Asian Interdisciplinary and Sustainability Review

Original Research Article

Received: 15 June 2025 **Revised:** 10 July 2025 **Accepted:** 15 July 2025

MINDFUL PARENTING IN THAILAND: VALIDATING A CHILD-REPORT MEASURE ACROSS PARENTS

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(This article belongs to the Theme 1: Humanities and Social Sciences for Sustainability)

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Abstract

This study addresses a critical gap in parenting research by evaluating the measurement invariance of the Perceived Mindful Parenting Scale (PMPS) across fathers and mothers, as reported by Thai adolescents. While mindful parenting has been linked to positive youth outcomes, it remains unclear whether existing measures function equivalently across parents. Utilizing a sample of 484 Thai junior high school students, the study assessed the PMPS, which measures parental efficacy and being in the moment with the child. Through multiple-group confirmatory factor analyses (MG-CFA), configural, metric, scalar, and residual invariance were evaluated. The results confirm the original two-factor structure of mindful parenting and establish measurement invariance across parent groups. Emphasizing the significance of culturally relevant child-report measures, this research supports the PMPS's utility in comparing mindful parenting across genders in the Thai context. Therefore, this study promotes human sustainability as promoting mindful parenting contributes to adolescent emotional well-being and stronger family resilience, thereby enhancing key components of a more sustainable society.

Keywords: Mindful Parenting, Measurement Invariance, Adolescents, Family Studies, Thailand

Citation Information: Raksat, D., Pichayayothin, N., & Luadlai, S. (2025). Mindful Parenting in Thailand: Validating a Child-Report Measure Across Parents. *Asian Interdisciplinary and Sustainability Review, 14*(2), Article 13. https://doi.org/10.14456/aisr.2025.24

Introduction

In an increasingly complex world, adolescents in Thailand face growing academic pressures, rapid social changes, and rising mental health concerns. These challenges can significantly affect their emotional well-being, making the role of parenting more crucial than ever. Mindful parenting—defined as a parent's intentional and nonjudgmental awareness of the present moment in interactions with their child—has emerged as a promising approach to support positive youth development (Duncan et al., 2009). Research suggests that mindful parenting is associated with improved emotional regulation, reduced adolescent stress, and stronger parent-child relationships (Duncan et al., 2009). However, the extent to which such parenting can be measured equivalently across mothers and fathers remains unclear.

Although today's families are evolving, parents remain one of the most significant factors in children's development (Clarke-Stewart & Dunn, 2006). While researchers mostly continue to compare differences and similarities in fathers' and mothers' parenting behaviors based on mean values on the respective dimensions, or make significant conclusions about fathering and mothering and their impact on children's development. However, the true significance of these findings remains unclear, as it is uncertain whether the reported differences in parenting studies stem from genuine differences between mothers and fathers or from the use of measures that inadequately and inaccurately evaluate parenting in one or both parent groups. There exists in parenting literature an ongoing discussion about the gendered nature of parenting, with some scholars suggesting that parenting is similar enough between genders to use the same measures for both fathers and mothers, and other scholars positing otherwise. Notably, during the past half-century, some theorists and researchers have attempted to conceptualize fathers' and mothers' parenting behaviors as separate sets of multidimensional constructs in the family system (Parke, 2004; Craig, 2006). In a recent review, Fagan et al. (2014) suggested that research should move away from the view that the dimensions of fathers' and mothers' parenting are conceptually different from each other. Instead, researchers should move toward gender-neutral dimensions of parenting (in terms of behaviors, skills, beliefs, attributes, and motivations). Said differently, there is a need for more research to evaluate the extent to which parenting can be conceptualized in similar or dissimilar ways for fathers and mothers. In order to address aspects of these orientations, tests of measurement invariance provide one way to allow researchers to investigate the similarity or difference of parenting measurement, to what extent mothering and fathering can be directly compared, and are particularly well suited to identifying where and how conceptualizations of parenting are congruent or not (Dyer, 2015). A review of empirical parenting research reveals that remarkably few invariance analyses across parents have been conducted (Fagan et al., 2014; Adamsons & Buehler, 2007). Some studies indicated invariance between parents (e.g., Finley et al., 2008; Prinzie et al., 2007; van Leeuwen & Vermulst, 2004), and other studies found more differences than similarities across the parents (e.g., Adamsons & Buehler, 2007; Corwyn & Bradley, 2005; Whiteside-Mansell et al., 2001). For example, Adamsons & Buehler (2007) examined seven types of measurement invariance (configural, metric, scalar, error variance, factor variance, factor mean, and functional) across three parenting constructs (acceptance, harshness, and psychological intrusiveness) in fathers and mothers of 416 sixth graders. The findings of this study revealed that the measure of psychological intrusiveness demonstrated invariance at all levels except for the test of error variance invariance. Parental harshness demonstrated invariance at all levels except for the test of factor variance equivalence. Acceptance demonstrated configural, factor mean, and functional invariance but not metric, scalar, error variance, or factor variance. Likewise, Prinzie et al. (2007) conducted confirmatory factor analysis to examine the psychometric properties of the Parenting Scale responses of 596 mothers and 559 fathers with elementary school-aged children. The findings of this study revealed that the scale assessing parents' disciplinary practices consists of two factors: laxness and over reactivity, which are

