

The Interpersonal Mindfulness in Parenting Scale – Infant version: Psychometric properties and factor structure in a sample of Portuguese mothers in the postpartum period

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Abstract

The present study aims to explore the factor structure and psychometric properties of an adapted version of the Portuguese version of the Interpersonal Mindfulness in Parenting Scale for parents of infants aged 0 to 12 months (the IM-P-I). Two studies were conducted. The first study included 560 postpartum mothers and examined the factor structure and internal consistency of the IM-P-I. The second study included 295 postpartum mothers, with the goal of cross-validating the factor structure of the questionnaire and examining its internal consistency and construct validity. In both studies, the original correlated five-factor model (which included the subscales Listening with Full Attention, Emotional Awareness of the Child, Compassion for the Child, Self-Regulation in Parenting, and Nonjudgmental Acceptance of Parental Functioning) was the best-fitting model. Adequate Cronbach's alpha values were found for the total scale and for all subscales, except for the Emotional Awareness of the Child subscale. Moderate to strong negative correlations were found between the IM-P-I subscales and anxious and depressive symptomatology and emotional dysregulation. This study shows that the IM-P-I is a psychometrically adequate measure of mindful parenting in the postpartum period.

Keywords: mindful parenting; IM-P; infant; psychometric study

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A Escala de Mindfulness Interpessoal na Parentalidade – Versão bebé: Propriedades psicométricas e estrutura fatorial numa amostra de mães Portuguesas no período pós-parto

Resumo

O presente estudo teve como objetivo explorar a estrutura fatorial e as propriedades psicométricas de uma versão adaptada da versão em Português da Escala de Mindfulness Interpessoal na Parentalidade para pais de bebés de 0 a 12 meses (IM-P-I). Foram realizados dois estudos. O primeiro estudo incluiu 560 mulheres no período pós-parto e examinou a estrutura fatorial e a consistência interna do IM-P-I. O segundo estudo incluiu 295 mulheres no período pós-parto, com o objetivo de confirmar a estrutura fatorial do questionário e examinar a sua consistência interna e validade de constructo. Nos dois estudos, o modelo original de cinco fatores correlacionados (que incluiu as subescalas Escutar com Atenção Plena, Consciência Emocional da Criança, Compaixão pela Criança, Autorregulação na Relação Parental, e Aceitação Não Ajuizadora do Funcionamento Parental) foi o modelo que melhor se ajustou aos dados. Foram encontrados valores de alfa de Cronbach adequados para a pontuação total da escala e para todas as subescalas, exceto para a subescala Consciência Emocional da Criança. Foram encontradas correlações negativas moderadas a fortes entre as subescalas do IM-P-I e a sintomatologia ansiosa e depressiva e a desregulação emocional. Este estudo mostra que o IM-P-I é uma medida psicometricamente adequada para avaliar a parentalidade mindful no período pós-parto.

Palavras-chave: parentalidade mindful; IM-P; bebé; estudo psicométrico

INTRODUCTION

The term “mindful parenting” was introduced by Kabat-Zinn and Kabat-Zinn (1997) to describe the practice of intentionally bringing mindful awareness to everyday parent–child interactions and experiences (Bögels & Restifo, 2014; Kabat-Zinn & Kabat-Zinn, 1997). In general, mindful parenting can be defined as a parenting style that involves the ability to be compassionate with the self and with the child, aware of one’s own emotions and of the child’s emotions, and to be fully present and able to exert self-regulation in parent–child interactions (Duncan et al., 2009).

Duncan et al. (2009) proposed a theoretical model, according to which mindful parenting has a positive effect on the parent–child relationship and on the psychological functioning of both the parents and children because it involves the development of five important parenting skills: (1) listening to the child with full

attention (i.e., being fully present and giving complete attention to the child during parent-child interactions); (2) nonjudgmental acceptance of the self and the child (i.e., accepting the self as a parent and the challenges that parenting involves, as well as the characteristics and behaviors of the child); (3) emotional awareness of the self and the child (i.e., being able to notice and correctly identify one's own emotions and the child's emotions during an interaction); (4) self-regulation in the parenting relationship (i.e., being able to pause before reacting in order to choose parenting behaviors that are in accordance with one's own values and goals); and (5) directing compassion toward the self as a parent and toward the child (i.e., being kind to the child and supportive of, sensitive to, and responsive to the child's needs).

