

The relationship between parental involvement in education and children's academic/emotion profiles: A person-centered approach

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ABSTRACT

The present study used a person-centered approach to identify academic/emotion profiles and examined whether different dimensions of parental involvement are associated with these profiles. Data were collected on 2323 children and their parents. Three student academic/emotion profiles were identified: High Achiever and Positive Emotion profile, Low Achiever and Moderate Emotion profile, and Average Achiever and Negative emotion profile. We found that mother monitoring, mother-child communication, mother-child activity and father-child activity can lead to more favorable child profiles, whereas mother learning assistance, mother-school contact, and father-school contact can result in a higher chance of children transitioning to risky profiles.

1. Introduction

Parental involvement in education generally refers to parents' participation in their children's school education through communication with school personnel, discussions about school-related topics with children, attendance at school activities, and cultivation of child behaviors that promote educational success (Epstein, 1986, 1987; Hill & Taylor, 2004; Hill & Tyson, 2009; Jenkins, 1997). Numerous studies conducted in different cultures and with children of different ages have suggested that parental involvement in education is conducive to children's development (Fan & Chen, 2001; Hill & Tyson, 2009; Pomerantz, Kim, & Cheung, 2012).

1.1. Parental involvement and students' academic achievement

In the literature, parental involvement in education has been found to be a multidimensional concept (Fan, 2001; Grolnick & Slowiaczek, 1994; McNeal, 2001), and different dimensions of parental involvement may have different effects on children's academic achievement. The literature has demonstrated that multiple types of parental involvement are positively associated with academic achievement (Fan & Chen, 2001; McNeal, 2001). Among these beneficial types of parental involvement, parent-child communication (we use Davidson and Cardemil's (2009) definition as follows: the exchange of factual and emotional information between parents and their children) has consistently been found to be positively associated with academic

outcomes (Castro et al., 2015; Fan & Chen, 2001; Lee & Bowen, 2006; McNeal, 2001; Wei, 2012). For instance, McNeal (2001) found that parent-child discussions were negatively associated with students' dropout rates. Some intervention studies also found that parent-child communication had a positive effect on both literacy and reading achievement (see the review by Van Voorhis, Maier, Epstein, & Lloyd, 2013). Additionally, parental participation in more extracurricular activities with their children has been shown to be conducive to children's achievement. Dumais (2006) used data from the Early Childhood Longitudinal Study, Kindergarten Class of 1998–1999 (ECLS-K), which included 5696 children in public kindergarten and elementary school and their parents, and found that the number of extracurricular activities (e.g., visiting a museum or participating in a social practical activity) that parents and children engage in together can determine children's advancements in reading achievement. Home monitoring has also been found to be positively associated with children's academic achievement. A meta-analysis of home monitoring (e.g., home rules for watching TV) revealed a weak but significant relationship with students' academic achievement ($r = 0.09$) (Fan & Chen, 2001). However, the relationship between some types of parental involvement and students' learning is mixed. For instance, Jeynes' (2012) meta-analysis found that although homework checking was positively associated with students' learning, the effect was the weakest among all types of parental involvement. In addition, another meta-analysis found that parental help with homework was negatively associated with students' achievement (Hill & Tyson, 2009). Similarly, a meta-analysis conducted

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by Hill and Tyson (2009) showed that school-based involvement was positively related to achievement. However, the latest longitudinal study found that children's academic competence can negatively predict the parent-school contact during the following term (Hoglund, Jones, Brown, & Aber, 2015).

1.2. Parental involvement and students' emotions

Although the key objective for parental involvement in education has generally been to enhance children's academic achievement, an increasing number of researchers have realized that parental involvement is also associated with children's emotional functioning (Cheung & Pomerantz, 2011; Yap & Baharudin, 2016). In the framework of self-determination theory, parental involvement in education may be associated with the fulfillment of three basic psychological demands (autonomy, competence, and relatedness), which is important for the overall development of individuals. First, parental involvement can improve both academic achievement and emotional functioning by promoting children's autonomy. For instance, Wang and Sheikh-Khalil (2014) found that academic socialization and school-based involvement influenced depression directly and indirectly through school engagement. Second, parental involvement in education can improve children's feelings of control over the environment (Yap & Baharudin, 2016). Third, parents can convey that they care about their children through their involvement (Grolnick & Slowiaczek, 1994), and a warm emotional climate is beneficial for the parent-child relationship. Some studies have shown the existence of a relationship between parental involvement and children's emotional functioning in families of different ethnicities and during different developmental periods of the children (Hill & Craft, 2003; Pomerantz, Ng, & Wang, 2006; Shumow & Lomax, 2002). To the best of our knowledge, most previous studies have found a positive relationship between these two constructs, except for the study conducted by Shumow and Lomax (2002). In their study, the authors found a negative relationship between parent-adolescent communication and adolescents' social-emotional adjustment among African American and Latin American adolescents, and minority adolescents' willingness to talk about these issues might indicate that they were more struggling with these issues.

