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Min Lu , Kerryann Walsh, Sonia White & Paul Shield

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The Influence of Perceived Maternal Psychological Control on Academic Performance in Chinese Adolescents: Moderating Roles of Adolescents' Age, Gender and Filial Piety

Min Lu

Faculty of Education, Queensland University of Technology, Kelvin Grove, QLD, Australia

Kerryann Walsh

Faculty of Education, Queensland University of Technology, Kelvin Grove, QLD, Australia

Sonia White

Faculty of Education, Queensland University of Technology, Kelvin Grove, QLD, Australia

Paul Shield

Faculty of Education, Queensland University of Technology, Kelvin Grove, QLD, Australia

Address correspondence to Min Lu. E-mail: saniphenix@gmail.com

Abstract

Existing studies with East-Asian samples have reported inconsistent findings on the association between parental psychological control and academic performance in children and adolescents. A Moderation effect is present, when the magnitude or direction of the association between two

variables significantly changes with another variable called a moderator. This study explored moderators for the association between maternal psychological control and academic performance. 338 Chinese secondary school students aged 14 to 20 years completed self-report measures of perceived maternal psychological control, academic performance, and attitudes toward filial piety. Structural equation modelling suggested that adolescent age moderated the association of interest: the influence of perceived maternal psychological control on academic performance significantly varied between middle adolescents aged 14 to 17 years and late adolescents aged 18 to 20 years. Based on the findings, this study offers a possible rationale for the inconsistent findings in studies with East-Asian samples and proposes that parenting effect should be assessed developmentally.

Keywords: academic performance, Chinese adolescents, East-Asian, parental psychological control

The term *parental psychological control* first appeared in the literature in the 1960s (Schaefer, 1965a, 1965b). However, in-depth study on this parenting construct did not begin until the mid-1990s (Barber, 1992, 1996, 2002; Barber, Bean, & Erickson, 2002; Barber & Harmon, 2002; Barber, Maughan, & Olsen, 2005; Barber & Olsen, 1997; Barber, Olsen, & Shagle, 1994; Barber, Xia, Olsen, McNeely, & Bose, 2012). The steady increase in empirical work on parental psychological control has yielded numerous important insights into the meaning and consequences of this intrusive parenting dimension. To date, there is a general consensus that: parental psychological control is a parenting dimension representing the collection of childrearing strategies that are intrusive to psychological wellbeing in children and adolescents (Barber, 1996, 2002), and lead to adjustment problems such as depressive symptoms (Rudy & Halgunseth, 2005; Soenens, Luyckx, Vansteenkiste, Duriez, & Goossens, 2008), relational aggression (Nelson, Hart, Yang, Olsen, & Jin, 2006), shyness (Van Zalk & Kerr, 2011), and risky behaviors (Kincaid, Jones,

Cuellar, & Gonzalez, 2011). Besides these maladjustments, parental psychological control is also negatively related to academic performance (Tynkkynen, Vuori, & Salmela-Aro, 2012; Weiss & Schwarz, 1996). However, a close look at the existing studies with the East-Asian samples reveals that although the associations consistently remain negative, the statistical findings are not consistently significant. For example, a study with Chinese adolescents found that when adolescents perceived high levels of psychological control from their parents, they were more likely to perform poorly according to their school records (Wang, Chan, & Lin, 2012). This same pattern of association was also found in a study with slightly older South Korean students (Kim & Dembo, 2000) showing that parental psychological control had a negative influence on academic performance measured by college entrance exam scores. A similar significant effect, however, has not been found among other samples from East-Asian cultures including from China and South Korea (Lee, Yu, & Choi, 2012; Lin, 2001; Wang, Pomerantz, & Chen, 2007).

One possible rationale for the inconsistent findings in East-Asian samples lies in the cause-effect path between parental psychological control and academic performance which may vary according to hitherto unidentified child or adolescent factors resulting in significant difference in the magnitude of associations. To our knowledge, no previous studies have investigated moderation effects for the association between parental psychological control and academic performance with Chinese adolescents. Hence, three adolescent factors - age, gender, and attitude toward filial piety - were explored as moderators in the current study. The specific reasons for investigating these factors are anchored in the extant research.

