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Childbearing Motivation Questionnaire: cross-cultural adaptation and evidence of validation in Peru

Childbearing Motivation Questionnaire: adaptação transcultural e evidencias de validade no Peru

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Abstract

Objective
This study aims to adapt and validate the Childbearing Motivation Questionnaire for use in Peru and to test the independence hypothesis between the two scales that compose it (Positive Childbearing Motivation and Negative Childbearing Motivation).

Method
The process considered six steps: 1) Translations, 2) Synthesis of the translations, 3) Evaluation by judges, 4) Evaluation by the target audience, 5) Back-translation e 6) Validity analysis using factorial analysis, evaluation of internal consistency, and test of the independence of the scales through correlation analysis. The sample consisted of 1,054 Peruvians from 22 regions of Peru.

Results
The Positive Childbearing Motivation scale showed a good fit for a bifactor, second-order structure, but the complementary bifactor indices indicate that the scale is mainly one-dimensional. The Negative Childbearing Motivation scale presented a unifactorial structure with adequate psychometric properties.

Conclusion
The results show that the Childbearing Motivation Questionnaire is a valid instrument to measure the motivations to have children in Peru.

Keywords: Cross-cultural comparisons; Factor analysis; Reliability; validity. Reproductive behavior.

Resumo

Objetivo

Este estudo visa adaptar e validar o Questionário de Motivação para Ter Filhos para uso no Peru e testar a hipótese de independência entre as duas escalas que o compõem (Motivação Positiva para Ter Filhos e Motivação Negativa para Ter Filhos).

Método

O processo considerou seis etapas: 1) Traduções, 2) Síntese das traduções, 3) Avaliação por juízes, 4) Avaliação pelo público-alvo, 5) Retrotradução e 6) Análise de validade utilizando análise fatorial, avaliação da consistência interna e teste da independência das escalas através da análise de correlação. A amostra consistiu em 1.054 peruanos de 22 regiões do Peru.

Resultados

A escala de Motivação Positiva para Ter Filhos mostrou um bom ajuste para uma estrutura bifatorial de segunda ordem, mas os índices bifatoriais complementares indicam que a escala é predominantemente unidimensional. A escala de Motivação Negativa para Ter Filhos apresentou uma estrutura unifatorial com propriedades psicométricas adequadas.

Conclusão

Os resultados mostram que o Questionário de Motivação para Ter Filhos é um instrumento válido para medir as motivações para ter filhos no Peru.

Palavras-chave: *Análisis factorial; Comportamento reprodutivo; Comparação transcultural; Confiabilidade; validade.*

Motivations for Parenting (MP) are considered the basis of the reproductive decision-making process according to the Motivations-Wishes-Intentions-Behaviour (Traits-Desires-Intentions-Behaviour, T-D-I-B) model proposed by the American researcher Warrem Miller.

Miller (1994) developed a model that describes the sequence by which MPs (T) become desires (D) and intentions (I), which are subsequently manifested in behavior (B) (Mynarska & Rytel, 2018). The MPs, according to this model, are defined as dispositions to respond favorably or unfavorably to various aspects of having children (Miller, 1994). These motivations have a biological basis and are influenced by experiences during childhood and adolescence and are divided into positive motivations and negative motivations to have children (Miller, 1994, 1995). These will remain latent during the early stages of life to generate desires later on (Mynarska & Rytel, 2022).

Reproductive desires are much more specific and decision-related and include 1) the desire to have a child, 2) the desire for a certain number of children, and 3) the desire for when to have children. These three categories have their corresponding intentions. The difference between desires and intentions is similar to the difference between what one would like to do without situational constraints and what one actually plans to do given the reality within which one normally operates. The last step in the T-D-I-B sequence is the implementation of intentions in the form of behavior (Miller, 1995; Miller & Pasta, 1993).