similar for both the mother sample and the father sample. Furthermore, Finley et al. (2008) employed confirmatory factor analysis to investigate the factor structure of the Nurturant Fathering and Father Involvement Scale and its parallel, the Nurturant Mothering and Mother Involvement Scale, in a sample of 1,714 young adult university students. These authors found that isomorphic factor structures characterize the fathering and mothering scales.

There have been some tests of the invariance of parenting measures of behavior. However, previous research has not assessed the measurement invariance of mindful parenting across parents, and most studies typically measure parenting practices via parent self-report only (Florean et al., 2020). Parenting practices, as measured via child report, were explored only through one measurement invariance analysis (Finley et al., 2008). This is worrisome, as several studies signaled that the child report of parenting practices has a higher predictive power (compared with the parent report) for the children's mental health outcomes (e.g., Barry et al., 2008; Fleming et al., 2016). Considering these limitations and building on evidence linking mindful parenting to adolescent well-being, the present study aims to examine the measurement invariance of the Mindful Parenting Scale across parents, investigating measurement invariance via child report (i.e., fathers vs. mothers). Using Multiple-group confirmatory factor analyses, four applicable levels of measurement invariance are assessed (configural, metric, scalar, and residual invariance, discussed in more detail below). In this way, the present study enables scholars to more accurately disentangle and interpret the similarities and differences between mothers' and fathers' parenting.

Literature Review

Mindful Parenting

Researchers and scholars have recently been giving an increasing amount of attention to mindfulness. The most frequently cited definition of mindfulness comes from Kabat-Zinn (2003), who defined mindfulness as "the awareness that emerges through paying attention, on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment". The concept of mindfulness and its development methods are rooted in Eastern wisdom, specifically Buddhist philosophy, which emphasizes the importance of practicing and cultivating mindfulness. Recently, researchers and scholars have expanded the concept of mindfulness into various contexts, one of which is the relationship between parents and children, specifically in the context of parenting. The key principle of mindful parenting is the extension of intra-personal mindfulness to inter-personal mindfulness during interactions with the child (Duncan, 2007). Moreover, Duncan et al. (2009) indicated that parents who practice mindful parenting tend to increase desirable qualities, skills, and behaviors toward both themselves and their children, while reducing undesirable ones. This approach has a positive impact on the parent-child relationship and contributes to the child's psychological well-being. Kabat-Zinn & Kabat-Zinn (1997) proposed that mindful parenting may consist of three components: sovereignty (i.e., recognition and encouragement of children's inner-selves), empathy (i.e., attempt to understand children's thoughts and think from the perspective of children), and acceptance (i.e., full acceptance of children's inner-selves, feelings, thoughts, and views). Later, Duncan et al. (2009) provided a more comprehensive explanation of the components of mindful parenting, based on the integration of Kabat-Zinn's (1997) view and current empirical research on mindfulness. They suggested that mindful parenting includes five components: (1) listening with full attention, (2) nonjudgmental acceptance of self and child, (3) emotional awareness of self and child, (4) self-regulation in the parenting relationship, and (5) compassion for self and child. More recently, McCaffrey (2015) developed a parent-report measure of mindful parenting using modern test theory, which emphasizes a rational and causal relationship between behaviors and the construct being measured. McCaffrey clearly identified two core components of mindful parenting: (1) parental efficacy and (2) being in the moment

with the child. These dimensions reflect both a parent's confidence in their ability to parent effectively and their capacity to be present and attentive during interactions with their child.

Measures of Mindful Parenting

Understanding and clearly defining mindful parenting is important. In addition to explaining the meaning of mindful parenting, measuring its structure and content is also crucial. Therefore, instruments for studying the components of mindful parenting have been continuously developed, including adaptations into different languages. Most previous studies have used the parent-report method to measure mindful parenting (Duncan et al., 2009; de Bruin et al., 2014; McCaffrey, 2015; Moreira & Canavarro, 2017). In addition to parent-report measures (i.e., parents report their mindful parenting behaviors), there are also child-report measures, in which children report their perceived parents' mindful parenting behaviors (Lippold et al., 2015), and behavioral observation, in which mindful parenting is assessed through observational coding of parent-child interactions (Geier, 2012). In conclusion, previous studies on the measurement of the structure and content of mindful parenting have found that the measurement of mindful parenting, whether from child report or behavioral observation, remains limited. Although the content of the components of mindful parenting is similar, the number of components used in measuring mindful parenting varies. This is due to differences in the measurement instruments used, including language, measurement methods, and the sample groups in the research. However, the psychometric properties of the measures are varied but acceptable. In the Thai cultural context, Saejeng & Taephant (2020) further emphasized the importance of adapting these tools to reflect cultural values, including filial piety, collectivism, and emotional self-restraint. Their work suggests that Western-developed instruments may not fully capture the nuances of parenting in Asian societies, reinforcing the need for locally validated measures that account for cultural expectations and norms.

