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The integral contributions of parental involvement and parenting style to adolescent adjustments: a regression mixture analysis

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Abstract

The integrative model of parenting has highlighted the integral contributions of parental involvement (quantity) and parenting style (quality) to adolescent psychological adjustments. The first aim of this study was to adopt the person-centered approach to identify profiles of parental involvement (quantity) and parenting styles (quality). The second purpose was to examine the associations between different parenting profiles and adolescent psychological adjustments. A cross-sectional online survey with families ($N=930$) that included fathers, mothers, and adolescents (50% female, $M_{age} = 14.37 \pm 2.31$) was conducted in mainland China. The fathers and mothers reported their level of parental involvement; the adolescents rated fathers' and mothers' parenting styles, as well as their own levels of anxiety symptoms, depression symptoms, and loneliness. Latent profile analysis was adopted to identify parenting profiles using the standardized scores of fathers' and mothers' involvement and style (warmth and rejection). The regression mixture model was used to examine the relationships between different parenting profiles and adolescent psychological adjustments. Four classes best characterized the parenting behaviors: warm involvement (52.6%), neglecting noninvolvement (21.4%), rejecting noninvolvement (21.4%), and rejecting involvement (4.6%). Adolescents in the warm involvement group scored lowest on anxiety symptoms, depression symptoms, and loneliness. Adolescents in rejecting involvement group scored highest on psychological adjustment indicators. Adolescents in neglecting noninvolvement group scored lower on anxiety symptoms than those in rejecting noninvolvement group. Adolescents in the warm involvement group adjusted best, while adolescents in the rejecting involvement group adjusted worst among all groups. To promote adolescents' mental health, intervention programs need to consider both parental involvement and parenting styles simultaneously.

Keywords Parental involvement · Parenting style · Adolescent psychological adjustments · Latent profile analysis · Regression mixture model

Introduction

Accumulated evidence has pointed to the critical role of parental involvement in influencing adolescent adjustment outcomes such as psychological symptoms (Wang et al., 2014). However, many have only measured the quantity of parental involvement rather than how parents become involved, that is, the quality of parental involvement. Parenting style, as a representation of the emotional climate in which parenting behaviors were carried out, has reflected the quality of parental involvement in the integrative model of parenting (Darling & Steinberg, 1993).To date, few studies have considered parenting style when examining the effects of parental involvement on adolescent adjustments (Li et al., 2019; Lv et al., 2018, 2019; Wang et al., 2014). Grounded on the integrative model of parenting (Darling & Steinberg, 1993), we aimed to explore the integral contributions of parental involvement and parenting style to adolescent adjustments. We firstly investigated parenting profiles of parental involvement and parenting style, including both fathers and mothers in the same family. Secondly,

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we examined the relationships between parenting profiles and adolescent psychological adjustments.

The need to consider both quantity and quality of parenting for child adjustments

There has been evidence pointing to the importance of parental involvement in promoting adolescents' adjustment outcomes in multiple domains, particularly decreasing children's internalizing problems (Wang & Sheikh-Khalil, 2014). When referring to parental involvement, we concentrate on the extent to which mothers and fathers fulfill the role of parents and the degree to which they play in the development of children (Lamb, 2010). Parental involvement is typically conceptualized as the participation of parents in children's development, which refers to the direct interactions between parents and children, including emotional communication, information exchange, and other one-on-one activities (Lamb, 2010). In this case, the definition of parental involvement pertains to the amount of time parents spend engaging in interactive activities with their children. To date, it is commonly assumed that the amount of parental involvement plays a central role in influencing children's adjustment outcomes (Chung et al., 2019; Li et al., 2019; Moroni et al., 2015). The generally belief is that the more involvement parents devote, the better children's adjustment outcomes will be (Moroni et al., 2015). However, little consideration is given to the quality of parental involvement, that is, how parents involve themselves with children during this process (Moroni et al., 2015). Given the assumption that a large quantity of parental involvement is also of high quality, many studies have only measured the amount of time parents spend engaging in interacting activities with their children (Lui et al., 2020; Lv et al., 2018, 2019; Yap & Baharudin, 2016).

However, previous studies have yielded inconsistent results regarding the associations between parental involvement and children's outcomes. While some studies have found that increased parental involvement leads to better child outcomes (Lv et al., 2018, 2019), others have shown that more parental involvement is not always beneficial for child development. In fact, when parental involvement is developmentally inappropriate and controlling, it may not be effective for child adjustments (Pomerantz et al., 2005, 2007). Researchers have emphasized the role of parenting style in explaining the inconsistent findings about the relationship between parental involvement and children's outcomes (Chung et al., 2019; Li et al., 2019; Lowe & Dotterer, 2013; Moroni et al., 2015). According to the integrative model of parenting, parenting style is defined as a constellation of attitudes toward the child (Darling & Steinberg, 1993). As an overarching contextual variable (Darling & Steinberg, 1993), parenting style creates the emotional climate within the family in which parenting behaviors are expressed to the child. Therefore, parenting style provides a perspective for exploring the quality of parental involvement. Specifically, parental involvement behaviors do not occur in isolation, but rather within the emotional climate of the family, which is primarily shaped by parenting style. Parenting style indicates how parents become involved with their children, attaching meanings to specific parental involvement behaviors. Overall, parenting style represents the essence of parental involvement behaviors, while parental involvement reflects the extent to which parenting styles are expressed to the child. Therefore, parenting style may adjust children's openness and acceptance of parental behaviors, and in turn, the effectiveness of parental involvement because it determines the main emotional tone of the parent-child relationship (Darling & Steinberg, 1993; Lowe & Dotterer, 2013).

