



The Relationship Between Parental Involvement and Children's Self-Efficacy Profiles: A Person-Centered Approach

Bo Lv^{1,2} · Huan Zhou² · Chunhui Liu² · Xiaolin Guo² · Juan liu² · Kexin Jiang² · Zhaomin Liu³ · Liang Luo²

Published online: 30 August 2018

© Springer Science+Business Media, LLC, part of Springer Nature 2018

Abstract

The present study used a person-centered approach to identify self-efficacy profiles in different domains (academic, emotional and social) and examined whether different dimensions of parental involvement were associated with these profiles. Data were collected on 1998 children. Five student self-efficacy profiles were identified: very low self-efficacy (low levels of all types of self-efficacy), low self-efficacy (low levels of all types of self-efficacy but higher than those in the “very low self-efficacy” profile), low emotional self-efficacy (relatively moderate levels of academic self-efficacy and social self-efficacy but very low emotional self-efficacy), moderate self-efficacy (moderate levels of all types of self-efficacy), and high self-efficacy (high levels of all types of self-efficacy). We also found that father's and mother's educational aspirations, father-child activity, mother-child activity and mother-child communication can lead to more favorable children profiles.

Keywords Parental Involvement · Self-Efficacy · Person-Centred Approach · Latent Profile Analysis · Children

Self-efficacy refers to one's beliefs regarding his/her ability to learn or perform behaviors at designated levels (Bandura 1997). Previous studies have indicated that self-efficacy is a domain-specific belief that can be viewed as the expression of self-regulatory skills in specific capability domains (Yap and Baharudin 2016). Academic self-efficacy, social self-efficacy and emotional self-efficacy are considered the most common domains of efficacy beliefs (Suldo and Shaffer 2007). Academic self-efficacy refers to one's belief or confidence that he/she can achieve a specific academic goal or attain a particular outcome on a particular academic task (Bong and Skaalvik 2003). Social self-efficacy is to an

individual's perceived ability to initiate and maintain interpersonal relationships (Gecas 1989; Smith and Betz 2000). Notably, because schools are the primary places in which children interact with their peers, children's social self-efficacy has always been measured in schools (Muris 2001). Finally, emotional self-efficacy refers to one's perceived capabilities to manage the negative emotions associated with stressful events; these emotions range from fear and anxiety to self-conscious emotions, such as shame and guilt (Caprara et al. 2013). These three domains of self-efficacy have all been proven beneficial for people's development, including their academic achievement (Richardson et al. 2012), academic aspiration (Bandura et al. 1996, 2001), career choice (Bandura et al. 2001) and subjective well-being (Yap and Baharudin 2016). Considering the importance of self-efficacy, an exploration of the factors that predict self-efficacy has significant implications for both research and practice.

According to social cognitive theory, self-efficacy is rooted in the social environment in which a person lives (Bandura 1997). Moreover, the bioecological model of human development (Bronfenbrenner 2005) provides a more precise framework for the exploration of factors that may predict children's self-efficacy. This model proposes four terms that can be used as a basis for investigating human development (process-person-context-time). Among these terms, the proximal processes (defined as enduring

✉ Zhaomin Liu
zhaominl@cupl.edu.cn

✉ Liang Luo
luoliang@bnu.edu.cn

¹ Faculty of Education, Northeast Normal University, Changchun, China

² Collaborative Innovation Center of Assessment toward Basic Education Quality, Beijing Normal University, Beijing, China

³ School of Sociology, China University of Political Science and Law, Beijing, China

forms of interaction in the immediate environment) are the most important engines of development. In addition to classical ecological system theory (Bronfenbrenner 1989), the bioecological model distinguishes the process from the context in which the process occurs and suggests that the effect of proximal processes is more powerful than the context. Family is an immediate social system for children's development. Children continuously interact with their parents, from whom they acquire most of their self-efficacy (Schunk and Miller 2002; Yap and Baharudin 2016). According to the bioecological model, the family process is more important than the family context (e.g., SES) for the development of children's self-efficacy. Among the numerous family process variables, parental involvement in education has received increasing attention (Cheung and Pomerantz 2011; Hill and Tyson 2009).

Parental involvement in education generally refers to "parents' interactions with schools and with their children to promote academic success" (Hill et al. 2004). Accordingly, parental involvement in education includes parents' educational aspirations and the practices by which they support achievement at home and at school (Hill and Tyson 2009). There is a significant relationship between parental involvement in education and academic outcomes across different races (Jeynes 2003). Grolnick and Slowiaczek (1994) suggested that through their involvement, parents can model an approach to learning in which they take control of a situation. This involvement and modeling also communicate to children that they have the ability to control their own learning and life. The beneficial effects of parental involvement in education are not only limited to the academic field but also associated with children's emotional and social functioning, as recognized by an increasing number of researchers (Pomerantz et al. 2006; Wang et al. 2014). First, parental involvement can improve both academic and emotional functioning by promoting children's motivational development. For instance, Wang and Sheikh-Khalil (2014) found that academic socialization and school-based involvement influenced depression directly and indirectly through emotional engagement in school. Second, parents can convey that they care about their children through their involvement (Grolnick and Slowiaczek 1994). In addition, a warm, emotional family climate is important for emotion regulation ability in both early and late childhood (Kliewer et al. 1996; Morris et al. 2007).

Numerous studies have suggested that parental involvement is positively associated with multiple domains of children's self-efficacy. For example, Yap and Baharudin (2016) found that parental involvement was positively associated with adolescents' academic, emotional and social self-efficacy. However, parental involvement in education is a multidimensional concept (Fan and Chen 2001; Grolnick and Slowiaczek 1994). Previous studies have explored the

relationship between different dimensions of parental involvement and students' self-efficacy. For example, parental involvement in homework is related to students' academic self-concept (Shumow 1998). Givertz and Segrin (2014) found that parent-adolescent communication was positively associated with general and social self-efficacy in adolescents. Furthermore, Fan and Williams (2010) simultaneously explored the effect of multiple dimensions of parental involvement in education on adolescents' academic self-efficacy and found that parents' participation in extracurricular activities and school functions as well as the provision of advice regarding aspirations were positively associated with adolescents' academic self-efficacy. However, parent-school communication regarding school problems and family rules for completing household chores were negatively associated with adolescents' academic self-efficacy. Although these studies have explored the possible link between parental involvement and children's self-efficacy, three important issues remain unaddressed.