Adolescent age is proposed to have a moderating role on the association between parental psychological control and academic performance. That is, we expect the magnitude of the relation between parental psychological control and academic performance will be inconsistent for

different adolescent age groups. The rationale for this proposal is twofold: First, previous literature suggests that adolescents' perception of psychological control is likely to vary with age. For example, a study with Korean adolescents and their parents showed that parental psychological control is not a consistent negative predictor of parental warmth for all the adolescent age groups (Kim, 2008). Specifically, adolescents' perceptions of maternal psychological control negatively predicted parental warmth for older, but not for younger adolescents. The authors of this Korean study argued that this finding was due to the developmental differences in adolescents' perceptions of personal autonomy and parental authority. Second, adolescent age may have significant impact on the association between parental psychological control and academic performance. In the literature, with East-Asian samples inconsistent associations have been reported for different age groups. For example, a statistically significant negative association between parental psychological control and college entrance exam scores was found among college students aged 17 to 30 years (Kim & Dembo, 2000). However, this negative association was not found in studies with younger students, for example with children from grades three to five with a mean age of 10.10 years (Tam, 2009), grade five and six with a mean age of 11.38 years (Lee et al., 2012), or grade seven with a mean age of 12.73 years (Wang et al., 2007). Thus, potentially, age may have a moderating effect.

Adolescent gender is proposed to be another potential moderator for the association between parental psychological control and academic performance. That is, the association between parental psychological control and academic performance may vary in magnitude depending on whether adolescent is a boy or girl. The reasons for proposing adolescent gender as a moderating factor are also twofold. First, the gender of adolescents may impact on how they perceive parental psychological control. For example, a study with a sample of adolescents showed

that the perception of negative parental behaviours such as alienation and rejection varied between boys and girls (Hale, Engels, & Meeus, 2006). Specifically, perceptions of the influence of negative parenting practices decreased among boys, but increased among girls over-time. Such discrepancy may be due to girls' greater sensitivity to interpersonal interaction compared to boys. Second, adolescent gender may be another important moderator of the association between parental psychological control and academic performance. In the literature, with East-Asian samples the statistical significance of this association has varied for boys and girls. For example, to investigate the role of gender in the association between parental behaviors and child academic performance in Hong Kong, Tam (2009) recruited 208 boys, 253 girls, and their parents. The study revealed child gender as a moderator for the association between parental psychological control and academic performance, however, a statistically significant association was found only for boys. To date, this study appears to be the sole piece of research that has considered the gender moderating effect with an East-Asian sample. Replication is therefore needed to confirm the findings.

Finally, traditional beliefs of filial piety, representative of East-Asian contextual backgrounds, may be at play. That is, parental psychological control may be differently associated with adolescents' academic performance according to adolescents' filial beliefs. Although there is broad consensus about the negative influence of parental psychological control on academic performance in Western cultures (Barber, 1996; Bean & Northrup, 2009; Conger, Conger, & Scaramella, 1997), in East-Asian cultures this agreement has not been reached and a stable association has yet to be convincingly detected and supported (Lee et al., 2012; Lin, 2001). This implies that the magnitude of the association between parental psychological control and academic performance may be context-dependent. Thus, traditional values prevalent within East-Asian

contexts may act as moderators that alter the strength of the association. This argument is in agreement with the Ecological literature that contextual factors can interact to impact behavioral adjustment instead of exerting a direct influence (Bronfenbrenner, 1986).

Filial piety refers to the way children should respect and care for their parents. Filial children are obliged to fulfil their duties by being obedient to their parents to please them, bringing honor to the family and ancestors via personal success, continuing the family line by having a son, taking care of parents when they age, and memorializing parents after they die (Cheng & Chan, 2006). Furthermore, Yeh and Bedford (2003) proposed that filial piety should consist of two components: a reciprocal dimension and an authoritarian dimension. Reciprocal filial piety is child emotional and physical care out of the gratitude toward their parents for the effort they put in during childrearing. This dimension includes two main filial concepts, these are "tsun-chin-ken-chin" (respecting and loving) and "feng-yang-chin-nien" (supporting and memorizing). Authoritarian filial piety is child self-suppression in favor of social role norms. This dimension includes two other filial concepts, these are "i-chi-shun-chin" (self-suppression) and "hu-chin-jung-chin" (protecting and improving family reputation) (Yeh, 1997).

