



# Chinese version of comprehensive early childhood parenting questionnaire (CECPAQ-CV): Factor structure, reliability, and validity

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## Abstract

Although the research interest in parenting behaviors of Chinese parents has increased during the past two decades, there remains a lack of an adequate and comprehensive Chinese assessment tool for these parenting behaviors in early childhood. Drawn from two samples of Chinese mothers with young children (i.e., 1- to 4-year-olds), this research addressed this gap by examining the factor structure, reliability, and validity of a Chinese version of the Comprehensive Early Childhood Parenting Questionnaire (CECPAQ-CV). Confirmatory factor analyses showed that a 5-factor model, consisting of 13 micro-dimensions of parenting behaviors, best fitted the data for Sample 1 ( $N_1 = 2179$ ) compared with 1-factor, 2-factor, and 4-factor models. This 5-factor model was further validated with the data for Sample 2 ( $N_2 = 160$ ). Reliability was good. The criterion validity of the CECPAQ-CV was supported by expected relations with maternal parenting stress and child externalizing and internalizing behaviors. The convergent and discriminant validity of the CECPAQ-CV was established with the Parent-Child Conflict Tactics Scale. The results indicate that the CECPAQ-CV holds promise as a reliable and valid tool to measure important dimensions of early parenting in China.

**Keywords** Parenting · CECPAQ · Factor structure · Chinese parents · Early childhood

According to the Human Development Reports, China has the second largest population of children under the age of five (United Nations Development Programme, 2019). The majority of these 86 million young children are reared by their parents and their development is greatly dependent on what behaviors their parents use with them (Bornstein & Landsford, 2010). Our understanding of these parenting behaviors in China is still preliminary (Chen, Sun, & Yu, 2017; Li & Xie, 2017) and one of the attempts to advance this understanding is to provide researchers and educators with culturally validated assessments.

Over two decades ago, research on Chinese parenting was sparse. In few studies that were conducted, researchers found that Chinese parents were strict and controlling towards their

child (Chao, 1994; Fung, 1999). The past twenty years have witnessed a growing number of studies on early Chinese parenting. In the main, contemporary Chinese parents show high warmth and acceptance and low hostility and negativity (e.g., Camras, Kolmodin, & Chen, 2008; Chen et al., 2017; Xing & Wang, 2017). Yet the use of harsh discipline has also been recorded (Liu & Wang, 2015a). Increasingly abundant self-reported measures have helped researchers reveal this pattern of parenting among Chinese parents (Table 1 lists the six most frequently used parenting questionnaires for mainland Chinese parents with young children). However, existing questionnaires used with Chinese samples still have several shortcomings, including focusing on only a limited number of parenting dimensions, mixing items measuring parental cognitions and parenting behaviors, not being suitable for parents with infants and toddlers, and not being theoretically and culturally grounded. There remains a lack of an adequate and comprehensive Chinese assessment tool of parenting behaviors in early childhood. Therefore, the current study was designed to address this research gap.

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**Table 1** Summary of six most frequently used parenting questionnaires for mainland Chinese parents with young children

Measure (Parenting Dimensions)	Authors (Year)	Child age	Items <sup>†</sup>	Dimensions Used
<p>Self-Expressiveness Within the Family Questionnaire (SEFQ):</p> <p>(a) Positive expressiveness (23 items);</p> <p>(b) Negative expressiveness (17 items).</p>	<p>Camras, Bakeman, Chen, Norris, and Cain (2006)<sup>‡</sup></p> <p>Camras et al. (2008)</p> <p>Cheng, Wang, Wu, and Su (2018a)</p> <p>Cheng, Wang, Zhao, and Wu (2018b)</p> <p>Hu, Wang, and Liu (2017)</p> <p>Wu, Wang, and Liu (2017)</p> <p>Liu, Zhou, Dong, Wang, and Hao (2019)</p> <p>Xing and Wang (2017)<sup>‡</sup></p> <p>Chen (2020)</p> <p>Chen and Zhou (2019)</p> <p>Xing, Liu, and Wang (2019a)</p>	<p>3 years</p> <p>3 years</p> <p>3–5 years</p> <p>3–5 years</p> <p>3–5 years</p> <p>3–5 years</p> <p>1.2 years</p> <p>3–6 years</p> <p>3.2 years</p> <p>3.6–6.8 years</p> <p>4 years</p> <p>3–5 years</p> <p>3–5 years</p> <p>3–5 years</p> <p>3–5 years</p> <p>3–6 years</p> <p>4 years</p> <p>3–6 years</p> <p>4 years</p> <p>4.8 years</p> <p>4.1 years</p> <p>2 years</p>	<p>12</p>	<p>(a) (b)</p> <p>(a) (b)</p> <p>(b)</p> <p>(b)</p> <p>(a) (b)</p> <p>(a) (b)</p> <p>(a)</p> <p>(c) (d)</p> <p>(c)</p> <p>(c)</p> <p>(c)</p> <p>(e) (g) (h)</p> <p>(e) (h)</p> <p>(g)</p> <p>(h)</p> <p>(e) (h)</p> <p>(e) (h)</p> <p>(e)</p> <p>(e)</p> <p>(e)</p> <p>(e) (h)</p> <p>Acceptance</p> <p>Rejection</p> <p>Encourage achievement</p> <p>Protection &amp; concern</p> <p>Warmth</p> <p>Induction / reasoning</p> <p>Power assertion</p> <p>Supportive parenting</p> <p>Power assertion</p> <p>(i) (j) (k) (l) (m)</p> <p>(i) (j) (k) (l) (m)</p> <p>(i) (k)</p> <p>Shaming / psychological control</p>
<p>Parental Acceptance and Rejection Questionnaire (PARQ):</p> <p>(c) Warmth (8 items);</p> <p>(d) Hostility (6 items).</p>	<p>Chen, Hastings, Rubin, Chen, Cen, and Stewart (1998)</p>	<p>2 years</p>	<p>91</p>	<p>Acceptance</p> <p>Rejection</p> <p>Encourage achievement</p> <p>Protection &amp; concern</p> <p>Warmth</p> <p>Induction / reasoning</p> <p>Power assertion</p> <p>Supportive parenting</p> <p>Power assertion</p>
<p>Parent-Child Conflict Tactics Scale (CTSPC):</p> <p>(e) Corporal punishment (6 items);</p> <p>(f) Non-violent discipline (4 items);</p> <p>(g) Physical abuse (7 items);</p> <p>(h) Psychological aggression (5 items).</p>	<p>Xing, Zhang, Shao, and Wang (2017)</p> <p>Xing, Wang, and Wang (2018)</p> <p>Xing, Yin, and Wang (2019b)</p> <p>Xing, Zhang, Shao, and Wang (2017)</p>	<p>3–6 years</p> <p>4 years</p> <p>4.8 years</p> <p>4.1 years</p>	<p>7</p>	<p>(e) (g) (h)</p> <p>(e) (h)</p> <p>(g)</p> <p>(h)</p> <p>(e) (h)</p> <p>(e) (h)</p> <p>(e)</p> <p>(e)</p> <p>(e)</p> <p>(e) (h)</p>
<p>Chinese Parenting Practices Measure (CPPM):</p> <p>(i) Encouragement of modesty (4 items);</p> <p>(j) Beliefs of maternal involvement (4 items);</p> <p>(k) Directiveness (3 items);</p> <p>(l) Shaming / love withdrawal (3 items);</p> <p>(m) Protection (3 items).</p> <p>Parenting Styles and Dimensions Questionnaire (PSDQ):</p> <p>(n) Warmth / acceptance (7 items);</p>	<p>Wu et al. (2002)<sup>‡</sup></p> <p>Chen et al. (2017)</p> <p>Nelson et al. (2006a)</p> <p>Wu et al. (2002)<sup>‡</sup></p> <p>Chen et al. (2017)</p>	<p>5.2 years</p> <p>3–6 years</p> <p>4–6.8 years</p> <p>Preschool ages</p> <p>3–6 years</p>	<p>18</p>	<p>(i) (j) (k) (l) (m)</p> <p>(i) (j) (k) (l) (m)</p> <p>(i) (k)</p> <p>Shaming / psychological control</p> <p>(n) (o) (p) (q) (r) (s)</p> <p>(n) (o) (p) (q) (r) (s)</p>
<p>Child Rearing Practice Report (CRPR)</p>	<p>Chen et al. (2002)</p> <p>Chen et al. (2014)</p>	<p>2 years</p> <p>2 years</p>	<p>91</p> <p>18</p>	<p>Encourage achievement</p> <p>Protection &amp; concern</p> <p>Warmth</p> <p>Induction / reasoning</p> <p>Power assertion</p> <p>Supportive parenting</p> <p>Power assertion</p>