First, most previous studies used variable-centered approaches to examine the average levels of self-efficacy. Individuals are not considered integral to variable-centered approaches and are assumed to be interchangeable units. Without incorporating random error, each person has nearly the same developmental level (Block 1971). However, in practice, it is difficult to ensure that the individuals sampled from the population are homogeneous. According to social cognitive theory, self-efficacy in different domains does not necessarily "move together" and can result in distinct self-organizing patterns (Paciello et al. 2016). Therefore, different aspects of self-efficacy can be configured differently among children. For example, two children may have the same global self-efficacy score, but one child's score might be primarily due to academic self-efficacy, whereas the other child's score might be primarily due to emotional or social self-efficacy. Person-centered approaches are useful for examining the validity of the homogeneity assumption by focusing on how individuals vary within multiple profiles and how different profiles are associated with other variables (Wang and Peck 2013). A thorough examination of self-efficacy profiles, constructed based on individual-level patterns of values across different domains of self-efficacy, can help reveal both nonlinearity in the relationships among the variables and heterogeneity among individuals (Bergman and Magnusson 1997).

However, to the best of our knowledge, only Paciello et al. (2016) have used a person-centered approach to explore this question, and these authors performed a cluster analysis to examine the patterns of these three types of self-efficacy (academic, social, and emotional self-efficacy) among college students. The authors identified the following four different clusters: Highly Self-Efficacious students (very high levels of all self-efficacy domains),

Low Self-Efficacious students (very low levels of all self-efficacy domains), Academic and Socially Self-Efficacious students (medium-high academic self-efficacy, medium social self-efficacy, and medium-low emotional self-efficacy), and Emotionally Self-Efficacious students (medium-high emotional self-efficacy, medium-low social self-efficacy, and low academic self-efficacy). Although the study conducted by Paciello et al. (2016) provided new perspectives regarding this topic, the authors assessed college students, and previous studies have suggested that self-efficacy differs across different developmental stages. Most children are overconfident about their abilities, and levels of self-efficacy consistently show a declining tendency throughout the development process (Pajares and Schunk 2001). Therefore, the potential profiles of these three types of self-efficacy should be explored in children.

Second, the relationship between multiple dimensions of parental involvement and self-efficacy profiles has not been addressed. Because self-efficacy in different domains does not necessarily “move together,” the multiple dimensions of parental involvement in education may also demonstrate varying effects on different patterns of the self-efficacy. Exploring this relationship between parental involvement in education and children’s self-efficacy profiles can provide elaborate implications for intervention efforts. To our knowledge, only Iruka et al. (2018) have explored a similar topic by investigating the relationship between parenting and profiles of academic/socioemotional competence at 36 months of age among a sample of 1292 children. Notably, in their study, parenting was simply categorized as positive or negative. However, parenting practices in reality are more complex and cannot be easily classified. Therefore, the effect of multiple dimensions of parental involvement in education on self-efficacy profiles should be explored.

Third, previous studies that have explored the effect of parental involvement on students’ self-efficacy 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 and Hill 2015). Fathers tend to spend more time working as the breadwinner, while mothers tend to spend more time on child rearing (Lamb 2010). Regarding the different familial roles of fathers and mothers, fathers often exhibit an instrumental orientation focused on objective performance, whereas mothers often exert less unilateral authority and are perceived as being more accepting (Smollar and Youniss 1985). Numerous studies have indicated that fathers have lower mean levels of overall involvement than do mothers (Kim and Hill 2015). In addition, mothers are considered warmer and more frequently involved in all aspects of their children’s lives, while fathers are more likely to use

challenging and cognitively stimulating strategies to help their children prepare for entrance into society (Paquette 2004; Parke 2002). 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. Furthermore, these effects remain consistent as children age (Jeynes 2016). Although most studies were performed in the Western context, limited studies involving Chinese samples have found similar results (Berndt et al. 1993; Putnick et al. 2012). For example, Putnick et al. (2012) found that mothers reported greater acceptance and warmth than did fathers in China and other Western countries (e.g., Italy, Sweden, and the United States). Therefore, the different effects of fathers’ and mothers’ involvement should be explored.

In the present study, we aimed to identify subgroups of Chinese children in 4th to 6th grade based on their unique academic, emotional, and social self-efficacy patterns using a person-centered approach. Then, we tested whether the multiple dimensions of their fathers’ and mothers’ involvement were associated with these different profiles. We hypothesized that at least three types of profiles would be identified: an optimal group characterized by high levels in all domains, a maladaptive group characterized by low levels in all domains and a group of children characterized by low emotional self-efficacy but moderate academic and social self-efficacy. Moreover, we hypothesized that educational aspirations, parent-child communication and learning assistance may be associated with the likelihood of children being characterized by the optimal self-efficacy profile. In addition, parent-school contact and home monitoring may be associated with the likelihood of children being characterized by the maladjusted self-efficacy profile.

Method

Participants

The respondents in this study included 2323 4th to 6th grade students from five elementary schools in Beijing, China, and their parents (both mothers and fathers). The data were collected using questionnaires that were administered to students from these five schools. After excluding incomplete responses (lack of one or both parental reports and questionnaires with a missing rate >20%), the final sample included 1998 dyads. Of the students, 1044 were boys (52.3%), and 954 were girls (47.7%). The mean ages of the students, mothers and fathers were 10.22 years (SD = 0.99), 38.01 years (SD = 3.89) and 40.31 years (4.73), respectively.

Procedure

Before the investigation, a unified training of the investigators (psychology and pedagogical postgraduates) was conducted. The students completed the questionnaires independently in class.

The students took the parents' questionnaires home, where the mothers and fathers completed them 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. Delayed questionnaires and receipts were returned within a week. All parents provided consent for the use of the data from the questionnaire in the current study.

Measures

Self-efficacy

The children's self-efficacy was assessed using the Self-Efficacy Questionnaire for Children (Muris 2001). This scale consists of three subscales: academic self-efficacy, social self-efficacy, and emotional self-efficacy. Each subscale contains eight items that are rated on a five-point scale ranging from 1 (not at all) to 5 (very well). Examples of the items include the following: "How well do you succeed in understanding all subjects in school?" (academic self-efficacy), "How well can you work in harmony with your classmates?" (social self-efficacy), and "How well do you succeed in becoming calm again when you are very scared?" (emotional self-efficacy). Cronbach's alphas of the academic self-efficacy, social self-efficacy, and emotional self-efficacy subscales in the current study were 0.829, 0.733, and 0.842, respectively. Cronbach's α of the entire questionnaire was 0.905. Confirmatory factor analyses (CFAs) were conducted using structural equation modeling (SEM) in Mplus 7.0. The model fit statistics of the questionnaire were all acceptable: $\chi^2 = 1785.35$; $df = 249$; $p < 0.001$; $\chi^2/df = 7.17$; comparative fit index (CFI) = 0.90; Tucker-Lewis index (TLI) = 0.88; and the root mean square error of approximation (RMSEA) = 0.055.