1.3. Limitations of previous studies

Most extant studies have used variable-centered approaches to examine how levels of parental involvement are associated, on average, with different levels of academic achievement and emotional functioning. Because of the inherent limitation of the variable-centered method, three important issues remain unaddressed.

First, when children's academic achievement and emotional functioning are included the same model as the outcome variables with the variable-centered method, the two variables are always set to be related to each other on average (e.g., Wang & Sheikh-Khalil, 2014). However, a previous study that used a person-centered approach found that adolescents' academic achievement (reading and mathematics) and academic well-being (academic self-concept, perceived learning difficulties and school burnout) did not “move together” (Korhonen, Linnanmäki, & Aunio, 2014). The authors found a type of adolescent with an average level of academic achievement but the lowest level of academic well-being. This type of adolescent may endeavor to achieve better outcomes but may be limited by many other factors; they may be disappointed about their current performance and experience low academic self-concept and higher levels of school burnout. This result implies that academic and emotional functioning may also be configured differently among children. Some children may maintain their current level of academic achievement at the cost of their emotions. The person-centered approach is useful for filling this gap because it focuses on how individuals vary within multiple profiles (Wang & Peck, 2013). The person-centered approach can shed more light on combinations of

characteristics within an individual (profile) by examining which different profiles can be identified based on indicators of academic and emotional functioning.

Second, the relationship between multiple dimensions of parental involvement and these profiles of academic achievement and emotion is unclear, particularly in China. In Chinese cultural values, academic functioning is important both morally and practically. Learning is defined not only in terms of the acquisition of knowledge and skills but also in connection with morality (Li, 2002, 2005), so academic functioning is given priority as a more important marker of optimal development than emotional functioning. In the Chinese cultural context, parents are more likely to improve their children's academic performance via their involvement. Cheung and Pomerantz (2011) found that Chinese parents tend to be more controlling in parenting; the more involved Chinese parents are in their children's learning, the more they use control. The observational study also found that Chinese parents place less emphasis on children's success, and when children fail, Chinese parents emphasize that failure more in their joint activities with their children. Based on these characteristics, specific Chinese parental involvement may benefit students' academic achievement but is accompanied by certain emotional costs (Pomerantz, Ng, Cheung, & Qu, 2014). Therefore, in the current study, some dimensions of parental involvement may be associated with a higher/lower chance of exhibiting certain profiles, and these distinctions can be detected by using a person-centered approach.

Third, previous studies that have explored the effect of parental involvement on students' academic achievement and emotional function did not distinguish between the roles of fathers and mothers. The key differences in mothers' and fathers' involvement may arise from the various meanings attached to parental involvement based on gendered parental roles (Kim & Hill, 2015). Fathers tend to spend more time working as the breadwinner, while mothers tend to spend more time in child rearing (Lamb, 2010).

Numerous studies have indicated that fathers have lower mean levels of overall involvement than do mothers (Kim & Hill, 2015). Fathers often exhibit an instrumental orientation focused on objective performance, whereas mothers often exert less unilateral authority and are perceived as being more accepting in daily life (Smollar & Youniss, 1985). According to a meta-analysis of 34 studies, mothers tend to be more nurturing and emotionally supportive than fathers are, and fathers tend to focus on preparing their children for the future more than mothers do (Kim & Hill, 2015). Some studies involving Chinese samples have also found similar results (Berndt, Cheung, Lau, Hau, & Lew, 1993; Putnick et al., 2012). For example, Putnick et al. (2012) found that mothers reported greater acceptance and warmth than fathers in China and other Western countries (e.g., Italy, Sweden, and the United States). In addition, mothers spent approximately 3 times more time caring for children than fathers in China (National Time-use Survey, 2018).

