Revision of the Parental Psychological Control Scale among Chinese College Students

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Abstract The study revised the Parental Psychological Control Scale (PPCS) among Chinese college students ($N = 604$) and analyzed its construct validity, criterion-related validity, internal reliability, and test-retest reliability using an exploratory structural equation modeling (ESEM) approach. Results showed that the revised PPCS contained three factors, including nine items. Notably, the three-factor ESEM solution fits the data better than the classical confirmatory factor analysis (CFA) approach. Measurement invariance of the scale was confirmed across gender groups based on ESEM. The criterion-related validity of the PPCS was also investigated within the ESEM approach using self-esteem as a validity criterion. The internal consistency and the test-retest reliability were also examined. Findings showed that the psychometric characteristics of the PPCS were favorable for its use as an assessment tool for parental psychological control of Chinese college students.

Key words Parental psychological control scale; ESEM; Measurement invariance; Chinese college students

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The typical transition from adolescence to adulthood has been delayed as socioeconomic demands have delayed the transition to social roles[1]. Most emerging adults (aged between 18 and 25) do not consider themselves adults and their parents agree. As a result, parents are faced with the dilemma of maintaining a close and supportive relationship while granting their emerging adult children increasing autonomy in their parent - adult relationship. Not surprisingly, parents' chosen methods of control and support continue to influence their children's adjustment as emerging adults[1-3].

Parental use of psychological control during emerging adulthood may hinder their children's growing sense of autonomy, thus leading to behavioral problems. Parental psychological control refers to parental attempts at control that interfere with a person's psychological or emotional development, such as thinking processes, expression of self, or attachment to parents[4-6]. Parental psychological control has almost exclusively been characterized as a negative form of parenting style[4]. According to Schaefer[7], psychologically controlling parents were perceived by their children as intrusive, possessive, overprotective, directive, and controlling through guilt. Numerous studies confirmed that psychologically controlling parents would render adolescent's social withdrawal, aggressive behavior[8-10], emotional ill-being[5,11-12], and low self-esteem[13]. Therefore, parental psychological control is a crucial predictor of the mental health status of their offspring.

Although research has elucidated the influence of parental psychological control during childhood and adolescence, its impact on emerging adulthood has only recently begun to be explored[14-15]. Consist to previous studies, parental psychological control correlated with college students' negative psychological status, such as Narcissism[15], and problematic behavior, such as aggression[1,14].

The reason for the poverty of existing research on parental psychological control among emerging adults may be the lack of the proper tool to measure the concept. While a number of scales were developed to measure parental psychological control, such as the Child's Report on Parental Behavior Inventory (CRPBI[7]), the Psychological Control Scale - Youth Self-Report (PCS-YSR[4]), the Parenting Questionnaire (PQ), and the Parental Psychological Control Scale (PPCS[5,16]), they are all developed aiming the adolescence group. The CRPBI is the first parent-child assessment instrument that included a specific scale of psychological control[4]. The scale is unidimensional with three components as guilt induction, love withdrawal, and excessive pressure for change. The major pitfalls concerning the CRPBI were twofold. First, some items in the scale appeared ambiguous as they failed to distinguish the concept between parental psychological control and behavior control, *e. g.*, "is always telling me how I should behave". However, empirical studies have shown that parental psychological control and behavior control have different effects on their children's development. Parental psychological control is closer to an attempt to "control" and often leads to adverse reactions in their offspring[17-18]. On the other hand, parental behavioral control is beneficial for children's socialization and adaptive development because such control provides the necessary guidance for children's behavior without limiting their individualized devel-

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opment[16]. Second, the dimension assessing parental psychological control in the CRPBI was labeled "Psychological Autonomy versus Psychological Control", implying the assumption that parental psychological control and autonomy granting were two extremes of the same parenting behavior. However, researchers have increasingly agreed that the two concepts belong to different parenting styles[19-20]. In other words, parental psychological control and autonomy support were not merely negatively related, but are two relatively independent concepts.