The integrative model of parenting has emphasized the importance of parental warmth in enhancing the effectiveness of specific parental behaviors (Darling & Steinberg, 1993; Lowe & Dotterer, 2013). Parental warmth can make a parental behavior more effective because it is salient in shaping a good parent-child relationship (Liu & Wang, 2021; Lowe & Dotterer, 2013). In contrast, parental rejection may weaken the effectiveness of parental behaviors because it damages trust and closeness between parents and the child. Therefore, parental warmth and rejection were selected as the representative parenting styles due to their relationships with child adjustments (Etkin et al., 2014; Li et al., 2018; Liu & Wang, 2021). Moving beyond more or less parental involvement as better for adolescents, the current study aims to explore the integral contributions of parental involvement and parenting style to adolescent adjustments.

Using the variable-centered approach to test the moderating role of parenting style

It has been recognized that parental involvement behaviors do not consistently and uniformly influence child adjustment outcomes, which may be due to the lack of consideration of parenting style in previous research (Dumont et al., 2012; Pomerantz et al., 2005). Only a few studies have simultaneously measured both the quantity and quality of parenting behaviors to investigate their influence on child outcomes. However, these studies have primarily used a variable-centered approach to test the moderating role of parenting style in the relationship between parental involvement and child outcomes (Chung et al., 2019; Lowe & Dotterer, 2013; Wang et al., 2014). For example, one previous research (Lowe &

Dotterer, 2013) found that mothers' warmth enhanced the positive relationship between parental monitoring behavior and children's adjustment outcomes, while fathers' warmth strengthened the negative associations between parental behavior and children's behavior problems. Similarly, a recent study (Chung et al., 2019) found a negative relationship between parental involvement and children's adjustment outcomes in the context of low levels of parental warmth. These findings suggest that parenting style might affect the direction and strength of the relationships between parental involvement behaviors and children's adjustments. In other words, the effectiveness of parental involvement on child adjustments depends on parenting styles, which represent the emotional context in which parental involvement behaviors are expressed towards the child. The empirical evidence indicated the need to simultaneously examine the influence of parental involvement and parenting style on child adjustments from the integral perspective of parenting (Darling & Steinberg, 1993).

However, the studies mentioned above have mainly used the variable-centered approach, which could only shows the interaction between variables at the mean level, and does not provide a comprehensive understanding of specific parenting characteristics within families (Li et al., 2019). Further investigation is needed to clarify how parental involvement and parenting style combine to make an integral contribution to adolescent psychological adjustments (Li et al., 2019). This requires us to investigate how parental involvement and parenting style operate concurrently in distinct patterns and influence adolescent adjustment outcomes. One approach for exploring parenting behavior patterns is the person-centered approach, which examines individual differences in the combination patterns of parenting style and parental involvement. The latent profile analysis (LPA) approach allows us to group cases into distinct latent subgroups based on different combinations of dimension indicators (Lubke & Muthén, 2007). That is, the presentation features of parenting style and parental involvement scores in a particular subgroup may differ from those in another group. Therefore, LPA is an efficient approach for identifying different combination patterns of parenting style and parental involvement. The current study aimed to use LPA to explore how various aspects (quantity and quality) of parenting behaviors operate in combination to influence adolescent adjustments.

Adopting the person-centered approach including both fathers and mothers

The person-centered approach for studying parenting could be traced back to the classical typology of parenting styles (Baumrind, 1991; Zhang et al., 2017), which classifies parenting style into four distinct subtypes based on responsiveness and demandingness dimensions, including authoritative, authoritarian, permissive, and rejecting-neglecting parenting. Recent studies have also used similar approaches to investigate parenting behaviors (Kim et al., 2013; Zhang et al., 2017), although most have focused on either parenting style (Zhang et al., 2017) or parental involvement (Zou et al., 2019) alone. Later, a recent study (Chung et al., 2019) classified fathers' and mothers' warmth into five categories and examined their moderating roles in the relationship between parental involvement and adolescents' adjustment outcomes. The results showed that parental involvement was negatively related to adolescents' adjustment outcomes when fathers and mothers demonstrated congruent low warmth. In contrast, parental involvement could facilitate adolescents' adjustment outcomes when fathers and mothers showed congruent high warmth. These findings suggested that the beneficial effects of parental involvement may be weakened by low parental warmth. It is also important to note that this study found significant differences in warmth between fathers and mothers (Chung et al., 2019), highlighting the need to investigate the joint influence of fathers' and mothers' parenting behaviors on the child.