1.4. The current study

Despite the importance of parental involvement, no known study has examined the relationship between parental involvement and academic achievement/emotion profiles. In the current study, we aimed to identify subgroups of Chinese children in 4th to 6th grades based on the children's academic achievement and positive and negative affect patterns using a person-centered approach. We then tested whether multiple dimensions of parental involvement were associated with these different profiles. We focused on 4th to 6th grade students in elementary school because the elementary school years provide the foundation for a variety of important academic and social skills (Jennings & DiPrete, 2010; Stipek, Newton, & Chudgar, 2010). In addition, 4th to 6th grade students have been shown to have the ability to report their emotions (Lv et al., 2016). Given the scarcity of empirical evidence on profiles of academic achievement and emotion in children, we did not make predictions regarding the number of profile groups. However, we

hypothesized that there would be at least the following two types of profiles: an optimal group characterized by a high level of academic achievement and positive emotional functioning and another group characterized by an imbalance in the development of academic and emotional functioning. Moreover, based on previous studies, we expected home monitoring, parent-child activity and parent-child communication to potentially be associated with the likelihood of children belonging to the optimal profile. Learning help and parent-school contact may be associated with the likelihood of children belonging to the other imbalanced profile. In addition, as mothers play a more central role than fathers in child caring, we hypothesized that all types of mother involvement will be associated with these profiles. In addition, according to a previous study, activities play more important role than language in father involvement (Lv et al., 2018); thus, we expected father-child activities to be more likely associated with these profiles than other types of father involvement.

2. Method

2.1. Ethical statement

All procedures performed in this study were approved by the Institutional Review Board of the Collaborative Innovation Center of Assessment toward Basic Education Quality, Beijing Normal University and the Institutional Review Board of Faculty of Education, Northeast Normal University.

2.2. Procedures and participants

Before the investigation, a unified training of the investigators (psychology and pedagogical postgraduates) was conducted. The students completed the questionnaires independently in class. The parents' questionnaires were taken home by the students, and the mothers and fathers completed the questionnaires at home separately. A cover letter asking for parental agreement to participate in the project and explaining the use of the data accompanied the questionnaire. The students returned the completed questionnaires and the parents' receipts of the cover letters the following day. If both the mother and father did not return the questionnaires and cover letter, we considered that they did not agree to attend. Delayed questionnaires and receipts were returned within a week.

We distributed 2323 questionnaires (including the child, mother and father components) to 4th to 6th grade students and their parents (both mothers and fathers) at five elementary schools in Beijing, China. Except for 63 children who did not return the parent questionnaires (both mother and father) and did not agree to attend, the remaining 2260 families all agreed to participate in this survey. Although the FIML or MI can be used to address missing data, a previous simulative study also showed that the precision of these methods obviously declines when the overall missing rate exceed 20% (Qiu et al., 2018). Because it is difficult to control for all missing data, we choose a strict criterion (excluding individuals with > 20% missing rate) to ensure that the overall missing rate was under 20%. In total, 370 dyads with a missing rate > 20% were excluded, and the final sample included 1890 dyads of students from all three elementary grades and their parents (both mothers and fathers).

Among the final 1890 dyads, 1022 were boys (54.1%), and 868 were girls (45.9%). The mean ages of the students, mothers and fathers were 10.20 years (SD = 0.98), 38.03 years (SD = 3.89) and 40.30 years (SD = 4.73), respectively.

3. Measures

3.1. Parental involvement

Parental involvement was assessed using the Parental Involvement

Questionnaire (parent report) (Guo et al., 2018; Wei et al., 2016; Wu, Han, Wei, & Luo, 2013). This questionnaire is a 30-item self-reported inventory that was developed and adapted from previous research on parental involvement (Green & Hoover-Dempsey, 2007; Green, Walker, Hoover-Dempsey, & Sandler, 2007; Walker, Wilkins, Dallaire, Sandler, & Hoover-Dempsey, 2005). The items describe parents' involvement in their children's educational activities in/outside of school and are rated on a 4-point scale ranging from never (1) to always (4). This questionnaire contains five subscales representing five important and well-recognized dimensions of involvement: (a) Parent-school contact (7 items)—the parents were asked to indicate how often they visited school, attended school events (parent meetings, performances, athletic and extracurricular activities) and had contact with teachers and school personnel (e.g., attending parent-teacher conferences); (b) parent-child communication (6 items)—the parents were asked to indicate how often they conversed with their children about learning-related topics and school experiences (e.g., “I talk with my child about how they are doing at school”); (c) learning assistance (5 items)—the parents were asked to indicate how often they helped their children complete homework and prepare for upcoming examinations (e.g., “I help my child do homework when he/she encounters difficulties”); (d) parent-child activity (7 items)—the parents were asked how frequently they spent time with their children in extracurricular activities (e.g., “I travel and go out with my child”); and (e) home monitoring (5 items)—the parents were asked to report how frequently they set rules for their children's lives (e.g., “I require my child to go to bed and get up on time”).