Research on mindful parenting has been mainly conducted among parents of school-aged children and adolescents. For instance, mindful parenting has been found to be associated with higher quality parent-child relationships (e.g., Duncan et al., 2015), a more secure perception in the child of their relationship with their parents (Medeiros et al., 2016), more positive and adaptive parenting styles and practices (de Bruin et al., 2014; Gouveia et al., 2016), better well-being (Medeiros et al., 2016) and psychosocial functioning (e.g., Parent et al., 2016) in the child, and lower levels of parenting stress (Bögels et al., 2014; Bögels & Restifo, 2014; Gouveia et al., 2016) and self-critical rumination (Moreira & Canavarro, 2018). Mindfulness-based parenting programs for parents of children and adolescents, such as mindful parenting training (Bögels & Restifo, 2014), have also been shown to be efficacious in reducing parental stress, parental reactivity, children's and parents' psychopathological problems and in promoting parents' emotional regulation and psychological adjustment (Bögels et al., 2014; Bögels et al., 2010; Bögels & Restifo 2014; Meppelink et al., 2016).

In contrast, research on mindful parenting in the postpartum period is extremely limited. Some exceptions are the study of Laurent et al. (2017), which explored the effects of mindful parenting on cortisol levels in mothers and their infants in the first six months postpartum, and the study of Potharst et al. (2017), which examined the feasibility, acceptability and effects of mindful parenting group training for parents of babies up to 18 months old ("Mindful with Your Baby"). Although these studies support the benefits of promoting mindful parenting in the postpartum period, further studies are needed to better understand the protective role of this parental approach and the factors that can influence mindful parenting in this critical period. Therefore, mindful parenting assessment tools for the postpartum period are needed for research in this area to develop. In the studies by Laurent et al. (2017) and Potharst et al. (2017), adaptations of the Interpersonal Mindfulness in Parenting scale (IM-P; Duncan, 2007) were used. However, although Cronbach's alpha values in these studies were adequate for most of the subscales, to the best of our knowledge, the psychometric properties of these adaptations were not examined.

THE INTERPERSONAL MINDFULNESS IN PARENTING SCALE

The IM-P was developed by Duncan (2007) to assess mindful parenting among parents of children and adolescents. The initial 10-item version (Duncan, 2007) was later expanded to a 31-item scale aimed at assessing the five mindful parenting dimensions proposed in Duncan et al.'s (2009) mindful parenting theoretical model (i.e., Listening with Full Attention; Non-Judgmental Acceptance of the Self and Child; Emotional Awareness of the Self and Child; Self-Regulation in the Parenting Relationship; and Compassion for the Self and Child). Although the psychometric properties and factor structure of the original 31-item version were not investigated, other validation studies have examined its factor structure and psychometric qualities among different populations, including in the Netherlands (de Bruin et al., 2014), Portugal (Moreira & Canavarro, 2017), Hong Kong (Lo et al., 2018), Korea (Kim et al., 2018) and Mainland China (Pan et al., 2019). However, no study has been able to confirm the initially proposed 5-factor structure. The different versions of the IM-P vary in their number of items and their factorial structure, which may reflect that parenting behavior and meaning are embedded in the cultures. However, there are also some commonalities. All versions indicate that Compassion for the Self could not be integrated with Compassion for the Child as one factor, and include a factor of Listening/Interacting with Full Attention. In addition, almost all of them also include a factor of Compassion for the Child and Nonjudgmental Acceptance in Parenting/Parental functioning.

The factor structure and the psychometric properties of the Portuguese version of the IM-P were examined in three complementary studies that included parents of children and adolescents aged between 1 and 18 years old (Moreira & Canavarro, 2017). In the first study, the authors conducted an exploratory factor analysis in a sample of 300 mothers of children, which yielded a six-factor structure that was very similar to the factor structure of the Dutch version of the scale (de Bruin et al., 2014). The six factors were named: (1) Nonjudgmental Acceptance of Parental Functioning; (2) Self-regulation in Parenting; (3) Compassion for the Child; (4) Listening with Full Attention; (5) Emotional Awareness of the Child; and (6) Emotional Awareness of the Self. Factor 6 was excluded from the scale because it included only two items (items 3 and 6), with corrected item-total correlations below the recommendations ($\leq .30$), and presented an unacceptable Cronbach's alpha value ($\alpha = .42$). All the other subscales and the total score presented an adequate internal consistency (Cronbach's alpha values between .78 and .83), with the exception of the Emotional Awareness of the Child subscale, which presented a slightly lower Cronbach's alpha value than recommended ($\alpha = .69$). Therefore, the final version of the Portuguese version of the IM-P was composed of 29 items distributed across five subscales. In the second

study, confirmatory factor analyses in a different sample of mothers demonstrated that a correlated five-factor model and a hierarchical model had an acceptable fit to the data, supporting the utilization of the IM-P subscales and total score. The third study included mothers and fathers and examined the convergent validity of the scale. As expected, higher levels of mindful parenting were correlated with higher levels of parents' self-compassion. In addition, positive correlations were found between all IM-P subscales and the authoritative parenting style and negative correlations were found between all IM-P subscales and the authoritarian and permissive parenting styles.