As far as we know, only two studies have explored parenting profiles from the person-centered perspective (Garcia Mendoza et al., 2019; Li et al., 2019). One previous study has included the indicators of parental involvement and parenting style (autonomy support and psychological control) in the LPA analysis. This study revealed a heterogeneous distribution of the combination patterns of parental involvement and parenting style among families: high control–low involvement (7.55%), moderate all (50.65%), high all (4.00%), and high autonomy support–moderate involvement (37.80%). Across the four identified profiles, adolescents in the first group demonstrated higher subjective well-being than adolescents in other groups. Adolescents in the last group were more psychologically maladaptive than adolescents in other groups. These findings have indicated that the efficiency of parental involvement may change depending on the parenting styles parents demonstrate toward the child simultaneously. Another study (Garcia Mendoza et al., 2019) added the indicator of parental warmth in addition to the parenting style indicators used in the study mentioned above (Li et al., 2019). But this study identified three profiles that demonstrated similar positive associations between parental involvement and parenting style indicators: high parental involvement in combination with high warmth; similarly, low parental involvement combined with low warmth. Hence, this study did not reveal a heterogenous distribution of parental involvement and parenting styles across families different from results in the study conducted among Chinese families (Li et al., 2019).

Notably, the study mentioned above did not distinguish between fathers' and mothers' parenting behaviors (Li et al., 2019). Indeed, most previous studies have only measured mothers' parenting behaviors or treated fathers and mothers as a whole (Li et al., 2019; Zhang et al., 2017). It has been acknowledged that fathers and mothers made unique and significant contributions to children's adjustments different from each other (Cabrera et al., 2018). Therefore, it is necessary for us to consider their joint influence on adolescents simultaneously. Besides, very few studies including both fathers and mothers did not consider the quality and quality aspects of parenting behaviors simultaneously (Chung et al., 2019; Miranda et al., 2016; Zou et al., 2019). Grounded in the integrative model of parenting (Darling & Steinberg, 1993), the first goal of the present study was to examine the specific combining patterns of parental involvement and styles on the dyad level, including both fathers and mothers. The second goal of this study was to test whether adolescent adjustment outcomes differed across multiple parenting profiles.

The current study

Under the integrative model of parenting, the first purpose of this study is to identify parenting behavior profiles in Chinese families with adolescents, using indicators of parent-reported parental involvement and adolescent-perceived parenting styles. Using the person-centered approach of LPA, we aim to identify natural combination patterns of parental involvement and parenting style within Chinese families (Deng et al., 2020; Li et al., 2019). Given limited previous empirical evidence (Garcia Mendoza et al., 2019; Li et al., 2019), it is expected that a warm involvement group (high parental involvement combined with high warmth and low rejection) will emerge, similar to high autonomy support–moderate involvement group (Li et al., 2019) and high quality group (Garcia Mendoza et al., 2019). We also expected to see a rejecting noninvolvement group (low involvement in combination with low warmth and high rejection), similar to the high control-low involvement group (Li et al., 2019) and low quality group (Garcia Mendoza et al., 2019). It is also possible that we will see the low/moderate all profiles in our study, given the high percentage of the moderate all profile (50.65%) in Chinese families with adolescents in a previous study (Li et al., 2019). In addition, we also hypothesized that a rejecting involvement profile (high parental involvement combined with low warmth and high rejection) may also emerge in our study due to the heterogeneous distribution of parental involvement and parenting style, such as the high all group among Chinese families with adolescents (Li et al., 2019). However, due to limited previous empirical evidence, we did not make specific predictions in advance about the characteristics of other possible parenting profiles. The second purpose of this study was to use the regression mixture model to examine the relationships between different parenting profiles and adolescent psychological adjustment indicators (anxiety symptoms, depression symptoms, and loneliness). We aimed to provide a deeper understanding about which type of parental involvement is most effective for adolescent adjustments. Based on previous findings, we hypothesize that adolescents in the warm involvement group will show better psychological adjustment outcomes, including lower levels of anxiety, depression symptoms, and loneliness. In contrast, we expect that adolescents in the rejecting involvement group (whose parents showed low parental involvement combined with high rejection) would display higher levels of anxiety, depression symptoms, and loneliness compared to the other groups.

Methods

Procedures

The present study was based on a cross-sectional online survey of Chinese two-parent families. Data were collected in April 2020 when adolescents were confined at home to study online because of the COVID-19 school shutdowns. Fathers, mothers, and adolescents from 930 Chinese families participated in the questionnaire survey. The participating families were recruited with the assistance of the local education department or schools. We sent the links about questionnaires to students through the social networking app WeChat. The online informed consent statement, including the purpose, procedure, and consent of this study, was sent to all participants through the Internet. Fathers, mothers, and adolescents were given the same 8-digit ID number. This 8-digit ID number is constituted of the last four digits of the father's cell phone number plus the last four digits of the mother's cell phone number. Parents completed questionnaires about the 8-digit ID number, demographic information, and parental involvement. Adolescents completed questionnaires about the 8-digit ID number, demographic information, parenting styles, their anxiety symptoms, depression symptoms, and loneliness. The study was approved by the Research Ethical Committee of a university. We conducted this study with permission from the participating schools' principals. The participating adolescents and parents were free to withdraw from the research anytime.