Measurement Invariance of Parenting

The concept of testing measurement invariance of parenting across fathers and mothers involves considering the level of measurement that assesses identical psychometric properties across different conditions (Drasgow, 1984; Horn & McArdle, 1992), using the technique of multi-group confirmatory factor analysis (MG-CFA). Although several methods have been suggested for testing the invariance of measures across different populations, this study follows the suggestions of Chen (2007), who proposed four types of invariances representing progressively more stringent levels of similarity between groups, each level will be a nested model in a hierarchical ordering, ranging from lower or more lenient levels of invariance to stricter levels of invariance, by gradually adding constraints to the parameters, which increases the degrees of freedom (Milfont & Fischer, 2010). In the present study, all four proposed types of measurement invariance were tested: configural invariance, metric invariance, scalar invariance, and error/residual invariance.

Establishing construct equivalence is particularly important in diverse family and cultural contexts, especially in Asian societies where parenting roles often differ by gender. Testing the measurement invariance of parenting across fathers and mothers in research that aims to study the correlation or influence of both parents' parenting on children's developmental variables or behaviors will be beneficial in providing more precise conclusions and explanations of research findings. Said differently, it helps researchers differentiate whether the effects of dependent variables in children stem from actual differences in parenting between fathers and mothers, or if they are a result of measurement errors associated with each parent group. Prior research emphasizes the influence of parent gender on parenting roles (Fagan et al., 2014; Craig, 2006). Testing measurement invariance across parent gender allows for meaningful and unbiased comparisons (Dyer, 2015). While child gender may also play a role, it was beyond the scope of this study's primary research question.

Although some studies have assessed the measurement invariance of parenting behavior across parents (e.g., Finley et al., 2008; Prinzie et al., 2007; Adamsons & Buehler, 2007), the literature on mindful parenting reveals that studies on the measurement invariance of mindful parenting across fathers and mothers are lacking. Moreover, research on the measurement invariance of parenting perceptions from the children's perspective across parents is even more limited, especially within Asian cultures. This gap highlights the need for research that not only develops a mindful parenting measurement for child-report but also examines the measurement invariance of perceived mindful parenting across parents, as reported by children, in Thailand and Asian settings.

The Present Study

This study aimed to achieve two main objectives. First, it sought to evaluate the original two-factor structure and construct validity of perceived mindful parenting in order to determine whether it is equally valid and reliable across fathers and mothers among Thai adolescents. Second, the study aimed to identify the best-fitting model for assessing measurement equivalence/invariance, to investigate whether Thai adolescents report perceived mindful parenting from fathers and mothers in the same way.

The study hypothesized that the conceptual structure of perceived mindful parenting would demonstrate construct validity through factor analysis and that perceived mindful parenting would exhibit measurement equivalence/invariance across fathers and mothers among Thai adolescents.

Research Methodology

Research Design

This quantitative study employed a cross-sectional design to evaluate the measurement invariance of perceived mindful parenting across fathers and mothers, as reported by Thai adolescents. The study employed a structural equation modeling (SEM) framework, specifically using multiple-group confirmatory factor analyses (MG-CFA).

Participants

In total, 484 Thai junior high school students completed the assessment: 204 students who reported the mindful fathering and 280 students who reported the mindful mothering. The participants of this study were purposively selected based on the following research criteria. The demographic characteristics of the participants were students aged 12 to 16. (70.2% female; mean age 13.73 years, SD 1.01, 33.7% aged 13). In terms of the current education level, 39.5% were in Grade 7, 32.0% were in Grade 8, and 28.5% were in Grade 9. More than half of the participants reported their relationship with their mothers (57.9%); however, 42.1% reported their relationship with their fathers. The vast majority of parents (97.9%) were biological parents, and 2.1% were stepparents.

Procedure

The Human Research Ethics Review Committee at Chulalongkorn University, Bangkok, Thailand (approval number: COA No. 261/67), approved this study before the collection of research data. The questionnaires were gathered through online social media channels, using a Google Form with a link and QR code. Participants were informed about the study details and gave their consent before answering the online questionnaires. Participants completed the entire questionnaire, including demographic information and the PMPS, within approximately 20 minutes. Data was gathered between December 2024 and January 2025.