Parental involvement practices

The parental involvement practices were assessed using the Parental Involvement Questionnaire (parent report) (Wu et al. 2013). This questionnaire is a 30-item self-report inventory that was developed and adapted from previous studies investigating parental involvement (Green and Hoover-Dempsey 2007; Green et al. 2007; Walker et al. 2005). The items describe the parents' involvement in their children's educational activities inside/outside of school and

are rated on a 4-point scale ranging from never (1) to always (4). This questionnaire contains the following five subscales that represent five important and well-recognized dimensions of involvement: (a) parent-school contact (7 items): parents were asked to indicate how often they visited the school, attended school events (parent meetings, performances, and athletic and extracurricular activities) and contacted the teachers or school personnel (e.g., attending parent-teacher conferences); (b) parent-child communication (6 items): 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): 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): parents were asked how frequently they participated in extracurricular activities with their children (e.g., "I travel and go out with my child"); and (e) home monitoring (5 items): 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 the current study, Cronbach's alpha of the entire questionnaire for the fathers was 0.943. Cronbach's alphas of the five subscales (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. CFAs were conducted using SEM in Mplus 7.0. The model fit statistics of the paternal questionnaire were all acceptable: $\chi^2 = 3548.29$; $df = 393$; $p < 0.001$; $\chi^2/df = 9.029$; CFI = 0.90; TLI = 0.89; and RMSEA = 0.06.

For the mothers, Cronbach's alpha of the entire questionnaire was 0.929. Cronbach's alphas of the five subscales (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. CFAs were conducted using SEM in Mplus 7.0. The model fit statistics of the maternal questionnaire were also acceptable: $\chi^2 = 3318.296$; $df = 393$; $p < 0.001$; $\chi^2/df = 8.444$; CFI = 0.89; TLI = 0.87; and RMSEA = 0.06.

Parental educational aspirations

The mothers and fathers reported their educational aspirations for their children ("How far in school do you hope your child will get?") using a 5-point scale ranging from 1 (less than high school) to 5 (more than 4 years of college).

Control variables

The children's gender and grade were obtained from the children's questionnaires, and the mothers' and fathers'

educational levels and family income were obtained from the mothers' questionnaires. The parents' occupational status was not included in the current study because the relationship between occupational prestige and levels of economic development is apparently more complex in China than in Western societies (Hodge et al. 1966), and the consistency of evaluations of occupational prestige is much lower in China than in other countries (Li 2000; Ren 2010). For example, Li (2000) indicated that Chinese people always hold different evaluation criteria; certain people consider income and power, while other people consider contributions to society or technological and educational levels.

Data Analyses

First, less than 3% of the data were missing for all the variables included in the analysis. According to Little's missing completely at random (MCAR) test, the missing data from all variables were randomly distributed ($\chi^2_{[612]} = 632.05, p = 0.28$). The missing values were computed using full information maximum likelihood (FIML).

Second, to identify 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.

Latent profile analysis is a probabilistic or model-based variant of traditional cluster analysis (Vermunt and Magidson 2002) that can capture the heterogeneity within a population and classify individuals into groups to provide better parameter estimates, standard errors, and tests of model fit.

The LPA method determines the best fitting model by comparing the efficacy of models with one through k subgroups and by evaluating a combination of fit statistics, class proportions, and entropy values (Nylund et al. 2007). In the analyses, one class is added in each step until the model optimally fits the data. We used the following fit statistics to determine which model best fit the data: Akaike's information criterion (AIC), the Bayesian information criterion (BIC), the adjusted BIC (ABIC), the Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMRT), and entropy. For the AIC, BIC, and ABIC, lower values indicate a better fitting model (Flaherty and Kiff 2012). The VLMRT compares 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 (Tofghi and Enders 2008). Higher entropy indicates less classification error (Collins and Lanza 2010), and we confirmed that the classes were sufficiently large to be meaningful and of practical value (Marsh et al. 2009).

Third, after determining the number of classes that best fit the data, two multinomial logit regression models were

utilized to test the relationship between parental involvement and latent profiles separately for the mothers and fathers after controlling for the demographic variables. Logit regression models differ from linear regression models because the outcome variable in logit regression models is a categorical variable (Hosmer et al. 2013). If the dependent variables have more than two categories, one category must be chosen as the reference. The odds ratio was used as an index in these multinomial logit regression models. If the odds ratio is greater than 1, there is a higher chance of entering the current category than entering the reference category. If the odds ratio is smaller than 1, the inverse effect is indicated. All analyses were performed in SPSS 20.0 and Mplus 7.0.

Results

The correlations among the key study variables are shown in Table 1. To identify the best fitting model, we tested models varying from two- to six-class solutions. Table 2 shows the goodness-of-fit measures used to determine the number of classes that provided the best fit for our data. We considered the five-class model optimal because it demonstrated smaller AIC, BIC and ABIC values than the three- and four-class models. Adding a sixth class did not yield substantially different profiles from those identified using the five-class model. Although the BIC values continued to increase after we added a sixth class, the increase was small, and the LMR test was not significant. Moreover, the entropy value was smaller than it was in the five-class model. Thus, we chose the five-class model.

Descriptions of the Five Profiles Based on Self-Efficacy

As shown in Fig. 1, the first profile was characterized by low levels of all types of self-efficacy and could be described as "very low self-efficacy." In total, 4.4% ($n = 88$) of the sample exhibited this profile. The second profile could be described as representing "low self-efficacy" and was characterized by low levels of the three types of self-efficacy, although the levels were higher than those in the "very low self-efficacy" profile. In total, 9.1% ($n = 182$) of the sample exhibited this profile. The third profile exhibited relatively moderate levels of academic self-efficacy and social self-efficacy but very low levels of emotional self-efficacy. Therefore, we named this profile "low emotional self-efficacy." In total, 8.6% ($n = 171$) of the sample exhibited this profile. The fourth profile exhibited moderate levels of all types of self-efficacy and was thus called "moderate self-efficacy." In total, 36.8% ($n = 735$) of the sample exhibited this profile. The fifth profile exhibited high