Miller (1995) developed the Childbearing Motivation Questionnaire (CBQ) to assess MP. The questionnaire is composed of two independent scales. The Positive Childbearing Motivation (PCM), consisting of 27 items that give an overall score of positive motivations to have children and also five categories that describe different positive aspects of parenthood: 1) Pleasures of pregnancy, birth, and childhood (PE), 2) Traditional parenting (CT), 3) Satisfaction in raising a child (SC), 4) Feeling needed and connected (SN), and 5) Instrumental values of children (VI). The second scale, Negative Childbearing Motivation (NCM), is composed of 20 items that provide a general score on negative motivations to have children and four categories that specify negative aspects

of parenting: 1) Discomfort during pregnancy and childbirth (ME), 2) Parental fears and concerns (TP), 3) Negative aspects of childcare (AN), and 4) Parental stress (PE).

Miller (1995) initially tested the questionnaire on 401 American couples by means of principal component analysis and cluster analysis, whose results showed the existence of five factors in the PCM and four factors in the NCM. He also found adequate internal consistency indices with alphas between 0.83 and 0.94 and non-significant correlations between PCM and NCM according to sex and parity (correlation coefficients between - 0.15 and 0.02), which supports the hypothesis that these are two main and separate aspects of MP.

The CBQ has been used in several MP studies in the United States of America (USA) (Alexander et al., 2019; Miller et al., 2018). Adaptations of the CBQ have also been performed in Italy (Sina et al., 2010), Poland (Mynarska & Rytel, 2014, 2018, 2020), Brazil (Varas & Borsa, 2020) and Iran (Ahmadi Rezamahaleh et al., 2020; Irani & Khadivzadeh, 2018; Khadivzade et al., 2018; Pezeshki et al., 2005; Shoaee et al., 2020; Valashani et al., 2020).

The Polish adaptation was tested using Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) in search of a bifactor structure that would evidence the existence of positive and negative motivations. The EFA found both expected factors, but the CFA fit indices indicated an unsatisfactory fit (X^2 (1951) = 4367.95; $p < 0.0005$, CFI = 0.677 RMSEA = 0.078) (Mynarska & Rytel, 2014). The Iranian version was also evaluated by CFA, butan eight-factor structure was proposed: four factors of positive motivations and four of negative motivations. The model initially showed acceptable RMSEA indices, but unacceptable TLI and CFI indices, so three items with low loading were eliminated and 13 correlated error terms were added, with which the fit indices improved considerably (CFI = 0.91, TLI = 0.91, RMSEA = 0.06 and X^2/df = 3.49) (Khadivzade et al., 2018).

In the Brazilian adaptation, second-order and two-factor models were tested for each scale separately using AFC. The PCM scale showed an excellent fit for both a second-order factorial solution (CFI = 0.96, TLI = 0.96, RMSEA = 0.08 and X^2/df = 11.44) and a two-factor model (CFI = 0.98, TLI = 0.98, RMSEA = 0.06 and X^2/df = 7.03), but the supplementary indices indicated that the scale is mainly one-dimensional. On the other hand, the NCM showed a unifactorial structure with good psychometric properties (CFI = 0.96, TLI = 0.95, RMSEA = 0.08, and X^2/df = 12.67) (Varas & Borsa, 2020). The Italian version did not test the factorial functioning of the instrument (Sina et al., 2010).

Despite the importance of MP for understanding reproductive behavior and for implementing interventions in the areas of reproductive health and family planning, there are no studies or scales measuring this construct in the Peruvian population (Varas & Borsa, 2020). On the other hand, it is worth mentioning that although adaptations of the CBQ in other countries have analyzed its factor structure, with the exception of Brazil (Varas & Borsa, 2020), the models tested did not follow a second-order structure, which is the most consistent model according to the theory proposed by Miller (1995), as he described the existence of two general independent factors of positive and negative motivations that explain the existence of specific types of motivations, which in turn explain the response pattern of the items.

Therefore, considering the importance and the need to investigate MP in the Peruvian reality by means of instruments that take into account cultural particularities and meet validity criteria, this study aims to adapt and validate the CBQ for its use in Peru and in the hypothesis of independence between the two scales that compose it (PCM and NCM).

