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Trajectories of Paternal Self-Efficacy for Educational Involvement in Late Childhood: Effects of Fathers' Time and Energy

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Parental self-efficacy beliefs develop over time. Most research, however, has focused mainly on the trajectories and predictors of trajectories of maternal self-efficacy, while little is known about those of paternal self-efficacy. This study examined the change in paternal self-efficacy for educational involvement during children's elementary school period, analyzing whether the change is influenced by fathers' long working hours (i.e., work hours on workdays and work hours on nonworkdays) and fathers' perceptions of time and energy. Data from 1,684 Chinese fathers of fourth grade children were collected every half year for two-and-a-half consecutive years. The results of a latent growth curve analysis revealed that paternal self-efficacy for educational involvement increased over the elementary school period. Fathers' working hours on nonworkdays were negatively associated with the initial level of paternal self-efficacy for educational involvement, but this negative effect was nonsignificant after fathers' perceived time and energy were added to the final model. Fathers' perceived time and energy were positively associated with the initial level of paternal self-efficacy for educational involvement and negatively associated with the growth rate of paternal self-efficacy for educational involvement. The findings advance the theory of parental self-efficacy, underlining the need to consider fathers' perceived time and energy to understand changes in paternal self-efficacy for educational involvement.

Keywords: paternal self-efficacy, fathers' time and energy, overtime work, late childhood

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Parental self-efficacy for educational involvement refers to parental beliefs regarding their personal ability to exert a positive influence on their children's educational outcomes through their involvement (Green et al., 2007). Positive parental self-efficacy beliefs are beneficial for the quantity and quality of parental involvement, including increased parents' home- and school-based involvement (Green et al., 2007; Wei et al., 2019) and the quality of home-based parental instruction (Yotyodying, & Wild, 2014). Therefore, the developmental trajectories of parental self-efficacy beliefs as well as the predictors of trajectories in parental self-efficacy beliefs have received increasing attention (Deković et al., 2010; Glatz & Buchanan, 2015; Gross et al., 1994; Weaver et al., 2008; Zayas et al., 2005).

Increased involvement of fathers has become a vital social trend that has essentially changed the social cultural context in which children develop (Cabrera et al., 2000). Paternal self-efficacy (PSE), as an important predictor variable of paternal involvement, has attracted great attention in recent years. Many previous studies (see supplemental materials S2 Table A) have revealed the impact of PSE on fathers' engagement and that PSE is a resilience factor that increases father involvement under unfavorable circumstances (Finzi-Dottan et al., 2016; Kwok et al., 2013; Pagorek-Eshel & Dekel, 2015; Trahan, 2018). Surprisingly, the existing related studies about the trajectories of parental self-efficacy (see supplemental materials S3 Table B) have focused mainly on the trajectories and predictors of trajectories in maternal self-efficacy, and there has been little research investigating the change in and predictors of PSE. In this study, we examine the change in PSE for educational involvement and the impact of fathers' long work hours and their perceived time and energy on the change in PSE for educational involvement.

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The Developmental Trajectories of PSE

According to Bandura (1989), the self-efficacy construct does not represent a global, fixed, personality trait but is instead conceptualized as an integral component of a dynamic, emergent system that is subject to modification in response to the changing demands of a task, situational determinants, and individual developmental processes. Parental self-efficacy involves parents' beliefs in their ability to positively influence the behavior and development of their children and is considered a specific case of the more general class of constructs associated with personal efficacy (for a review, see Jones & Prinz, 2005). Within Bandura's framework, parental self-efficacy has domain specificity, and therefore, research application of the self-efficacy construct to the domain of parenting has recently been increasing.

Moreover, parental self-efficacy may change over time due to the changing demands of one's children, parenting situational determinants, and individual developmental processes. A previous study has focused on the dynamic change in parental self-efficacy. Glatz and Buchanan (2015) examined changes in general parental self-efficacy among European American parents and African American parents of 11- and 12-year-old adolescent children who were followed over 3 years, and they found that parental self-efficacy beliefs in the parenting role declined among parents of adolescents (there were fathers and mothers in the sample). Previous studies have also explored mean-level changes in maternal self-efficacy. Deković et al. (2010) examined changes in the general maternal sense of competence among a sample of mothers of 32-month-old children in the Netherlands, and the results showed that maternal self-efficacy beliefs regarding their ability to be a parent increased over infancy. Weaver et al. (2008) examined changes in general maternal self-efficacy among African American mothers, European American mothers, and biracial mothers of 2-year-old children who were followed for 3 years, and they found that maternal self-efficacy for the parenting role increased over the preschool years. Zayas et al. (2005) explored the sense of maternal self-efficacy for the parenting role during the pregnancy–postpartum transition among a group underrepresented in much adult developmental research, namely, minority women (African American and Hispanic mothers), and they found that the levels of reported maternal self-efficacy increased. Gross et al. (1994) examined changes in general maternal self-efficacy in two cohorts of children from ages 1 to 2 and 2 to 3, with measurements of maternal self-efficacy three times each year among African American, Hispanic, Asian, and White mothers. The results showed that maternal self-efficacy increased between ages 1 and 2 in Cohort 1 but remained stable from ages 2 to 3 in Cohort 2.