Participants

Fathers, mothers, and adolescents from 930 families participated in the study. The mean age of adolescents was 14.37 years old (SD = 2.31), ranging from 10 to 18 years old. About Half (50.4%) of the children were boys, and approximately 58% (57.7%) were the only-child. The mean age of fathers was 44.52 years old (SD = 4.50), ranging from 31 to 59 years old. Educational levels of fathers ranged from primary school (4.2%), lower general secondary education (21.8%), intermediate vocational and higher general secondary education (27.3%), higher vocational education (16.9%), to university education (29.8%). The mean score of subjective socioeconomic status (SSS, ranging from 1 to 10) reported by fathers compared with the members in the province were 6.20 (SD = 1.93). The mean age of mothers was 42.57 years old (SD = 4.27), ranging from 30 to 57 years old. Educational levels of mothers ranged from primary school (5.5%), lower general secondary education (24.1%), intermediate vocational and higher general secondary education (25.6%), higher vocational education (19.2%), to university education (25.6%). The mean SSS score reported by mothers was 6.15 (SD = 1.93).

Measures

Parental involvement

Parental involvement was measured using the Chinese version of the Parental Involvement Behavior Questionnaire (C-PIBQ) developed by Wu et al. (Wu et al., 2018). The C-PIBQ measures the degree of parental involvement perceived by children derived from the Engagement dimension of the original Parental Involvement Questionnaire (Wu et al., 2015). The full C-PIBQ scale consists of 23 items reported by children. Because this study was conducted during the home quarantine period, we deleted some items about leisure activities, such as "My father takes me to a museum, zoo, science center, or library," remaining 16 items reported by children. The remaining 16 items include four dimensions: living care (4 items, e.g., I take care of my child's daily life), academic support (4 items, e.g., I discussed with my child about the difficulties he/she encountered in learning), emotional interaction (5 items, e.g., I express my affective love to children using body language such as hugging, patting on the shoulder, touching the head), discipline instruction, (3 items, e.g., I teach my children to take responsibility for their own affairs). Responses are provided on a scale ranging from 1 (*never*) to 5 (*always*), and item scores are averaged. Higher scores reflect higher levels of parental involvement. Cronbach's alphas of mothers' involvement and fathers' involvement were 0.93 and 0.95, respectively.

Parenting style

The Short form of Egna Minnen Beträffande Uppfostran (S-EMBU) was initially developed (Arrindell et al., 1999) to assess the current rearing styles of both parents perceived by the child. The Chinese version of this scale (S-EMBU-C) was developed (Jiang et al., 2010) based on the original version. The 21-item S-EMBU-C consists of three subscales: Emotional Warmth (six items), Rejection (seven items), and Over Protection (eight items). The items of the Emotional Warmth (e.g., If things went badly for me, I then felt that my parents tried to comfort and encourage me) and Rejection (e.g., My parents would punish me hard, even for trifles such as minor offenses) were used primarily in the current study. All items were scored on a 4-point scale: 1 = no, never; 2 = yes, but seldom; 3 = yes, often; and 4 = yes, mostly. The scores of parental warmth and rejection were created by averaging the scores of the subscale items, respectively. Cronbach's alphas of mothers' emotional warmth and rejection were 0.93 and 0.88, respectively; Cronbach's alphas of fathers' emotional warmth and rejection were 0.92 and 0.84, respectively.

Anxiety symptoms

We use the Zung Self-Rating Anxiety Scale (SAS) to assess the level of anxiety symptoms of adolescents (Ramirez & Lukenbill, 2008; Zung, 1971). SAS is a 20-item scale developed to evaluate the frequency of anxiety symptoms based on diagnostic conceptualizations (e.g., Do you feel afraid for no reason at all?). The respondent indicates how often he or she has experienced each symptom on a 4-point Likert scale from 1 (*none or a little of the time*) to 4 (*most or all of the time*). Items 5, 9, 13, 17, and 19 are reversed scored (e.g., Do you feel calm and can you sit still easily?) and the total score on the SAS ranges from 20 to 80. The total score was averaged and used in subsequent analysis. The SAS has shown good reliability and validity in assessing anxiety symptoms in Chinese adolescents (Tang et al., 2010). The Cronbach's alpha of SAS in this study is 0.85.

Depression symptoms

Child depression symptoms were measured using the Zung Self-Rating Depression Scale (Taylor et al., 2005; Zung, 1965). The SDS consists of 20 items generated and selected as representative of typical depression based on the clinical interviews with patients (Taylor et al., 2005). Of the 20 items, ten are worded positively in relation to symptoms

Table 1 Pearson Correlations and Descriptive Statistics for the Main Study Variables