In each subscale, the items were averaged, and the average score was used as a predictor in the model.

In the current study, the Cronbach's alpha for the entire questionnaire for fathers was 0.943. The Cronbach's alpha values for home monitoring, learning assistance, parent-child communication, parent-child activity, and parent-school contact were 0.687, 0.898, 0.823, 0.845, and 0.909, respectively.

In the current study, the Cronbach's alpha for the entire questionnaire for mothers was 0.929. The Cronbach's alpha values for home monitoring, learning assistance, parent-child communication, parent-child activity, and parent-school contact were 0.652, 0.842, 0.805, 0.831, and 0.864, respectively.

3.2. Academic achievement

Academic achievement across two subjects (Chinese language and mathematics) was determined by the children's performance on the final examinations of their most recent semester. In the Chinese compulsory education system, mainland China has unified “curriculum standards”. All teaching material and courses should be based on the curriculum standards. Among these five schools, the exams were not all the same, but all exams were based on the unified curriculum standards. Original scores ranged from 0 to 100. Class level was used as a unit in each school, and the scores were transformed to standard achievement. Finally, standard achievement in the two subjects was averaged, and this average score was used to represent the students' academic achievement (Cheung & Pomerantz, 2011); the final averaged standard score (after the missing value imputation) ranged from −6.18 to 1.45 in the current study.

3.3. Positive and negative affect

A Chinese version of the positive and negative affect scale (PANAS) (Qiu et al., 2018), which was adjusted from the original version by Watson, Clark, and Tellegen (1988), was used to assess the children's positive and negative affect. In the PANAS, the two factors represent affective state dimensions, but Tellegen (1985) has demonstrated that these factors are also related to the corresponding affective trait dimensions of positive and negative emotionality. The reliability and

Table 1
Means, standard deviations, and correlations among the key variables.

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Academic achievement	1												
2. Positive affect	0.10**	0.1											
3. Negative affect	−0.19**	−.22**	1										
4. Father monitoring	0.06**	0.09**	−0.02	1									
5. Father learning assistance	0.02	0.04	0.00	0.52**	1								
6. Father-child communication	0.10**	0.09**	−0.04	0.65**	0.62**	1							
7. Father-child activity	0.07**	0.11**	0.03	0.48**	0.58**	0.65**	1						
8. Father-school contact	−0.04	0.04	0.05*	0.45**	0.58**	0.53**	0.70**	0.1					
9. Mother monitoring	0.06**	0.10**	−0.01	0.28**	0.13**	0.22**	0.16**	0.09*	1				
10. Mother learning assistance	−0.05*	0.08**	0.02	0.14**	0.16**	0.19**	0.18**	0.13**	0.53**	1			
11. Mother-child communication	0.07**	0.14**	−0.10**	0.19**	0.15**	0.29**	0.24**	0.11**	0.61**	0.57**	0.1		
12. Mother-child activity	0.07**	0.14**	−0.06	0.15**	0.18**	0.25**	0.32**	0.18**	0.42**	0.47**	0.61**	1	
13. Mother-school contact	−0.04*	0.09**	0.00	0.15**	0.15**	0.19**	0.24**	0.22**	0.47**	0.54**	0.53**	0.61**	1
M		3.77	2.06	3.00	2.44	2.82	2.19	1.97	3.15	2.76	2.93	2.32	2.29
SD		0.88	0.82	0.57	0.73	0.56	0.55	0.65	0.51	0.67	0.54	0.57	0.61

validity of the Chinese version of this scale has been proven in a Chinese sample (Lv et al., 2016; Zhou et al., 2017). The scale included 9 descriptive terms for each positive and negative emotion experience (such as happy and ashamed). Using these terms, the participants were asked to report to what degree they had experienced the emotions in the previous week on a five-point scale (1 = very weak or not at all, 2 = very little, 3 = moderate, 4 = more, 5 = very strong). The Cronbach's α for the positive and negative affect questionnaires were 0.85 and 0.82, respectively. The positive and negative affect ranged from 1 to 5.