The PCS-YSR mainly addressed the first problem of the CRPBI as it clearly distinguished the concepts between parental psychological control and behavioral control[4]. The PCS-YSR was widely used in empirical studies, even among college students[1]. Nonetheless, it was developed and verified in the U.S. so it might lack validity when applied in the Eastern cultural context. The PQ mainly addressed the second problem of the CRPBI. Confirmatory factor analyses proved that parental psychological control and autonomy support were distinct parenting constructs rather than opposite ends of a continuum. However, parental psychological control is merely a factor included in the PQ and there was no evidence that it could be used separately from the whole scale. Developed by Wang *et al.*[5,16], the PPCS adopted items from the above scales and added new items revealing Chinese culture such as filial piety (*e.g.*, "My parents say, if I really love them, I would do my best for the sake of the family"). The scale was built in English and translated into Chinese and applied among adolescents from the U.S. and China. Since the goal of the present study was to apply in the Chinese cultural context, the PPCS was chosen for examination. The PPCS showed satisfactory criterion-related validity and internal consistency when applied to Chinese adolescents. It was negatively correlated with parental autonomy support, child emotional functioning, academic performance, and Cronbach's α ranged between 0.89 – 0.93[5,16]. However, the other psychometric properties (such as construct validity, and test-retest reliability) were not reported in detail due to the presence of a larger number of variables.

It is almost universally acknowledged that the Chinese culture, as opposed to the western one, places more emphasis on interpersonal relationships than individualism[21]. For example, the concept of "guan" in China implies that parents were expected to manage or discipline children through high demands, firm instructions, close monitoring, and a sense of humiliation so that children's behavior can conform to social expectations. It was safe to say that parental psychological control was more prevalent in China than in the western culture, as was proven by empirical studies[5,16]. Thus, there might be assumptions that parental control would be less associated with the intrusion of children's sense of self, given the high value placed on interdependence[22-23]. However, empirical research suggested otherwise. The harmful effects of parental psychological control were similar across cultures[2,16].

The aim of the present study was to explore the reliability and validity when the PPCS was applied among Chinese college students. First, we hypothesized that the PPCS adapted for college students may have fewer items than the original version since parents tend to grant their children more autonomy in college than in primary and secondary schools. Second, we expected the PPCS would show good psychometric characteristics, such as high reliability, favorable model fit, and having expected correlation with external variables, when applied among Chinese college students, given the development of the scale took the Chinese cultural context into account.

1 Method

1.1 Participants Participants were 604 Chinese college students (244 males and 360 females; mean age = 20.11 years, SD = 1.37 years) from Guangdong Province. The data was collected in March 2022 using a convenience sampling approach. Investigators sent a Sojump link (https://www.wjx.cn/; a Chinese online survey platform) to potential subjects who were enrolled in the researchers' classes. Students who agreed to participate in the study would complete and submit the web-based questionnaire onsite under the supervision of the researchers. In order to examine the test-retest reliability, 38 participants (15 males and 23 females; mean age = 20.37 years, SD = 1.23 years) were randomly selected to take the test after two weeks. All participants were informed regarding the purpose of the current study and gave written consent upon participation.

1.2 Measures

1.2.1 The parental psychological control scale. The original PPCS contained 18 items, some of which came from Barber *et al*[4]. The psychometric properties of the PPCS were examined among US and Chinese children in primary and secondary schools[5,16]. Three dimensions were included in the scale, guilt induction (10 items), love withdrawal (5 items), and authority assertion (3 items). Respondents to PPCS were asked to respond on a 4-point Likert-type scale (1 = not at all true, 4 = very true). A high total score indicated a high level of parental psychological control.

1.2.2 The Rosenberg self-esteem scale (RSES). Previous studies have shown the negative relation between parental psychological control and self-esteem among emerging adults[24-25]. The RSES was adopted to examine the criterion-related validity of the PPCS. The 10 items are each answered on a 4-point Likert-type scale. The Cronbach's α for the total score was 0.871 in the present study.