Table 1 Correlations among key variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Academic self-efficacy	1														
2. Social self-efficacy	.63**	1													
3. Emotional self-efficacy	.59**	.64**	1												
4. Father’s educational aspiration	.16**	.06**	.03	1											
5. Father monitoring	.09**	.06**	.08**	.09**	1										
6. Father learning assistance	.08**	.03	.04	.09**	.51**	1									
7. Father-child communication	.10**	.06**	.05*	.16**	.65**	.61**	1								
8. Father-child activity	.14**	.11**	.09**	.11**	.47**	.57**	.65**	1							
9. Father-school contact	.05*	.04	.05*	.01	.44**	.57**	.52**	.70**	1						
10. Mother’s educational aspiration	.15**	.09**	.01	.58**	.04	.05*	.13**	.10**	.00	1					
11. Mother monitoring	.09**	.08**	.06*	.09**	.27**	.12**	.21**	.15**	.08**	.12**	1				
12. Mother learning assistance	.07**	.04	.02	.08**	.14**	.15**	.19**	.18**	.12**	.11**	.53**	1			
13. Mother-child communication	.14**	.13**	.10**	.15**	.19**	.15**	.30**	.24**	.12**	.19**	.60**	.56**	1		
14. Mother-child activity	.15**	.13**	.10**	.12**	.15**	.17**	.26**	.33**	.18**	.16**	.41**	.47**	.61**	1	
15. Mother-school contact	.09**	.06*	.06*	.08**	.15**	.15**	.18**	.23**	.21**	.10**	.46**	.54**	.52**	.61**	1

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

Table 2 Model fit indices

Model	AIC	BIC	Adjusted BIC	VLMRT p-value	Entropy	Percentage of students in the smallest class
2-class	8300.21	8356.21	8324.44	<0.001	0.82	0.29
3-class	7822.94	7901.34	7856.86	<0.001	0.77	0.13
4-class	7690.25	7791.05	7733.86	0.02	0.76	0.03
5-class	7574.55	7697.75	7627.85	0.05	0.77	0.04
6-class	7516.28	7661.87	7579.20	0.10	0.75	0.04

levels of all three types of self-efficacy and was labeled “high self-efficacy;” 41.1% (n = 822) of the sample exhibited this profile.

Relationship Between Parental Involvement and Latent Profiles

The relationship between parental involvement and latent profiles was estimated by constructing two multinomial logit models, one for the fathers and one for the mothers, while controlling for the demographic variables. In both the paternal and maternal models, the “very low self-efficacy” and “low emotional self-efficacy” profiles were considered the reference group in separate analyses because the “very low self-efficacy” group had the greatest risk during the current period, and the latter displayed a specific profile in which the three types of self-efficacy were not balanced. Bergman and Magnusson (1997) called this type of specific and infrequent profile a “white spot.” “White spots” tend to be the research focus of studies using a person-centered approach. The results are shown in Table 3 (for the fathers) and Table 4 (for the mothers).

In the fathers’ model, when “very low self-efficacy” was used as the reference group, fathers’ educational aspirations were associated with higher chances of the children being in the “high self-efficacy” group. Father-child activity was associated with a greater chance of the children being in the “high self-efficacy” and “moderate self-efficacy” groups. When the “low emotional self-efficacy” class was designated the reference group, the results were similar; fathers’ educational aspirations and father-child activity were associated with a greater chance of the children being in the “high self-efficacy” group.

In the mothers’ model, when “very low self-efficacy” was considered the reference group, mothers’ educational aspirations were associated with a higher chance of the children being in the “high self-efficacy” and “low emotional self-efficacy” groups. Mother-child activity was also associated with a greater chance of children being in the “high self-efficacy” group. When the “low emotional self-efficacy” class was designated the reference group, mothers’ educational aspirations were associated with a lower risk of the children being in the “very low self-efficacy” group, whereas mother-child communication was associated with a

Fig. 1 Profiles of self-efficacy. All self-efficacy variables were centered by mean

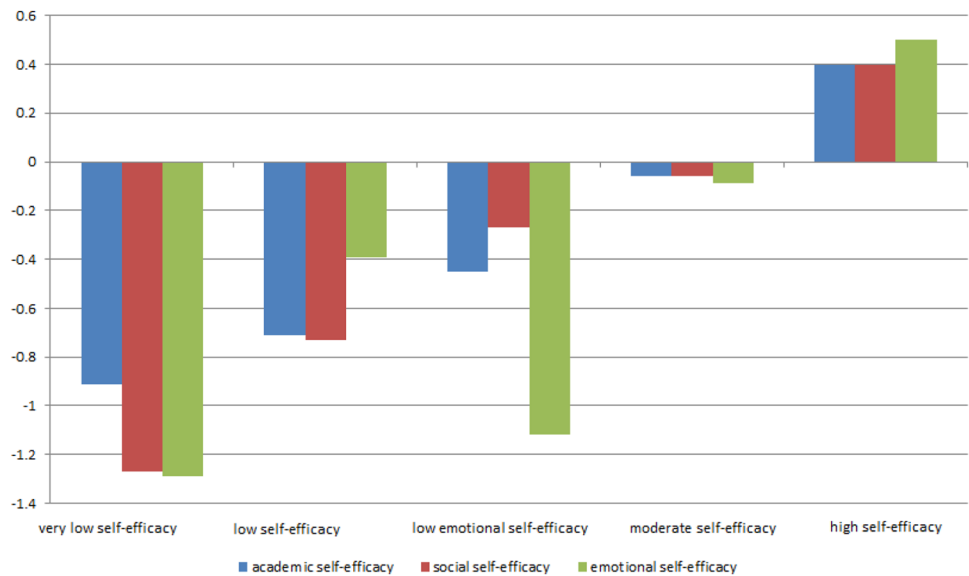


Table 3 Association between fathers' involvement and self-efficacy profiles

	Latent profiles of self-efficacy OR (95% CI)				
	Very low self-efficacy	Low self-efficacy	Low emotional self-efficacy	Moderate self-efficacy	High self-efficacy
Father's educational aspiration	Reference 0.77 (0.55–1.09)	1.04 (0.75–1.44) 0.80 (0.61–1.07)	1.30 (0.92–1.83) Reference 0.91 (0.72–1.16)	1.18 (0.89–1.57) 0.91 (0.72–1.16)	1.75 (1.30–2.34) 1.35 (1.06–1.72)
Father monitoring	Reference 0.96 (0.52–1.75)	1.27 (0.69–2.31) 1.21 (0.73–1.99)	1.05 (0.57–1.92) Reference 1.38 (0.93–2.05)	1.44 (0.86–2.43) 1.38 (0.93–2.05)	1.47 (0.87–2.47) 1.40 (0.94–2.08)
Father learning assistance	Reference 1.24 (0.74–2.07)	0.83 (0.50–1.38) 1.03 (0.68–1.55)	0.81 (0.48–1.35) Reference 0.82 (0.59–1.14)	0.66 (0.43–1.03) 0.82 (0.59–1.14)	0.78 (0.50–1.20) 0.96 (0.69–1.34)
Father-child communication	Reference 1.08 (0.52–2.24)	0.94 (0.46–1.94) 1.01 (0.56–1.85)	0.93 (0.45–1.94) Reference 1.18 (0.73–1.91)	1.10 (0.58–2.06) 1.18 (0.73–1.91)	0.80 (0.43–1.50) 0.86 (0.53–1.39)
Father-child activity	Reference 0.67 (0.30–1.51)	1.27 (0.57–2.83) 0.85 (0.45–1.61)	1.49 (0.66–3.36) Reference 1.38 (0.83–2.29)	2.06 (1.02–4.17) 1.38 (0.83–2.29)	2.56 (1.26–5.18) 1.72 (1.04–2.84)
Father-school contact	Reference 0.77 (0.41–1.43)	1.35 (0.73–2.50) 1.03 (0.63–1.70)	1.31(0.70–2.44) Reference	1.03 (0.60–1.77) 0.79 (0.53–1.17)	1.03 (0.60–1.76) 0.79 (0.53–1.16)