Although numerous studies have explored the trajectories of parental self-efficacy, several important issues remain unaddressed.

First, the aforementioned study (Glatz & Buchanan, 2015) on parental self-efficacy did not generate separate analyses by parent gender, and other studies (Deković et al., 2010; Gross et al., 1994; Weaver et al., 2008; Zayas et al., 2005) also focused mainly on the trajectories of maternal self-efficacy. However, few studies have explored the trajectories of PSE. According to social cognitive theory, self-efficacy is largely determined by one's experience (Bandura, 1989). Currently, fathers are expected to be economic providers and provide day-to-day physical and emotional care to children as equal partners of the mother (Barbeta-Viñas & Cano, 2017). However, as "breadwinners," fathers shoulder more family responsibilities and work responsibilities and face varied constraints in the social environment. They are typically employed full-time, often for an extended, long working week (Cooklin et al., 2016). In addition, fathers also have lower mean levels of overall involvement than mothers (Kim & Hill, 2015). The trajectories of parental self-efficacy may thus differ between fathers and mothers according to individual involvement experience. Based on our findings,[1] fathers have lower initial levels of parental self-efficacy compared with mothers but have a significant growth trend. This result suggests that there are different trajectories of parental self-efficacy between fathers and mothers. Therefore, it is necessary to explore the trajectories of PSE.

Second, most previous studies have focused on the trajectories of parental self-efficacy over children's infancy, preschool years, and adolescent period. However, the current understanding of the trajectories of parental self-efficacy during the elementary school-age period is still limited. In the elementary school period, the distinct developmental tasks of pupils center on learning the basic academic and social competencies valued by society, and school experiences serve as the primary means through which children acquire ideas about their own particular abilities (Coleman & Karraker, 2000). At this stage, parents also pay increasing attention to their children's basic academic and social competencies and take active involvement practices to promote their children's positive school outcomes (Hoover-Dempsey & Sandler, 1997). Specifically, parents of these pupils are increasingly involved in their children's educational activities (Green et al., 2007). Therefore, it becomes particularly necessary to explore the trajectories of parental self-efficacy in educational involvement during the elementary school-age period to enhance school outcomes by promoting optimal educational involvement. Given parents' ever-increasing experiences, knowledge, and skills, combined with their intimate understanding of their children's natures and personal needs (Coleman & Karraker, 2000), parental self-efficacy may tend to increase during this period.

In addition, in the measurement of parental self-efficacy, previous studies have assessed general parental self-efficacy that focuses broadly on the extent to which a parent feels competent in the parenting role without focusing on a particular domain of parenting. Conceptually, general self-efficacy is viewed as the totality of self-efficacy beliefs over the individual's entire history of achievement experiences, while domain self-efficacy is based on a portion of life events and emerges via combined efficacy information from several conceptually related experiences (Watt & Martin, 1994; Woodruff & Cashman, 1993). Applied to parenting, domain parental self-efficacy that is related to children's salient developmental tasks at a certain stage may reflect the levels of parental self-efficacy of this stage more subtly and uniquely than general parental self-efficacy. Therefore, in the elementary school stage, considering the salient developmental demands of pupils and the main components of parental involvement, it is necessary to examine the trajectories of parental self-efficacy for educational involvement. Thus, the first aim of the current study is to explore the trajectories in PSE for educational involvement during children's elementary school-age period.

[1] The findings derived from our article in preparation: "The different trajectories of parental self-efficacy in educational involvement domain: The differential impact of marital conflict."

Fathers' Time and Energy and PSE for Educational Involvement

According to social cognitive theory, self-efficacy is socially constructed (Bandura, 1989). From this standpoint, contextual variables of fathers' lives are the major situational determinants of PSE for educational involvement. Fathers' perceived time and energy, as the perceived life context variable, refers to fathers' perceptions of demands on their time, especially demands related to employment and family needs that may influence fathers' thinking about the possibilities of involvement (Green et al., 2007). As mentioned earlier, as "breadwinners," father shoulder more work burden and family responsibilities and have long working hours. Therefore, among the contextual variables, fathers' objective working hours and their perceptions of time and energy may have a great influence on PSE for educational involvement.

To our knowledge, only one previous study has explored the effect of fathers' working hours on PSE among a sample of White fathers of adolescents (Bogenschneider et al., 1997). In the cross-sectional study, fathers reported how many hours per week they worked for pay in seven categories of 10-hr increments and their perceived parenting competence. The results showed that the negative effect of long working hours on PSE was nonsignificant. In addition, previous studies have reported effects of subjective perceptions of time and energy on self-efficacy. Mathieu et al. (1993) explored the individual and situational antecedents of self-efficacy development during training in America and found that trainees who perceived more situational constraints, such as the constraints of their time and energy, were less likely to believe that they could successfully master the training materials. Netemeyer et al. (1996) found that work–family conflict, referring to people's perceptions of not having enough time and energy to manage all work and family responsibilities, had a negative effect on self-efficacy in a sample of American salespeople. Wang et al. (2010) found that people who perceived that work demands on their time and energy were affected by family-related strain had lower job-related self-efficacy in a sample of Chinese and Indian individuals.