Among Chinese people, filial piety is usually ranked first among all the ethics that well-educated people are supposed to practice and value. Filial piety is not only the basis for the family ethical system, but also the basis of broader social ethical systems and, arguably, perhaps even the basis of national ethical systems (Ikels, 2004). Although filial piety is an indigenous Chinese concept, the practice of filial obligations has been prevalent in other East-Asian societies due to the deep influence of Confucianism (Johnson, Bengtson, Coleman, & Kirkwood, 2006). For this reason, in this study, filial piety was chosen as a representative contextual moderating factor for the association between parental psychological control and academic performance.

The specific reasons for examining filial piety as a potential moderator for the association between parental psychological control and academic performance can be summarized in two ways. First, filial piety has an impact on how East-Asian parents exercise psychological control. Specifically, filial piety is a constellation of role ethics for parent-child interaction, and the attitude toward filial piety is greatly influenced by daily parenting experiences. Thus, the way children respect and care for their parents out of gratitude (i.e., reciprocal filial piety) or out of role requirement (i.e., authoritarian filial piety) closely relates to their experience with psychologically controlling parenting. For example, existing studies have evidenced that authoritarian filial piety was promoted by demanding parenting (Huang & Yeh, 2013), while dampened by overprotection (Li, Zou, Liu, & Zhou, 2014). Second, the moderating possibility of filial piety on the association between psychological control and academic performance is plausible based on the empirical evidence. Although, to our knowledge, in the existing literature no study has directly investigated the interaction role of filial piety with parental psychological control on the influence of academic outcomes. However, moderation effects of filial piety have been identified with psychological control related parenting constructs. For example, a study with Hong Kong adolescents evidenced the moderating role of filial piety on the association between parental (behavioral) control and its positive outcomes, suggesting that the more Hong Kong adolescents value filial piety, the more positive influence can be observed from parental behavioral control (Wong, Leung, & McBride-Chang, 2010). Meanwhile, filial piety also can be a moderator for negative parental behaviours and child maladjustment. For example, a study with a Chinese sample showed that filial piety was a protective factor against depression through its moderating effect on childhood maltreatment (Ng, Bhugra, McManus, & Fennell, 2011). Therefore, the extant research implies the moderating potential for the association between psychological control and academic performance.

METHODS

Participants

This study employed a cross-sectional design. The research was approved by the Queensland University of Technology Human Research Ethics Committee (Approval Number 1300000524). A sample of 338 adolescents was recruited from one senior high school in Heilongjiang Province, mainland China. Participants in this survey were volunteers who provided their informed consent in accordance with the guidelines provided in the National Statement on Ethical Conduct in Human Research (NHMRC, 2015). The final sample consisted of 171 boys (50.6%) and 167 girls (49.4%). The ages of participants in the sample ranged from 14 to 20 years, (M = 17.10, SD = 1.24).

Measures

Academic Performance

Academic performance was assessed using a scale specifically developed for the current study. Three items of self-reported subject grades for Literature (Chinese), Mathematics, and Foreign Language (English) were included in the scale. An example item from this scale is: "what is the usual category of grades you receive in English?" The responses were rated from one to six representing grade percentage brackets: below 50%, 50-60%, 60-70%, 70-80%, 80-90%, and above 90%, respectively.

Psychological Control

Maternal psychological control was measured using the Psychological Control Scale—Youth Self-Report (PCS-YSR) (Barber, 1996). Adolescent self-report was appropriate as the aim

of the current research was to examine the association between *perceived* parental behaviors and adolescent academic outcomes. Maternal controlling behaviors are the focus in the current study, because they are the primary care givers and often take the major responsibility for childrearing problems (Garey & Arendell, 2001), and under these social conditions, compared to fathers, mothers may exert more psychological control towards their children (Kim, 2008; Wu et al., 2002). PCS-YSR consists of eight items. An example item from the PCS-YSR is: "My mother is a person who if I have hurt her feelings, stops talking to me until I please her again". Responses were recorded on a three-point Likert scale with a score of one (not like her) indicating the least and three (a lot like her) indicating the most psychologically controlling behaviors.