THE PRESENT STUDY

As already mentioned, research on mindful parenting in the postpartum period is scarce, probably due to the lack of an adequate measure of mindful parenting for this particular period. The few studies in this period (Laurent et al., 2017; Potharst et al., 2017) used IM-P scale adaptations. However, to the best of our knowledge, the factor structure and other psychometric properties of these adaptations were not examined. Therefore, further studies examining the psychometric qualities of an adapted version of the IM-P for the postpartum period are needed. The existence of a properly adapted and validated instrument for this population will allow the development of this particular area of study and, consequently, a better understanding of the factors that may be related to the mindful parenting in the postpartum period and a better evaluation of the mindful parenting intervention outcomes in this period. Therefore, we developed an adapted version of the Portuguese IM-P that is appropriate for parents of infants aged up to 12 months (i.e., the IM-P-Infant). The goal of the present study is to examine the factor structure and the psychometric properties of the IM-P-I in two different studies.

STUDY 1

The first study aimed to examine the factor structure of the IM-P-I by exploring three models: 1) a one-factor model; 2) the five-factor correlated model found in the Portuguese validation study (Moreira & Canavarro, 2017); and 3) a hierarchical model with one second-factor (mindful parenting) and five first-order factors corresponding to each mindful parenting dimension of the Portuguese factor structure. The internal consistency of the scale was also examined. We expected to confirm

the five-factor structure found in the validation study of the Portuguese version of the scale (Moreira & Canavarro, 2017).

METHOD

Participants

The sample included 560 mothers of infants (52.5% males; $n = 294$) aged between 0 and 12 months ($M_{\text{age}} = 5.29$, $SD = 3.14$). Mothers had a mean age of 32.81 years ($SD = 4.65$, range = 18-46), and the majority were married or living with a partner ($n = 535$, 95.5%), had completed higher education ($n = 534$, 71.4%), were employed ($n = 467$, 83.4%), had a monthly household income less than 2000€ ($n = 408$, 72.9%), and lived in urban areas ($n = 411$, 73.4%), mainly from the Lisbon metropolitan area ($n = 187$, 33.4%), central Portugal ($n = 158$, 28.2%), and northern Portugal ($n = 152$, 27.1%). Most pregnancies were spontaneous ($n = 524$, 93.6%), planned ($n = 426$, 76.1%) and desired ($n = 546$, 97.5%) and developed with no obstetric complications in the mother ($n = 393$, 70.2%) or baby ($n = 524$, 93.6%).

Procedure

The IM-P-I was adapted from the Portuguese version of the IM-P (Moreira & Canavarro, 2017). Two authors of this study (D. F. and H. M.) independently adapted the questionnaire items so that they would be appropriate to parents of infants. After that, the two authors met to compare their versions and to obtain a comprehensible instrument that was conceptually consistent with the original but suitable for parents of infants. In the infant version of the questionnaire, the word “child” was replaced by the word “baby” in all items, and actions that implied verbal or cognitive abilities not yet present in infants younger than 12 months old were replaced by similar actions that did not imply these abilities. For instance, the item “I often react too quickly to what my child says or does” was modified to “I often react too quickly when my baby gets agitated or cries”; or the item “When my child misbehaves, it makes me so upset I say or do things I later regret” was replaced by “When my baby cries, becomes agitated or cranky, it makes me so upset I say or do things I later regret”. In addition, some examples were provided in

several items so that the meaning of the item could be more easily understood. For instance, “When times are really difficult with my child, I tend to blame myself” was replaced by “When times are really difficult with my child (e.g., when it is difficult to calm him down, when he cries nonstop, when he has difficulty falling asleep), I tend to blame myself”. Only item 4 (“I listen carefully to my child’s ideas, even when I disagree with them”) was deleted because no adaptation was deemed adequate. Therefore, the final version of the scale resulted in 28 items.