**Table 1** (continued)

Measure (Parenting Dimensions)	Authors (Year)	Child age	Items <sup>†</sup>	Dimensions Used
(o) Reasoning / induction (4 items); (p) Democratic participation (4 items); (q) Physical coercion (5 items); (r) Verbal hostility (3 items); (s) Nonreasoning (3 items).	Nelson et al. (2006a) Nelson, Hart, Yang, Olsen, and Jin (2006b) Porter et al. (2005) Ren and Edwards (2015)	4–6 years 3.8–6.3 years 4–6 years 3–5 years	8 60 49	(q) (q) Psychological control (n) (o) (p) (s) Physical & verbal hostility (o) (p) (r) (s) Warmth & involvement Good nature / easy going Clear guidance Corporal punishment Directiveness Insecure guidance

<sup>†</sup> Dimensions used in the study which have different numbers of items from the original version of the questionnaire

<sup>‡</sup> The study with the full range of parenting dimensions of the corresponding questionnaire that has been conducted the earliest

parenting. In the main, contemporary Chinese parents show high warmth and acceptance and low hostility and negativity (e.g., Camras, Kolmodin, & Chen, 2008; Chen et al., 2017; Xing & Wang, 2017). Yet the use of harsh discipline has also been recorded (Liu & Wang, 2015a). Increasingly abundant self-reported measures have helped researchers reveal this pattern of parenting among Chinese parents (Table 1 lists the six most frequently used parenting questionnaires for mainland Chinese parents with young children). However, existing questionnaires used with Chinese samples still have several shortcomings, including focusing on only a limited number of parenting dimensions, mixing items measuring parental cognitions and parenting behaviors, not being suitable for parents with infants and toddlers, and not being theoretically and culturally grounded. There remains a lack of an adequate and comprehensive Chinese assessment tool of parenting behaviors in early childhood. Therefore, the current study was designed to address this research gap.

There is no unanimous agreement over a single, comprehensive theory of parenting thus far, although most scholars agree that parenting is a multi-dimensional construct (O'Connor, 2002). Two seminal views of parenting exist: one focuses on within-parent similarities across individual parenting dimensions (a person-centered parenting styles approach; O'Connor, 2002) while another focuses on the specificity of individual parenting dimensions (a variable-centered parenting dimensions approach; Grusec and Davidov, 2010). The latter view has been progressively supported (Grusec & Davidov, 2010) and is said to be especially useful for examining parenting behaviors in understudied population (e.g., Chinese parents; Bornstein, 2012). Moreover, dimensions can be and usually are used to identify parenting styles.

Based on the dimensions approach, different clusters of parenting dimensions have been found, including (a) one general dimension ranging from hostile, cold, and rejecting behaviors that hinder child development to supportive, warm, and accepting behaviors that promote child development (Russell, 1997); (b) two orthogonal dimensions denoted by warmth and control (e.g., Deater-Deckard et al., 2011), of which distinctive combinations also differentially influence child development (Maccoby & Martin, 1983); and (c) parenting dimensions universally relevant to child development and dimensions relatively culturally-specific (Grusec & Davidov, 2010). Of note, four parenting dimensions are considered universally crucial: *support* to alleviate child distress (attachment theory; Bowlby, 1969), *structure* to facilitate child cooperation (attachment theory; Bowlby, 1969), *stimulation* to scaffold child understanding (Vygotsky's theory; Holden, 2010), and *disciplinary strategies* to mitigate or assert hierarchy in the family (social learning theory; Bandura, 1977). This model by Grusec and Davidov (2010) is becoming influential in the field and has guided the development of novel parenting questionnaires.

## The Comprehensive Early Childhood Parenting Questionnaire

To address the dearth of an adequate and comprehensive Chinese questionnaire of parenting behaviors in early childhood, we selected the Comprehensive Early Childhood Parenting Questionnaire (CECPAQ; Verhoeven, Deković, Bodden, & van Baar, 2017) and provided the first efficacy of using this tool with Chinese mothers to measure their early parenting behaviors. The CECPAQ, a 54 items questionnaire, was originally developed for Dutch parents with children aged between 1 and 4 years. During the initial development of the CECPAQ, five macro-dimensions of parenting (detailed below) were deduced which were based on attachment theory (Bowlby, 1969), Vygotsky's sociocultural theory of learning (Holden, 2010), and social learning theory (Bandura, 1977). Items from nine parenting scales (see Verhoeven et al., 2017 Appendix) were reviewed for their appropriateness of tapping the relevant parenting behaviors. These selected 54 items were evaluated by experts in consideration of their importance for child early development and their actual frequencies in everyday life. There are at least four reasons as to why the CECPAQ is a preferable alternative to the existing parenting questionnaires in China.

First, as seen in Table 1, most measures tap a limited number of parenting dimensions. The Self-Expressiveness Within the Family Questionnaire (SEFQ, 40 items; Camras et al., 2006) and Parental Acceptance and Rejection Questionnaire (PARQ, 14 items; Xing & Wang, 2017) tap only two parenting dimensions. Another four measures are also less comprehensive, focusing on only four (Parent-Child Conflict Tactics Scale, CTSPC, 22 items; Cui et al., 2016) and Child Rearing Practices Report, CRPR, 91 items; Chen et al., 1998), five (Chinese Parenting Practices Measure, CPPM, 18 items; Wu et al., 2002), or six dimensions (Parenting Styles and Dimensions Questionnaire, PSDQ, 26 items; Wu et al., 2002).

The CECPAQ, however, consists of five macro-dimensions (i.e., support, stimulation, structure, harsh discipline, and positively discipline) which taps thirteen micro-dimensions of parenting behaviors including sensitivity, responsiveness, affection, involvement in activities, exposure, using toys, consistency, overreactivity, laxness, verbal punishment, physical punishment, psychological control, and positive discipline. Obviously, the CECPAQ captures a wider range of parenting behaviors, which may have the potential to provide a more complete snapshot of parenting in early childhood. Of note, each of these five macro-dimensions of parenting has been found to be relevant to the development of young Chinese children (see Luo, Tamis-LeMonda, & Song, 2013 for a review). In general, support, stimulation, structure, and positive discipline are associated with higher social competence (e.g., Chen et al., 2014; Ren & Edwards, 2015), whereas harsh discipline is associated with more problem behaviors (e.g., Cui et al., 2018; Xing et al., 2018).