Measures

The Perceived Mindful Parenting Scale (PMPS) is an adolescent-report measure that assesses the perception of mindful parenting. The researchers themselves developed this scale; the majority of items were derived from the original Mindfulness in Parenting Questionnaire by McCaffrey (2015), parents' self-report. The development of these items and additional items

was influenced by other preceding work (Lippold et al., 2015). The language was modified to be suitable for the Thai adolescent cultural context and reporting style, using a “mother” version in which “father” was replaced with “mother”. The adolescent-report version of The Perceived Mindful Parenting Scale comprises 28 items, organized into two subscales: perceived parental efficacy (EFF; 14 items) and being in the moment with the child (BEM; 14 items). All items were positively worded, and each item was rated on a 4-point Likert scale, ranging from 'Strongly Disagree' (1) to 'Strongly Agree.' (4). The participants were required to choose whom they wanted to assess the relationship with (father or mother) and rate their perception of their relationship with them on how much they agreed with each measurement item. The composite score ranges from 28 to 112. Those who score higher on the Perceived Mindful Parenting Scale are considered to have a higher perception of mindful parenting by their parents compared to those with lower scores. The scale was pilot-tested with a sample of 40 adolescents who were not part of this main study sample. The scale demonstrated good reliability with a Cronbach’s alpha of 0.98.

Data Analyses

Demographic and variable data were analyzed using descriptive statistics, and key assumptions of the data for confirmatory factor analysis (CFA) were assessed. Testing the variance-covariance matrix of items and sampling adequacy assumptions with Bartlett's Test of Sphericity and Kaiser-Meyer-Olkin (KMO). Univariate normality assumptions were tested by computing Skewness and Kurtosis. Reliability was assessed by computing Cronbach's alpha coefficient and Pearson’s product-moment correlation; reliability values must be greater than 0.7, with a significance level set at $p < .05$, to be considered valid (Gliem & Gliem, 2003; Tavakol & Dennick, 2011). These summarized numerical and categorical data, along with the data assumptions, were investigated using SPSS. A multiple-group confirmatory factor analysis (MG-CFA) was employed to assess measurement invariance of the Perceived Mindful Parenting Scale, with the analysis conducted using LISREL. The determination of model fit indexes included: The relative chi-square value ($\chi 2/df$) ≤ 2 (Schreiber, 2017); the comparative fit index (CFI) ≥ 0.95 (Schreiber, 2017); the Tucker-Lewis index (TLI) ≥ 0.95 (Tucker & Lewis, 1973); the root mean square of error approximation (RMSEA) < 0.05 to 0.08 (Schumacker & Lomax, 2010); and a standardized root mean square residual (SRMR) ≤ 0.08 (Schreiber, 2017). Following the four types of standard sequence of invariance testing — configural (equivalent overall structure), weak/metric (equivalent factor loadings), strong/scalar (equivalent factor loadings and intercepts), and strict/residual invariance (equivalent factor loadings, intercepts, and residuals) — were assessed. When evaluating measurement invariance, to compare configural models to metric ones, the metric models to scalar ones, and the scalar models to residual ones, the change in the goodness-of-fit indices (ΔGOFs) was considered: $\Delta CFI > - 0.010$, $\Delta RMSEA < 0.015$, and $\Delta SRMR < 0.030$ indicate weak/metric invariance; $\Delta CFI > - 0.010$, $\Delta RMSEA < 0.015$, and $\Delta SRMR < 0.010$ indicate strong/scalar and strict/residual invariance (Chen, 2007). Additionally, the 90% confidence interval of the RMSEA (RMSEA 90% CI) was also considered. If the confidence interval of one level of invariance falls within the confidence interval of another level, it indicates measurement invariance (Timmons, 2010).

Research Results

Preliminary Analyses

The average scores of the latent variables EFF and BEM were 3.14 (SD = .60) and 3.06 (SD = .65), respectively. The relationship between the two latent variables is statistically significant at the .01 level. It can be concluded that the latent variables are linearly related, with a correlation coefficient of .81. The correlation coefficients between the 28 items were statistically significant at the 0.01 level for every pair, with correlation coefficients ranging

from 0.30 to 0.73. The Kaiser-Meyer-Olkin (KMO) measure was used to verify the sampling adequacy for the analysis, with a KMO value of 0.974. Bartlett's test of sphericity $\chi 2$ (378) = 9309.299, $p < 0.001$, confirming that the correlation structure is suitable for confirmatory factor analyses. Regarding the normality assumptions, an examination of the skewness of items revealed that all the items had skewness values between -1.22 and -0.22. Similarly, the kurtosis values of the items ranged from -1.05 to -0.28. Absolute skewness and kurtosis values of 2.3 or below are not problematic for confirmatory factor analyses and other types of structural equation models (Lei & Lomax, 2005).