Variable	1	2	3	4	5	6	7	8
1Paternal involvement	1							
2Maternal involvement	0.35**	1						
3 Paternal warmth	0.33**	0.32**	1					
4 Paternal rejection	-0.12**	-0.19**	-0.47**	1				
5 Maternal warmth	0.23**	0.39**	0.71**	-0.32**	1			
6 Maternal rejection	-0.10**	-0.23**	-0.33**	0.67**	-0.46**	1		
7 Adolescent AS	-0.16**	-0.28**	-0.38**	0.40**	-0.40**	0.43**	1	
8 Adolescent DS	-0.23**	-0.31**	-0.52**	0.40**	-0.51**	0.43**	0.80**	1
9 Adolescent loneliness	-0.21**	-0.28**	-0.49**	0.36**	-0.44**	0.37**	0.61**	0.71**
M	3.57	3.87	2.97	1.47	3.20	1.46	1.65	0.76
SD	0.77	0.67	0.78	0.57	0.74	0.59	0.49	0.55

Note. **p<0.01, *p<0.05. AS = Anxiety symptoms; DS = Depression symptoms

(e.g., I get tired for no reason) and the other ten negatively (e.g., I feel hopeful about the future). Each item was measured on a 4-point Likert scale from 1 (*none or little of the time*) to 4 (*most or all of the time*), with a total score ranging from 20 to 80 (Taylor et al., 2005). The total score was averaged and used in the subsequent analysis of this study. The Cronbach's alpha of SDS in the current study is 0.89.

Loneliness

Adolescents' experience of loneliness was measured using the Chinese version of the original version of the University of California at Los Angeles-Loneliness Scale (UCLA-LS) (Russell & Daniel, 1996). The Chinese version of UCLA-LS included 20 items with nine items reverse-coded (e.g., How often do you feel isolated from others?). Each item was measured on a 5-point Likert scale ranging from 0 (never) to 3 (always). A higher level of total score indicates a higher level of loneliness. The total score was averaged and used in the subsequent analysis of our study. The Chinese version of UCLA-LS has been widely used in Chinese populations (Ren et al., 2019). The Cronbach's alpha of UCLA-LS in the current study is 0.92.

Control variables

The children's age, gender, and the-only child status were obtained from the children's questionnaires. In the fathers' and mothers' questionnaires, we collected information about their age, education levels, and subjective socioeconomic status (SES) compared to other members in their province. Parents rated their highest level of education on a scale from 1 (primary school finished) to 5 (finished university education and above). All of these variables were included as covariates when examining adolescent outcomes.

Data analysis

First, latent profile analysis was conducted for father–mother dyads to determine the optimal number of latent groups using Mplus Version 8.3. Fathers' and mothers' standardized scores of the parenting behavior variables (parental involvement, warmth, rejection) were used as indicators in the latent profile analyses. The following fit statistics were used to determine the best fitting model: Bayesian information criterion (BIC), Adjusted BIC (ABIC), the Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR LRT), bootstrapped likelihood ratio test (BLRT) and entropy. Second, to examine the effect of parenting profiles on adolescents' adjustment outcomes (i.e., differences in the effects of parenting behavior profiles on adolescent depression symptoms), an alternative three-step method (Asparouhov & Muthén, 2014; Deng et al., 2020; Vermunt, 2010) with unequal variances (DU3STEP) in the regression mixture model was adopted, which was appropriate for the continuous distal variables.

Results

Descriptive results

Descriptive statistics are shown in Table 1. Parental involvement was positively related to parental emotional warmth and negatively related to parental rejection ($p<0.01$). Parental warmth was negatively associated with parental rejection ($p<0.01$).

Table 2 Model fit indices for standardized results

Model	*Number of free parameters*	*H0 value*	*BIC*	*Adjusted BIC*	*VLMR LRT p-value*	*BLRT p-value*	*Entropy*	*Number of families in each class*
1-class	12	-7914.679	15911.381	15873.270				
2-class	19	-7300.073	14730.015	14669.672	< 0.001	< 0.001	0.841	304–626
3-class	26	-7077.407	14332.530	14249.956	= 0.071	< 0.001	0.865	578-282-70
4-class	**33**	**-6915.026**	**14055.613**	**13950.808**	**< 0.01**	**< 0.001**	**0.860**	**199-489-199-43**
5-class	40	-6836.764	13946.936	13819.899	= 0.347	< 0.001	0.861	135-235-453-65-42
6-class	47	-6752.056	13825.365	13676.098	= 0.498	< 0.001	0.876	25-64-137-274-388-42

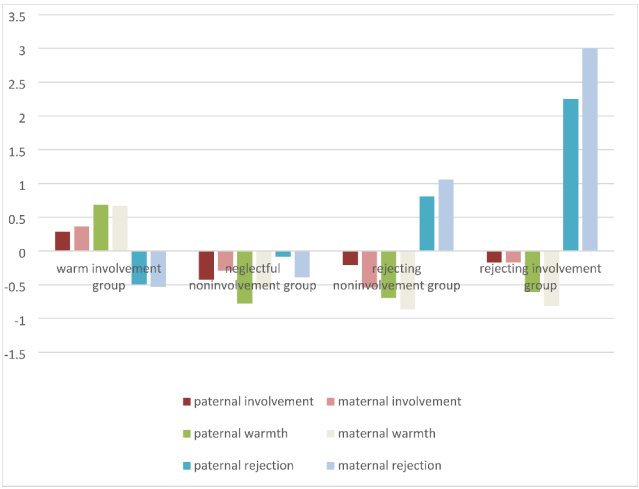

Fig. 1 Profiles of parental involvement and parenting style

Latent profile modeling of fathers' and mothers' parenting behaviors

We examined one-to-six class models separately to identify the best model. Table 2 shows the goodness-of-fit indices we used to explore the number of classes in the LPA analysis. The 4-class model was identified as the optimal model. We found that the BIC persistently declined but tended to stabilize after the 4-class model. And the *VLMR LRT p*-values in 3 class model and 5-class models were insignificant. Therefore, we choose the 4-class model as the best-fitting model.