Although previous studies have explored the effect of fathers' working hours on PSE and provided empirical evidence about the relationship between perceived time and energy and self-efficacy, several important issues remain unaddressed in this area.

First, although the previous study explored the impact of long working hours on PSE because the results were based on one-time correlational designs, they did not illuminate the effect of long working hours on the dynamic change in PSE longitudinally. Second, in general, fathers often work full-time and even have overtime hours on nonworkdays. Thus, fathers' long working hours include both work hours on workdays and work hours on nonworkdays. However, previous studies have mostly explored the impact of total working hours on PSE, while few studies have further examined the effect of fathers' work hours on nonworkdays on PSE. Some studies have shown that fathers are engaged with children for more hours on weekends than on weekdays (Yeung et al., 2001). It is possible that fathers' work hours on nonworkdays significantly reduce the time they spend with their children, which affects PSE. Third, many previous studies have revealed that subjective perceptions of time and energy have a potent effect on self-efficacy. However, few prior studies have controlled objective work hours. In theory, the developmental ecological systems framework for understanding father–child and family relationships (Cabrera et al., 2018) provides a model for the hypothesized link between objective work hours and the association between the subjective perceptions of time and energy and self-efficacy. Specifically, this framework proposes four different systems, including the macrosystem (cultural practices, social support, and community services), exosystem (extended family and supports), microsystem (family environment), and mesosystem (connection between microsystems of work, school, and child care). The contextual and individual components in these systems may affect fathers, families, and children. Among these systems, fathers' long working hours, as the important component of the exosystem, and fathers' subjective perceptions of time and energy devoted to the family, as the important component of the microsystem, may both impact PSE. In addition, in the framework, these systems are interconnected. Therefore, fathers' subjective perceptions of time and energy devoted to the family may be influenced by fathers' long working hours. Furthermore, fathers' long working hours may play a role in PSE via fathers' subjective perceptions of time and energy devoted to the family. Many studies have also shown that long working hours can be associated with increased subjective experience of work–family conflict (Eby et al., 2005; Goodman et al., 2011; Milkie et al., 2010). From theoretical and empirical perspectives, it is possible that objective work hours affect the association between the subjective perceptions of time and energy and self-efficacy as potential confounding factors. Specifically, objective work hours may be linked to self-efficacy via subjective perceptions of time and energy. When objective work hours are controlled, subjective perceptions of time and energy might exert less of an effect on self-efficacy. Therefore, based on previous research, the second aim of the current study is to explore the impact of fathers' long working hours (i.e., work hours on workdays and work hours on nonworkdays) and fathers' perceptions of time on the change in PSE for educational involvement.

In addition, most previous studies about parental self-efficacy have been performed in the Western context. However, hardly any research has directly explored the change in and predictors of change in parental self-efficacy in the context of Chinese culture. In China, most mothers as well as fathers work full-time. The phenomenon of mothers' long working hours is even more common in China than in many Western countries. According to the figures available from the U.S. Bureau of Labor Statistics, in 2010, China had the highest labor participation rate worldwide: 80% for men and nearly 70% for women.[2] In addition, in the second national time use survey organized by the National Bureau of Statistics of China, the average working time of Chinese women was 7 hr and 24 min per day, which is only 28 min less than the average working time of Chinese men.[3] In many Western countries, many mothers are more inclined to cut back their work hours, seek part-time work, or reduce their hours in lower status jobs or industries (Cooklin et al., 2016). To ease maternal time pressure and work–family conflict, increased involvement of fathers in children's education and other daily activities becomes particularly necessary in China. To increase fathers' effective and positive involvement in children's education,

[2] U.S. Bureau of Labor Statistics and International Labor Office (the U.S. Bureau of Labor Statistics, 2012): https://www.bls.gov/

[3] National Bureau of Statistics (NBS, 2018): http://www.stats.gov.cn/tjsj/zxfb/201901/t20190125_1646796.html

it is worth exploring the change in and predictors of PSE for educational involvement in the context of China.

The Current Study

In this study, we filled a critical gap in the existing literature by examining the trajectories of PSE for educational involvement during children's elementary school-age period and the effect of fathers' long working hours (on workdays and on nonworkdays) and their perceptions of time and energy on the trajectories of PSE for educational involvement in the context of China. To achieve these goals, we conducted a longitudinal study of Chinese fathers. First, we recruited 1,833 Chinese fathers of fourth grade children from 36 public primary schools in China. Second, we followed these fathers for two-and-a-half years, and we collected relevant information using an investigative questionnaire administered at five time points. Third, we used latent growth curve (LGC) analyses to examine the mean-level changes in PSE for educational involvement and then examined the impact of fathers' long work hours (on workdays and on nonworkdays) and their perceived time and energy on the mean-level changes in PSE for educational involvement.

In addition, according to Coleman and Karraker (2000), mothers of school-age children who were better educated and had higher family incomes tended to have higher parenting self-efficacy, and mothers of older children also tended to have high parenting self-efficacy. We controlled for the demographic variables, including family income, fathers' educational levels, and children's age. Bogenschneider et al. (1997) found that fathers reported higher levels of perceived competence in parenting sons than daughters. Therefore, we controlled for the children's gender.