Confirmatory Factor Analysis

For fathers, CFA analyses revealed that the initial model did not show adequate fit. Modification indices suggested estimating residual covariances between items 19 and 20, and between items 26 and 28. These error terms were correlated based on test theory, which posits that items measuring the same construct are expected to share error variance. CFA allows controlling their effects. With these error terms correlated, the model demonstrated an acceptable fit (n = 204), $\chi^2(347) = 703.22$, $p < 0.001$; $\chi^2/df = 2.027$; RMSEA = 0.071; SRMR = 0.052; CFI = 0.98; and TLI = 0.98. All items loaded on a two-factor structure; the standardized loadings of the items varied from 0.64 to 0.83 (perceived parental efficacy) and from 0.62 to 0.83 (being in the moment with the child). These loadings were greater than 0.5. with statistically significant ($p < 0.01$). For mothers, CFA analyses yielded similar results to those for fathers; the initial model did not show adequate fit. Modification indices suggested estimating residual covariances between items 5 and 6, and between items 17 and 20. After modification, the model demonstrated an adequate fit (n = 280), with the following fit indices: $\chi 2$ (347) = 934.84, $p < 0.001$; $\chi 2/df = 2.694$; RMSEA = 0.078; SRMR = .049; CFI = 0.98; and TLI = 0.98. No item had a standardized factor loading less than 0.50, and all factor loadings were statistically significant ($p < 0.01$). Specifically, the loadings for perceived parental efficacy items ranged from 0.62 to 0.77, while the loadings for being in the moment with the child ranged from 0.67 to 0.83. The internal consistency of the scale was high for both fathers ($\alpha = 0.97$) and mothers ($\alpha = 0.96$).

Measurement Invariance

As the CFA, the models presented adequate adjustment for fathers and mothers. When analyzing the configural invariance model, it also exhibited a reasonable fit to the data. Although the model $\chi 2$ was significant ($\chi 2$ (690) = 1569.89, $p < 0.001$), the model was judged to have acceptable fit based on indices of practical fit ($\chi 2/df = 2.275$; RMSEA = 0.073 [0.068-0.078]; SRMR = 0.048; and CFI = 0.98), similar to the other models (metric, scalar, and residual). When considering the details of measurement invariance, in the metric invariance model, all factor loadings were constrained to be equal across fathers and mothers. The non-significant chi-square difference test ($\chi 2(28) = 14.37$, $p > 0.05$) and the change in the goodness-of-fit indices suggest that the metric invariance model does not have significantly poorer fit than the configural invariance model (ΔCFI = 0.000 > - 0.010, ΔRMSEA = -0.002 < 0.015, and ΔSRMR = 0.012 < 0.030). Thus, factor loadings were not significantly different between mothers and fathers. When comparing the metric invariance model to a scalar invariance model, in which the intercepts are constrained to be equal across fathers and mothers, despite the significant chi-square difference test ($\chi 2(25) = 294.47$, $p > 0.001$), there was trivial change in the fit (ΔCFI = 0.010 > - 0.010, ΔRMSEA = -0.011 < 0.015, and ΔSRMR = -0.001 < 0.010) suggests that differences in intercept variance were not of practical importance. Therefore, intercepts did not show a significant difference between mothers and fathers. Finally, evaluating the residual invariance model, in which error variances were constrained to be equal across mothers and fathers. Likewise, the non-significant chi-square difference test ($\chi 2(32) = 44.00$, $p > 0.05$) and the change in the goodness-of-fit indices indicate that the residual invariance model does not show a significantly poorer fit compared to the scalar invariance

model (ΔCFI = 0.000 > - 0.010, ΔRMSEA = -0.001 < 0.015, and ΔSRMR = -0.002 < 0.010). Thus, residuals did not exhibit a significant difference between mothers and fathers. Additionally, the confidence interval of one level of invariance overlaps with that of another, higher-level model. These indices further support the invariance of structure, factor loading, intercept, and residual across mothers and fathers (Chen, 2007; Timmons, 2010), as shown in Table 1.