The mean standardized scores of parenting variables in each profile were depicted in Fig. 1. For the 4-class model, in the largest group, fathers' and mothers' standardized scores for involvement and emotional warmth were higher than average, while the standardized scores for rejection were lower than average (labeled "Warm involvement group;" $n = 489$, 52.6% of the sample). In the second group, fathers' and mothers' standardized scores for involvement, emotional warmth, and rejection were all lower than average (labeled "Neglecting noninvolvement group;" $n = 199$, 21.4% of the sample). In the third group, fathers' and mothers' standardized scores for involvement and emotional warmth were lower than average, while the standardized scores for rejection were higher than average (labeled "Rejecting noninvolvement group;" $n = 199$, 21.4% of the sample). In the last group, fathers' and mothers' standardized scores for involvement were near the average level, the standardized scores for emotional warmth were lower than average, while the standardized scores for rejection were extremely higher than average with more than two standardized deviations (labeled as "Rejecting involvement group;" $n = 43$, 4.6% of the sample).

Comparing adolescent adjustment indicators across parenting profiles

The regression mixture analysis was conducted to examine the effect of parenting behavior profiles on adolescents' adjustment indicators. The results are presented in Tables 3 and 4. There were significant differences between the four latent subgroups of parenting behaviors in predicting adolescent adjustment indicators ($p < .05$). Adolescents in the warm involvement group scored significantly lower on anxiety symptoms, depression symptoms, and loneliness ($p < .05$) than adolescents in the other three groups. Adolescents in rejecting involvement group scored significantly higher on anxiety symptoms ($p < .05$) than adolescents in the

Table 3 Descriptive statistics of adolescent adjustment indicators across parenting profiles

	Anxiety symptoms		Depression symptoms		Loneliness	
	M	*SE*	*M*	*SD*	*M*	*SD*
WI group	1.32	0.28	1.42	0.35	0.52	0.45
NN group	1.53	0.35	1.79	0.45	0.95	0.52
RN group	1.70	0.43	1.99	0.49	1.06	0.53
RI group	1.93	0.57	2.13	0.55	1.19	0.52

Note. WI = warm involvement group; NN = neglecting noninvolvement group; RN = rejecting noninvolvement group; RI = rejecting involvement group

Table 4 Differences across parenting profiles on adolescent adjustment indicators

	Anxiety symptoms		Depression symptoms		Loneliness	
	χ^2	p	χ^2	p	χ^2	p
WI vs. RI	53.49	<0.001	78.11	<0.001	74.81	<0.001
WI vs. RN	133.55	<0.001	261.38	<0.001	159.69	<0.001
WI vs. NN	73.90	<0.001	189.10	<0.001	102.11	<0.001
RI vs. RN	4.87	<0.05	2.01	0.16	2.08	0.15
RI vs. NN	13.29	<0.001	6.26	<0.05	1.42	0.23
RN vs. NN	6.20	<0.05	3.67	=0.06	0.12	0.73

Note. WI = Warm involvement group; NN = neglecting noninvolvement group; RN = rejecting noninvolvement group; RI = rejecting involvement group

other three groups and also significantly higher on depression symptoms ($p < .05$) than adolescents in the neglecting noninvolvement group. Adolescents in the rejecting noninvolvement group scored significantly higher on anxiety symptoms ($p < .01$) than those in the neglecting noninvolvement group but did not differ in depression symptoms and loneliness.

Discussion

Parental involvement has been shown to play a crucial role in adolescent adjustment outcomes (Lv et al., 2018, 2019; Wang & Cai, 2015), such as psychological symptoms (Wang & Sheikh-Khalil, 2014). However, previous research has only considered the quantity of parental involvement rather than the quality, or how parents get involved. According to the integrative model of parenting (Darling & Steinberg, 1993; Lowe & Dotterer, 2013), parenting style reflects the emotional climate in which parental involvement behaviors were carried out and therefore indicates the quality of parental involvement. The current study adopted the person-centered approach to examine the combination patterns of parental involvement and parenting styles within families (Li et al., 2019). This study used the regression mixture analysis (Deng et al., 2020) to explore the influence of these parenting patterns on adolescent psychological adjustment indicators (anxiety symptoms, depression symptoms, and loneliness).