Method

Participants

The sample was composed of 1,054 Peruvians from 22 departments of Peru. The majority reside in Cajamarca (*n* = 430, 40.80%) and Lima (*n* = 397, 37.67%). The age of the participants ranged from 18 to 52 years (*M* = 22.77; *SD* = 4.88); being mostly women (*n* = 717, 68%), with incomplete higher education (*n* = 764, 72.49%) and living in a relationship they classified as loving (*n* = 476, 45.12%).

The type of sampling was by convenience (non-probability) and although there is no ideal sample size for factor analysis (Damásio, 2012), it was sought to collect responses from a large number of subjects per item because the models would be tested second-order (Goretzko et al., 2019). A total of 43% (*n* = 450) of participants completed the questionnaire on the online platform, while 57% (*n* = 604) completed the questionnaire in person.

Instruments

The CBQ is a 47-item self-report questionnaire that aims to assess MP (Miller, 1995). It is composed of two independent scales: PCM and NCM. The PCM is composed of 27 items that describe five positive aspects of parenting: 1) Pleasures of pregnancy, childbirth, and childhood (PE), 2) Traditional parenting (CT), 3) Satisfaction in raising a child (SC), 4) Feeling needed and connected (SN), and 5) Child instrumental values (VI). The NCM is composed of 20 items representing four negative aspects of parenting: 1) Discomfort during pregnancy and childbirth (ME) 2) Parental fears and concerns (TP), 3) Negative aspects of childcare (NA) and 4) Parental stress (PD).

In the response alternatives, people must choose on a 4-point Likert scale (4 = very much, 3 = a little, 2 = a little, 1 = not at all). In the first part, which evaluates positive motivations, the person will answer how desirable for him/her each of the consequences of having children presented. In the second part, which evaluates negative motivations, the person will have to answer how undesirable the consequence is. According to Miller (1994), the score for both scales can be calculated by adding up all the items, in order to have an overall score for positive motivations and an overall score for negative motivations, or it can be calculated considering the five types of positive motivations and the four types of negative motivations.

Considering that this study is part of the doctoral dissertation entitled *Motivaciones para la parentalidad: un estudio transcultural con jóvenes brasileros y peruanos* conducted in the Peruvian and Brazilian populations, this study was conducted according to the guidelines stipulated in the Declaration of Helsinki and approved by the Ethics and Research Committee of Pontifical Catholic University of Rio de Janeiro (PUC- Rio) (protocol no. 68/2018) and by Research Ethics Committee (CEP) of the Center for Philosophy and Human Sciences at the Federal University of Rio de Janeiro (UFRJ) (CAAE no. 03490118.8.0000.5582). Ethical issues were guaranteed, according to the guidelines of Resolution No. 510/2016 of the Ministry of Health. It is worth noting that Peru does not have a regulatory body for ethical aspects of research, but to comply with the ethical considerations, the authors followed the international guidelines mentioned.

Data collection was done online and in person. For online collection, the Survey Monkey tool was used and the questionnaire link was sent by email and announced on social networks between December 2018 and July 2019. A Free and Informed Consent Form, with information about the research objectives and procedures, assuring data confidentiality and the right to withdraw permission to participate, can be found on the online questionnaire's first page. The face-to-face

collection was conducted at the Peruvian university premises in March and April 2019. A brief introduction was made to the participants about the construct investigated and the terms that make up the ethical guidelines for later, the people who agreed to participate, signed the Free and Informed Consent Form and answered the questionnaire.