higher chance of the children being in the “high self-efficacy” group.

Discussion

In the present study, we used a person-centered approach to identify the following five profiles of children's self-efficacy: very low self-efficacy, low self-efficacy, low emotional self-efficacy, moderate self-efficacy and high self-efficacy. Our study not only provides empirical evidence supporting the multifaceted nature of self-efficacy but also demonstrates its relationship with parental involvement. Simultaneously exploring multiple dimensions of children self-efficacy based on a person-centered

perspective yields distinct self-efficacy profiles in the current study; thus, this approach is a promising, useful approach for addressing sample heterogeneity and understanding the factors that predict heterogeneity. The current study overcomes the limitation of previous studies conducted based on a variable-centered perspective in which the average effect generalized from the sample to the population may not apply to a single individual; this study could be helpful for the development of personalized interventions for children's self-efficacy.

According to the LPA, most of the sample had a profile that was consistent across the three dimensions of self-efficacy, that is, all three dimensions were very low (4.4%), low (9.1%), moderate (36.8%) or high (41.1%). These findings suggest that the three dimensions of self-

Table 4 Association between mothers' involvement and self-efficacy profiles

	Latent profiles of self-efficacy OR (95% CI)				
	Very low self-efficacy	Low self-efficacy	Low emotional self-efficacy	Moderate self-efficacy	High self-efficacy
Mother's educational aspiration	Reference	1.45 (0.96–2.18)	1.94 (1.24–3.02)	1.46 (1.03–2.08)	1.88 (1.32–2.69)
	0.52 (0.33–0.81)	0.75 (0.51–1.11)	Reference	0.76 (0.55–1.05)	0.97 (0.70–1.35)
Mother monitoring	Reference	0.85 (0.44–1.65)	1.17 (0.60–2.30)	1.17 (0.66–2.09)	1.0 (0.56–1.76)
	0.85 (0.44–1.67)	0.73 (0.42–1.26)	Reference	1.00 (0.64–1.56)	0.84 (0.54–1.31)
Mother learning assistance	Reference	1.36 (0.81–2.29)	1.19 (0.70–2.01)	1.04 (0.66–1.63)	1.03 (0.66–1.62)
	0.84 (0.50–1.42)	1.15 (0.75–1.76)	Reference	0.87 (0.62–1.22)	0.87 (0.62–1.22)
Mother-child communication	Reference	0.98 (0.48–2.00)	0.86(0.42–1.77)	1.28 (0.69–2.38)	1.59 (0.86–2.95)
	1.16 (0.57–2.39)	1.14 (0.63–2.06)	Reference	1.49 (0.93–2.39)	1.85 (1.16–2.95)
Mother-child activity	Reference	1.27 (0.64–2.51)	1.44 (0.72–2.85)	1.39 (0.77–2.52)	1.83 (1.01–3.32)
	0.70 (0.35–1.38)	0.89 (0.51–1.52)	Reference	0.97 (0.63–1.48)	0.94 (0.64–1.38)
Mother-school contact	Reference	0.86 (0.47–1.58)	0.84 (0.46–1.55)	0.86 (0.51–1.45)	0.79 (0.47–1.33)
	1.19 (0.65–2.19)	1.03 (0.63–1.68)	Reference	1.02 (0.70–1.51)	0.94 (0.64–1.38)

efficacy are dynamically connected to each other. In addition, as expected, we identified a specific profile characterized by moderate academic and social self-efficacy but low emotional self-efficacy (8.6%). Thus, certain children may perceive themselves to be good at managing social and learning activities but not at managing negative emotions. This finding supports Bandura's hypothesis that academic and social self-efficacy emphasize the regulation of processes related to the execution of an action, whereas emotional self-efficacy emphasizes the regulation of internal negative affect (Bandura 1997). Our results were consistent with those from a study by Paciello et al. (2016), who also identified balanced (high self-efficacy and low self-efficacy groups) and imbalanced (an academic and socially self-efficacious group and an emotionally self-efficacious group) profiles. However, in their study, the authors found an imbalanced profile in the emotionally self-efficacious group; this finding was not observed in our study. This result may indicate that certain adults are good at regulating their negative emotions even though they have low academic and social abilities. The factors that lead children to exhibit this specific profile during the development process may be an interesting topic for future studies to explore.

We also examined the relationship between parental involvement and self-efficacy profiles. For both the mothers and fathers, when the "very low self-efficacy" class was included as the reference group, educational aspirations were associated with a higher chance of the children exhibiting more favorable profiles, such as the "high self-efficacy" profile. Previous studies have indicated that parental educational aspiration is the strongest predictor of children's academic achievement among all the parental involvement-related variables (Fan and Chen 2001). Our

study extended the results of previous studies and showed that parental educational aspiration can promote not only children's academic development but also their social and emotional development. Parental educational aspirations can convey that parents care about their children, and this message may improve the quality of the parent-child relationship. In addition, this favorable relationship pattern may extend to the social environment outside of the home, and thus, children may perceive higher social self-efficacy. A previous study also suggested that parental educational aspirations can promote children's emotional functioning (Wang and Eccles 2012). Parental educational aspirations are an important index of the family's emotional climate, which can help children feel emotionally secure because they know what is expected of them (Eisenberg et al. 1998). In addition, these feelings of security are beneficial for children's emotion regulation (Morris et al. 2007). Furthermore, when the "low emotional self-efficacy" class was included as the reference group, the fathers' and mothers' educational aspirations had different effects. The fathers' educational aspirations were predictive of the children's likelihood of being characterized by the "high self-efficacy" profile, but the mothers' educational aspirations functioned as a protective factor in preventing their children from entering the less favorable profiles, such as the "very low self-efficacy" group. This result may reflect the different roles of fathers and mothers. Mothers tend to be more nurturing and emotionally supportive than are fathers, and fathers tend to focus more on preparing their children for the future than do mothers (Jeynes 2016). Thus, based on this hypothesis, in emotionally maladjusted children, mothers' educational aspirations may have a protective function, and fathers' educational aspirations may have a promotive function in their children's life.