Second, some questionnaires are composed of scales measuring both parenting behaviors and parental cognitions (e.g., the CPPM measures encouragement of modesty and beliefs of maternal involvement). This phenomenon also occurs at the item level. For instance, among the items of maternal involvement in the CPPM, one is described as “A mother’s sole interest is in taking care of her children” while another is described as “Mothers express love by helping children to succeed in school”. This could be especially problematic as behaviors and cognitions are different aspects of parenting (Bornstein & Landsford, 2010) and it is difficult to draw a firm conclusion for the roles played by constructs measured with conceptually confounded items. In contrast, the CECPAQ focuses on parenting behaviors solely and the items are worded in such a way that parental cognitions are not confounded. As such, the CECPAQ has the potential to reveal relatively accurate, unconfounded associations between parenting behaviors and child outcomes, which may, in turn, facilitate future interventions specifically targeting those parenting behaviors.

Third, with the exception of the CRPR (e.g., Chen et al., 1998), the questionnaires in Table 1 are only suitable for parents of preschool- or school-aged children. The CECPAQ was initially developed to tap into parenting behaviors important for child development during the first 4 years (Verhoeven et al., 2017). Therefore, the CECPAQ could fill the age gap in the literature on the parenting behaviors of Chinese parents with infants and toddlers.

Finally, questionnaires including CRPR and PSDQ were developed on the basis of the parenting styles approach that uses typologies established from WEIRD (Western, educated, industrial, rich, and democratic) populations (Nielsen, Haun, Kärtner, & Legare, 2017) to depict distinctive combinations of naturally occurring parenting behaviors (Maccoby & Martin, 1983). However, since mainland Chinese parents differ from WEIRD samples on developmental experiences, these prototypes of parenting do not necessarily generalize to Chinese parents (Li & Xie, 2017). Measures based on the styles approach may lead to questionable validity and, even worse, misleading interpretations of parenting (Chao, 1994; Li & Xie, 2017). A good example is the ill-established structure of the CRPR among Chinese studies, in which parenting dimensions are distinctively constructed using a different selection of items (see Table 1).

In contrast, the CECPAQ was developed based on the parenting dimensions approach, which describes parenting as multifaceted and situationally determined (Grusec & Davidov, 2010). This approach has been acknowledged for its appropriateness and empirical validity in capturing the specific functional meaning of parenting behaviors in understudied cultures (Bornstein, 2012). The developmental relevance of parenting dimensions included in the CECPAQ has been cross-culturally validated (e.g., Deater-Deckard et al., 2011; Huang et al., 2011; Mesman, van IJzendoorn, &

Bakermans-Kranenburg, 2012) including among Chinese families (Luo et al., 2013). Therefore, the CECPAQ is more theoretically and culturally grounded compared with CRPR and PSDQ.

## The Present Study

Given the aforementioned strengths of the CECPAQ, the present study was designed to determine whether this measure could be reliably and validly used with Chinese parents with young children. Maternal reports on a Chinese version of the CECPAQ (CECPAQ-CV) were collected as mothers remain the primary caregiver of young children in China. Mothers have the most responsibility for childrearing and they offer affection, scaffolding, and guidance to facilitate child development (Barnard & Solchany, 2002). To this end, we aimed at examining the factor structure, reliability, and validity of the CECPAQ-CV with Chinese mothers.

For factor structure, we first conducted confirmatory factor analyses similar to those in the original study (Verhoeven et al., 2017). That is, we tested a 5-factor model (Fig. 1a) with support, stimulation, structure, harsh discipline, and positive discipline built upon the 13 micro-dimensions of parenting behaviors against a 1-factor model in which parenting ranges from negative to positive (Fig. 1b; Russell, 1997) and a 2-factor model (Fig. 1c) with two orthogonal dimensions to organize all the parenting behaviors (Deater-Deckard et al., 2011): warmth/support (sensitivity, responsiveness, affection, involvement in activities, exposure, and using toys) and control (consistency, overreactivity, laxness, verbal punishment, physical punishment, psychological control, and positive discipline).

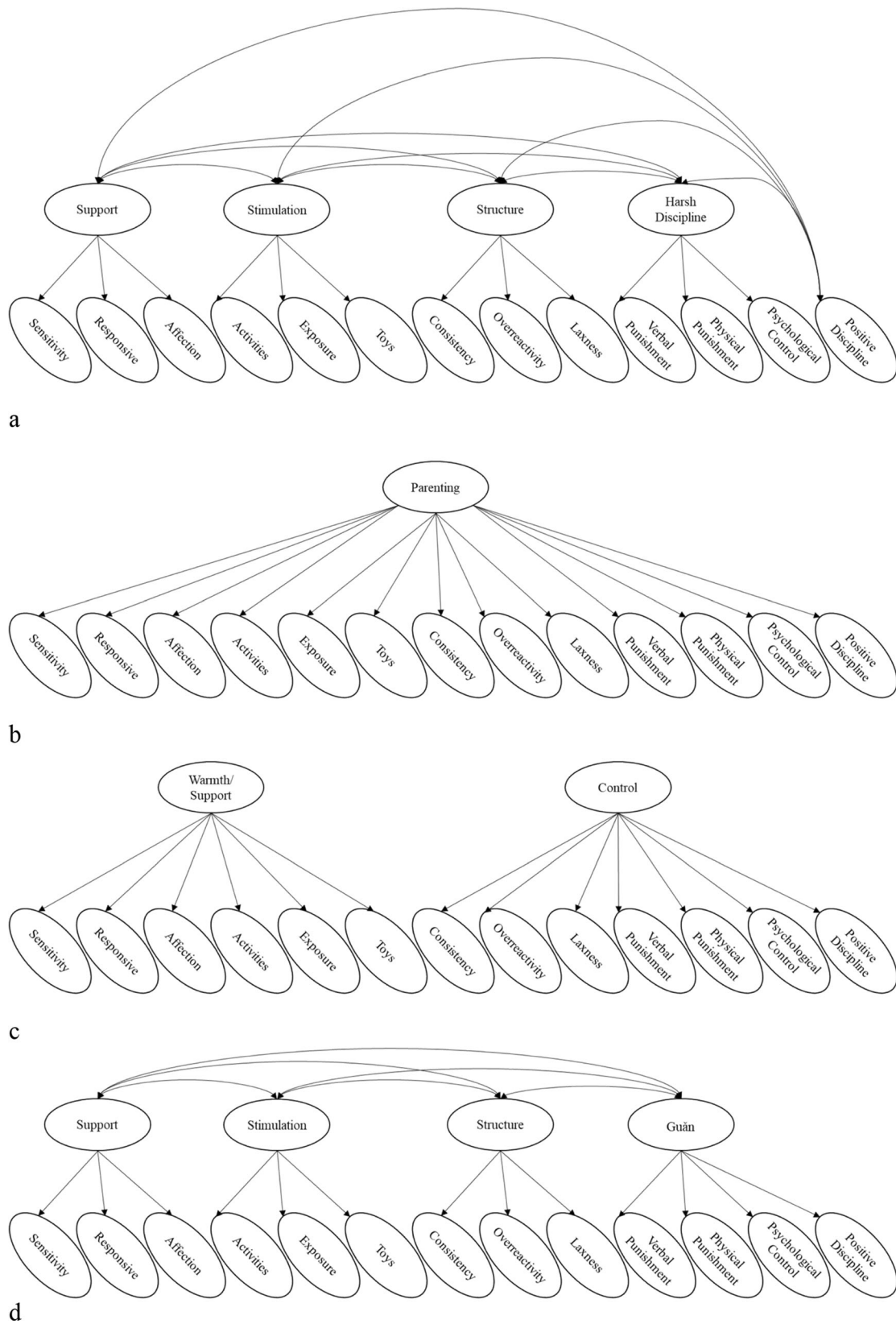
In addition, a 4-factor model (Fig. 1d) unique in the Chinese culture was examined in this study which was derived from the concept of *Guǎn* (Chao, 1994; Li & Xie, 2017). *Guǎn* represents parental governance and control imbued with care and concern for a child (Chen et al., 2017), which could be manifested as positive and negative disciplinary strategies. This model also matches the proposed four universally important parenting dimensions in the Grusec and Davidov (2010) model. As a result, the macro-dimensions of support (sensitivity, responsiveness, affection), stimulation (using toys, involvement in activities, exposure), and structure (consistency, overreactivity, laxness) remain the same as those in the 5-factor model, while verbal punishment, physical punishment, psychological control, and positive discipline would load on the fourth macro-dimension of *Guǎn*. Of note, this research is mainly an exploratory one aimed at examining which factor structure of the CECPAQ-CV best fits the data for Chinese mothers. Therefore, we did not make a concrete hypothesis with respect to which model is more optimal.