3.4. Control variables

The children's gender was obtained from the children's questionnaires. In both the mothers' and fathers' questionnaires, we collected the responders' education levels and their spouses' education levels. Therefore, we could determine the fathers' education level from either the fathers' questionnaire or mothers' questionnaire. In addition, we found that the responses were nearly the same in both questionnaires (consistency rate 98.5%). In addition, the missing rate of the fathers (9%) was higher than that of the mother (5%); thus, the mothers' and fathers' educational levels were both obtained from the mothers' questionnaires.

It was difficult to effectively rank the parents' occupational status because of the controversy regarding this classification system in Chinese society (Ren, 2010), and the influence of this factor was thus not considered in the analyses.

3.5. Data analytic strategy

In total, 370 dyads were excluded because of the high missing rate. To compare the students with missing rates higher than 20% and lower than 20%, a series of *t*-tests was performed to analyze academic achievement, positive affect, and negative affect, and no significant differences were observed ($p > .05$). < 3% of the data were missing for all variables included in the analysis. Little's missing completely at random (MCAR) test showed that the missing data for all variables were

randomly distributed ($\chi^2 = 601.46$, $p = .98$). Missing values were computed using full information maximum likelihood (FIML).

Three continuous variables (academic achievement, positive affect, and negative affect) were utilized as indicators in the latent profile analyses. To determine the optimal number of latent groups that could be identified from the continuous indicator variables in the data, we conducted a latent profile analysis (LPA) using Mplus 7.0 (Muthen & Muthen, 1998–2012). We used the following fit statistics to determine which model fit the data best: Bayesian information criterion (BIC), adjusted BIC (ABIC), the Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMRT), bootstrapped likelihood ratio test (BLRT) and entropy. For the BIC and ABIC, lower values indicate a better fitting model (Flaherty & Kiff, 2012). The BLRT and VLMRT compare models for *k* and *k*-1 classes. If the ratio test results in a significant *p*-value, the *k* class model is a better fit than the *k*-1 class model (Tofighi & Enders, 2008). Higher entropy indicates less classification error (Collins & Lanza, 2010), and we confirmed that the classes were large enough to be meaningful and of practical value (Marsh, Lüdtke, Trautwein, & Morin, 2009).

After determining the number of classes that fit the data best, we applied the 3-step approach in Mplus (Asparouhov & Muthén, 2014) to test the relationship between parental involvement and these latent profiles. The 3-step approach in Mplus allowed for LPA and multinomial logistic regression to determine association with profile group membership. We tested the mother and father variables in the same model after controlling for the parents' educational level and children's gender. All analyses were performed in SPSS 20.0 and Mplus 7.0 (Muthen & Muthen, 1998–2012).

4. Results

Descriptive statistics and the correlations among the key study variables are shown in Table 1. To identify the best fitting model, we tested models varying from a one- to six-class solution. Table 2 shows the goodness-of-fit measures that we used to determine the number of classes that provided the best fit for our data. To choose the best fitting model, we comprehensively considered the goodness-of-fit measures, parsimony and interpretability. Because of the small number of students

Table 2
Model fit indices.

Model	Number of free parameters	H0 value	BIC	Adjusted BIC	VLMRT p-value	BLRT p-value	Entropy	Percentage of students in the smallest class
1-class	6	−7769.27	15,853.80	15,564.74				
2-class	10	−7500.86	15,077.16	15,045.39	< 0.001	< 0.001	0.92	0.09
3-class	14	−7327.21	14,760.04	14,715.56	< 0.001	< 0.001	0.85	0.07
4-class	18	−7263.25	14,662.29	14,605.10	= 0.11	< 0.001	0.86	0.06
5-class	22	−7199.10	14,564.17	14,494.28	< 0.001	< 0.001	0.81	0.05
6-class	26	−7144.76	14,485.07	14,402.47	= 0.14	< 0.001	0.83	0.01

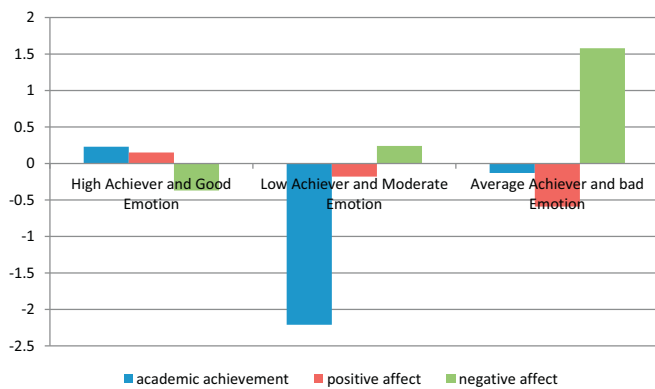


Fig. 1. Academic/emotion profiles in children; all individual variables were standardized.