Data Analysis

Considering that Miller (1995) described the existence of two general independent factors of positive and negative motivations, which explain the existence of specific types of motivations, which in turn explain the response pattern of the items, two second-order CFAs were performed for the PCM and NCM Scales using the Weighted Least Squares Mean and Variance Adjusted (WLSMV) method and a poly-correlation matrix due to the categorical nature of the data. In the PCM scale model, five first-order factors (PE, CT, SC, SN, and VI) and one second-order factor (MP) were considered, while in the NCM scale model, four first-order factors (ME, TP, AN, and EP) and one second-order factor (MN) were considered. The absolute fit index calculated was the chi-square (χ^2) and the parsimonious fit index used was the Root-Mean-Square Error of Approximation (RMSEA). The comparative fit indices used were Comparative Fit Index (CFI) y Tucker Lewis Index (TLI). RMSEA values less than 0.06 indicated a good model fit, between 0.06 and 0.08 a reasonable fit, between 0.08 and 0.10 a poor fit, and greater than 0.10 indicated no fit. The CFI and TLI indices should be greater than or close to 0.90 or 0.95 (Brown, 2019; Byrne, 2013). The fit adequacy indices presented were selected based on their popularity in the literature and especially for their favorable performance in Monte Carlo simulation research (Brown, 2019).

Due to the fact that the second-order model of the NCM scale presented inadequate fit indices, an EFA was performed using the WLSMV method, a polycorrelation matrix and oblique rotation (Promin), as this type of rotation allows factors to be correlated with each other (Damásio, 2012). These methods were chosen for their accuracy in identifying latent constructs underlying variables and for hypothesizing the existence and correlations between possible factors (Costello & Osborne, 2005). The retention criterion was the Hull Method, which is considered a reliable method of factor retention (Timmerman et al., 2018). Sample adequacy was assessed using the Kayser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity.

Subsequently, to assess whether the five specific factors of positive motivations and the four factors of negative motivations explained item scores better compared to two general factors, two bifactorial models (one for each scale of the CBQ) were tested. In addition to the fit indices used to evaluate the second-order models, the following indices were used to evaluate the bifactor model: hierarchical omega (ωH and ωhs), explained common variance (ECV), ECV-I, and Percentage of Uncontaminated Correlations (PUC). These indices are especially important for a proper interpretation, since two-factor models tend to fit the RMSEA, TLI, and CFI indices better than the AFC precisely because of the way they are specified (Flores-Kanter et al., 2018). The hierarchical omega (ωH; Zinbarg et al., 2006) was used to report the amount of total variation that can be attributed to general factors, and indices ≥ 0.70 partially conclude in favor of unidimensionality (Reise et al., 2013). The hierarchical omegas of each of the five scale-specific factors (ωhs) were used to assess the variation in specific factor scores (Rodríguez et al., 2016), and values ≥ 0.30 were considered significant. On the other hand, the ECV (Sijtsma, 2009) showed the amount of common variation due to the general factor, where indexes greater than 0.60 indicate that there is little common variation between specific factors than with the general factor (Reise et al., 2013) and, at the item level, the ECV-I (Stucky et al., 2013) indicated the percentage of each item's actual

variation explained by the general factor, with values ≥ 0.80 concluding a significant influence of the general factor (Stucky & Edelen, 2015). In turn, the PUC (Reise et al., 2013) index provided information on the percentage of correlations uncontaminated by multidimensionality (Rodríguez et al., 2016), and indices greater than 0.70, may provide evidence of the unidimensionality of the scale (Rodríguez et al., 2016).

The Omega ω coefficient (McDonald, 1999) was used to evaluate the first- and second-order internal consistency of the PCM scale factors and the NCM single-factor structure considering that this coefficient is based on the proportion of the common variance and that it performs better compared to other indices, such as Cronbach's alpha (Kalkbrenner, 2021). Values of ω between 0.70 and 0.90 were considered acceptable (Campo-Arias & Oviedo, 2008). Finally, a Pearson correlation analysis was performed to test the absence of a significant correlation between NCM and PCM proposed by Miller (1994).

AFEs were performed in the FACTOR software, AFCs, in the Mplus software version 7.11, bifactor indices were calculated using the Bifactor Indices module of Domínguez-Lara and Rodriguez (2017) and McDonald's Omega as well as correlations were tested in the JSP program.