After the factor structure was determined, the reliability and validity of the CECPAQ-CV was then examined to determine its utility with Chinese mothers. The CECPAQ has excellent reliability in the original study, the Cronbach's  $\alpha$  values ranging from .75 to .88 (Verhoeven et al., 2017). In the current study, we provided more information regarding the reliability of the CECPAQ-CV, including (1) the composite reliability, which is suitable when there are multiple micro-dimensions within a macro-dimension (Bentler, 2009) and acknowledges the possibility of heterogeneous item-construct relations (Geldhof, Preacher, & Zyphur, 2014); and (2) the mean inter-item correlations (MIC), which indicates unidimensionality of the measured parenting behaviors and is independent of scale length (Clark & Watson, 1995).

Our next step was to test the criterion, convergent, and discriminant validity of the CECPAQ-CV. Similar to the original study, the criterion validity was established with child problem behaviors and parenting stress. According to theories about the determinants of parenting (Abidin, 1992; Belsky, 1984), these two factors exert a direct influence on parenting behaviors. Child problem behaviors have been found to be negatively related to maternal support and structure and positively related to harsh discipline (e.g., Verhoeven et al., 2017; Xing & Wang, 2017). In the current study to estimate the criterion validity, we examined associations of the CECPAQ-CV with child externalizing and internalizing problems as assessed by the Chinese Version of Infant-Toddler Social and Emotional Assessment (CITSEA; Briggs-Gowan & Carter, 1998; Zhang et al., 2009). The CITSEA is a culturally-validated instrument for measuring child problem behaviors and social competence in the first three years of life, and has shown expected associations with positive (Chen et al., 2014) and negative (Liu et al., 2019) parenting behaviors of Chinese mothers.

Parenting stress has been consistently associated with lower maternal support (Chen, 2020; Xing & Wang, 2017) and structure (Verhoeven et al., 2017) and higher levels of harsh discipline (e.g., Liu & Wang, 2015a). As such we examined associations of the CECPAQ-CV with a Chinese version of the Parenting Stress Index-Short Form (PSI-SF; Abidin, 1995; Luo et al., 2019). The PSI-SF is a widely used tool tapping parental stressful reactions arising from the different demands of the parenting role. This 15-item Chinese version of the PSI-SF (PSI-SF-15) has shown expected associations with positive parenting and harsh discipline (Luo et al., 2019) guaranteeing a valid use with Chinese parents. Given the above empirical evidence for the CITSEA and the PSI-SF-15, they were selected as the criterion measures for the validity of the CECPAQ-CV. We expect negative associations with child problem behaviors and parenting stress for parenting behaviors that are supportive, scaffolding, and structured, and positive associations with these constructs for parenting behaviors that are inconsistent, negative, and harsh.





**Fig. 1** Factor structure models tested for the CECPAQ-CV. **a** 5-factor model, **b** 1-factor model, **c** 2-factor model, **d** 4-factor model

Furthermore, we extended the original Dutch study by testing the convergent and discriminant validity of the CECPAQ-CV with non-violent discipline, corporal punishment, and psychological aggression in the CTSPC. The CTSPC has been demonstrated to be a reliable and valid tool for assessing child abuse and harsh disciplines (Liu & Wang, 2015a). For good convergent and discriminant validity, the mean correlation with these indicators in the CTSPC would be significant for the macro-dimension in the CECPAQ-CV consisting of the similar constructs (i.e., verbal punishment, physical punishment, and psychological control, respectively) and stronger for this macro-dimension than for the other macro-dimensions in the CECPAQ-CV.

Finally, parenting is socially patterned and demographic factors have been linked to parenting behaviors among Western samples (e.g., Belsky, Bell, Bradley, Stallard, & Stewart-Brown, 2007). Specifically, child age was especially relevant to maternal disciplinary practices in early childhood. Several national survey studies have found that mothers use more harsh discipline and positive discipline as a child gets older (see Wissow, 2002 for a review). Past studies have also indicated that maternal age, income, and education are related to higher support and positive discipline and lower harsh discipline (Belsky et al., 2007; Browne & Jenkins, 2012). To explore these associations in Chinese families, we examined whether child age and maternal age, education, and income were related to individual differences in parenting behaviors in the CECPAQ-CV.

## Method

### Participants

**Sample 1** Participants were recruited from the maternity and well-baby clinics of a regional hospital in Beijing, China for a study of early parenting and child development. Children who did not have any severe medical conditions or developmental disabilities and lived with their mother or both parents were eligible for participation in the study. Mothers filled in the questionnaires while in a waiting room in the hospital.

The initial sample included 2219 mothers with children aged between 1 and 4 years (1090 boys and 1129 girls). We excluded 40 participants (19 boys and 21 girls) as their missingness on the items of the CECPAQ-CV was larger than 20% (Downey & King, 1998). No differences were found on maternal ages, education, income, and child ages between the included and excluded samples ( $ps > .38$ ). The included sample ( $N_1 = 2179$ ) was composed of 1071 boys and 1108 girls. Child mean age was  $23.27 \pm 4.56$  months (range = 11.24–52.60) with 75% of the children being an only child. Maternal mean age was  $34.17 \pm 8.61$  years. Approximately 90% of the mothers

had completed college or postgraduate education. The mode of maternal monthly income (40.3%) was between 3000 and 6000 yuan.

**Sample 2** Participants were from the Beijing Longitudinal Study 2015 (BELONGS 2015), an ongoing longitudinal study that began in 2015 when infants were 6 months. The initial sample was recruited from several maternity and well-baby clinics of regional hospitals in Beijing or through signing up on the project website. The CECPAQ-CV data were collected at wave 4 when the child was approximately 3 years old. The questionnaire was completed at home by mothers and brought back during the laboratory visit.

This sample ( $N_2 = 160$ ) was composed of mothers of 82 boys and 78 girls. At wave 4, child mean age was  $37.25 \pm 1.37$  months (range = 34.65–50.56) and 62.1% of the children was an only child. Maternal mean age was  $35.96 \pm 4.19$  years. Approximately 90% of the mothers have completed college or postgraduate education. The mode of maternal monthly income (29.4%) was between 6000 and 10,000 yuan.

### Measures

**Comprehensive Early Childhood Parenting Questionnaire (CECPAQ)** Most of the 54 items of the CECPAQ (Verhoeven et al., 2017) were assessed on a 6-point scale, ranging from 1 (*never*) to 6 (*always*). Nine items (item 14–23) were rated on 6-point scales that are anchored on one effective and one ineffective response to the parenting situation (e.g., the responses to the situation “When there is a problem with my child” range from 1 = *Things build up and I do things I don’t mean to* to 6 = *Things don’t get out of hand*). To develop the CECPAQ-CV, two Chinese-native speakers and one bilingual English-Chinese speaker (the first author) translated the items into Chinese and then another bilingual English-Chinese speaker back-translated the items into English. The accuracy of the final Chinese version was checked and agreed upon by the four translators.