in the smallest class (< 20), the 6 class model was rejected. We found that the BIC persistently declined but tended to stabilize after the 3 class model. Combined with the significant VLMRT p -value, the 3 class and 5 class models may be two optional models. Then, we tested the 3 class and 5 class models and found that the 5 class model did not provide more useful information than the 3 class model; for example, profile 4 has a higher achievement than profile 2 but a low positive affect, while profile 5 also has a higher achievement than profile 2 but a higher negative affect. Because of the principle of parsimony, the 3 class model was chosen as the best fitting model.

4.1. Descriptions of the three profiles based on academic achievement and emotion

As shown in Fig. 1, the first profile was characterized by high levels of academic achievement, positive affect and low levels of negative affect, which we described as the “High Achiever and Positive Emotion” profile (profile 1). This profile represented 77.2% ($n = 1460$) of the sample. The second profile was described as the “Low Achiever and Moderate Emotion” profile (profile 2) and was characterized by the lowest level of academic achievement and moderate positive and negative affect. This profile represented 6.6% ($n = 124$) of the sample. The third profile exhibited average academic achievement, a low level of positive affect and a high level of negative affect. Therefore, we named this profile the “Average Achiever and Negative Emotion” profile (profile 3), and this profile represented 16.2% ($n = 306$) of the sample.

4.2. The relationship between parental involvement and the latent profiles

The relationship between parental involvement and the latent profiles was estimated by the 3-step approach in Mplus after controlling parents' educational level and child's gender. Odds ratios (ORs) are provided in Table 3 to demonstrate how a one-unit change in parental involvement is associated with the likelihood of being in a particular group compared to being in the reference group.

Among the mothers, when the High Achiever and Positive Emotion profile was considered the reference, mother monitoring and mother-child activity were associated with a lower risk of being in the Low Achiever and Moderate Emotion group, and mother-child communication was associated with a lower risk of being in the Average Achiever and Negative Emotion group ($p = .039$, $p = .013$). However, mother learning assistance and mother-school contact were associated with a higher chance of children being in the Low Achiever and Moderate Emotion group ($p = .002$, $p = .026$). When Low Achiever and Moderate Emotion profile was considered the reference, mother monitoring and mother-child activity were associated with a higher chance of the children being in the Average Achiever and Negative Emotion group

($p = .021$, $p = .034$).

Among the fathers, when the High Achiever and Positive Emotion profile was considered the reference, father-child activity was associated with a lower risk of being in the Low Achiever and Moderate Emotion group ($p = .037$). Father-school contact was associated with a higher chance of the children being in the Low Achiever and Moderate Emotion group and Average Achiever and Negative Emotion group ($p = .025$, $p = .005$). When the Low Achiever and Moderate Emotion profile was considered the reference, there was no significant effect between the Low Achiever and Moderate Emotion group and the Average Achiever and Negative Emotion group.

5. Discussion

In the present study, we used a person-centered approach to identify the following three profiles of children's academic achievement and emotion: High Achiever and Positive Emotion (profile 1: 77.2%), Low Achiever and Moderate Emotion (profile 2: 6.6%), and Average Achiever and Negative Emotion (profile 3: 16.2%). In addition, we examined the relationship between parental involvement and these academic and emotion profiles.

The LPA showed that the High Achiever and Positive Emotion profile represents the majority of the sample, indicating that the development of academic skills and emotion was balanced in most children. In addition, as expected, we identified the following two specific and traditionally neglected profiles: the children with a Low Achiever and Moderate Emotion profile had lower academic achievement but better emotional functioning (higher positive affect and lower negative affect) than the children in the Average Achiever and Negative Emotion profile. These two profiles indicate that academic achievement and emotion may not necessarily “move together”. This result is consistent with previous studies that used the person-centered method (Korhonen et al., 2014).