Filial Piety

Adolescents' attitude toward the importance of filial piety was evaluated using the Filial Piety Scale (Yeh, 1997). The original Filial Piety Scale (Yang, Yeh, & Hwang, 1989) had 52 items. To reduce the response burden, and thereby increase the potential response rate and subsequent data quality, the more recently developed short version of the Filial Piety Scale with nine items (S-FPS) was employed in this study. The S-FPS consists of two subscales for reciprocal filial piety and authoritarian filial piety, and has been widely used with Chinese adolescent samples (Chu, Xie, & Yu, 2011; Yeh & Bedford, 2003, 2004). An example item from the reciprocal filial piety subscale (four items) is: "One should be grateful to parents for their upbringing". An example item from the authoritarian filial piety subscale (five items) is: "One should give up his/her own plans for the future in order to comply with parents' wishes and expectations". The responses were rated on a five-point Likert scale from one (not important) to five (absolutely important).

Statistical Analysis

Moderation occurs when the magnitude or direction of the association between two variables significantly varies under the influence of a third variable (i.e. moderator) (Cohen, Cohen, West, & Aiken, 2003). A moderator can be measured as a categorical variable (e.g. a yes/no response) or on an interval or continuous scale (e.g., a Likert-type response) and different analytical approaches should be applied. Multiple group analysis within structural equation modelling (SEM) is appropriate when a moderator is categorical, and interaction analysis within multiple linear regression is a sound choice when an interval or continuous moderator is involved because of inherent limitations of categorizing interval or continuous data for multiple group analysis (Altman, 1991).

Age, gender, and attitude towards filial piety were studied as potential moderators in this study. Gender was measured as a categorical variable. Age was measured as an ordinal variable and then categorized into two age groups here: a younger group aged 14 to 17 years representing middle adolescents, and an older group aged 18 to 20 years representing late adolescents reflecting the age distinctions made in previous research (Smetana, Campione-Barr, & Metzger, 2006). Attitude toward filial piety was measured with a continuous scale index score from the S-FPS.

Multiple group analysis was conducted in *SPSS AMOS* (Arbuckle, 2011) for age and gender, respectively. First, respondents were divided into groups based on the level of categorical moderators. Second, proposed models were specified for all groups at the same time. Third, three nested models (i.e. an unconstrained model, a factor loading constrained model, and a fully constrained model) were compared to test the statistical significance of measurement and structural invariance between models. It should be noted that measurement errors were not fixed for the fully constrained model since this requirement was considered too limiting (Byrne, 2013). A statistically nonsignificant difference of model fit between the unconstrained model and factor loading

constrained model indicates measurement invariance of latent factors across groups, which is the basis of structural invariance testing (Byrne, 2013). Similarly, a statistically significant difference of model fit between the factor loading constrained model and the fully constrained model indicates group difference of the structural associations across groups (Byrne, 2013).

Interaction analysis was conducted for adolescents' attitude toward filial piety in *SPSS*. To test proposed moderating effect of filial piety, an interaction term was created using the cross-product of maternal psychological control and filial piety, and centered to the mean to avoid data multicollinearity.

RESULTS

Preliminary Analysis

Table 1 presents descriptive statistics and reliability coefficients for the study scales. The descriptive results were summarized based on the scale index score instead of self-reported raw scores because the index score has the advantage of accounting for measurement errors and actual weighted contribution of individual items for the corresponding latent factor. The negative rating for PCS-YSR is a result of employing Bayesian data imputation to compensate for the ordinal nature of the data. Individual means and standard deviations were reported for the two subscales underlying S-FPS. Both Cronbach's alpha and SEM reliability estimates were reported. In contrast to Cronbach's alpha (Cronbach, 1951), SEM reliability estimates assume unique item contribution to corresponding latent factor. A three-item measurement model was specified for academic performance scale, which is just-identified. However, within SEM, model fit can only be evaluated when the model is over-identified, thus only Cronbach's alpha was reported for this scale. Coefficient H was reported for the single-factor measurement model of PCS-YSR, and stratified-

alpha was calculated for the two-factor measurement model of S-FP. As shown in **Table 1**, all reliability estimates are close or above .70, which indicates adequate internal consistency among scale items.