1.3 Data analysis Mplus 8.3 was used to explore the validity and reliability of the PPCS. For validity, we examined the factor structure, measurement invariance, and criterion-related validity of the PPCS[26]. To accommodate the categorical nature of the Likert scale, the mean & variance-adjusted weighted least squares (WLSMV) estimator was used. The model fitness was evaluated using the comparative fit index (CFI) and Tucker – Lewis index (TLI) > 0.90 and root mean square error of approximation (RM-

SEA) values < 0.08 with 90% confidence interval (CI) as indicative of acceptable model fit[27]. To test differences among configural, metric, and scalar measurement invariance, ΔCFI was calculated with a critical level of 0.01[28-29]. Based on theoretical considerations and previous empirical research literature, the PPCS was expected to be negatively correlated with the RSES[13].

For reliability, the composite reliability and test-retest reliability of the PPCS were calculated. Due to the small sample size, the test-retest reliability was measured by the Bayesian correlation coefficient for the time one and time two measurement scores.

2 Results

The ICM-CFA model showed a worse fit, *TLI* = 0.863, *CFI* = 0.882, and *RMSEA* = 0.101, compared with the ESEM with target rotation, *TLI* = 0.907, *CFI* = 0.938, and *RMSEA* = 0.083. However, the RMSEA index of the ESEM is still higher than 0.080. Also, the ESEM indicated that nine items presented relatively low primary factor loading ($\lambda < 0.4$ on the target factor[30]) or a small gap between primary and secondary loading (*e. g.*, 0.20[30]). Table 1 showed the ESEM factor loading matrix for the original 18-item PPCS. Eight items were deleted due to low primary factor loading (items 4, 5, 8, 9, 11, 14, 15, 16), and one item was deleted due to high cross-factor loading (item 6). The analysis of the 9-item version of the PPCS was re-run. The ESEM showed a satisfactory model fit, *TLI* = 0.969, *CFI* = 0.990, and *RMSEA* = 0.058. On the other hand, the RMSEA of ICM-CFA is higher than the standard, *TLI* = 0.932, *CFI* = 0.955, and *RMSEA* = 0.086 (Table 2).

Table 1 ESEM standardized factor loadings for the original PPCS

Item	Guilt induction	Love withdrawal	Authority assertion
1. My parents tell me about all the things they have done for me	0.401***	−0.073	0.023
2. My parents say, if I really cared for them, I would not do things that cause them to worry	0.467***	−0.109	0.152*
3. My parents tell me how disappointed they are in me when I do not do things their way	0.694***	0.080	0.065
6. My parents bring up my past mistakes when they criticize me	0.425***	0.063	0.311***
7. My parents tell me of all the sacrifices they made for me	0.477***	0.083	0.209***
8. My parents tell me that I should feel guilty when I do not meet their expectations	0.335***	0.356***	0.147**
9. My parents tell me that I am not a good member of the family when I do something that is against their wishes	0.314***	0.532***	0.108*
11. My parents tell me that I should feel ashamed when I do not behave as they wish	0.172**	0.650***	0.135**
14. My parents say, if I really loved them, I would do my best for the sake of the family	0.229***	0.397***	0.227***
15. My parents tell me that I am not as good as other kids when I fall short of their expectations	0.233***	0.296***	0.362***
4. My parents are less friendly with me, if I do not see things their way	0.757***	0.186**	−0.014
5. My parents will not let me do things with them if I do something they do not like	0.658***	0.305***	−0.071
10. My parents avoid looking at me when I have disappointed them	0.18***	0.656***	0.122***
12. My parents act cold and unfriendly if I do something they do not like	0.258***	0.578***	0.135**
13. If I have hurt their feelings, my parents stop talking to me until I please them again	0.046	0.627***	0.197***
16. My parents tell me that what they want me to do is the best for me and I should not question it	0.246***	0.304***	0.357***
17. My parents say, when I grow up, I will appreciate all the decisions they make for me	0.149***	−0.001	0.678***
18. My parents answer my arguments by saying things like, "You'll know better when you grow up"	0.093	−0.268***	0.934***

Note: Primary factor loadings are highlighted. * shows $P < 0.05$; ** shows $P < 0.1$; *** shows $P < 0.001$.