This study identified four parenting behavior profiles (warm involvement, neglecting noninvolvement, rejecting noninvolvement, and rejecting involvement) similar to our hypothesis. In the present study, about half of the parents (52.6%) belonged to the warm involvement group, which is the largest across groups, followed by neglecting noninvolvement group (21.4%, similar to our hypothesis of the low all group) and rejecting noninvolvement group (21.4%). The rejecting involvement group had the least number of parents in the current study. Adolescents in the warm involvement group adjusted best across groups with the lowest level of psychological symptoms (Chung et al., 2019; Wang et al., 2014). Adolescents in the rejecting involvement group demonstrated the worst adaptation across groups. Adolescents in the neglecting noninvolvement group adjusted relatively better than those in the rejecting noninvolvement group.

Combination patterns of parental involvement profiles

To date, this is the first study to use the person-centered approach to identify parenting profiles combining parental involvement and parenting style. The inclusion of quantity and quality contributed to a more comprehensive understanding of parenting behaviors in Chinese families than the traditional identification using only one aspect of parenting (e.g., only parental involvement). Our study has identified four parenting behavior profiles (warm involvement, neglecting noninvolvement, rejecting noninvolvement, and rejecting involvement). The warm involvement group is characterized by high levels of parental involvement combined with high levels of warmth and low levels of rejection. The neglecting noninvolvement group is characterized by approximately low levels of all parenting aspects measured. The rejecting noninvolvement group is characterized by low levels of parental involvement combined with low levels of warmth and higher levels of rejection. While the rejecting involvement group is characterized by nearly an average level of parental involvement with low levels of warmth and extremely high levels of rejection. This indicates that high parental involvement may not always be accompanied by perceived high warmth and low rejection (Li et al., 2019). Specifically, parents with high parental involvement may also demonstrate high rejection toward their children in the rejecting involvement group.

Furthermore, in this study, only adolescents in the warm involvement profile perceived a higher level of warmth than average; adolescents in other groups perceived relatively low warmth. Indeed, the warm involvement profile was more beneficial for adolescent adjustments. The warm involvement profile is similar to the classic pattern of authoritative parenting wherein the child receives sufficient

parental warmth and positive control, which is considered to be the optimal parenting (Wu et al., 2016; Zhang et al., 2017). The warm involvement profile in the current study was also similar to the high autonomy support–moderate involvement profile identified previously (Li et al., 2019). Adolescents in this profile perceived their parents as moderately involved in supporting autonomy. And they demonstrated higher levels of subjective well-being.

The neglecting noninvolvement profile has reflected the rejecting-neglecting parenting behavior, which is considered to be parent-centered parenting in the classic typologies (Zhang et al., 2017). Neglecting parents disengage from their roles, do not care about the child's needs and demands, or even completely ignore the presence of the child. Even though parents do not actively reject the child, they do not show warmth toward the child (relatively low levels of warmth and rejection). Not surprisingly, parents in neglecting noninvolvement group also demonstrated relatively low levels of parental involvement toward the child.

The rejecting involvement profile has, to some extent, reflected the"tiger" Chinese parenting behavior (Kim et al., 2013). Tiger parents, as depicted in previous studies, have been portrayed as harsh, uncaring about children, and highly involved in children's lives, such as through the strict restriction of children's free time to pursue success (Kim et al., 2013; Zhang et al., 2017). This indicated that high levels of rejection can be combined with high levels of parental involvement. The contributions of parental involvement for adolescents may be changed when combined with different levels of warmth and rejection.

Relationships between parental involvement profiles and adolescent adjustments

The expansion of features in the parenting behavior profiles resulted in significant links between different parenting profiles and adolescents' adjustment outcomes (Li et al., 2019). These findings may help explain the inconsistent results in previous studies about the relationships between parental involvement and child adjustment outcomes (Moroni et al., 2015; Pomerantz et al., 2005, 2007). Among the four profiles, the warm involvement profile was the most adaptive for adolescents (Chung et al., 2019). Adolescents in this profile experienced lower levels of anxiety symptoms, depression symptoms, and loneliness. Parental warmth could convey parents' concern and love to their children and promote reciprocal trust in the parent-child relationship (Dotterer & Day, 2019; Lippold et al., 2018; Lowe & Dotterer, 2013; Silva et al., 2020). This can improve children's openness and acceptance of parenting behaviors, enhance the effectiveness of parental involvement behaviors, and improve their mental health (Chung et al., 2019; Lowe & Dotterer, 2013).

The rejecting involvement profile was the most maladaptive across the four profiles. Adolescents in this group experienced nearly average levels of parental involvement, but perceived relatively low warmth and extremely high rejection. Adolescents in this group showed the highest levels of anxiety symptoms, depression symptoms, and loneliness across the four groups. And this contrasted with the hypothesis in previous studies that the more amount of parental involvement, the better adolescent development (Lv et al., 2018, 2019; Moroni et al., 2015). The findings suggest that combined with high parental rejection, the efficiency of parental involvement for adolescents was limited. According to the perspective of the integrative model of parenting (Darling & Steinberg, 1993; Lowe & Dotterer, 2013), parenting style conveys the attitudes parents hold toward the child and constitute the main emotional atmosphere of the parent-child relationship in which parental involvement behaviors were carried out. When parents involve themselves with adolescents in a rejecting way, adolescents may be exposed to indifference, dislike, or rejection from their parents, which may result in psychological symptoms. Exposing to rejection from parents, the child may not feel that they are being deeply loved and cared but rather self-rated as disgusting, terrible, and unworthy of love (Papadaki & Giovazolias, 2013; Rebecka et al., 2020). Adolescents who perceived themselves to be rejected by their parents tended to formulate negative evaluations of themselves, experience negative emotions, and develop low levels of self-esteem (Dwairy, 2010; Miranda et al., 2016). This phenomenon may become particularly prominent during the home quarantine period because adolescents spend most of their time with their parents. During the home quarantine period, there is an increasing chance for adolescents to experience negative emotions repeatedly from interactions with rejecting parents, which ultimately contributes to their poor psychological adjustments.