Results

Translation and Adaptation From CBQ

The process of translating and adapting the CBQ into Peruvian Spanish included six steps based on the International Testing Commission guidelines (Hernández et al., 2020) and the work of Borsa et al. (2012). Initially, two freelance translators translated the questionnaire from English into Peruvian Spanish. Then, a synthesis of the two versions was made considering semantic, idiomatic, experiential, and conceptual equivalence. In case of doubt about the best translation, consultation with three judges specialized in psychological assessment was carried out. An example of this happened with the original item: "Breast (bottle) feeding a baby" with which the translations were obtained: "*Amamantar (dar el biberón) al bebé*" and "*Dale pecho (biberón) a un bebé*". Faced with uncertainty about which term to use, specialists were consulted and, finally, the option "*darle pecho*" was chosen for being a more colloquial expression and easier to understand by people of different educational levels. The synthesized version was evaluated by a second group of three psychologists specialized in psychological assessment who made observations about aspects related to the structure of the scale, as well as about the appropriateness of the expressions contained in the items. This second group of experts made suggestions to modify words or phrases that were difficult to understand, such as in the item "*tener un hijo inadaptado*", in which the word "*inadaptado*"(*inadaptable*) was considered a pejorative word that should be modified. Subsequently, the adapted version was evaluated by two target groups (N = 5) composed of Peruvians of both genders, aged between 20 and 40 years, who checked the appropriateness of the scale instructions, the readability of the items, and the response options. After minor revisions, the adapted version was retranslated from Spanish into English by a third independent translator. The retranslated version was evaluated by the author of the original scale who considered it grammatically and semantically equivalent.

Validation of the CBQ's Internal Structure

Initially, two second-order CFAs were performed for the PCM and NCM scales independently, using the WLSMV estimation method. In the PCM, the one-factor second-order and five-factor first-order model had an adequate fit to the data [χ^2 (319) = 2528; $p < 0.001$; IFC = 0.96; TLI = 0.96; RMSEA = 0.081 (95% CI 0.078–0.084)], confirming the original model structure. The 27 scale items had factor weights statistically different from zero ($z > 1.96$, $p < 0.05$). As can be seen in Table 1, the items of the first-order factor PE had factor loads between 0.86 and 0.90, the factor CT had loadings between 0.73 and 0.88, and in the SC the factor loads ranged between 0.86 and 0.94, the factor SN had loadings between 0.79 and 0.88 and the factor VI had lower factor loads ranging from 0.51 to 0.78.

Table 1
Factorial loads of the second-order model of the Positive Childbearing Motivation

Sub-scale	Item	Factorial Load
Pleasures of pregnancy, childbirth and childhood	Item 3	0.815
	Item 4	0.824
	Item 5	0.821
	Item 7	0.821
	Item 11	0.829
	Item 13	0.796
ω		0.923
Traditional parenting	Item 14	0.682
	Item 15	0.679
	Item 16	0.741
	Item 17	0.689
	Item 25	0.782
	Item 26	0.813
ω		0.874
Satisfaction of Raising a Child	Item 19	0.758
	Item 20	0.886
	Item 21	0.852
	Item 22	0.891
	Item 23	0.782
	Item 27	0.725
ω		0.921
Feeling needed and connected	Item 6	0.790
	Item 8	0.767
	Item 9	0.740
	Item 10	0.807
	Item 24	0.798
ω		0.866
Children's instrumental values	Item 1	0.474
	Item 2	0.728
	Item 12	0.650
	Item 18	0.687
ω		0.730
ω second-order factor		0.923

Note: Estimation method: Weighted Least Squares and Adjusted Variance (WLSMV). ω = Omega.

On the other hand, the AFC performed on the NCM scale evaluating one second-order factor and four first-order factors obtained inadequate fit indices [χ^2 (166) = 3442; p = 0.000; IFC = 0.85; TLI = 0.82; RMSEA = 0.137 (95% CI 0.133–0.141)]. For this reason, in order to know the factor structure of the NCM, an AFE was performed (KMO = 0.94; Bartlett's test of sphericity χ^2(190) = 10725, p < 0.001), with the WLSMV extraction method and Promin rotation. As reported in Table 2, the NCM presented a one-factor solution and all items showed factor loads greater than 0.50, except for items 10 and 14 which had factor loads of 0.42 and 0.43, respectively. The fit indices presented by the one-factor model were as follows [χ^2(176) = 1409; p < 0.001; IFC = 0.96; TLI = 0.96; RMSEA = 0.084 (95% CI 0.080–0.088)]. In Table 3, the fit indices of all tested AFCs can be seen.