Table 2 The model fitness indices of ICM-CFA and ESEM

Item		χ^2	*df*	χ^2/df	*TLI*	*CFI*	*SRMR*	*RMSEA* (90% *CI*)
Original scale	ICM-CFA	948.274	132	7.184	0.863	0.882	0.053	0.101 [0.095, 0.107]
	ESEM	530.248	102	5.199	0.907	0.938	0.035	0.083 [0.076, 0.090]
Revised scale	ICM-CFA	130.236	24	5.427	0.932	0.955	0.046	0.086 [0.072, 0.100]
	ESEM	36.697	12	3.058	0.969	0.990	0.015	0.058 [0.037, 0.080]

The factor loading matrix for the final ESEM was shown in Table 3. While all the items strongly loaded onto their target factor, some cross-loadings were also significant, suggesting that the fit of the ICM-CFA model was unlikely to be good[31]. The latent factor correlations between (a) guilt induction – love withdrawal, (b) guilt induction-authority assertion, and (c) love withdrawal – authority assertion were less inflated in ESEM (*rs* = 0.553, 0.560 and 0.601, $P < 0.001$, respectively) compared with those estimated based on the ICM-CFA (*rs* = 0.738, 0.707 and 0.634, $P < 0.001$, respectively), suggesting that ESEM has higher discriminant validity than the ICM-CFA model[32]. The PPCS also showed full scalar measurement invariance across gender (Table 4). Male students ($M = 38.86$, $SD = 11.50$) reported higher levels of parental psychological control than female students ($M = 35.98$, $SD = 11.07$, $t = 3.09$, $P < 0.01$).

Table 3 ESEM standardized factor loadings for the best fitting model

Item	Guilt induction	Love withdrawal	Authority assertion
1. My parents tell me about all the things they have done for me	0.836***	−0.155***	−0.203***
2. My parents say, if I really cared for them, I would not do things that cause them to worry	0.652***	−0.118**	0.065
3. My parents tell me how disappointed they are in me when I do not do things their way	0.402***	0.317***	0.081
7. My parents tell me of all the sacrifices they made for me	0.495***	0.167***	0.198***
10. My parents avoid looking at me when I have disappointed them	0.057	0.816***	−0.002
12. My parents act cold and unfriendly if I do something they do not like	0.036	0.846***	0.017
13. If I have hurt their feelings, my parents stop talking to me until I please them again	0.033	0.754***	0.021
17. My parents say, when I grow up, I will appreciate all the decisions they make for me	0.037	0.090	0.701***
18. My parents answer my arguments by saying things like, "You'll know better when you grow up"	0.027	−0.103**	0.879***

Note: Primary factor loadings are highlighted. ** shows $P<0.1$, and *** shows $P<0.001$.

Table 4 Multi-group ESEM measurement invariance across gender

Model	*CFI*	*TLI*	*RMSEA* (90% *CI*)	Δ*CFI*
Configural	0.989	0.967	0.060 [0.036, 0.083]	–
Metric (λ)	0.990	0.983	0.042 [0.020, 0.062]	+0.001
Scalar (λ + θ)	0.985	0.977	0.049 [0.031, 0.067]	−0.005

The ESEM used to test the criterion-related validity of the PPCS fitted the data well, *TLI* = 0.957, *CFI* = 0.983, and *RMSEA* = 0.062, 90% *CI* = [0.045, 0.079]. All three dimensions in the PPCS (guilt induction, love withdrawal, authority assertion) were correlated negatively with the total score of the RSES, *rs* = −0.191, −0.256, −0.160, $P<0.001$, respectively (Fig. 1).