The sample was recruited online through a data collection website (LimeSurvey®) between December 2018 and January 2019 after approval from the Ethics Committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra. The only criteria to participate in the study were being Portuguese, being 18 years old or older, and having at least one child between 0 and 12 months old. Participants were invited to participate in a study about their opinions and preferences regarding a mindful parenting intervention in the postpartum period. The survey link was shared on social networks, including parenting forums and Facebook pages about parenting-related issues in the postpartum period. Several advertisements explaining the main goals of the study and containing the web link to the survey were posted on Facebook pages. The link was shared through unpaid cross-posting, through paid boosting campaigns, and through e-mail. The first page of the online protocol provided a brief description of the study objectives, the inclusion criterion, and the ethical issues of the study. The participants were assured that their participation in the study was anonymous and that no identifying information would be collected. Those who provided informed consent by clicking on the option “I understand and accept the conditions of the study” were granted access to the assessment protocol. If parents had more than one child, they were instructed to focus on their child aged between 0 and 12 months old when answering the questionnaires.

Measures

Sociodemographic and Clinical Information. Participants answered several questions regarding their sociodemographic background (e.g., age, marital status, educational level, employment status, and average monthly income) and obstetric information (e.g., maternal and fetal complications during pregnancy, type of delivery).

Mindful Parenting. The Portuguese IM-P-I contains 28 items scored on a five-point Likert response scale, ranging from 1 (*never true*) to 5 (*always true*). The items are distributed across five subscales, following the structure of the Portuguese IM-P version: (1) Listening with Full Attention (LFA; e.g., “I find myself paying little attention to my baby because I am busy doing or thinking about something else at the same time”); (2)

Compassion for the Child (CC; e.g., “I am kind to my baby when he/she is tearful, restless or upset with something”), (3) Non-Judgmental Acceptance of Parental Functioning (NJAPF; e.g., “I tend to criticize myself for not being the kind of parent I want to be”), (4) Self-Regulation in Parenting (SR; e.g., “When I’m upset with my baby, I notice how I am feeling before I take action”), and (5) Emotional Awareness of the Child (EAC; e.g., “It is hard for me to tell what my baby is feeling”). The subscale scores are the sum of the items, with higher scores indicating higher levels of the mindful parenting dimensions.

Data analyses

A CFA using maximum likelihood estimation was conducted in AMOS© 24 to test the adequacy of the factor structure of the IM-P-I. Three models were estimated: 1) a one-factor model; 2) a correlated five-factor structure, which presumes that the IM-P-I measures five different, but correlated, dimensions; and 3) a hierarchical model with five first-order factors and a single second-order factor of mindful parenting, which presumes that the dimensions of mindful parenting load on a general mindful parenting factor. The fit of the models was assessed through the comparative fit index (CFI), the Tucker-Lewis Index (TLI), the root-mean-square error of approximation (RMSEA), and the standardized root-mean-square residual (SRMR). The cut-offs for adequate and good model fit were CFI values $\geq .90$ and $\geq .95$, RMSEA values $\leq .08$ and $\leq .06$, and SRMR values $\leq .10$ and $\leq .08$, respectively (Browne & Cudeck, 1993; Hu & Bentler, 1999). The Akaike information criterion (AIC; Akaike, 1987) was used to compare the models. The model with the smallest AIC values was considered the best-fitting model. A chi-square difference test was also computed to compare the model fit of different models and to determine whether a model had a significantly better fit to the data than another model. Factor loadings of .32 or above were considered meaningful (Tabachnick & Fidell, 2013). Cronbach’s alpha values were obtained for each subscale and for the total score of the IM-P-I to explore its internal consistency.

RESULTS

Confirmatory factor analyses

As presented in Table 1, the one-factor model presented a poor fit to the data. Although the correlated five-factor model presented an acceptable fit to the data

$[\chi^2(340) = 937.15, p < .001; CFI = .894; RMSEA = .056, 90\% CI = [.052, .060], p = .010; SRMR = .055; AIC = 1069.15]$, modification indices were examined, suggesting that the errors in items 2 and 21, 2 and 8, 8 and 11, 15 and 20, 18 and 20, 25 and 27 might be correlated. Because these pairs of items belonged to the same factors, their measurement errors were allowed to correlate (Byrne, 2010). As presented in Table 1, the respecified model presented an adequate fit to the data, which was significantly better than the fit of the initial model [$\Delta\chi^2(6) = 56.52, p < .001$]. All standardized factor loadings for the items were significant ($p < .001$), ranging from .226 (item 10) to .806 (item 30).