We tested the following hypotheses:

First, based on Ballenski and Cook's result (1982) that suggested parents reported feeling highly competent during the elementary school years and the logical expectations that fathers would gain accumulation and enrichment of parental experience over time, we established the first hypothesis that PSE for educational involvement increases over the elementary school stage.

Second, extrapolated from the result that some structural conditions of parents' work environment (e.g., long working hours and atypical schedules) are negatively associated with parental involvement (Hook & Wolfe, 2013), we devised the second hypothesis that fathers' long working hours (on workdays and on nonworkdays) are also negatively associated with the initial level and growth rate of PSE for educational involvement.

Third, according to the conclusion that people's perceptions of time and energy are positively associated with self-efficacy in the job area (Mathieu et al., 1993; Netemeyer et al.,1996; Wang et al., 2010); thus, in the parenting area, we proposed the third hypothesis that fathers' perceptions of time and energy are positively associated with the initial level and growth rate of PSE for educational involvement.

Method

Ethical Statement

All procedures involving human participants in this study were approved by the Institutional Review Board of the Collaborative Innovation Center of Assessment toward Basic Education Quality, Beijing Normal University. Written informed consent to participate in the study was obtained from all individual participants before evaluation.

Participants and Procedure

The data used in this study were from a project of the Child Academic and Psychological Development Study (CAPS), an ongoing longitudinal study designed to investigate determinants of child academic and psychological development from childhood to adolescence. To better understand whether family contextual factors and parenting have significant impacts on child academic and psychological development, 4,074 Chinese fourth grade pupils and parents of these pupils were recruited from 36 public primary schools in the Baoding area (including 3 urban districts, 5 county-level cities, 12 counties, and 2 development areas), Hebei Province, China. The economic level of Hebei Province is slightly lower than the national average level; the per capita disposable income of households in Hebei Province and in China in 2017 was 15,189 yuan and 18,310 yuan, respectively. The education levels of the elementary schools in Hebei Province are equivalent to national average levels, for example, the pupil–teacher ratio in Hebei Province in 2017 was 17.42, and the national average was 16.98.[4]

Due to numerous variables of family context and parenting, the research team randomly separated the parents into two groups (one group: 2,241 parents; the other group: 1,833 parents). Different variables were examined in the two groups. In the current study, we used the fathers' data from the group of 1,833 parents. Specifically, of the children of these fathers (mean age = 36.69; SD = 4.22) in this group, 52% were boys, and 48% were girls. At T1, T2, T3, T4, and T5, the fathers' questionnaires were taken home by the students, and the fathers completed the questionnaires at home. A cover letter asking for the father's agreement to participate in the project and explaining the use of the data accompanied the questionnaire. The students returned the completed questionnaires and the fathers' cover letters that were signed to acknowledge receipt the next day. Delayed questionnaires and signed cover letters were sent back within a week. All fathers gave consent for the use of data from the questionnaire in the current study.

In this study, the first time point (T1) of the data collection took place in December 2016, the second time point (T2) took place a half-year later, the third time point (T3) took place 1 year later, the fourth time point (T4) took place one-and-a-half years later, and the fifth time point (T5) took place 2 years later. At T1, 1,833 fathers' questionnaires were distributed. After excluding incomplete responses (i.e., those with more than one-tenth of all questions unanswered or with missing information regarding PSE for educational involvement or paternal time and energy, N = 149), 1,684 valid questionnaires remained. At T2, 91.6% of the 1,684 fathers completed the PSE measures (N = 1,542). At T3, 94.6% of the 1,542 fathers completed the PSE measures (N = 1,459). At T4, 95.5% of the 1,459 fathers completed the PSE measures (N = 1,394). At T5, 95.1% of the 1,394 fathers completed the PSE measures (N = 1,325), and 78.7% of the 1,684 fathers

[4] China Statistical Yearbook (2018): http://www.stats.gov.cn/tjsj/ndsj/2018/indexeh.htm

completed the measures at all five time points (N = 1,325). Attrition occurred mainly because fathers left home to work or were on a business trip. A t test was conducted to examine the extent to which the absence of data at T2, T3, T4, and/or T5 was related to the demographic and study variables measured at T1. The results showed that only one of the variables significantly predicted missingness: Significant differences in the fathers' education levels were observed at T2 ($t = -2.50, p = 0.013$). In addition, Little's missing completely at random test also indicated that the missing data from the PSE measures at T2 were not consistent with the pattern of missing completely at random test ($\chi^2 = 38.841, p = .038 < .05$), but the missing data for all other variables were randomly distributed ($p > 0.05$). In all analyses, to handle missing data, full information maximum likelihood (FIML) was used.

Measures

In this study, we used self-reports about PSE for educational involvement and fathers' perceptions of time and energy. For both variables, we calculated the summed scores of the items, took the average, and then used the average scores of the items in the subsequent data analysis. Higher values represent higher levels of the construct measured.

PSE for Educational Involvement

PSE for educational involvement was assessed using the PSE questionnaire. This questionnaire is a six-item self-report inventory that was adapted from the Parental Self-efficacy Scale (Walker et al., 2005). The adapted PSE questionnaire was used in a previous study and had good structural validity and reliability (Wei et al., 2015).[5] In the current study, it was used in five waves (T1, T2, T3, T4, and T5) of data collection; an example item is "I know how to help my child make good grades in school." Fathers responded on a Likert scale ranging from 1 (*very strongly disagree*) to 4 (*very strongly agree*). The Cronbach's alphas ranged from 0.67 to 0.77 across five time points.