**Chinese Version of Infant-Toddler Social and Emotional Assessment (CITSEA)** Mothers in Samples 1 and 2 filled out the CITSEA (Briggs-Gowan & Carter, 1998; Zhang et al., 2009) to assess child externalizing and internalizing behaviors. The 18-item externalizing behavior scale (Cronbach’s  $\alpha$  was .92 in Sample 1 and .90 in Sample 2) consists of peer aggressiveness, aggressiveness, and impulsivity subscales. The 27-item internalizing behavior scale (Cronbach’s  $\alpha$  was .91 in Sample 1 and .89 in Sample 2) consists of anxiety, depression, fear, compulsiveness, separation distress, and inhibition to novelty subscales. All items are rated on a 3-point scale (0 = *not true or rarely*, 1 = *sometimes true or sometimes*, 2 = *very true or often*). The mean scores of externalizing and internalizing behaviors were used.

**Parenting Stress Index-Short Form—15 Items Version (PSI-SF-15)** Mothers in Sample 2 rated their parenting stress on the Parenting Stress Index-Short Form (Abidin, 1995). Using a refined 15-item Chinese version (PSI-SF-15; Luo et al., 2019), parenting distress (i.e., the level of distress resulting from the demands of child-rearing; 5 items), parent-child dysfunctional interaction (i.e., mothers' dissatisfaction with interactions with their children; 5 items) and perception of a child being difficult (i.e., mothers' perceptions of their children's self-regulatory abilities; 5 items) were measured. All the items are rated on a 5-point Likert-type scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) and the mean score of each subscale was used. In this study, the PSI-SF-15 has good reliability, Cronbach's  $\alpha = .86$ .

**Parent-Child Conflict Tactics Scale (CTSPC)** Three subscales of the CTSPC (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998) were used with mothers in Sample 2: 4-item non-violent discipline (e.g., explanation and time-out), 5-item psychological aggression (e.g., threatening or shaming), and 5-item corporal punishment (e.g., spanking or pinching). This measure has been translated into Chinese and used in early childhood previously (Liu & Wang, 2015a, 2015b). Mothers reported their frequencies of using these disciplinary behaviors in the previous 12 months on seven categories (0 = *never*, 1 = *once*, 2 = *twice*, 3 = *three to five times*, 4 = *six to ten times*, 5 = *eleven to twenty times*, 6 = *more than twenty times*), Cronbach's  $\alpha = .79$ . Items were scored using the midpoints for the answer categories: for categories 0, 1, and 2, midpoints are 0, 1, and 2; for categories 3, 4, and 5, midpoints are 4, 8, and 15; for category 6, the midpoint is 25. The total score of each subscale was calculated by summing up the item scores.

### Analytic Strategies

All analyses were conducted with *Mplus* 8.4 (Muthén & Muthén, 1998–2017). Parameters were estimated by a robust weighted least squares estimator using a diagonal weight matrix (WLSMV) which performs accurately in factor loading estimates regardless of sample sizes when data are ordered-categorical measures (Li, 2016). Missing data were handled by full information maximum likelihood (FIML) which provides relatively unbiased estimates (Graham & Coffman, 2012). Analyses proceeded as follows: First, we explored which factor structure of the CECPAQ-CV best applies to Sample 1 data and validated the selected factor structure with Sample 2 data. Second, the reliability of the CECPAQ-CV was calculated and the validity of the CECPAQ-CV was examined with child problem behaviors, parenting stress, and the parenting behaviors reported on the CTSPC.

**Factor Structure** Two steps were used to examine the factor structure of the CECPAQ-CV. In step 1, four models (the 1-

factor, 2-factor, 4-factor, and 5-factor model) were tested against each other to determine which factor structure fits the best with Sample 1 data. The model was selected based on (1) acceptable model fit, indexed by comparative fit index (CFI) above .90 and the root mean square error of approximation (RMSEA) values smaller than .08 (Hu & Bentler, 1999); (2) a significant result of chi-square difference test when compared with other models (DIFFTEST function in *Mplus*); and (3) factor loadings of all items on the corresponding micro-dimension and factor loadings of all micro-dimensions on the corresponding macro-dimension being significant. In step 2, the selected model from step 1 was validated with Sample 2 data by examining the goodness of model fit, the significance of the factor loadings, and correlations among the macro-dimensions of parenting.

**Reliability and Validity** Three indicators of reliability were reported for the CECPAQ-CV: (1) the Cronbach's  $\alpha$  for the macro-dimensions, which should be larger than the marginal standard (.60; Barker, Pistran, & Elliot, 1994); (2) the composite reliability for the macro-dimensions, which should be larger than .60 (Geldhof et al., 2014); and (3) the MIC for the micro-dimensions, which should be within the range of .15 to .50 (Clark & Watson, 1995).

For the criterion validity of the CECPAQ-CV, zero-order concurrent correlations were estimated between the mean scores of macro-dimensions of parenting behaviors in the CECPAQ-CV and the mean scores of child externalizing behaviors and internalizing behaviors assessed by the CITSEA (Samples 1 and 2). Zero-order correlations with the mean scores of parenting distress, parent-child dysfunctional interaction and perception of a child being difficult in the PSI-SF-15 (Sample 2) were also calculated for the CECPAQ-CV.

For the convergent and discriminant validity, the multi-trait correlations method in Raykov (2011) was used to calculate the mean correlation with non-violent discipline, corporal punishment, and psychological aggression in the CTSPC (Sample 2) for the macro-dimensions of parenting behaviors in the CECPAQ-CV. This method estimates convergent and discriminant validity coefficients defined in terms of observed measure correlations, rather than fitting confirmatory factor models with these observed indicators (Raykov, 2011). Capturing each parenting behavior through a latent variable respectively, we can calculate the multi-trait correlations between these latent variables to index the intervals of convergent and discriminant validity coefficients. This is done through examining whether the mean correlation of the overlapping constructs in the CTSPC and the CECPAQ-CV is significant (the convergent validity) and whether the mean correlation of the overlapping constructs is also significantly stronger than the mean correlations between the non-overlapping constructs in these two questionnaires (the discriminant validity).



**Table 2** Descriptive statistics for the Chinese version of comprehensive early childhood parenting questionnaire (CECPAQ) and criteria measures

Variables	Sample 1 ( $N_1=2179$ )			Sample 2 ( $N_2=160$ )		
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range
<b>CECPAQ</b>						
Support	5.19	0.66	1.38–6.00	5.29	0.50	3.38–6.00
Sensitivity	5.11	0.74	1.25–6.00	5.27	0.53	3.75–6.00
Responsiveness	5.19	0.68	1.20–6.00	5.21	0.54	3.00–6.00
Affection	5.26	0.73	1.25–6.00	5.40	0.57	3.00–6.00
Stimulation	4.80	0.85	1.00–6.00	4.72	0.65	2.69–6.00
Involvement in activities	4.94	0.93	1.00–6.00	5.05	0.76	3.00–6.00
Exposure	4.58	0.96	1.00–6.00	4.49	0.78	2.40–6.00
Using toys	4.95	0.94	1.00–6.00	4.76	0.78	2.80–6.00
Structure	4.24	0.61	1.75–6.00	4.29	0.55	2.67–5.67
Consistency	4.28	0.91	1.00–6.00	4.24	0.70	1.67–5.67
Overreactivity	4.42	0.90	1.00–6.00	4.32	0.80	2.50–6.00
Laxness	4.07	0.82	1.00–6.00	4.29	0.74	2.00–6.00
Harsh discipline	2.48	0.71	1.00–5.58	2.56	0.63	1.08–4.17
Verbal punishment	2.94	0.97	1.00–6.00	3.26	0.88	1.00–5.00
Physical punishment	1.76	0.83	1.00–6.00	1.71	0.67	1.00–3.67
Psychological control	2.61	0.82	1.00–6.00	2.64	0.70	1.17–4.17
Positive discipline	4.86	0.90	1.00–6.00	5.20	0.51	3.50–6.00
<b>Criterion variables</b>						
Child externalizing behaviors	0.40	0.31	0.00–2.00	0.52	0.31	0.00–1.44
Child internalizing behaviors	0.46	0.25	0.00–1.75	0.52	0.25	0.04–1.23
Parenting distress				2.22	0.70	1.00–4.00
P-C dysfunctional interaction				1.49	0.44	1.00–2.80
Difficult child				1.99	0.78	1.00–4.00
Non-violent discipline				36.57	21.39	2.00–90.00
Psychological aggression				15.82	16.40	0.00–90.00
Corporal punishment				8.23	10.90	0.00–67.00