Adolescents in the neglecting noninvolvement group demonstrated lower levels of anxiety symptoms but did not differ in depression symptoms and loneliness compared to adolescents in the rejecting noninvolvement group. Overall, adolescents in the neglecting noninvolvement group adjusted relatively better than adolescents in the rejecting noninvolvement group. These two groups had similar levels of parental involvement and warmth, but adolescents in rejecting noninvolvement group experienced a higher level of parental rejection. It appears that, even under similar levels of low parental involvement, adolescents are still affected by parental emotional rejection.

Our findings contributed to understanding the associations between parenting and adolescent psychological

adjustments from an integrative perspective. By adopting the person-centered approach, our findings help to capture the parenting characteristics within Chinese families more comprehensively. For example, parents may simultaneously demonstrate high involvement with a rejecting parenting style. Increased parental involvement does not necessarily mean that parents also display emotional warmth toward adolescents. Moreover, our study suggested that more parental involvement may not always bring benefits to adolescents. To some extent, the utility and efficiency of parental involvement is determined by the parenting styles adopted by parents simultaneously (Chung et al., 2019; Li et al., 2019). Parental involvement may benefit adolescents much when combined with a warm parenting style (Chung et al., 2019), but its effectiveness for adolescent mental health may be limited if accompanied by a rejecting parenting style. Overall, our findings have indicated the significance of differentiating the quality and quality aspects of parenting (Chung et al., 2019; Li et al., 2019; Moroni et al., 2015).

Implications

First, using parenting profiles to describe combination patterns of parental involvement and parenting style can help understand specific parenting characteristics within Chinese families (Li et al., 2019). Second, differentiating the quality and quality aspects of parenting behaviors can help us achieve a more comprehensive understanding of the integral contributions of parenting behaviors for adolescents (Chung et al., 2019; Li et al., 2019; Moroni et al., 2015). This can be helpful for clinicians and therapists to develop more targeted treatments concerning parenting behaviors for adolescents. Third, including both fathers and mothers could help us understand parenting behaviors on the family level (Chung et al., 2019). The current study suggested that more parental involvement may not always be better for adolescents. The utility and efficiency of parental involvement may change depending on the parenting styles parents demonstrate toward the child simultaneously (Chung et al., 2019; Li et al., 2019). Parental involvement could bring a lot of benefits for adolescents in the warm emotional climate context (Chung et al., 2019). In contrast, the effectiveness of involvement may be restricted when parents demonstrate emotional rejection. These findings encourage educators not only to enhance the level of parental involvement but also to improve parenting styles, that is, to modify the way in which parents get involved. Specifically, intervention programs should encourage parents to involve themselves with adolescents in a way that is high in emotional warmth and low in rejection.

Limitations

This study has some limitations. First, this study was based on a cross-sectional research design which precluded us from drawing causal links between parenting profiles and adolescent psychological adjustments. Indeed, some parents may display rejecting involvement behaviors because their adolescents have shown psychological symptoms. Future research should collect data at multiple time points to explore the causal relationships and developmental trends during adolescence. Second, we utilized self-reported measures to evaluate parenting and adolescent psychological symptoms. Future studies may adopt multiple approaches such as experimental observation to better investigate the associations between parenting and adolescent adjustments. Moreover, researchers may collect multi-informant reported data, for example, parent-reported adolescent psychological adjustments and adolescent-reported parenting behaviors. Third, the findings are only based on a sample of adolescents and their parents. Future studies may identify the parenting profiles of parents with children before adolescence and examine the possible differential influences of parenting profiles on children's adjustment.

Conclusion

The present study identified Chinese parenting patterns of parental involvement and parenting styles using a person-centered approach, including fathers and mothers. This study also explored the effects of different parenting profiles on adolescent adjustment outcomes. The findings of this study advanced our understanding of the integral contributions of quantity and quality of parenting behaviors to adolescent adjustments in Chinese families. First, four parenting profiles were identified: warm involvement, neglecting noninvolvement, rejecting noninvolvement, and rejecting involvement. Second, different parenting profiles showed significant effects on adolescent adjustment outcomes. Adolescents of warm involvement parents exhibited fewer anxiety symptoms, depression symptoms, and loneliness, while adolescents of rejecting involvement parents showed more symptoms. Adolescents of neglecting noninvolvement parents showed fewer anxiety symptoms than those of rejecting noninvolvement parents.

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Data availability The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Competing interests The authors have no relevant financial or non-financial interests to disclose.

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