Table 1 Goodness of Fit for Tests of Measurement Invariance in PMPS for Fathers and Mothers (N = 484)

Model	**$\chi 2$**	***df***	**$\chi 2/df$**	**$\Delta \chi 2$**	**Δ *df***	**CFI**	**Δ CFI**	**RMSEA [90% CI]**	**Δ RMSEA**	**SRMR**	**Δ SRMR**
configural	1569.89***	690	2.275	-	-	0.98	-	0.073 [0.068, 0.078]	-	0.048	-
metric	1584.26***	718	2.206	14.37	28	0.98	0.00	0.071 [0.066, 0.075]	-0.002	0.060	0.012
scalar	1289.79***	693	1.861	294.47***	25	0.99	0.01	0.060 [0.055, 0.065]	-0.011	0.061	-0.001
residual	1333.79***	725	1.840	44.00	32	0.99	0.00	0.059 [0.054, 0.064]	-0.001	0.059	-0.002

*** $p < .001$

Conclusion and Discussion

This present study investigated the factor structure, construct validity, and generalization of mindful parenting across parents. The first objective was to replicate the factor structure of the Mindful Parenting Scale from the children's perspective. The second objective was to determine the extent to which this scale was unique to fathers and mothers or represented parenting scales applicable to assess both mothers and fathers. The demonstration of measurement invariance is necessary for studies using the Perceived Mindful Parenting Scale to draw valid conclusions that the instrument measures the same theoretical constructs in different parents. Additionally, measurement invariance allows researchers to make comparisons of parenting. A lack of invariance would suggest that Thai adolescents would provide different perspectives on their parents' mindful parenting.

The present findings can be summarized as follows. First, based on confirmatory factor analysis, the factor structure of the Perceived Mindful Parenting Scale had two factors: perceived parental efficacy and being in the moment with the child. This structure presented a good fit to the index values. This finding provided support for two factors involving the original parent report of mindful parenting from a previous study (McCaffrey, 2015). Second, the Perceived Mindful Parenting Scale demonstrated measurement invariance across fathers and mothers, with strict invariance (including structure, factor loading, intercept, and residual invariance). Said differently, this scale appears to be characterized by isomorphic factor structures for mothers and for fathers, the meaning of each item in the scale was the same for children when evaluating both fathers and mothers, children had the same pattern of item responses for both fathers and mothers in every item, and the variance of the actual scores that children assess for both fathers and mothers was equal. These findings suggest that this scale is suitable and can be used to accurately compare children's perceptions of mindful parenting by both fathers and mothers, without being distorted by external factors.

The overall findings of measurement invariance extended the prior psychometric evaluation of mindful parenting and other parenting measures. In previous research that studied measurement invariance in parenting, invariance may have been examined only at the factor structure level or at

Multiple levels of invariance. However, most studies typically found invariance only at the factor structure level or failed to observe residual invariance (e.g., Finley et al., 2008; Prinzie et al., 2007; Adamsons & Buehler, 2007). This may be due to the studies using self-reported measures of parenting by parents, which may present a different perspective compared to how children assess their parents' parenting in certain aspects. Additionally, the studies on measurement invariance in parenting mentioned above investigated other theoretical frameworks of parenting, such as paternal and maternal involvement, parental acceptance, psychological intrusiveness, harsh parenting, and parenting practices (e.g., Finley et al., 2008; Prinzie et al., 2007; Adamsons & Buehler, 2007), which may lead to different results in level of measurement invariance compared to this study, which uses the mindful parenting theoretical framework.

The findings also contribute to an understanding of child development and family dynamics within the broader Asian cultural context. In Thailand, cultural values such as respect for authority, family hierarchy, and collectivism profoundly shape parenting practices and adolescents' interpretations of their parents' behaviors (Saejeng & Taephant, 2020). By demonstrating that children evaluate fathers and mothers similarly when it comes to mindful parenting, the study suggests that such parenting practices may transcend traditional gendered expectations in Asian cultures, where mothers are often viewed as primary caregivers. These findings could inform culturally sensitive parenting interventions and provide a comparative model for similar collectivist societies across Asia.

This study provided valuable insights into how children view their fathers and mothers, as well as the roles that both fathers and mothers play within the family system. Equally important was the development of isomorphic scales for children's perceptions of parenting by fathers and mothers. This scale opens a window of opportunity to study the impact of parental variables on children's outcomes more fully. It can be applied to explore family-related issues and questions that involve measuring children's perceptions of both their fathers and mothers. Moreover, the promotion and accurate measurement of mindful parenting have broader implications for sustainable development. Families serve as the primary environment for human development; fostering parenting practices that emphasize emotional presence, empathy, and self-regulation contributes directly to sustainable human development. By strengthening parent-child relationships and emotional resilience in both parents and children, mindful parenting plays a key role in building socially sustainable communities characterized by emotional intelligence, mutual respect, and intergenerational understanding. These qualities are essential for cultivating a more cohesive, equitable, and resilient society. Therefore, this research contributes not only to the field of parenting science but also to the broader goals of sustainability by highlighting the foundational role of mindful parenting in long-term individual and societal well-being.