Regarding parent-child communication, only mother-child communication was associated with a higher chance of the child being in the “high self-efficacy” group than in the “low emotional self-efficacy” group. This result indicated that mother-child communication is beneficial to multiple domains of children’s self-efficacy, particularly emotional self-efficacy. Davidson and Cardemil (2009) defined parent-child communication as the exchange of not only actual information but also emotional information. When actual information exchange (e.g., talking with a child about his/her performance in school) occurs, children learn strategies to enhance their perceptions of competence and control over their academic outcomes (Lareau 2000). In addition, during the process of exchanging actual information, parents obtain more information about their children’s social difficulties and can then help their children address these problems, thereby improving their children’s social self-efficacy. The exchange of emotional information between mothers and children (e.g., praising a child’s progress) can help children feel warmth from their parents, which in turn promotes the development of their emotional functioning. Previous studies have found that parents’ responses to children’s emotional needs are important for emotion regulation ability in both early and late childhood (Kliewer et al. 1996; Morris et al. 2007). These results were consistent with those of a previous study indicating that fathers often failed to talk their children about topics such as feelings, self-doubt, and adjustment problems, whereas mothers tended to accept children personally and to present themselves as being more interested in their children’s day-to-day problems (Smollar and Youniss 1985).

Regarding parent-child activity, both mother- and father-child activity was associated with a higher chance of children being in the better self-efficacy groups, such as the “high self-efficacy” or “moderate self-efficacy” groups, than of being in the “very low self-efficacy” group. Parents’ and children’s joint involvement in diverse extracurricular activities can broaden children’s horizons, structure children’s after-school activities and provide additional academic practice opportunities, all of which can help children develop intrinsic motivation for learning and ultimately feelings of autonomy. According to self-determination theory, feelings of autonomy can promote multiple domains of development (Deci and Ryan 2000; Ryan and Deci 2000). In an observational study, Crowley et al. (2001) found that children who were engaged in a museum exhibit with their parents spent more time and were more focused on the exhibit than were children who were without their parents. Thus, parents who participate in activities with their children are likely explain different topics to their children and help them connect their current experience to prior knowledge, which could help the children better understand

the experience and become more interested in different types of activities.

Surprisingly, father-child activity was associated with a higher chance of the children being in the “high self-efficacy” group than in the “low emotional self-efficacy” group; mother-child activity did not demonstrate this association. Thus, father-child activity has important implications for children’s emotional self-efficacy. A previous study found that fathers tended to help their children prepare for entrance into society (Kim and Hill 2015). Therefore, fathers more often have an instrumental orientation focused on objective performance and standards. Father-child activities, such as visiting a museum or engaging in social practices, could provide fathers the chance to help their children understand the world around them. During this process, the children may perceive their fathers’ love, which could ultimately promote the development of their emotional function. Combined with the results regarding parent-child communication, we can speculate that fathers may not be good at conveying their warmth toward children through communication, but they may more easily express their love and warmth through father-child activities.

The remaining dimensions of parental involvement, i.e., parent-school contact, home monitoring and learning assistance, were not associated with self-efficacy profiles. This result is consistent with previous studies in which these forms of parental involvement were found to accelerate or interfere with achievement (Fan and Chen 2001). The effect of these types of parental involvement may depend more on the quality of the involvement and whether the children need these forms of help. For example, the negative relationship between learning assistance and developmental outcomes may be due to parental interference with students’ autonomy and to excessive parental pressure. In contrast, supporting a student who is struggling with his/her homework can deepen the student’s understanding of the material (Hill and Tyson 2009). In a meta-analysis, Fan and Chen (2001) found that home supervision had the weakest relationship with students’ academic achievement. The authors indicated that a potential reason for closer parental supervision at home may be that students do not perform well in school. The effect of parent-school communication was also mixed in previous studies, and the different effects of parent-school communication may be due to the content of the communication. For example, Fan and Williams (2010) found that parent-school communication regarding students’ poor performance and behavior problems was negatively associated with students’ motivational outcomes. In contrast, school-initiated communication regarding students’ academic programming and future educational plans had positive associations with motivational outcomes.

Limitations

This study also had certain limitations. First, all the data were obtained from students in Beijing, which is among the largest cities in China. Thus, the generalizability of the findings is unknown, and more studies are needed to determine whether these results apply to other samples.

Second, the current study was cross-sectional and thus could not determine causal relationships; therefore, longitudinal studies are needed. Future studies should explore the transformation process of the different profiles at two time points and the effect of parental involvement over a long period. Finally, this study only focused on the quantity of parental involvement in education, but an increasing number of studies have indicated that the quality of parental involvement in education is also important for students' development (Dumont et al. 2014; Yotyodying and Wild 2014). Thus, future studies should consider both the quantity and quality of parental involvement in education.

Acknowledgements This study was supported by Major Projects of National Social Science Fund of China (16ZDA229), General Projects of Humanities and Social Sciences of the Ministry of Education of the People's Republic of China (16YJA190005), the Training Program Foundation for the Excellent Youth Scholars of China University of Political Science and Law, and the Humanity and Social Science Foundation of China University of Political Science and Law (15ZFG18001).

Author Contributions BL designed and executed the study, analyzed the data, and wrote the paper. HZ collaborated in the design and writing of the study. CHL analyzed the data and wrote part of the results. GXL analyzed the data and wrote part of the results. JL analyzed the data and wrote part of the results. KXJ analyzed the data and wrote part of the results. ZML provided overall guidance and took part in all procedures. LL provided overall guidance and took part in all procedures.

Compliance with Ethical Standards

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

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 the Institutional Review Board of Faculty of Education, Northeast Normal University.

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

References

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman.

- Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (1996). Multifaceted impact of self-efficacy beliefs on academic functioning. *Child Development, 67*(3), 1206 <https://doi.org/10.1002/gps.4527>.
- Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (2001). Self-efficacy beliefs as shapers of children's aspirations and career trajectories. *Child Development, 72*(1), 187–206. <https://doi.org/10.1111/1467-8624.00273>.
- Bergman, L. R., & Magnusson, D. (1997). A person-oriented approach in research on developmental psychopathology. *Development and psychopathology, 9*(2), 291–319. <https://doi.org/10.1017/S095457949700206x>.
- Berndt, T. J., Cheung, P. C., Lau, S., Hau, K. T., & Lew, W. J. (1993). Perceptions of parenting in mainland China, Taiwan, and Hong Kong: Sex differences and societal differences. *Developmental Psychology, 29*(1), 156.
- Block, J. (1971). *Lives through time*. Berkeley, CA: Bancroft.
- Bong, M., & Skaalvik, E. M. (2003). Academic self-concept and self-efficacy: How different are they really? *Educational Psychology Review, 15*(1), 1–40. <https://doi.org/10.1023/A:1021302408382>.
- Bronfenbrenner, U. (1989). Ecological systems theory. In R. Vasta (Ed.), *Annals of child development: Vol. 6. Six theories of child development: Revised formulations and current issues*. Greenwich, CT: JAI Press.
- Bronfenbrenner, U. (2005). Making human beings human: Bioecological perspectives on human development. *British Journal of Developmental Psychology, 23*(1), 143–151.
- Caprara, G. V., Di, G. L., Pastorelli, C., & Eisenberg, N. (2013). Mastery of negative affect: a hierarchical model of emotional self-efficacy beliefs. *Psychological Assessment, 25*(1), 105 <https://doi.org/10.1037/a0029136>.
- Cheung, C. S. S., & Pomerantz, E. M. (2011). Parents' involvement in children's learning in the United States and China: Implications for children's academic and emotional adjustment. *Child Development, 82*(3), 932–950. <https://doi.org/10.1111/j.1467-8624.2011.01582.x>.
- Collins, L. M., & Lanza, S. T. (2010). *Latent class and latent transition analysis. With applications in the social, behavioral, and health sciences*. Hoboken, NJ: John Wiley & Sons.
- Crowley, K., Callanan, M. A., Jipson, J. L., Galco, J., Topping, K., & Shrager, J. (2001). Shared scientific thinking in everyday parent-child activity. *Science Education, 85*(6), 712–732.
- Davidson, T. M., & Cardemil, E. V. (2009). Parent-child communication and parental involvement in Latino adolescents. *The Journal of Early Adolescence, 29*(1), 99–121. <https://doi.org/10.1177/0272431608324480>.
- Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: human needs and the self-determination of behavior. *Psychol Inq, 11*, 227–268. <https://doi.org/10.1080/08870440902783628>.
- Dumont, H., Trautwein, U., Nagy, G., & Nagengast, B. (2014). Quality of parental homework involvement: Predictors and reciprocal relations with academic functioning in the reading domain. *Journal of Educational Psychology, 106*(1), 144.
- Eisenberg, N., Cumberland, A., & Spinrad, T. L. (1998). Parental socialization of emotion. *Psychological Inquiry, 9*(4), 241–273.
- Fan, X., & Chen, M. (2001). Parental involvement and students' academic achievement: A meta-analysis. *Educational Psychology Review, 13*(1), 1–22.
- Fan, W., & Williams, C. M. (2010). The effects of parental involvement on students' academic self-efficacy, engagement and intrinsic motivation. *Educational Psychology, 30*(1), 53–74.
- Flaherty, B. P., & Kiff, C. J. (2012). Latent class and latent profile models. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf & K. J. Sher (Eds.), *APA handbook of research methods in psychology (Vol. 3: Data analysis and research*