Table 1
Goodness of fit statistics in Study 1 and Study 2

	Goodness of fit statistics						
	χ^2	<i>df</i>	<i>p</i>	CFI	SRMR	RMSEA	AIC
One-factor model							
Study 1	1985.83	350	< .001	.710	.078	.091, 90% CI = [.088, .095], <i>p</i> < .001	2097.83
Study 2	1218.85	350	< .001	.636	.088	.092, 90% CI = [.086, .098], <i>p</i> < .001	1330.85
Correlated 5-factor model							
Study 1	880.63	334	< .001	.903	.053	.054, 90% CI = [.050, .058], <i>p</i> = .059	1024.63
Study 2	555.22	334	< .001	.907	.063	.047, 90% CI = [.040, .054], <i>p</i> = .720	699.22
Second-order 5-factor model							
Study 1	919.22	339	< .001	.897	.056	.055, 90% CI = [.051, .060], <i>p</i> = .021	1053.22
Study 2	570.70	339	< .001	.903	.064	.048, 90% CI = [.041, .055], <i>p</i> = .659	704.70

The hierarchical model, in which the same errors were allowed to correlate, also presented an adequate fit. All first-order factors loaded significantly onto the general mindful parenting factor (standardized factor loadings were .848 for the subscale Compassion for the Child; .718 for the subscale Listening with Full Attention; .695 for the subscale Non-Judgmental Acceptance of Parental Functioning; .735 for the subscale for Emotional Awareness of the Child; and .954 for the subscale Self-regulation in Parenting), and all standardized factor loadings for the items were significant ($p < .001$), ranging from .227 (item 10) to .812 (item 31). The difference in the adjustment of the correlated and hierarchical models was significant [$\Delta\chi^2(5) = 38.59, p < .001$], suggesting that the correlated model seems to be a better representation of the IM-P-I factor structure.

Descriptive statistics and internal consistency

The means, standard deviations, and Cronbach’s alpha values for the IM-P-I subscales and total scores are presented in Table 2. Cronbach’s alpha values were adequate for the subscales Listening with Full Attention, Self-Regulation, Non-Judgmental Acceptance of Parental Functioning, Compassion for the Child, and for the total score. A lower Cronbach’s alpha was found for the Emotional Awareness of the Child subscale.

Table 2
Means and standards deviations and Cronbach’s alphas for IM-P-I subscales

	Study 1		Study 2	
	<i>M (SD)</i>	Cronbach’s alphas	<i>M (SD)</i>	Cronbach’s alphas
Listening with Full Attention	20.81 (3.01)	.84	20.38 (2.85)	.84
Emotional Awareness of the Child	11.48 (1.94)	.68	11.79 (1.70)	.58
Self-Regulation in Parenting	30.18 (4.57)	.75	30.97 (3.96)	.69
Nonjudgmental Acceptance of Parental Functioning	24.67 (4.90)	.77	24.76 (4.78)	.77
Compassion for the Child	22.12 (2.36)	.76	22.40 (2.10)	.70
Mindful Parenting Total Score	116.34 (12.75)	.90	110.19 (11.14)	.87

STUDY 2

The goal of the second study was to cross-validate the factor structure of the questionnaire in a different sample of postpartum mothers. This study was also intended to examine the evidence for the validity of the IM-P-I scores based on their associations with variables that are expected to be associated with mindful parenting (anxiety and depression symptoms and difficulties in emotion regulation) and on the differences between a group of mothers presenting clinically significant levels of anxiety and/or depression symptomatology and a group of mothers with normal levels of symptomatology. Based on previous investigations, we expected higher levels of mindful parenting to be associated with lower levels of anxiety and depression symptoms (e.g., Moreira & Canavarro, 2018) and with lower levels of emotion dysregulation (e.g., Gouveia et al., 2019; Moreira & Canavarro, 2020). We also expected to find higher levels of mindful parenting dimensions among mothers with normal levels of symptomatology.

METHOD

Participants

The sample included 295 mothers of infants (52.9% males) aged between 0 and 12 months ($M_{\text{age}} = 6.98$, $SD = 3.45$). Mothers had a mean age of 32.07 years ($SD = 4.84$, range = 19-47), and the majority were married or living with a partner ($n = 279$, 94.6%), had completed higher education ($n = 188$, 63.7%), were employed ($n = 237$, 80.3%), had a monthly household income less than 2000€ ($n = 217$, 73.6%), and lived in urban areas ($n = 216$, 73.2%) mainly from central Portugal ($n = 126$, 42.7%), the Lisbon metropolitan area ($n = 73$, 24.7%), and northern Portugal ($n = 60$, 20.3%). Most pregnancies were spontaneous ($n = 280$, 94.9%) and developed with no obstetric complications in the mother ($n = 222$, 75.3%) or baby ($n = 283$, 95.9%).