Fathers' Perceived Time and Energy

Fathers' perceptions of time and energy were assessed using the paternal time and energy questionnaire. This questionnaire is a five-item self-report inventory that was adapted from a subscale of the Parents' Perceived Life Context Scale (Walker et al., 2005). A previous study showed that the questionnaire has good structural validity and reliability (Wei et al., 2015).[6] In the current study, the questionnaire was used at T1. An example item is "I have enough time and energy to help out at my child's school." Fathers responded on a Likert scale ranging from 1 (*very strongly disagree*) to 4 (*very strongly agree*). The Cronbach's alpha was 0.85 at T1.

Fathers' Work Hours

Two questions were used to examine fathers' work hours: one question about work hours on workdays and another about work hours on nonworkdays. (a) The question that examined work hours on workdays was "Your average work hours per standard workday in the past year were 1 = unemployed, 2 = 0–2 hr, 3 = 3–5 hr, 4 = 6–8 hr, 5 = 9–10 hr, and 6 = 11 hr or more." (b) The question that examined overtime work hours on nonworkdays was "The number of days that you worked overtime on Saturdays, Sundays, and national holidays in the past year was 1 = 0 days, 2 = 1–30 days, 3 = 31–60 days, 4 = 61–90 days, and 5 = 91 days or more."

Demographic Variables

Children's gender and age were obtained from the children's questionnaires, and fathers' educational levels and family income were obtained from the fathers' questionnaires (see supplemental materials S5).

Data Analysis

We performed LGC analysis using Mplus 7.0 (Muthén & Muthén, 1998–2012). LGC analysis was applied to examine a father's change relative to his initial level (intraindividual change) and how this change compared with other fathers' changes (interindividual change). Specifically, two indices were used to describe the changes. The mean values of the intercept and slope describe the average initial level and the average change. The variance in the intercept and the slope describes variability in the initial level and change. In addition, three indices were used to evaluate the fit of the models: the comparative fit index (CFI; Bentler, 1990), the Tucker–Lewis index (TLI; Tucker & Lewis, 1973), and the root mean square error of approximation (RMSEA; Browne & Cudeck, 1993). CFI and TLI values above 0.90 and RMSEA values of 0.06 or lower are considered indicators of a good fit between the hypothesized model and the observed data (Hu & Bentler, 1999).

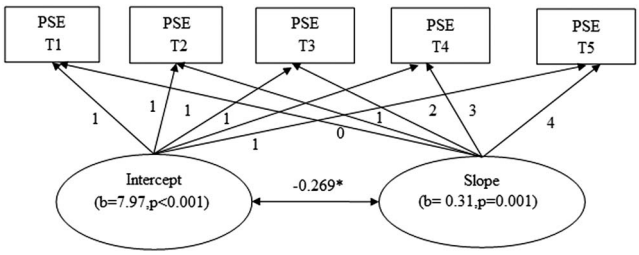
In the LGC analysis, first, to explore the trajectories of PSE for educational involvement, we examined the unconditional latent curve model of PSE for educational involvement in which the intercept represented the initial level of PSE for educational involvement at T1, and the slope represented the change in PSE for educational involvement from T1 to T5. Specifically, in the model, the factor loadings of the intercept were fixed at 1.0 at five time points, indicating an absence of growth. The factor loadings of the slope were fixed at 0 at T1, 1 at T2, 2 at T3, 3 at T4, and 4 at T5, representing the time interval between the time points. The intercept and the slope were allowed to correlate, meaning that the initial level could be associated with the amount of change. Second, to explore the predictors of change in PSE for educational involvement, we examined the conditional latent curve models in which we included fathers' work hours (on workdays and on nonworkdays) as predictors of the initial level and change in PSE for educational involvement after controlling for demographic variables. Then, in the model, we examined whether fathers' perceived time and energy predicted the initial level and change in PSE for educational involvement when controlling for fathers' work hours and the significant demographic variables.

[5] CFA revealed an adequate fit: $\chi^2 = 566.43$, $df = 167$, $\chi^2/df = 3.39$, TLI = 0.84, CFI = 0.86, GFI = 0.92, RMSEA = 0.062; $\alpha = 0.61$.

[6] CFA revealed an adequate fit: $\chi^2 = 130.36$, $df = 26$, $\chi^2/df = 5.01$, TLI = 0.85, CFI = 0.90, GFI = 0.96, RMSEA = 0.08; $\alpha = 0.84$.

Figure 1

Structural Equation Model Examining the Unconditional Latent Growth Curves for Paternal Self-Efficacy for Educational Involvement



Note. Standardized coefficients are presented; PSE = paternal self-efficacy for educational involvement; T1 = Time 1; T2 = Time 2; T3 = Time 3; T4 = Time 4; T5 = Time 5.
$^{*}p < .05$. $^{**}p < .01$.

Results

The zero-order correlations among all variables are reported. All predictors were correlated with PSE for educational involvement in the expected directions (see Supplemental materials S7 Table D).