Limitations and Future Research Directions

Several important limitations of the current study exist. First, this research was conducted primarily for junior high school students in Thailand. This limitation should be considered when applying to other adolescent populations or adolescents outside of Thailand. Furthermore, the adolescent experience in Thailand is uniquely shaped by cultural expectations around family hierarchy, respect for elders, and collectivist values, which may influence adolescents' perceptions of parental mindfulness and parent-child interactions. These contextual factors are important to consider when interpreting the findings. Second, although the collection of data through online platforms facilitated accessibility, it complicated the control over participants' contexts and omitted key demographic details (e.g., location, SES, parents' education), which may influence parenting perceptions. Third, only selected participants in the current study were early adolescents, and all target parents were their biological parents or stepparents. Because parenting behavior patterns inevitably shift with

changes in family structure, custody/residence status, and the maturity of children, parenting measures may show different evidence of equivalence when tested among more diverse family types and different age groups of children; however, this was beyond the scope of the current study to test. Fourth, the use of a cross-sectional design limits the ability to conclude the stability of perceived mindful parenting and measurement invariance over time. Fifth, purposive sampling was employed to ensure that participants had regular interactions with at least one parent figure, enabling them to provide meaningful responses. However, this non-random sampling method may limit the generalizability of the findings due to potential selection bias. To mitigate this, efforts were made to include a diverse group of students from various grade levels and school backgrounds. Finally, while there were benefits to understanding the child's perspective of mindful parenting, this study did not include any mindful parenting from the parents' perspective. Thus, the findings may limit the ability to triangulate or validate adolescent perceptions fully. Future research testing the measurement invariance of mindful parenting would benefit from a sample with greater diversity and more validated measures. In this sense, researchers should investigate measurement invariance across informants (parents and children). Another direction worth considering is the measurement invariance across different ages of children. Additionally, researchers are encouraged to continue refining and validating measures of mindful parenting for different populations and contexts. Developing culturally appropriate tools and testing their psychometric properties will help ensure that the instruments used capture the nuances of parent-child relationships across diverse societies, particularly within the Asian context.

In conclusion, this study contributed to a better understanding of the use of the Perceived Mindful Parenting Scale with Thai adolescents. Overall, the models for perceptions of mindful parenting across mothers and fathers were quite similar, with strict/residual invariance. These results suggest that the structures, factor loadings, intercepts, and residuals functioned similarly for mothers and fathers from the children's point of view, at least for this sample. Because children viewed these elements of fathers' and mothers' mindful parenting presumably in the same way or at least very similar ways, these findings lent support to the idea that the same measures could be used for both fathers and mothers, as children's perceptions of parenting measures. Furthermore, the results allowed for mean comparison as well as utilizing latent variable modeling.

References

Adamsons, K., & Buehler, C. (2007). Mothering versus fathering versus parenting: Measurement equivalence in parenting measures. *Parenting: Science and Practice, 7*(3), 271-303.

Barry, C., Frick, P., & Grafeman, S. (2008). Child versus parent reports of parenting practices: Implications for the conceptualization of child behavioral and emotional problems. *Assessment, 15*(3), 294-303.

Chen, F. (2007). Sensitivity of Goodness of Fit Indexes to Lack of Measurement Invariance. *Structural Equation Modeling: A Multidisciplinary Journal, 14*(3), 464-504.

Clarke-Stewart, A., & Dunn, J. (eds.). (2006). *Families count: Effects on child and adolescent development*. Cambridge: Cambridge University Press.

Corwyn, R., & Bradley, R. (2005). The Cross-Gender Equivalence of Strains and Gains from Occupying Multiple Roles Among Dual-Earner Couples. *Parenting: Science and Practice, 5*(1), 1-26.

Craig, L. (2006). Does Father Care Mean Fathers Share? A Comparison of How Mothers and Fathers in Intact Families Spend Time with Children. *Gender & Society, 20*(2), 259-281.

de Bruin, E., Zijlstra, B., Geurtzen, N., van Zundert, R., van de Weijer-Bergsma, E., Hartman, … & Bögels, S. (2014). Mindful Parenting Assessed Further: Psychometric Properties of the Dutch Version of the Interpersonal Mindfulness in Parenting Scale (IM-P). *Mindfulness, 5*, 200-212.

Drasgow, F. (1984). Scrutinizing psychological tests: Measurement equivalence and equivalent relations with external variables are the central issues. *Psychological Bulletin, 95*(1), 134-135.

Duncan, L. (2007). *Assessment of mindful parenting among parents of early adolescents: Development and validation of the Interpersonal Mindfulness in Parenting scale*. Doctor of Philosophy Thesis, Pennsylvania State University.

Duncan, L., Coatsworth, J., & Greenberg, M. (2009). A model of mindful parenting: implications for parent-child relationships and prevention research. *Clinical Child & Family Psychology Review, 12*(3), 255-270.

Dyer, W. (2015). The vital role of measurement equivalence in family research. *Journal of Family Theory & Review, 7*(4), 415-431.