Moderating Effects

Age Moderator

Model fit indices and comparisons for the proposed age moderating effect are summarized in **Table 2**. The Chi-square difference test between the unconstrained model and the factor loading constrained model showed no statistical differences between two nested models, indicating measurement invariance of latent factors for PCS-YSR and the custom-made academic performance scale. The fully constrained model was statistically different from the factor loading constrained model, $\chi 2(1) = 3.89$, $p = .049$, indicating that adolescent age moderated the associations between maternal psychological control and adolescent academic performance. Specifically, for the older group, $\beta = -.24$, $p = .03$ (see **Figure 1**), there was a statistically significant negative association between maternal psychological control and academic performance for the adolescents aged 18 to 20 years. However, for the younger group, $\beta = .03$, $p = .76$ (see **Figure 1**), there was no statistically significant association for the adolescents aged 14 to 17 years. The proposed age moderating effect for the association between maternal psychological control and academic performance was supported.

Gender Moderator

The proposed gender moderating effect was examined while controlling for the effect of age. As shown in **Table 2**, for each age group the Chi-square difference tests showed no statistical difference between the unconstrained model and the factor loading constrained model, indicating

measurement invariance of related latent factors. Similarly, no statistically significant difference was detected between the fully constrained model and the factor loading constrained model between male and female students for each age group, indicating no gender moderating effect for the association between perceived maternal psychological control and academic performance. Consequently, the proposed gender moderating effect was not supported.

Filial Piety Moderator

As previously discussed, interaction analysis within multiple linear regression was conducted to examine the proposed moderating effect of filial piety. The analysis was performed while controlling for age effect. Since there were two latent factors within S-FPS (i.e., reciprocal filial piety and authoritarian filial piety), the analysis was conducted separately for each factor. The result showed that neither the interaction term of reciprocal filial piety (p = .591 for younger age group and p = .986 for older age group) nor the interaction term of the authoritarian filial piety (p = .758 for younger age group and p = .618 for older age group) was statistically significant for either age group. Thus, the proposed moderating effect of filial piety for the association between perceived maternal psychological control and academic performance was not supported.

DISCUSSION

Overall, of the three proposed moderators – age, gender and attitude towards filial piety – only age was identified as a moderator of the association between perceived psychological control and academic performance. Moderation effects for gender and the attitude toward filial piety were not supported in the data from the current sample.

With regards to the moderating effect of age, which was supported, the current findings were in line with previous studies with East-Asian samples. In previous research, significant

negative association between parental psychological control and academic performance was identified for students aged 17 to 30 years (Kim & Dembo, 2000). However, for the younger group, previous research had found a negative albeit nonsignificant association (Lee et al., 2012; Tam, 2009; Wang et al., 2007). This finding was also borne out in the current study.

A possible reason for this phenomenon was the discrepancy of developmental characteristics related to parental psychological control between these two age groups. In the literature, adolescence was generally categorized into three developmental stages: 10-13 for early adolescence; 14-17 for middle adolescence; and 18-mid-twenties for late adolescence (Smetana et al., 2006). Compared to middle adolescents, late adolescents began to focus more on independence and identity (Soenens, Vansteenkiste, & Sierens, 2009). Thus, despite being raised in a collectivist Confucian culture, the pressure for autonomy in late adolescents may be more salient for this group than for their younger counterparts as middle adolescents. Within this schema, late adolescents may perceive their mothers to be more psychologically controlling than do middle adolescents, and this may result in significant difference in terms of the influence of perceived maternal psychological control on academic performance between the two age groups.

In terms of the unsupported moderating effect of gender, the findings based on the current sample appeared to contradict the previous reports with East-Asian samples in which boys were influenced more by perceived maternal psychological control (Tam, 2009). However, caution was advised before drawing this conclusion, as the age range of the participants in the present study differed from that recruited by Tam (2009). Specifically, the participants in this study were students from grades 10 to 12, while the participants in Tam's (2009) study were students from grades three to five. Further research is needed to clarify this moderating effect when child or adolescent age is controlled.