Unconditional Latent Curve Model

We used an unconditional model to examine the change trajectories of PSE for educational involvement. The final model (see Figure 1) showed a good fit to the data, $\chi^2 = 49.876$ (10), $p < .001$, RMSEA = 0.048, CFI = 0.964, TLI = 0.964. On average, fathers reported a mean PSE score of 7.97 ($p < .001$, 95% CI [7.31, 8.63]) at T1, which was followed by a positive linear slope ($b = 0.31$, $p = 0.001$, 95% CI [0.13, 0.48]). The variances of the PSE intercepts ($b = 0.11$, $p < .001$, 95% CI [0.09, 0.12]) were significant, suggesting significant individual variation in initial levels of PSE. The slope variance was significant for PSE ($b = 0.003$, $p < .001$, 95% CI [0.001, 0.005]), suggesting significant individual variation in the growth of PSE. The growth of PSE was negatively associated with initial levels of PSE ($r = -0.269$, $p < .05$), showing that fathers who had higher levels of PSE at T1 experienced slower growth in PSE.

Conditional Latent Curve Models

We used conditional latent curve models to examine whether the intercept and slope differed as a function of the predictors in this study. As a first step, we included fathers' work hours (on workdays and on nonworkdays) as predictors of the initial level and change in PSE for educational involvement after controlling the demographic variables (i.e., fathers' education level, family income, and children's gender and age). As a second step, we included fathers' perceived time and energy to predict the intercept and slope of PSE for educational involvement while controlling for the significant variables from the first step.

The model including fathers' work hours (on workdays and on nonworkdays) and the demographic variables showed a good fit, $\chi^2 = 69.650$ (31), $p < .001$, RMSEA = 0.028, CFI = 0.964, TLI = 0.948. The effects of fathers' education level and fathers' work hours on nonworkdays on the PSE intercept were both significant (see Table 1). At T1, fathers with higher education levels reported higher initial levels of PSE than did fathers with a lower education level, but fathers with fewer work hours on nonworkdays reported higher initial levels of PSE than did fathers with more work hours on nonworkdays.

The final model[7] including the significant variables (i.e., fathers' work hours for nonworkdays and fathers' education level) from the first step and fathers' perceived time and energy showed a good fit, $\chi^2 = 73.199$ (19), $p < .001$, RMSEA = 0.042, CFI = 0.966, TLI = 0.955. The results from this model are shown in Figure 2. Fathers' education level remained a significant predictor of PSE. Fathers' perceived time and energy predicted the intercept and the slope. Fathers who perceived that they had enough time and energy reported higher levels of PSE at T1 but a slower increase in PSE over time than fathers who perceived that they did not have enough time and energy.

Discussion

In the present study, drawing on longitudinal survey data, we examined the trajectories of PSE for educational involvement using LGC analysis among Chinese fathers of children in the fourth through sixth grades over two-and-a-half years and found that PSE for educational involvement increased over this developmental period. In addition, we also examined the impact of fathers' long work hours (i.e., work hours on workdays and work hours on nonworkdays) and their perceived time and energy on PSE for educational involvement. We found that fathers' overtime on nonworkdays was significantly linked to the initial level of PSE for educational involvement, but this negative effect was no longer significant after fathers' perceived time and energy were added to the final model. We also found that fathers' perceived time and energy were positively associated with the initial level of PSE for educational involvement and negatively associated with the growth rate of PSE for educational involvement.

According to the LGC analysis, PSE for educational involvement increased significantly as children moved from the fourth to sixth grades. This result is consistent with our hypothesis and previous studies (Deković et al., 2010; Gross et al., 1994; Weaver et al. 2008; Zayas et al., 2005), as well as logical expectations that fathers would gain more experience in paternal educational involvement over time. However, our result is not consistent with that of a previous study by Glatz and Buchanan (2015) who found that parental self-efficacy declined among parents of adolescents. This difference may indicate that during the early childhood years, parents feel increasingly competent but that this competence declines thereafter to a nadir at adolescence (Glatz & Buchanan, 2015). Ballenski and Cook (1982) compared levels of parental self-efficacy among parents of children in different age groups (infancy, toddlerhood, preschool, school age, and adolescence) and found similar results: Parents from infancy to school age reported feeling highly competent, while parents of

[7] We also controlled for all predictors (fathers' work hours on workdays and on nonworkdays, fathers' education level, family income, and children's gender and age) from the former step in the model. The model showed a good fit, $\chi^2 = 83.100$ (34), $p < .001$, RMSEA = 0.031, CFI = 0.967, TLI = 0.951. The results are concurrent: Fathers' education level remained a significant predictor of the intercept of PSE ($b = 0.089$, $p < .01$). Fathers' perceived time and energy predicted the intercept and the slope (intercept: $b = 0.660$, $p < .001$; slope: $b = -0.418$, $p < .001$).