We also examined the relationship between parental involvement and these profiles. When the High Achiever and Positive Emotion profile was included as the reference, the mothers' monitoring was associated with a lower chance of the children being in the Low Achiever and Moderate Emotion profile. This result indicates that mother's monitoring is positively associated with children's academic and emotional functioning, especially their academic functioning. Although the effect of home monitoring was mixed in previous studies, most studies in Western cultures have found that parental control always has a negative effect on children's development by intruding, pressuring, or dominating children in terms of their thoughts, feelings, and behavior (for a review, see Pomerantz & Thompson, 2008). However, because of the Chinese concept of *guan*, which means to govern as well as to care for, Chinese parental home monitoring may not be experienced as rejecting by Chinese children as it is in Western cultures and may exert a less negative effect on children (for a review, see Pomerantz & Wang, 2009). Due to Confucianism, Chinese children may be particularly accepting of parental monitoring in regard to academics. When the Low Achiever and Moderate Emotion profile was included as the reference, the mothers' home monitoring was associated with a higher chance of the children being in having the Average Achiever and Negative Emotion profile. This result was consistent with a previous study; Pomerantz et al. (2014) considered that in China, specific parental involvement may benefit students' academic achievement but is accompanied by emotional costs, and Chinese parents' heightened control may be one of the reasons.

When the High Achiever and Positive Emotion profile was included as the reference, mother-child activity was associated with a lower chance of the children being in the Low Achiever and Moderate Emotion profile. This result indicates that mother-child activity is positively associated with both children's academic and emotional functioning but especially with academic functioning. Parents' and children's joint involvement in diverse extracurricular activities can

Table 3

The association between mothers' and fathers' involvement and academic and emotion profiles.

	Latent profiles O.R. (95% CI)		
	High achiever and good emotion	Low achiever and moderate emotion	Average achiever and bad emotion
Mother monitoring	Reference 1.64* (1.03–2.64)	0.61* (0.38–0.98) Reference	1.26 (0.80–1.97) 2.07* (1.11–3.90)
Mother learning assistance	Reference 0.51*** (0.34–0.80)	1.94** (1.26–2.97) Reference	1.36+ (0.996–1.06) 0.70 (0.42–1.16)
Mother-child communication	Reference 1.43 (0.84–2.44)	0.70 (0.41–1.19) Reference	0.40** (0.24–0.66) 0.57 (0.28–1.16)
Mother-child activity	Reference 2.26* (1.19–4.35)	0.44* (0.23–0.84) Reference	1.00 (0.64–1.53) 2.25* (1.07–4.71)
Mother-school contact	Reference 0.60* (0.38–0.94)	1.67* (1.06–2.61) Reference	1.21 (0.80–1.82) 0.72 (0.41–1.28)
Father monitoring	Reference 1.20 (0.66–2.16)	0.84 (0.47–1.49) Reference	0.88 (0.58–1.32) 1.05 (0.53–2.1)
Father learning assistance	Reference 0.96 (0.63–1.48)	1.04 (0.68–1.60) Reference	1.00 (0.73–1.36) 0.96 (0.57–1.58)
Father-child communication	Reference 1.23 (0.63–2.41)	0.81 (0.41–1.58) Reference	0.87 (0.54–1.39) 1.07 (0.50–2.29)
Father-child activity	Reference 2.37* (1.06–5.26)	0.42* (0.19–0.94) Reference	0.89 (0.54–1.45) 2.10 (0.84–5.26)
Father-school contact	Reference 0.55* (0.32–0.93)	1.81* (1.07–3.10) Reference	1.72** (1.19–2.48) 0.95 (0.51–1.73)

Note. O.R. = Odd Ratio + $p < .1$ * $p < .05$ ** $p < .01$ *** $p < .001$.

broaden children's horizons, structure children's after-school activities and provide additional academic practice opportunities, which can help children to develop intrinsic motivation for learning and view learning as an interesting process (Dumais, 2006).

When the Low Achiever and Moderate Emotion profile was included as the reference, mother-child activity was associated with a higher chance of the children being in the Average Achiever and Negative Emotion profile. These results indicate that the effect of mother-child activity is similar to that of mother's home monitoring. In particular situations, both mother's monitoring and mother-child activity may benefit students' academic achievement but have emotional costs, and Pomerantz et al. (2014) considered that Chinese parents' heightened control and emphasis on children's failure may be the reasons for this. In the current study, the effect of emotional costs appeared only when the child was in the Low Achiever and Moderate Emotion profile or Average Achiever and Negative Emotion profile in which the level of academic achievement is not high. When mothers parent children whose academic achievement is not strong, their home monitoring will focus more on improving their children's academic achievement. Thus, although home monitoring can guarantee that children spend more time learning, the development of autonomy is also limited. When mothers join extracurricular activities with their children who have low academic achievement, the mothers may focus more on these children's failures. For example, an observational study by Ng, Pomerantz, and Lam (2007) found that Chinese parents emphasize children's failures more than their successes in Raven's test. Although parent-child activity in the current study focused on nonacademic fields, some items referenced competitive sports, and mothers may associate these activities with academic achievement and may attribute failure to a lack of perseverance or effort.