Procedure

The sample of Study 2 was collected online ($n = 262$, 88.8%) and in four nurseries of the central region of Portugal ($n = 33$, 11.2%), between December 2018 and February 2019. The study was approved by the Ethics Committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra and by the directors of the nurseries that collaborated in the study. The only criteria to participate in the study were being Portuguese, being 18 years old or older, and having at least one child between 0 and 24 months old. Participants were invited to participate in a study about their emotional experiences in the first two years after the birth of a child. The procedures for online data collection were similar to the procedures described in Study 1. Participants recruited from nurseries received a letter explaining the study (study aims, inclusion criteria, and institutional background), an informed consent form, and the questionnaires from the child's kindergarten teacher. Mothers were asked to complete the questionnaires at home and to return them completed within one week. Of the 235 potential participants, 139 (59.15%) mothers completed the questionnaires. For the purpose of this study, 104 questionnaires corresponding to mothers of children over 12 months of age were excluded. In addition, two questionnaires corresponding to mothers of other nationalities were also excluded, which resulted in a final sample of 33 participants (11.2% of the total sample).

No significant differences were found between mothers recruited online and those recruited from nurseries in terms of level of education [$\chi^2(1) = 0.61$, $p = .435$], marital

status [$\chi^2(1) = 2.13, p = .144$], professional status [$\chi^2(1) = 2.63, p = .105$], household monthly income [$\chi^2(1) = .522, p = .470$], place of residence [$\chi^2(1) = 3.02, p = .082$], infant gender [$\chi^2(1) = .041, p = .839$], mother's age, [$F(1, 251) = 1.14, p = .287$], mother-related obstetric complications [$\chi^2(1) = 0.01, p = .943$], and infant-related obstetric complications [$\chi^2(1) = 2.63, p = .105$]. Likewise, no significant differences were found in mindful parenting dimensions, Wilk's Lambda = .988, $F(5, 289) = 0.71, p = .619$.

Measures

Mothers completed a sociodemographic form and the IM-P-I described in Study 1 in addition to measures of anxiety and depression symptoms and difficulties in emotional regulation.

Anxiety and Depressive Symptoms. The Portuguese version of the Hospital Anxiety and Depression Scale (HADS; Pais-Ribeiro et al., 2007; Zigmond & Snaith, 1983) was used to assess levels of depressive and anxious symptomatology in the previous week. This scale contains 14 items and uses a four-point Likert scale that ranges from 0 (*not at all/only occasionally*) to 3 (*most of the time/a great deal of the time*), with higher scores indicating higher levels of symptomatology. Scores between 0 and 7 are considered "normal"; between 8 and 10, "mild"; between 11 and 14, "moderate"; and between 15 and 21, "severe". According to Snaith (2003), scores of 11 or higher indicate the possible presence ("caseness") of clinically significant symptomatology. In this sample, the Cronbach's alpha coefficients were .82 for anxiety and .81 for depression.

Difficulties in Emotion Regulation. The Portuguese version of the Difficulties in Emotion Regulation Scale - Short Form (DERS-SF; Kaufman et al., 2015; Moreira et al., 2020) was used to assess difficulties in emotional regulation or dysregulation. The scale consists of 15 items (e.g., "When I'm upset, I feel guilty for feeling that way"; "When I'm upset, I have difficulty concentrating"), answered on a five-point Likert scale that ranges from 1 (*almost never*) to 5 (*almost always*). The total score consists of the mean of the items, with higher scores indicating more difficulties in regulating emotions. In the current study, Cronbach's alpha was .90.

Data analyses

Following the procedures described in Study 1, a CFA using maximum likelihood estimation was conducted in AMOS© 24. The same three models that were already tested in Study 1 were tested in Study 2 to cross-validate the factor structure of

the IM-P-I. The internal consistency of the scale was assessed through Cronbach's alpha, which was obtained for each subscale and for the total score. The validity of the IM-P-I scores, based on their relation to variables expected to be associated with mindful parenting, was explored. Correlations around .10 were considered small; correlations near .30 were considered medium; and correlations of .50 or higher were considered large (Cohen, 1988). Based on the HADS cutoff scores, two groups were created: 1) a group with normal/mild anxiety and depression symptoms (HADS scores < 11 in both subscales; Normal symptomatology group); and 2) a group with clinically significant levels of anxiety and/or depression symptoms (HADS anxiety and/or depression scores \geq 11; Clinically significant symptomatology group). Differences between the study variables across the groups were analyzed through MANOVA (for mindful parenting dimensions) and ANOVA (for the total score).