Table 1

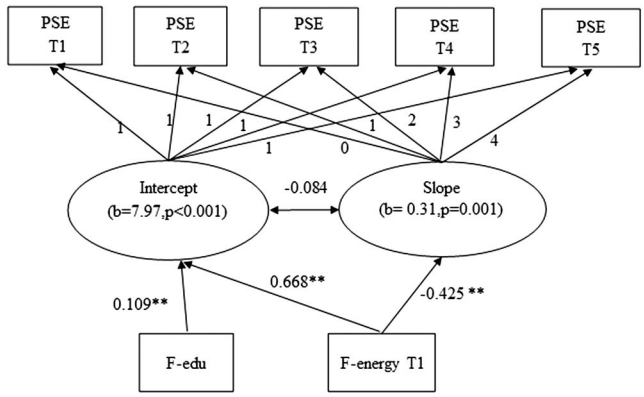
Results for the Demographic Control Variables Predicting Paternal Self-Efficacy for Educational Involvement

Variable	Step 1		Step 2	
	Intercept	Slope	Intercept	Slope
Fathers' work hours on workdays Time point 1	−0.043	0.102	—	—
Fathers' work hours on nonworkdays Time point 1	−0.127**	0.025	−0.026	0.013
Fathers' education level	0.141**	0.062	0.109**	0.076
Family income	0.035	0.064	—	—
Children's gender	0.049	−0.089	—	—
Children's age	0.022	−0.011	—	—
Fathers' perceived time and energy Time point 1	—	—	0.668**	−0.425**

Note. ** $p < .01$.

Figure 2

Structural Equation Model Examining the Effects of Fathers' Education Level and Perceived Time and Energy on Paternal Self-Efficacy for Educational Involvement



Note. Standardized coefficients are presented; PSE = paternal self-efficacy for educational involvement; F-energy T1 = fathers' perceived time and energy; T1 = Time 1; T2 = Time 2; T3 = Time 3; T4 = Time 4; T5 = Time 5; F-edu = fathers' education level.
* $p < .05$. ** $p < .01$.

adolescents felt the least competent. The factors that lead to the transition in parental self-efficacy from elementary school age to adolescence may be an interesting topic for future studies to explore.

We examined the effect of fathers' long working hours on the change in PSE for educational involvement. On workdays, the negative effect of long working hours on PSE for educational involvement was nonsignificant. This result is consistent with that of a study by Bogenschneider et al. (1997). However, our study also found that fathers with fewer work hours on nonworkdays reported higher initial levels of PSE for educational involvement; this result was not observed in the study by Bogenschneider et al. (1997).

A previous study showed that fathers spent more time with their children on weekends than on weekdays (Yeung et al., 2001). Fathers' overtime on nonworkdays might significantly reduce the time they spend with their children, which affects the initial level of PSE for educational involvement. Although the findings concerning fathers' overtime on nonworkdays provide partial support for our hypotheses, we expected an impact on both the intercept and slope. This result might imply that fathers' overtime on nonworkdays is merely a temporary phenomenon or increases and decreases over their children's elementary school period. Therefore, fathers' overtime on nonworkdays has a short-term impact rather than a stable long-term impact on PSE for educational involvement.

However, surprisingly, when fathers' perceptions of time and energy were added to the final model, we found that the negative effect of fathers' work hours for nonworkdays on the initial level of PSE for educational involvement was no longer significant. This finding indicates that the effect of fathers' work hours on nonworkdays on PSE for educational involvement may be mediated by fathers' perceptions of demands on their time and energy, which supports Bandura's hypothesis that the effect of numerous contextual factors on the development of self-efficacy is basically dependent on how it is cognitively appraised (Bandura, 1989). The mediation analysis we conducted supported this assumption (indirect effect = −0.137, $SE = 0.018$, $p < .001$, 95% CI [−0.176, −0.104]).[8] Therefore, the adjustment of subjective perceptions of time and energy could be a good strategy for fathers to offset the negative effect of long working hours for nonworkdays on PSE for educational involvement.

In addition, we found that fathers' perceptions of time and energy were positively associated with the initial level of PSE for educational involvement after controlling for objective work hours. This result is consistent with those of previous studies (Mathieu et al., 1993; Netemeyer et al., 1996; Wang et al., 2010). Fathers' perceptions of having enough time and energy for their children's education imply their history of successful educational involvement. From a social cognitive theory standpoint (Bandura, 1989), fathers' history of successful educational involvement, derived from an authentic experiential base, is perhaps the most obvious and powerful influence on PSE for educational involvement. In addition, considering that objective work hours have a significant correlation with subjective perceptions of time and energy (Eby et al., 2005; Goodman et al., 2011; Milkie et al., 2010), we explored the impact of fathers' perceptions of time and energy on PSE for educational involvement after controlling for objective work hours. The results showed that subjective perceptions of time and energy were a significant predictor of PSE for educational involvement. This finding suggests that fathers with similar work schedules may display significant differences in their subjective experiences of time and energy (Cooklin et al., 2016), and these significant differences in their subjective experiences of time and energy produce variations in self-efficacy for educational involvement.