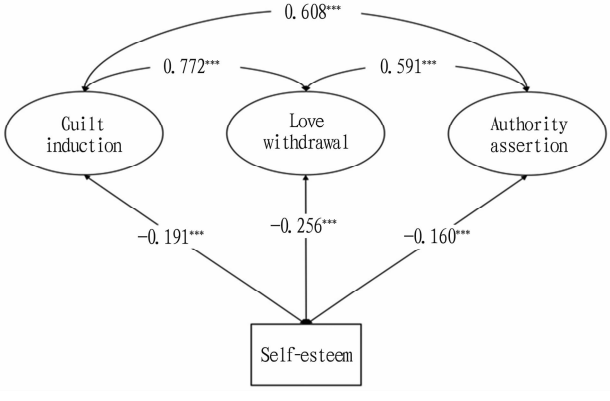

Fig. 1 ESEM criterion-related validity model

The composite reliability under ESEM was 0.903[33]. Due to the small sample size of the test-retest study, the test-retest reliability was calculated using the Bayesian method, which has shown robustness in small samples[34]. The results showed that the 2-week test-retest correlation was *rs* = 0.878, $P<0.001$.

3 Discussion

The present study revised the PPCS to be applied among college students in Chinese cultural contexts. The ESEM approach confirmed the satisfactory fitness of the three-factor structure of the PPCS, including guilt induction, love withdrawal, and authority assertion as three distinct but interrelated aspects of parental psychological control. However, nine out of 18 items of the scale were removed from the original version proposed by Wang *et al.*[5,16] because of low target factor loadings. Emerging adult children gained independence and spent more time outside their homes, time might dim their memory of parenting styles. Nonetheless, deleting these items did not affect the factor structure of the original scale. The revised version presented a more even distribution of items among the three dimensions than the original one, from 10∶5∶3 to 4∶3∶2. Interestingly, the 9-item version of the PPCS has 5 items that are included in the PCS-YSR as well. This may suggest that the PCS-YSR could be applied in different cultural and educational contexts. Future research is needed to replicate our findings.

Compared to the ICM-CFA, ESEM showed a better fit, as demonstrated in many studies[31,35]. This is most likely because of the restrictive demands of the ICM-CFA that all cross-loadings should be fixed at zero. The ESEM also presented better discriminate validity in distinguishing the latent factors of the PPCS. The correlations among the three dimensions of the PPCS were lower in the ESEM than in the ICM-CFA model, suggesting less inflated correlations among factors. It is worth noting that the model fitness of ESEM is generally better than the ICM-CFA model because of the trade-off effect between parsimony and precision. The precision of the ESEM was achieved at the cost of losing model parsimony to some extent. In other words, the ICM-CFA uses fewer parameters to achieve model fitness. There are significant strategic advantages to adopting the CFA approach when the ICM-CFA model fits the data well[35]. Nonetheless, at least in this investigation, the ICM-CFA model was unable to reach a satisfactory model fit, but the ESEM model was able to do so. Therefore, the ESEM was adopted to conduct the following validity and reliability examination.

The ESEM confirmed the PPCS processed scalar measurement invariance across gender groups. In line with previous studies, male students exhibited higher levels of parental psychological control than female students[9]. The ESEM also demonstrated the criterion-related validity of the PPCS in terms of college students'

self-esteem. All three dimensions of the PPCS were negatively related to students' self-esteem. The coefficients of the composite reliability and test-retest reliability were high (>0.80), which proved the scale's internal as well as time consistency.

4 Limitations and future directions

The present study adopted various analysis methods throughout the revision of the PPCS among Chinese college students. However, there were several limitations. First, the samples in this study were all from the same region in China. Therefore, the sample size and the variety of the sample are limited. Further research is needed to support whether the PPCS is applicable to a larger group of college students in China. Second, only one validated scale was selected as a criterion in the present study. For future studies, researchers might consider other scales that could be used as criteria. Last but not least, the present study combines both parents' parenting behavior (*e. g.*, psychological control). Although previous research has demonstrated a high correlation between paternal and maternal psychological control[24,36], the correlation's effect size was moderate suggesting paternal and maternal psychological controls are distinguishable[37]. Future studies could explore the measurement invariance across the father and the mother of the PPCS.

5 Conclusion

The findings of this study provide evidence that the PPCS is a valid and reliable scale among Chinese college students. The scale is relatively brief (containing nine items), so it is easy to apply in empirical studies. The PPCS also provides an excellent tool for educational practitioners, researchers, and others seeking to measure parental psychological control levels and assess the impact of parental psychological control on Chinese college students.

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