*P-C* Parent-Child. Sample sizes slightly vary for each variable (missingness <0.63%)

## Results

### Descriptive Analyses

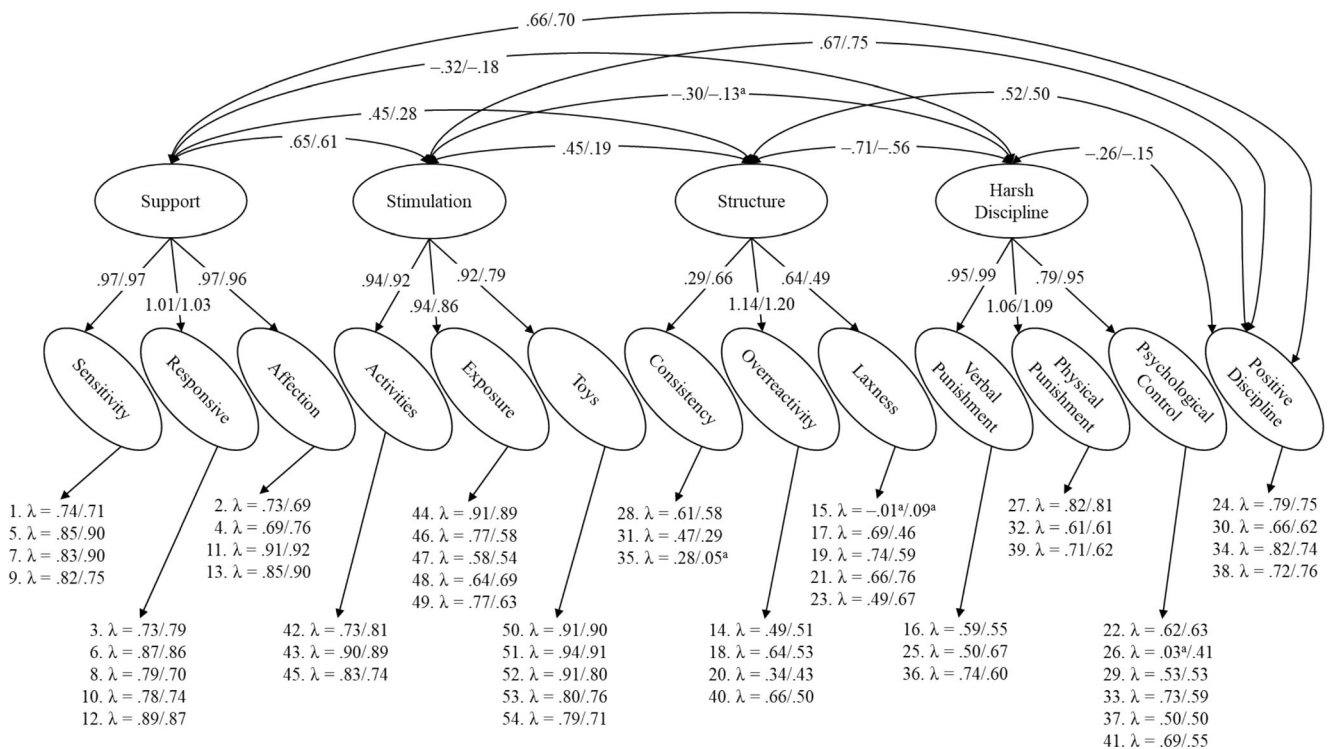
In Table 2, descriptive information of all variables is presented separately for Samples 1 and 2. To check the distribution of these variables based on skewness and kurtosis, a sample-size dependent method was used (Kim, 2013). All the variables in Sample 1 were normally distributed (either  $|\text{skewness}| < 2$  or  $|\text{kurtosis}| < 7$ ). All the variables were also normally distributed in Sample 2 except for psychological aggression (skewness = 1.81,  $Z = 9.43$ ; kurtosis = 3.83,  $Z = 10.04$ ) and corporal punishment (skewness = 2.69,  $Z = 14.01$ ; kurtosis = 9.71,  $Z = 25.48$ ) in the CTSPC.

In regard to participants from the two studies, mothers in Study 2 displayed slightly more support, Welch's ANOVA test,  $F_{\text{adjust}}(1, 201.64) = 5.38, p = .02$ , effect size,  $\text{Hedges}' g = 0.17$ , and used relatively more positive discipline,  $F_{\text{adjust}}(1,$

$239.64) = 58.92, p < .001, g = 0.47$ . In addition, children in Study 2 had more externalizing behaviors,  $F_{\text{adjust}}(1, 180.96) = 22.60, p < .001, g = 0.40$ , and more internalizing behaviors,  $F_{\text{adjust}}(1, 182.54) = 7.61, p = .01, g = 0.22$ . Participants from the two studies did not differ on maternal stimulation, structure, and harsh discipline in the CECPAQ-

**Table 3** Confirmatory factor analysis model fit statistics for the Chinese version of comprehensive early childhood parenting questionnaire (CECPAQ-CV)

Model	$\chi^2$	<i>df</i>	CFI	RMSEA [90% CI]
1-factor	48,662.13	1367	.66	.13 [.13, .13]
2-factor	35,702.18	1364	.75	.11 [.11, .11]
4-factor	18,429.21	1358	.88	.08 [.08, .08]
5-factor	13,514.67	1355	.91	.06 [.06, .07]
5-factor (Sample 2)	1784.28	1355	.94	.04 [.04, .05]



**Fig. 2** Five-factor structure model of the CECPAQ-CV and standardized parameters. Standardized parameters for Sample 1 / Sample 2 are presented separately. <sup>a</sup>  $p > .05$  and all the other parameters are significant

CV, all  $F_{\text{adjust}} < 2.58$ ,  $ps > .10$ , and they had a similar pattern of parenting behaviors across the five macro-dimensions in the CECPAQ-CV, for the means, Mann-Whitney test,  $Z = 0.52$ ,  $p = .60$ , and for the coefficients of variation (i.e., means divided by standard deviations),  $Z = 1.36$ ,  $p = .22$ , indicating that mothers in both studies showed high levels of positive parenting and low levels of negative parenting.

**Factor Structure of the CECPAQ-CV**

Next, we estimated the factor structure of the CECPAQ-CV. The model fit indices are shown in Table 3 for the 1-factor model, 2-factor model, 4-factor model, and 5-factor model. First, the 5-factor model yielded the best model fit, indexed by the largest CFI and the smallest RMSEA, all of which met the required standards. Second, the 5-factor model fitted the Sample 1 data significantly better than the 1-factor model,  $\Delta\chi^2(12) = 8907.75$ ,  $p < .001$ , the 2-factor model,  $\Delta\chi^2(9) = 4678.41$ ,  $p < .001$ , and the 4-factor model,  $\Delta\chi^2(3) = 818.22$ ,  $p < .001$ . Third, all the micro-dimensions of parenting behaviors loaded significantly on the respective macro-dimensions (see Fig. 2). All but two items loaded significantly on the respective micro-dimensions. Item 15 (“When my child does something I don’t like”, from 1 = *I do something about it every time it happens* to 6 = *I often let it go*) did not load on laxness,  $\lambda = -.01$ ,  $p = .75$ . Item 26 (“I tell my child that she or he should be ashamed when she or he misbehaves”) did not load on psychological control,  $\lambda = .03$ ,  $p = .32$ . In Fig. 2, support,

stimulation, structure, and positive discipline are positively related to each other ( $rs > .44$ ,  $ps < .001$ ) and negatively related to harsh discipline ( $rs < -.26$ ,  $ps < .001$ ).