RESULTS

Confirmatory factor analyses

As presented in Table 1, the one-factor model presented a poor fit to the data. In contrast, the correlated five-factor model presented a good fit to the data. All standardized factor loadings for the items were significant ($p < .001$), ranging from .188 (item 10) to .796 (item 23). The hierarchical model also presented an adequate fit. All first-order factors loaded significantly on the general mindful parenting factor (standardized factor loadings were .798 for the subscale Compassion for the Child; .673 for the subscale Listening with Full Attention; .593 for the subscale Non-Judgmental Acceptance of Parental Functioning; .579 the subscale for Emotional Awareness of the Child; and .972 for the subscale Self-regulation in Parenting), and all standardized factor loadings for the items were significant ($p < .001$), ranging from .189 (item 10) to .795 (item 23). The difference in the adjustment of the correlated and hierarchical models was significant [$\Delta\chi^2(5) = 15.48, p = .008$], which means that the correlated model seems to be a better representation of the IM-P-I factor structure.

Descriptive statistics and internal consistency

The means, standard deviations, and Cronbach's alpha values for the IM-P-I subscales and total scores are presented in Table 2. Cronbach's alpha values were

adequate for the subscales Listening with Full Attention, Non-Judgmental Acceptance of Parental Functioning, Compassion for the Child, and for the total score. Lower Cronbach's alpha values were found for the subscales Emotional Awareness of the Child and Self-Regulation.

Validity evidence of the IM-P-I scores in relation to other variables

As presented in Table 3, moderate to strong negative correlations were found between all IM-P-I dimensions and the total score and symptoms of anxiety and depression and emotion dysregulation.

Table 3
Correlations between IM-P-I subscales and other measures in Study 2

	Depression symptoms	Anxiety symptoms	Emotion dysregulation
Listening with Full Attention	-.26**	-.29**	-.34**
Emotional Awareness of the Child	-.30*	-.26**	-.21**
Self-Regulation in Parenting	-.33**	-.39**	-.40**
Nonjudgmental Acceptance of Parental Functioning	-.48**	-.61**	-.54**
Compassion for the Child	-.25**	-.21**	-.25**
Mindful Parenting Total Score	-.48**	-.56**	-.54**

* $p < .05$, ** $p < .01$

Comparison analyses of mindful parenting as a function of mothers' anxiety and depression symptoms

The majority of mothers reported normal or mild levels of anxiety and/or depression symptoms ($n = 233$, 78.98%; "Normal symptomology group"), and only 21.02% ($n = 62$; "Clinically significant symptomatology group") reported clinically significant levels of symptomatology (i.e., scored ≥ 11 on one or both of the HADS subscales). Levels of mindful parenting dimensions were compared between groups (see Table 4). The multivariate effect was significant [Wilk's Lambda = 0.76, $F(5, 289) = 18.17$, $p < .001$]. Significant differences were found in all mindful parenting dimensions, with mothers presenting clinically significant levels of anxiety and/or depressive symptoms reporting lower levels of all mindful parenting dimensions than mothers with normal levels of symptomatology.

Table 4*Comparison analyses as a function of anxiety and depression symptoms in Study 2*

	No symptoms group <i>n</i> = 233	Clinically significant symptomatology group <i>n</i> = 62	Comparison analyses
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	
Listening with Full Attention	20.73 (2.68)	19.04 (3.11)	$F(1, 293) = 17.51, p < .001$
Emotional Awareness of the Child	11.95 (1.64)	11.18 (1.77)	$F(1, 293) = 10.45, p = .001$
Self-Regulation in Parenting	31.47 (3.63)	28.63 (4.35)	$F(1, 293) = 27.53, p < .001$
Nonjudgmental Acceptance of Parental Functioning	25.93 (4.28)	20.37 (3.97)	$F(1, 293) = 84.98, p < .001$
Compassion for the Child	22.58 (2.05)	21.69 (2.15)	$F(1, 293) = 9.05, p = .003$
Mindful Parenting Total Score	112.27 (9.90)	100.19 (11.14)	$F(1, 293) = 66.28, p < .001$

DISCUSSION

The goal of the present study was to explore the factor structure and the psychometric properties of an adapted version of the Portuguese version of IM-P (Moreira & Canavarro, 2017) for parents of infants aged zero to 12 months (the IM-P-I). To this end, the questionnaire items of Portuguese IM-P were adapted to be suitable for parents of infants. The final version resulted in 28 items that were conceptually consistent with the original scale.