Table 2
Factorial loads of the one-factor model of the Negative Childbearing Motivation

Scale	Item	Factorial Load
Negative Childbearing Motivation	Item 1	0.529
	Item 2	0.731
	Item 3	0.783
	Item 4	0.797
	Item 5	0.727
	Item 6	0.812
	Item 7	0.743
	Item 8	0.765
	Item 9	0.775
	Item 10	0.416
	Item 11	0.778
	Item 12	0.769
	Item 13	0.678
	Item 14	0.433
	Item 15	0.589
	Item 16	0.591
	Item 17	0.589
	Item 18	0.630
	Item 19	0.625
	Item 20	0.780
ω overall factor		0.921

Note: Estimation method: Weighted least squares average and adjusted variance (WLSMV). ω = Omega.

Table 3
Childbearing Motivation Questionnaire confirmatory factor analysis

Motivation to Have Children Questionnaire	Model	Adequacy of the Adjustment Ratios				
		χ^2 (*df*)	χ^2/*df*	RMSEA (95% CI)	CFI	TLI
Positive Motivation to Have Children	Second-order model	2528(319)	7.92	0.08 (0.078–0,084)	0.96	0.96
	Two-factor model	1241(287)	4.32	0.05 (0.053–0.059)	0.98	0.98
Negative Childbearing Motivation	Second-order model	3442(166)	20.74	0.14 (0.133–0.141)	0.85	0.82
	One-factor model	1409(176)	8.01	0.084 (0.080–0.088)	0.96	0.96
	Two-factor model	1584(144)	11.00	0.09 (0.093–0.102)	0.93	0.91

Note: χ^2: Chi-square; df: degrees of freedom; CFI: comparative fixed index, TLI: Tucke-Lewis Index; RMSEA: Root Mean Square Error of Approximation.

The fit indices of the two-factor model of the PCM scale were better than those of the second-order models [χ^2 (287) = 1241; p = 0.000; IFC = 0.984; TLI = 0.980; RMSEA = 0.046 (95% CI 0.053–0.059)]. On the other hand, regarding the indices to evaluate the two-factor model, the ωH was 0.945 and the ωhs were: 0.213 for the PE subscale, 0.115 for the CT subscale, 0.173 for the SC subscale, 0.034 for the SN subscale, and 0.171 for the VI subscale. In turn, the ECV index was 0.817, the ECV-I, ranged from 0.491 to 0.995, with 11 items below the value of 0.8, and the PUC index was 0.826. The two-factor model of the NCM scale showed the following fit indices: χ^2 (144) = 1584; p = 0.000; IFC = 0.932; TLI = 0.911; RMSEA = 0.097 (95% CI 0.093–0.102). Similarly, regarding the complementary indices, the ωh was 0.529 and the ωhs of the ME subscale were 0.567, 0.609 for the TP subscale, 0.722 for the AN subscale, and 0.402 for the EP subscale. In turn, the ECV was 0.372 and the ECV-I of the items ranged from 0.037 to 0.896, with 17 items below the value of 0.80. Finally, the PUC index was 0.737.

The internal consistency assessment can be seen in Tables 1 and 2. The PCM scale presents acceptable values ranging from 0.874 to 0.966 in the five first-order factors and in the second-order factor. The one-factor model of the NCM presented a value of 0.923.

Finally, in the correlation analysis between PCM and NCM, it was found that positive motivations to have children (M = 73.36; SD = 20.35) showed negative and weak correlation with negative motivations to have children (M = 49.46; SD = 14.08); r (1054) = - 0.228; p < 0.001; R^2 = 0.052.