Moreover, we also found that only the variable of fathers' perceptions of time and energy was negatively associated with the growth rate of PSE for educational involvement. This finding may reflect that fathers' perceptions of time and energy have a longer-term impact on PSE for educational involvement. However, the result is not consistent with our hypothesis. There are two possible explanations. First, the variable of fathers' perceptions

[8] The mediation model showed a good fit to the data, $\chi^2 = 86.874$ (20), $p < .001$, RMSEA = 0.045, CFI = 0.960, TLI = 0.946.

of time and energy contributed to the increase in the level of PSE for educational involvement over time. However, the initial level of PSE for educational involvement may buffer the effect of fathers' perceptions of time and energy on the growth rate of PSE for educational involvement. More specifically, when fathers perceived having enough time and energy for their children's education, they had higher initial levels of PSE for educational involvement. The initial level of PSE for educational involvement was negatively associated with the growth rate of PSE for educational involvement. Thus, for fathers with high initial levels of PSE for educational involvement, although they perceived having enough time and energy for their children's education, they might have had slow growth in PSE for educational involvement. Nevertheless, for fathers with low initial levels of PSE for educational involvement, when they perceived having enough time and energy for their children's education, they might have had a steep increase in PSE for educational involvement. We further compared fathers who perceived having enough time and energy for their children's education (ranked in the top 27%, called "the high group") with fathers who perceived having scant time and energy for their children's education (ranked in the bottom 27%, called "the low group"). We found that the high group of fathers had higher levels of PSE for educational involvement than the low group of fathers both at T1 and at T5 ($t = 16.61$, $p < .001$, $d = 1.09$ at T1; $t = 8.90$, $p < .001$, $d = 0.63$ at T5). These results suggested that fathers' perceptions of time and energy boosted the growth of PSE for educational involvement over time.

Second, a ceiling effect was potentially present for fathers' PSE or for fathers who have higher initial levels of perceived time and energy. These fathers start with such high levels of PSE that there is little room to further increase their PSE. Thus, higher initial levels of perceived time and energy lead to slower growth in PSE. We performed the data analysis to further examine whether the association is due to a ceiling effect. We calculated the summed scores of PSE for all participants and then took the average. The score of PSE for each participant on average was 15.48 at T1 and 15.96 at T5. We also calculated the summed scores of PSE for participants who have higher initial levels of perceived time and energy (ranked in the top 27%) and then took the average. In this group, the score of PSE for each participant on average was 17.22 at T1 and 17.28 at T5. These results suggested that there was no ceiling effect potentially present for PSE or for fathers who have higher initial levels of perceived time and energy, and there is still room to further increase their PSE. Therefore, based on the above results, we accepted the first explanation. However, we still cannot exclude the effect of unknown potential related factors on the growth rate of PSE for educational involvement. This possibility needs to be explored further in the future research.

Strengths and Implications

This study makes an important contribution to the literature and has important practical implications. First, previous studies have paid little attention to PSE (Jones & Prinz, 2005), and longitudinal studies on the trajectories of PSE are especially scarce. This is the first study, to our knowledge, to examine the trajectories of PSE for educational involvement among Chinese fathers during their children's elementary school years. Second, this study takes into account the impact of both fathers' objective work hours and fathers' perceptions of time and energy on PSE for educational involvement in the same model and reveals that fathers' perceived time and energy play a very important role in the change in PSE for educational involvement. The second half of the 20th century has seen the unprecedented entry of women with children into the labor market, and gender egalitarian and intensive parenting ideologies have become widespread (Cano et al., 2019). These phenomena have led to a rise in fathers' involvement in children's education. High levels of PSE for educational involvement facilitate fathers' high-quality educational involvement. Therefore, scientific intervention is necessary to improve the level of PSE for educational involvement. The findings of this study suggest that fathers' overtime on nonworkdays is detrimental to the level of PSE for educational involvement, while fathers' perceptions of time and energy are conducive to the development of PSE for educational involvement. Efforts to adjust fathers' subjective perceptions of time and energy may protect PSE for educational involvement from the negative effect of long working hours on nonworkdays and promote increased levels of PSE for educational involvement over time.

Limitations

This study also has certain limitations. First, our sample is representative only of Chinese fathers, which raises the question of whether these results are generalizable to other ethnic groups and countries. Therefore, the generalizability of the findings is unknown, and more studies are needed to determine whether these results apply to other ethnic groups and countries.

Second, although CFA of the measurement models of the key study variables revealed an acceptable fit at T1, the RMSEA was over 0.06, which might indicate potential problems with the fit of the measurement models. This issue should be taken into account when interpreting the results. In addition, we used fathers' reports of their perceptions of time and energy in their children's education because of the belief that fathers' perceptions would be most influential for PSE beliefs for educational involvement (Glatz & Buchanan, 2015). Nonetheless, the use of only fathers' reports increased the risk of reporter bias, and this issue should be taken into account. It might be useful in the future research to compare fathers' reports with time-diary data on paternal time and energy as predictors of PSE for educational involvement.

Third, in this study, we measured fathers' work hours (on workdays and nonworkdays) and fathers' perceptions of time and energy only at T1 and used these variables to predict the change in PSE for educational involvement. However, parents' work hours and the subjective perceptions of time and energy may change dynamically over time. Future research should regard these variables as time variant and use these variables to predict the trajectories of parenting belief.

Finally, considering the salient developmental demand of pupils and the main components of parental involvement at the primary school stage, this study focused only on PSE at a domain-specific level. Therefore, we cannot conclude that global PSE also increased at this stage. In addition, the impact of fathers' long working hours and fathers' perceptions of time and energy on global PSE may also be different. Thus, future studies should further explore the trajectories and predictors of trajectories of global PSE at this stage.

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