- publication) (pp. 391–404). Washington, DC: American Psychological Association.
- Gecas, V. (1989). The social psychology of self-efficacy. *Annual Review of Sociology*, 15(15), 291–316.
- Givertz, M., & Segrin, C. (2014). The association between over-involved parenting and young adults' self-efficacy, psychological entitlement, and family communication. *Communication Research*, 41(8), 1111–1136.
- Green, C. L., & Hoover-Dempsey, K. V. (2007). Why do parents homeschool? A systematic examination of parental involvement. *Education and Urban Society*, 39(2), 264–285.
- Green, C. L., Walker, J. M., Hoover-Dempsey, K. V., & Sandler, H. M. (2007). Parents' motivations for involvement in children's education: An empirical test of a theoretical model of parental involvement. *Journal of Educational Psychology*, 99(3), 532 <https://doi.org/10.1037/0022-0663.99.5.532>.
- Grolnick, W. S., & Slowiaczek, M. L. (1994). Parents' involvement in children's schooling: A multidimensional conceptualization and motivational model. *Child Development*, 65(1), 237–252. <https://doi.org/10.1111/j.1467-8624.1994.tb00747.x>.
- Hill, N. E., Castellino, D. R., Lansford, J. E., Nowlin, P., Dodge, K. A., & Bates, J. E., et al. (2004). Parent academic involvement as related to school behavior, achievement, and aspirations: demographic variations across adolescence. *Child Development*, 75(5), 1491–1509. <https://doi.org/10.1111/j.1467-8624.2004.00753.x>.
- Hill, N. E., & Tyson, D. F. (2009). Parental involvement in middle school: a meta-analytic assessment of the strategies that promote achievement. *Developmental Psychology*, 45(3), 740 <https://doi.org/10.1037/a0015362>.
- Hodge, R. W., Treiman, D. J., & Rossi, P. H. (1966). A comparative study of occupational prestige. *Class, Status and Power*, 2, 309–321.
- Hosmer Jr., D.W., Lemeshow, S., Sturdivant, R.X. (2013). Logistic regression models for multinomial and ordinal outcomes. *Applied Logistic Regression*, (Third Edition, pp:269–311). John Wiley & Sons, Inc.
- Iruka, I. U., De Marco, A., & Garrett-Peters, P., Family Life Project Key Investigators. (2018). Profiles of academic/socioemotional competence: Associations with parenting, home, child care, and neighborhood. *Journal of Applied Developmental Psychology*, 54 (2018), 1–11.
- Jeynes, W. H. (2003). A meta-analysis: The effects of parental involvement on minority children's academic achievement. *Education and Urban Society*, 35(2), 202–218.
- Jeynes, W. H. (2016). Meta-analysis on the roles of fathers in parenting: Are they unique? *Marriage and Family Review*, 52(7), 665–688. <https://doi.org/10.1080/01494929.2016.1157121>.
- Kliewer, W., Fearnow, M. D., & Miller, P. A. (1996). Coping socialization in middle childhood: Tests of maternal and paternal influences. *Child Development*, 67(5), 2339–2357. <https://doi.org/10.1111/j.1467-8624.1996.tb01861.x>.
- Kim, S. W., & Hill, N. E. (2015). Including fathers in the picture: a meta-analysis of parental involvement and students' academic achievement. *Journal of Educational Psychology*, 107(10), 919–934. <https://doi.org/10.1037/edu0000023>.
- Lamb, M. E. (2010). How fathers influence children's development? Let me count the ways. In M. E. Lamb (Ed.), *The role of the father in child development*. 5th ed. (pp. 1–26). Hoboken, NJ: Wiley.
- Lareau, A. (2000). *Home advantage: Social class and parental intervention in elementary education*. New York, NY: Falmer.
- Li, Q. (2000). Conflicting occupational prestige evaluation in the transitional period in China. *Social Sciences in China*, 4, 100–111.
- Marsh, H. W., Lüdtke, O., Trautwein, U., & Morin, A. J. S. (2009). Classical latent profile analysis of academic self-concept dimensions: Synergy of person- and variable-centered approaches to theoretical models of self-concept. *Structural Equation Modeling: A Multidisciplinary Journal*, 16(2), 191–225. <https://doi.org/10.1080/10705510902751010>.
- Morris, A. S., Silk, J. S., Steinberg, L., Myers, S. S., & Robinson, L. R. (2007). The role of the family context in the development of emotion regulation. *Social Development*, 16(2), 361–388. <https://doi.org/10.1111/j.1467-9507.2007.00389.x>.
- Muris, P. (2001). A brief questionnaire for measuring self-efficacy in youths. *Journal of Psychopathology and Behavioral Assessment*, 23(3), 145–149.
- Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation modeling*, 14(4), 535–569.
- Paciello, M., Ghezzi, V., Tramontano, C., Barbaranelli, C., & Fida, R. (2016). Self-efficacy configurations and wellbeing in the academic context: A person-centred approach. *Personality and Individual Differences*, 99, 16–21. <https://doi.org/10.1016/j.paid.2016.04.083>.
- Pajares, F., & Schunk, D. (2001). The development of academic self-efficacy. *Development of achievement motivation. United States*, 7.
- Paquette, D. (2004). Theorizing the father-child relationship: Mechanisms and developmental outcomes. *Human Development*, 47(4), 193–219. <https://doi.org/10.1159/000078723>.
- Parke, R. D. (2002). Fathers and families. In M. H. Bornstein (Ed.), *Handbook of parenting*. 2nd ed. (pp. 27–74). Mahwah, NJ: Erlbaum.
- Pomerantz, E. M., Ng, F. F. Y., & Wang, Q. (2006). Mothers' mastery-oriented involvement in children's homework: Implications for the well-being of children with negative perceptions of competence. *Journal of Educational Psychology*, 98(1), 99 <https://doi.org/10.1037/0022-0663.98.1.99>.
- Putnick, D. L., Bornstein, M. H., Lansford, J. E., Chang, L., Deater-Deckard, K., Di Giunta, L., & Pastorelli, C. (2012). Agreement in mother and father acceptance-rejection, warmth, and hostility/rejection/neglect of children across nine countries. *Cross-Cultural Research*, 46(3), 191–223. <https://doi.org/10.1177/1069397112440931>.
- Ren, C. (2010). Measurement methodology on social economic status index of students. *J Educ Stud*, 6, 77–82.
- Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: a systematic review and meta-analysis. *Psychological Bulletin*, 138(2), 353–387. <https://doi.org/10.1037/a0026838>.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist*, 55(1), 68–78.
- Schunk, D. H., & Miller, S. D. (2002). Self-efficacy and adolescents' motivation. In F. Pajares & T. Urdan (Eds.), *Academic motivation of adolescents*. Greenwich, CT: Information Age.
- Shumow, L. (1998). Promoting parental attunement to children's mathematical reasoning through parent education. *Journal of Applied Developmental Psychology*, 19(1), 109–127.
- Smith, H. M., & Betz, N. E. (2000). Development and validation of a scale of perceived social self-efficacy. *Journal of Career Assessment*, 8(3), 283–301.
- Smollar, J., & Youniss, J. (1985). Parent-adolescent relations in adolescents whose parents are divorced. *The Journal of Early Adolescence*, 5(1), 129–144.
- Suldo, S. M., & Shaffer, E. J. (2007). Evaluation of the self-efficacy questionnaire for children in two samples of American adolescents. *Journal of Psychoeducational Assessment*, 25(4), 341–355. <https://doi.org/10.1177/0734282907300636>.
- Tofghi, D., & Enders, C. K. (2008). Identifying the correct number of classes in a growth mixture model. In G. R. Hancock (Ed.),

- Mixture models in latent variable research (pp. 317–341). Greenwich, CT: Information Age.
- Vermunt, J. K., & Magidson, J. (2002). Latent class cluster analysis. *Applied latent Class Analysis, 11*, 89–106.
- Walker, J. M., Wilkins, A. S., Dallaire, J. R., Sandler, H. M., & Hoover-Dempsey, K. V. (2005). Parental involvement: Model revision through scale development. *The Elementary School Journal, 106*(2), 85–104. <https://doi.org/10.1086/499193>.
- Wang, M. T., & Eccles, J. S. (2012). Adolescent behavioral, emotional, and cognitive engagement trajectories in school and their differential relations to educational success. *Journal of Research on Adolescence, 22*(1), 31–39. <https://doi.org/10.1111/j.1532-7795.2011.00753.x>.
- Wang, M. T., Hill, N. E., & Hofkens, T. (2014). Parental involvement and African American and European American adolescents' academic, behavioral, and emotional development in secondary school. *Child Development, 85*(6), 2151–2168.
- Wang, M. T., & Peck, S. C. (2013). Adolescent educational success and mental health vary across school engagement profiles. *Developmental Psychology, 49*(7), 1266–1276. <https://doi.org/10.1037/a0030028>.
- Wang, M. T., & Sheikh-Khalil, S. (2014). Does parental involvement matter for student achievement and mental health in high school? *Child Development, 85*(2), 610–625.
- Wu, Y., Han, X., Wei, W., & Luo, L. (2013). Theoretical model construction and testing of parental involvement in primary school children education. *J Beijing Normal Univ, 1*, 61–69.
- Yap, S. T., & Baharudin, R. (2016). The relationship between adolescents' perceived parental involvement, self-efficacy beliefs, and subjective well-being: A multiple mediator model. *Social Indicators Research, 126*(1), 257–278. <https://doi.org/10.1007/s11205-015-0882-0>.
- Yotyodying, S., & Wild, E. (2014). Antecedents of different qualities of home-based parental involvement: Findings from a cross-cultural study in Germany and Thailand. *Learning, Culture and Social Interaction, 3*(2), 98–110. <https://doi.org/10.1016/j.lcsi.2014.02.002>.