**Validation of the 5-Factor Model**

In Table 3, for Sample 2, the model fit of the 5-factor model is good, indicating that the 5-factor model of the CECPAQ-CV is stable. The factor loadings of all the micro-dimensions and of all but two items were significant. Item 15 did not load on laxness again,  $\lambda = .09$ ,  $p = .28$ . Additionally, item 35 (“My child talks me out of being punished after she or he has done something wrong”) did not load on consistency,  $\lambda = .05$ ,  $p = .64$ . In Fig. 2, support, stimulation, structure, and positive discipline are positively related to each other ( $rs > .18$ ,  $ps < .03$ ). Their negative correlations with harsh discipline were significant,  $rs < -.15$ ,  $ps < .04$ , except for stimulation,  $r = -.13$ ,  $p = .06$ .

**Reliability of the CECPAQ-CV**

Since the background of Samples 1 and 2 was generally homogenous, these two samples were combined ( $N_{\text{Chinese}} = 2339$ ) to calculate the psychometric properties of the CECPAQ-CV. All Cronbach’s  $\alpha$ s were larger than the marginal standard (.60; Barker et al., 1994): support, .96, stimulation, .95, structure, .66, harsh discipline, .85, and positive discipline, .83. All composite reliability met the required

**Table 4** Correlations between the Chinese version of comprehensive early childhood parenting questionnaire (CECPAQ-CV) and criteria measures and demographic variables

Correlations	Support	Stimulation	Structure	Harsh discipline	Positive discipline
1. Child externalizing behaviors	-.22***	-.21***	-.24***	.33***	-.15***
2. Child internalizing behaviors	-.17***	-.17***	-.24***	.23***	-.12***
3. Parenting distress	-.24**	-.09	-.35***	.18*	-.16
4. P-C dysfunctional interaction	-.44***	-.26**	-.33***	.26**	-.43***
5. Difficult child	-.31***	-.19*	-.46***	.43***	-.36***
6. Non-violent discipline	.12	.07	.04	.27**	.21*
7. Psychological aggression	.02	-.02	-.19*	.51***	.13
8. Corporal punishment	.10	-.07	.01	.45***	.02
9. Child age	.01	-.01	-.03	.11***	.08**
10. Maternal age	.05*	-.02	-.00	.04*	.01
11. Maternal education	.09***	.14***	.11***	-.06*	.17***
12. Maternal monthly income	.02	.04	.07**	-.07**	.11***

P-C Parent-Child. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

standard ( $> .60$ ; Geldhof et al., 2014): support, .96, stimulation, .96, structure, .81, harsh discipline, .88, and positive discipline, .83. The MICs for consistency (.20), overreactivity (.25), laxness (.23), psychological control (.30), and verbal punishment (.35) were acceptable (Clark & Watson, 1995). The MICs for sensitivity (.65), responsiveness (.66), affection (.63), involvement in activities (.65), using toys (.74), exposure (.53), physical punishment (.51), and positive discipline (.54) were above the criterion of .50 (Clark & Watson, 1995), indicating that the items in these micro-dimensions were relatively highly correlated and somewhat isomorphic with each other.

### Validity of the CECPAQ-CV

**Criterion Validity** In Table 4, correlations between the five macro-dimensions in the CECPAQ-CV and child problem behaviors are calculated for the combined sample. Support, stimulation, structure, and positive discipline were negatively, whereas harsh discipline was positively, associated with child externalizing behaviors and internalizing behaviors. For Sample 2, support, stimulation, structure, and positive discipline were generally negatively (10 out of 12 correlations), while harsh discipline was positively, correlated with parenting stress, parent-child dysfunctional interaction, and perceptions of a child as difficult.

**Convergent Validity** In Table 4, harsh discipline was positively related to non-violent discipline, psychological aggression, and corporal punishment in the CSTPC at a moderate to high level (.27 to .51). The correlations for the other four macro-dimensions (i.e., support, stimulation, structure, and positive discipline) were generally nonsignificant (only 2 out of 12 correlations were significant). To check the convergent

validity of the CECPAQ-CV, we calculated the mean correlation coefficient ( $r_1$ ) between harsh discipline and non-violent discipline, psychological aggression, and corporal punishment in the CSTPC. This coefficient was significant,  $r_1 = .37$ , 95% CI = [.26, .47]. For comparison, we calculated the mean correlation coefficient ( $r_2$ ) between the other four macro-dimensions and non-violent discipline, psychological aggression, and corporal punishment in the CSTPC. This coefficient was not significant,  $r_2 = .06$ , 95% CI = [-.03, .15]. These results indicate that harsh discipline has acceptable convergent validity, exhibiting a moderate correlation with similar measures in the CSTPC, while other macro-dimensions in the CECPAQ-CV are not related to these measures in the CSTPC.

**Discriminant Validity** We tested whether  $r_1$  differed from  $r_2$  to check the discriminant validity of the CECPAQ-CV. The difference was significant,  $\Delta r = .31$ , 95% CI = [.16, .46], Wald test  $\chi^2(1) = 16.87$ ,  $p < .001$ , Cohen's  $d = 0.69$ . Since structure was negatively related to psychological aggression in the CTSPC and positive discipline was positively related to non-violent discipline in the CTSPC (see Table 4), the discriminant validity was also checked by calculating the differences between  $r_1$  and the mean correlation coefficients for structure or positive discipline. Similarly,  $r_1$  was larger than these coefficients, all  $\chi^2(1) > 9.64$ ,  $ps < .01$ , all Cohen's  $d > 0.50$ . These results indicate that apart from harsh discipline, other macro-dimensions of the CECPAQ-CV do not tap the three constructs measured in the CTSPC.

### Correlations with Demographic Variables

In Table 4, we present how child age as well as maternal age, education, and income are correlated with parenting behaviors

in the CECPAQ-CV. Mothers used more harsh discipline and positive discipline with older children. Older mothers tended to use more support and harsh discipline. Maternal education was positively related to support, stimulation, structure, and positive discipline, and negatively related to harsh discipline. Maternal income was related to more structure and positive discipline and less harsh discipline.

## Discussion

There is an increasing interest in the parenting behaviors of Chinese parents during the past decade (e.g., Chen and Zhou, 2019; Ren & Edwards, 2015). A close examination of these parenting behaviors could add to scientific knowledge since parenting-relevant models, norms, and approaches are tested almost exclusively with WEIRD samples (Bornstein, 2012). Practically, such examination is also beneficial for young Chinese children, who constitute a relatively large proportion of the world population, as their development is scaffolded or undermined by these parenting behaviors (e.g., Chen et al., 1998).

To this end, the current study examined the utility of the CECPAQ-CV with Chinese parents. Drawing from two samples of Chinese mothers, we confirmed the 5-factor structure model of the CECPAQ-CV and demonstrated that the CECPAQ-CV has good psychometric properties including relatively high reliability and validity. In all, strengths of the CECPAQ-CV were theoretically justified and promising data were provided for the feasibility of using the CECPAQ-CV to comprehensively tap early parenting behaviors in Chinese mothers.