In this study, when the High Achiever and Positive Emotion profile was included as the reference, mother-child communication was associated with a lower chance of the children being in the Average Achiever and Negative Emotion profile. This result indicates that mother-child communication is positively associated with children's academic and emotional functioning, especially emotional functioning. Parent-child communication was consistently found to be positively associated with achievement and emotional function (Castro et al., 2015; Fan & Chen, 2001; Van Voorhis et al., 2013). Davidson and Cardemil (2009) defined parent-child communication as the exchange of factual and emotional information between parents and their

children. When actual information exchange (e.g., talking with a child about his/her performance in school) occurs, children can learn strategies to enhance their perceptions of competence and control over achievement outcomes (Lareau, 2000), and emotional information exchanges will cause children to feel warmth from their families. Previous studies have indicated that a parental positive response to children's emotional needs is necessary for the development of children's emotion regulation ability (Kliewer, Fearnow, & Miller, 1996; Morris, Silk, Steinberg, Myers, & Robinson, 2007).

When the High Achiever and Positive Emotion profile was included as the reference, mother learning assistance and mother-school contact were associated with higher chance of the children being in having the Low Achiever and Moderate Emotion profile and Average Achiever and Negative Emotion profile. A meta-analysis conducted by Hill and Tyson (2009) found that although overall parental involvement is positively associated with academic achievement, the relationship between different dimensions and academic achievement was different. Among these dimensions, learning assistance is negatively associated with children's academic achievement. Hoglund et al. (2015) also found a negative relationship between home-school contact and children's academic and behavioral development. According to the developmental system perspective, children are not passive recipients of parenting; they also evoke the parenting that they receive (Lerner, 2006). Parents may use their children's performance as a regulator of their parenting behaviors, tailoring their parenting efforts to their children's development (Maccoby, 1992). A previous study found that children's academic competence can negatively predict parent learning assistance and parent-school contact in the next term, which is consistent with the current study (Hoglund et al., 2015). When children perform poorly in school (academically and social-emotionally), it may elevate parents' concerns about their children, and parents will then engage in more home-school contact and learning assistance (Pomerantz & Eaton, 2001).

Compared with the mother model, only father-child activity and father-school contact are significantly associated with these profiles, and the relational schema is similar to the mothers' model. These results partly support our hypothesis that mothers' involvement and fathers' involvement are different. The effect of mothers' involvement is more widespread, and all five dimensions of mothers' involvement are associated with these profiles. A meta-analysis found that the effect sizes for fathers and mothers are not significantly different from each other (Kim

& Hill, 2015). However, the current study indicated that mothers are still more central to children's academic and emotional development in the person-centered approach. Nevertheless, the significant effect of two dimensions of fathers' involvement also indicate that the effect of fathers' involvement cannot be neglected. The effect of mothers' and fathers' involvement is relatively independent.

6. Limitation

The current study has some limitations that need to be considered when interpreting the results. First, the current research was cross-sectional and therefore cannot determine causal relationships; thus, longitudinal studies are needed to explore the transition process between different profiles at two time points and the effect of parental involvement over a long period. Second, the current study was conducted with a sample from Beijing, a highly developed city in China. Thus, more research is needed to investigate the generalizability of these findings in other places in China and in other countries.

6.1. Implications of the study's findings for practice

Our results indicate that mothers should be more involved in monitoring, mother-child communication and mother-child activity. However, among children with low achievement, mother monitoring and mother-child activity may improve academic performance but with an emotional cost. Therefore, mothers should pay more attention to their children's emotions when they participate in these types of activities. Although father involvement had significantly fewer effects than mother involvement, father-child activity may be important for both the children's academic and emotional development. Regarding mother learning assistance, mother-school contact and father-school contact, parents should carefully participate in these types of involvement, avoid exerting pressure on their children and provide warmth and a supportive environment, which may be helpful for their children's development.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All procedures in this study were approved by the Institutional Review Board of the Collaborative Innovation Center of Assessment toward Basic Education Quality, Beijing Normal University and Institutional Review Board of Faculty of Education, Northeast Normal University.

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Informed consent

Informed consent was obtained from all individual participants included in the study

Conflict of interest

None.

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