For the unsupported moderating effect of filial piety, although this cultural variable did not interact with psychological control in relation to academic performance in the current sample, it should be further confirmed in future studies as the adolescents in the current sample typically held highly positive attitudes toward filial piety. Thus, the lack of variance on this variable with this particular sample may be one of the reasons for nonsignificant results.

From the view of parenting study, a major contribution of this study was that it explored and attempted to clarify the inconsistent findings in the existing parental psychological control literature with East-Asian contexts (Kim & Dembo, 2000; Lin, 2001; Wang et al., 2012, 2007). For example, in the current study, significant age moderating effect coexisted with a nonsignificant main effect for the whole sample. That is, the significant influence of parental psychological control on academic performance for the older age group was dramatically buffered by the nonsignificant influence for the younger age group. Consequently, it resulted in a nonsignificant influence for the whole sample. We suspected that the nonsignificant findings in Lin's (2001) study might be attributed to the age moderating effect identified in the current study, as participants in Lin's study and those in the current study were of the same age range (i.e. aged 14 to 20 years) and they also shared a cultural background. The findings from this study suggested that the adverse effect of parental psychological control on adolescents' learning outcomes should be assessed developmentally. From a broader view, the current study also made a contribution to the field of family literature by improving the understanding on the risk factors for family dysfunction since psychologically controlling parenting with its risk of child maladjustment interfered with the well-functioning of a family unit.

The current study had limitations in terms of the research design. The study was based on a convenience sample and caution should be exercised in generalizing the findings to all Chinese

adolescents. Potential bias can be introduced by self-reported data due to respondents' tendency for social desirability, although this was unlikely to have been a substantive concern here, as the questions involved in the survey were not potentially stigmatizing or socially undesirable (Supino & Borer, 2012).

Besides the aforementioned contributions and limitations, the age moderating effect found in the current study can be extended in future research. First, the age moderating effect for the association between perceived psychological control and academic performance should be examined with samples from various backgrounds, e.g. different cultures and different age groups. Second, the age moderator was categorized into two levels in the current study due to the characteristics of the sample to broadly distinguish individuals closer to childhood from those entering adulthood. It will be informative for future research to investigate the effect of finer-grained groupings. For example, grouping students based on their year of birth can result in seven age groups for the students aged 14 to 20 years. In this way, the age moderating effect for the association of interest can be further refined developmentally, which may advance understanding of the nuanced changes that may occur with child development and maturation and/or years of education.

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Table 1. Descriptive statistics and reliabilities of study scales

Scales	Min	Max	*M*	*SD*	Cronbach's alpha	Reliability within SEM
Academic performance	1	6	3.93	1.33	.83	NA
S-FPS	1	5	4.65[1]; 3.34[2]	.70[3]; .95[4]	.71	.69
PCS-YSR	–2.96	1.69	–.44	.86	.79	.84

[1]Mean of reciprocal filial piety.

[2]Mean of authoritarian filial piety.

[3]Standard deviation of reciprocal filial piety.

[4]Standard deviation of authoritarian filial piety.

Table 2. Multiple group analysis results for age and gender moderators

Model comparisons	$\chi 2$	df	$\Delta\chi^2$ (Δ df)	p ($\Delta\chi^2$)
Age moderator				
1. Unconstrained model	34.70	38		
2. Factor loading constrained model	37.91	44	1 vs. 2: 3.21 (6)	.78
3. Fully constrained model	41.79	45	2 vs. 3: 3.89 (1)	.049
Gender moderator in older age group (18–20 years old)				
4. Unconstrained model	50.42	38		
5. Factor loading constrained model	61.17	44	7 vs. 8: 10.75 (6)	.10
6. Fully constrained model	62.16	45	8 vs. 9: .99 (1)	.32
Gender moderator in younger age group (14–17 years old)				
7. Unconstrained model	43.09	38		
8. Factor loading constrained model	48.39	44	4 vs. 5: 5.30 (6)	.51
9. Fully constrained model	50.31	45	5 vs. 6: 1.92 (1)	.17

Figure 1. Age moderating results for two age groups.