Our results showed that the CECPAQ-CV was composed of five macro-dimensions, that is, support, stimulation, structure, harsh discipline, and positive discipline, which is consistent with the original Dutch study (Verhoeven et al., 2017). This consistency provides additional support that the CECPAQ is well-constructed and covers parenting behaviors important for the early development of both Chinese and Dutch children. Supporting the importance of these five dimensions, cross-cultural studies have also shown that these parenting behaviors contribute to outcomes in multiple developmental domains and are particularly influential in early childhood (e.g., Huang et al., 2011; Mesman et al., 2012).

With respect to thirteen micro-dimensions of parenting behaviors, we found that these constructs were generally well-established and the majority of the items loaded significantly on the corresponding parenting dimension (51 out of 54 items). These findings may suggest that most items in the CECPAQ-CV could be used with Chinese parents to validly tap their parenting behaviors. However, it should be noted that

three items (15, 26, and 35) did not load on the corresponding micro-dimensions, warranting further discussions of their cultural sensitivity in capturing the purportedly measured parenting behavior among Chinese mothers.

Specifically, item 15, measuring whether a parent will take some actions when a child does something the parent dislikes, did not load on laxness and item 35, measuring the situation in which a child persuades a parent to not punish him or her, did not load on consistency in Sample 2. Theoretically, very young Chinese children are not punished for misbehaviors until they reach the “age of understanding” (approximately 6 years of age) (Cheah, Leung, Tahseen, & Schultz, 2009). Parents are supposed to be lenient warm toward young children and tolerate these children’s wrongdoing before that age (Cheah et al., 2009).

Empirical evidence from the study of another Chinese parenting questionnaire has shown that two items measuring parenting behaviors similar to those tapped by items 15 and 35 are not applicable to Chinese parents (e.g., “I follow through with a consequence when my child misbehaves”; Guo, Morawska, & Filus, 2017). Interviews with parents have revealed that these behaviors are perceived as the inflexibility of managing a child’s misbehaviors rather than parental consistency or low laxness (Guo et al., 2017). This might explain the non-significant factor loadings of items 15 and 35 in the CECPAQ-CV. Given that the factor loadings of these two items were significant in the original Dutch study, a critical step in the future is to determine whether they should be dropped (if their factor loadings are also not significant among samples from other cultures).

Moreover, item 26, measuring using shaming as an approach to socializing a child, had a low factor loading on psychological control. This is in line with a study examining the factor structure of psychological control with Chinese immigrant parents, which has shown that shaming has the lowest factor loading among the three scales (shaming, guilt induction, and love withdrawal) (Yu, Cheah, Hart, Sun, & Olsen, 2015). To some extent, our result might indicate mixed attitudes towards shaming in contemporary Chinese mothers. For one, drawn from traditional Chinese ideology, shaming has the function of transmitting cultural values to a child. Chinese studies conducted over two decades ago found that shaming was recognized as a means to bring the lesson about transgressions to its fullest impact (Fung, 1999; Wu et al., 2002). For another, drawn from Western values, shaming reflects manipulating a child’s self-esteem, which is less acceptable (Soenens, Vansteenkiste, & Van Petegem, 2015). Thus, it is possible that the mothers in our study held one of these two distinctive attitudes while some displayed a more mixed pattern of shaming use overall (a quarter of them chose low



frequencies, one third chose high frequencies, with just under half showing moderate levels).

The current findings also showed that the CECPAQ-CV has good internal consistency, indicated by the acceptable Cronbach's  $\alpha$  values and composite reliability of all the macro-dimensions. But it is worth mentioning that the MICs of the micro-dimensions in support, stimulation, and positive discipline were relatively high, suggesting that the items in these micro-dimensions are isomorphic to some degree which may be caused by conceptual redundancy or overlap in response distributions. As these items are consecutively assigned and adjacent to each other, random allocation of their sequence might be needed to reduce responding biases (e.g., always choosing the same value for the adjacent items).

With respect to validity, we found that the CECPAQ-CV has good criterion validity, indicated by the expected negative associations with child externalizing behaviors and internalizing behaviors and maternal parenting stress for support, stimulation, structure, and positive discipline and the positive associations with these external criterion variables for harsh discipline. Therefore, our results are congruent with numerous theoretical and empirical studies, which have shown that child problem behaviors and parenting stress could reduce the use of positive and supportive parenting behaviors (e.g., Xing & Wang, 2017) and increase the use of negative and harsh parenting behaviors (e.g., Liu & Wang, 2015a). Of course, longitudinal studies are needed to determine order of effects but nonetheless our results are consistent with these earlier findings in other Chinese studies.

Furthermore, our findings revealed that the CECPAQ-CV has good convergent and discriminant validity established with the CTSPC. As expected, harsh discipline was shown to have the strongest associations with non-violent discipline, psychological aggression, and corporal punishment in the CTSPC, whereas the other four macro-dimensions differed from these three indicators in the CTSPC. It is noteworthy that although harsh discipline and positive discipline were negatively associated with each other, they both linked positively with non-violent discipline in the CTSPC. To understand this seemingly odd result, we examined the items of non-violent discipline and found that there are two items measuring parenting behaviors that may be perceived as non-violent, but still punitive (timeout and privilege removal; Holden, Grogan-Kaylor, Durrant, & Gershoff, 2017) and two items measuring parenting behaviors that are perceived as purely non-violent and not punitive (induction and distraction; Van Zeijl et al., 2007). This inconsistency probably explains why positive links with non-violent discipline were found for both harsh discipline and positive discipline. To some extent, such a result supports that the CECPAQ-CV distinguishes conceptually varied constructs better than the CTSPC, in particular for parental disciplines.

## Limitations and Future Research

There are several limitations and future directions. First, although the confirmation of the factor structure of the CECPAQ-CV has ensured meaningful within-group comparisons of parenting behaviors among Chinese mothers, whether the factor structure and validity of this measure holds for Chinese fathers needs to be determined in future research. In addition, cross-cultural studies are needed to follow up on the estimation of measurement invariance, which could then reveal between-group similarities and differences in early parenting behaviors. Second, the CECPAQ aims at capturing parenting behaviors critical for development in general but does not cover socialization efforts unique in specific cultures. Future research could examine profiles of parenting behaviors measured by both the CECPAQ and culture-specific questionnaires (e.g., the CPPM measures encouragement of modesty specifically for Chinese parents) to better understand parenting characteristics in a selected culture. Third, although the CECPAQ is aimed at including fundamental dimensions of parenting, the developmental relevance and importance of some parenting behaviors (such as autonomy support; Andreadakis, Joussemet, & Mageau, 2019) has not been demonstrated in early childhood and across cultures until more recently. Future research should consider investigating associations between autonomy support and parenting behaviors in the CECPAQ to advance the understanding of parenting in early childhood.

## Conclusion and Implications

The current study examines the factor structure, reliability, and validity of the CECPAQ-CV. We confirm the 5-factor structure model previously found among Dutch parents and find good psychometric properties of the CECPAQ-CV, thus suggesting that this assessment tool holds promise as a reliable and valid tool to measure parenting behaviors of Chinese mothers in early childhood. Furthermore, there are at least two reasons as to why researchers and educators should consider using the CECPAQ-CV in their research. First, this comprehensive yet reasonably short questionnaire can give a quick snapshot of a wide range of parenting behaviors specific for parents of infants, toddlers, and preschoolers, such that researchers and educators can acquire a fuller understanding of how parents exert influences on their child in the investigated families. Second, this questionnaire focuses purely on parenting behaviors enabling researchers to examine the mechanisms of how specific parenting behaviors are shaped by related parental cognitions (e.g., beliefs and socialization goals) among Chinese families.

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**Data Availability** The data that support the findings of this study are available on request from the corresponding author upon reasonable request.

## Compliance with Ethical Standards

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

**Ethical Approval** We confirm that all procedures performed in this study involving human participants were in accordance with the ethical standards of Capital Normal University and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Consent to Participate** We confirm that informed consent was obtained from all individual participants included in the study.

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