Fagan, J., Day, R., Lamb, M., & Cabrera, N. (2014). Should Researchers Conceptualize Differently the Dimensions of Parenting for Fathers and Mothers?. *Journal of Family Theory & Review, 6*(4), 390-405.

Finley, G., Mira, S., & Schwartz, S. (2008). Perceived paternal and maternal involvement: Factor structures, mean differences, and parental roles. *Fathering: A Journal of Theory, Research, and Practice about Men as Fathers, 6*(1), 62-82.

Fleming, C., Mason, W., Thompson, R., Haggerty, K., & Gross, T. (2016). Child and parent report of parenting as predictors of substance use and suspensions from school. *The Journal of Early Adolescence, 36*(5), 625-645.

Florean, I., Dobrean, A., Păsărelu, C., Georgescu, R., & Milea, I. (2020). The Efficacy of Internet-Based Parenting Programs for Children and Adolescents with Behavior Problems: A Meta-Analysis of Randomized Clinical Trials. *Clinical Child and Family Psychology Review, 23*(4), 510-528.

Geier, M. (2012). *Measuring mindful parenting through systematic observation: The development and psychometric testing of the Mindful Parenting Observational Scales (MPOS)*. Master of Science Thesis, Pennsylvania State University.

Gliem, J., & Gliem, R. (2003). *Calculating, Interpreting, and Reporting Cronbach's Alpha Reliability Coefficient for Likert-Type Scales*. Retrieved from https://scholarworks.indianapolis.iu.edu/server/api/core/bitstreams/976cec6a-914f-4e49-84b2-f658d5b26ff9/content.

Horn, J., & McArdle, J. (1992). A practical and theoretical guide to measurement invariance in aging research. *Experimental Aging Research, 18*(3-4), 117-144.

Kabat-Zinn, J. (2003). Mindfulness-Based Interventions in Context: Past, Present, and Future. *Clinical Psychology: Science and Practice, 10*(2), 144-156.

Kabat-Zinn, M., & Kabat-Zinn, J. (1997). *Everyday Blessings: The Inner Work of Mindful Parenting*. New York: Hyperion.

Lei, M., & Lomax, R. (2005). The Effect of Varying Degrees of Nonnormality in Structural Equation Modeling. *Structural Equation Modeling: A Multidisciplinary Journal, 12*(1), 1-27.

Lippold, M., Duncan, L., Coatsworth, J., Nix, R., & Greenberg, M. (2015). Understanding how mindful parenting may be linked to mother-adolescent communication. *Journal of Youth and Adolescence, 44*(9), 1663-1673.

McCaffrey, S. (2015). *Mindfulness In Parenting Questionnaire (MIPQ): Development and Validation of a Measure of Mindful Parenting*. Doctoral Thesis, Nova Southeastern University.

Milfont, T., & Fischer, R. (2010). Testing Measurement Invariance Across Groups: Applications in Cross-cultural Research. *International Journal of Psychological Research, 3*(1), 111-121.

Moreira, H., & Canavarro, M. (2017). Psychometric Properties of the Interpersonal Mindfulness in Parenting Scale in a Sample of Portuguese Mothers. *Mindfulness, 8*(3), 691-706.

Parke, R. (2004). Fathers, Families, and the Future: A Plethora of Plausible Predictions. *Merrill-Palmer Quarterly, 50*(4), 456-470.

Prinzie, P., Onghena, P., & Hellinckx, W. (2007). Reexamining the Parenting Scale: Reliability, factor structure, and concurrent validity of a scale for assessing the discipline practices of mothers and fathers of elementary-school-aged children. *European Journal of Psychological Assessment, 23*(1), 24-31.

Saejeng, P., & Taephant, N. (2020). Mindfulness in Parenting: The Application Guideline. *PSAKU International Journal of Interdisciplinary Research, 9*(2), 10-18.

Schreiber, J. (2017). Update to core reporting practices in structural equation modeling. *Research in Social and Administrative Pharmacy, 13*(3), 634-643.

Schumacker, R., & Lomax, R. (2010). *A Beginner's Guide to Structural Equation Modeling* (3rd ed.). New York: Routledge.

Tavakol, M., & Dennick, R. (2011). Making Sense of Cronbach's Alpha. *International Journal of Medical Education, 2*, 53-55.

Timmons, A. (2010). *Establishing Factorial Invariance for Multiple-Group Confirmatory Factor Analysis*. Bangkok: Kasetsart University.

Tucker, L., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika, 38*, 1-10.

van Leeuwen, K., & Vermulst, A. (2004). Some Psychometric Properties of the Ghent Parental Behavior Scale. *European Journal of Psychological Assessment, 20*(4), 283-298.

Whiteside-Mansell, L., Bradley, R., & Rakow, E. (2001). Similarities and differences in parental investment for mothers and fathers. *Journal of Family Issues, 22*(1), 63-83.

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Conflicts of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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