste, M., & Mouratidis, A. (2012). Perceived parental psychological control and adolescent depressive experiences: A cross-cultural study with Belgian and South-Korean adolescents. *Journal of Adolescence*, *35*, 261–272.
- Soenens, B., & Vansteenkiste, M. (2010). A theoretical upgrade of the concept of parental psychological control: Proposing new insights on the basis of self-determination theory. *Developmental Review*, *30*, 74–99.
- Stewart, S. M., Kennard, B. D., Lee, P. W., Mayes, T., Hughes, C., & Emslie, G. (2005). Hopelessness and suicidal ideation among adolescents in two cultures. *Journal of Child Psychology and Psychiatry*, *46*, 364–372.
- Stone, L. L., Otten, R., Janssens, J. M., Soenens, B., Kuntsche, E., & Engels, R. C. (2013). Does parental psychological control relate to internalizing and externalizing problems in early childhood? An examination using the Berkeley puppet interview. *International Journal of Behavioral Development*, *37*, 309–318.
- Sun, X., Briel, M., Walter, S. D., & Guyatt, G. H. (2010). Is a subgroup effect believable? Updating criteria to evaluate the credibility of subgroup analyses. *British Medical Journal*, *340*, 850–854.
- Wagner, B. M. (1997). Family risk factors for child and adolescent suicidal behavior. *Psychological Bulletin*, *121*, 246–298.
- Wang, M. H. (2011). Shi lun wo guo gu dai jia jiao de you liang chuan tong. *Ludong University Journal (Philosophy and Social Sciences Edition)*, *28*, 19–21.
- Wang, Y., & Chang, L. (2007). A study on the multi-dimensional structure of Chinese parents' warmth behavior. *Psychological Development and Education*, *23*(2), 68–75.
- 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.
- Wen, Z., & Ye, B. (2014). Analyses of mediating effects: The development of methods and models. *Advances in Psychological Science*, *22*, 731–745.
- Xing, X. Y., Tao, F. B., Wan, Y. H., Xing, C., Qi, X. Y., Hao, J. H., & Huang, L. (2010). Family factors associated with suicide attempt among Chinese adolescent students: A national cross-sectional survey. *Journal of Adolescent Health*, *46*, 592–599.