The results of the confirmatory factor analyses conducted among two independent samples of mothers in the postpartum period confirmed the adequacy of the expected five-factor structure of the Portuguese scale. Both the correlated five-factor model and the hierarchical model presented an acceptable fit to the data in both studies, which is consistent with the results from the study examining the factor structure of the Portuguese IM-P (Moreira & Canavarro, 2017). However, consistent with the abovementioned study, the correlated five-factor model presented a better fit and, thus, seems to be a better representation of the IM-P-I factor structure.

The IM-P-I showed good internal consistency, with adequate Cronbach's alpha values for the total scale and for almost all the subscales, except for the Emotional Awareness of the Child subscale, which presented lower Cronbach's alpha values ($\alpha = .68$ in Study 1 and $\alpha = .58$ in Study 2). This finding is consistent with the results presented in the validation study of the Portuguese version of the IM-P (Moreira & Canavarro, 2017), in which this subscale also presented a lower Cronbach's alpha value ($\alpha = .69$) compared to the other subscales. A possible reason is that this subscale comprises a smaller number of items than the other subscales.

Supporting the construct validity of the scale, significant and moderate to strong negative correlations were found between the IM-P-I subscales and the total score and measures of anxious and depressive symptomatology. This result is consistent with the results found in the validation studies of the Portuguese (Moreira & Canavarro, 2017) and Chinese (Pan et al., 2019) versions of the scale. It is also in accordance with previous studies that demonstrated that lower levels of mindful parenting are significantly correlated with higher symptomatology levels (Moreira & Canavarro, 2018). It is interesting to note that the strongest negative correlation was found between anxiety and depression symptoms and the Nonjudgmental Acceptance of Parental Functioning subscale. Because the judgment and non-acceptance of parental function are essentially ruminative and self-critical processes, this strong correlation was expected, since self-criticism and rumination are core processes of psychopathology.

Also supporting the validity of the IM-P-I scores, significant and moderate to strong negative correlations were found between the IM-P-I subscales and total score and emotional dysregulation, which is also in accordance with previous studies (e.g., Gouveia et al., 2019; Moreira & Canavarro, 2020). Self-Regulation in the Parenting Relationship and Nonjudgmental Acceptance of Parental Functioning, in particular, were the subscales that correlated more strongly with emotion dysregulation. These results suggest that emotion regulation is a fundamental aspect in the parents' relationship with the child and in the self-to-self relationship. That is, mothers with more adaptive emotion regulation skills seem to be able to adaptively regulate their emotions and behaviors in the interactions with their children, as well as be less critical of their parental role and, therefore, more compassionate and tolerant with their mistakes or limitations as mothers.

Comparison analyses showed that mothers with clinically significant levels of anxious/depression symptoms reported lower levels of all mindful parenting dimensions. This result is consistent with previous investigations in parents of children and adolescents showing that parents who exhibit clinically significant levels of psychopathology symptoms have a greater difficulty in adopting a mindful parenting style (Moreira & Canavarro, 2018) and struggle to engage in optimal

parenting (e.g., Lovejoy et al., 2000). Therefore, these results support the validity of this version of the scale and its ability to discriminate parents with and without clinically significant levels of psychopathology symptoms.

Limitations, Contributions and Conclusions

The present study has some limitations. First, the IM-P-I was only administered once; thus, we were not able to determine the test–retest reliability of the IM-P-I. Second, the sample only included mothers, which precluded the generalization of the results to fathers. Third, although the total score and most subscales presented adequate Cronbach’s alpha values, the Emotional Awareness of the Child subscale presented a Cronbach’s alpha value below the recommendations. Although some authors have argued that Cronbach’s alpha values of .60 are acceptable in research in the social sciences (Aron et al., 2013), some caution should be used when interpreting the results obtained with this subscale. Fourth, the sample of Study 1 and most of the sample of Study 2 were recruited online, which may compromise the representativeness of the samples, as online recruitment is often associated with a self-selection bias (i.e., parents who participate in an online study tend to be more interested in the study theme and to be more motivated to complete the questionnaires).

However, despite these limitations, this study represents an important contribution to the measurement of mindful parenting in the postpartum period. Research on mindful parenting in the postpartum period is scarce, and this may be due, in part, to the scarcity of appropriate assessment tools of mindful parenting for this particular period. Therefore, we believe that the present study, by showing that the IM-P-I is a psychometrically adequate measure of mindful parenting in mothers of infants aged zero to 12 months, will contribute to the growth of scientific research in mindful parenting in the postpartum period.

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