Discussion

This research is the first conducted with the aim of translating, adapting, and evaluating the psychometric properties of the CBQ in Peru. For the translation and adaptation process, essential steps suggested by some researchers (Arafat et al., 2016) and summarized by Borsa et al. (2012) were followed. Situations were identified in which it was necessary to reflexively analyze the translation of the items taking into account cultural particularities in order to obtain the equivalence of the construct and avoid gender biases, pejorative words, or words that hinder the understanding of the item.

The AFC of second-order models and bifactor models were used to assess the plausibility of the factor structure of the two CBQ scales. The choice to test second-order models was justified by the theory proposed by the author in the T-D-I-B model, which describes PM as two general dispositions toward having children (positive and negative) that manifest themselves in increasingly specific aspects of parenting. (factors and items) (Miller, 1995). On the other hand, the two-factor model was tested to simultaneously assess the influence of general factors and specific factors on items.

The evaluation of the second-order model of the PCM scale adapted to Peru showed adequate fit indices, showing the existence of a second-order factor that explains five first-order factors, which in turn explain the relationships between the items. It was also found that the first-order factor with the lowest factor loads was factor VI, composed of four items: "knowing that I am fertile", "that my family and friends look up to me with my baby", "having a male child" and "having a daughter". According to the author, this factor describes positive motivations related to achieving a desired goal to satisfy a specific need (Miller, 1995). The item "knowing that I am fertile" was the item with the lowest factor load.

The classification of instrumental values of children is one of the oldest in the literature, as it was initially used to describe the practical and utilitarian benefits of having children, such as: help with household or agricultural tasks and economic support in old age (Bell et al., 1985).

In CBQ, instrumental values are related to having a child of a particular sex and to fertility and social status affirmation. Regarding the sex of the baby, studies show that this is a variable considered in the MP of people who already have one or two children, as it is related to the search for balance in family composition (Miranda et al., 2018). In the present study, the participants were people without children, which may explain the low factor loading of these items in the instrumental value category. On the other hand, the item that describes the affirmation of fertility as a reason to have children showed the lowest factor load, which may propose as a hypothesis that the participants do not have as an underlying goal when having children the self-demonstration of fertility or that the item was not understood by the sample considering that this was one of the items that presented greater difficulty in the adaptation process.

The original structure proposed by the author for the NCM scale did not present acceptable fit indices. For this reason, an EFA was performed, and regularly used in studies that seek to know how items will be grouped to form factors; and to structurally confirm or refute how an instrument articulates itself in different contexts (Brown, 2019). Therefore, it was possible to verify that the 20 items of the NCM spontaneously grouped into a single factor, corroborating the unidimensionality of the measure.

The two-factor model fit rates of the PCM and NCM scales were higher than those of the second-order models, but in the case of the NCM scale, the two-factor model rates were not higher than those of the one-factor model. The improvement in the two-factor fit indices relative to the second-order models is consistent with the work of Jovanović (2015), as it is an expected scenario when competing with oblique and hierarchical models (Gignac, 2016; Morgan et al., 2015). The combined analysis of the statistics associated with the two-factor model, both at the factor and item levels, indicates that the PCM scale is predominantly unidimensional and the overall factor (MP) is strong enough to be considered independently and, consequently, to be interpreted. On the other hand, although the EFA shows a one-factor structure with adequate fit indices, the fit indices of the two-factor models are not entirely favorable to the unidimensionality of the scale, which is why new studies are recommended, seeking to add items or remove those that are not contributing to the one-factor structure.

In an attempt to answer how accurately the items of this instrument assess the construct they propose, McDonald's Omega Internal Consistency Coefficient was used. The Omega index showed adequate values that corroborate the internal consistency of the first- and second-order factors in the PCM and the one-factor model in the NCM.

According to Miller (1994, 1995), the CBQ allows measuring MP at three different levels along a generality-specificity dimension. The general level includes 2 broad and orthogonal dimensions of positive and negative motivation. The intermediate level is represented by 5 main divisions within the general positive dimension and 4 within the negative dimension, which leads people to more bounded dimensions of parenting. Finally, at the specific level, there are values of attitudes toward very specific aspects of parenting. Since the positive and negative motivations would reflect general dispositions toward childbearing, they are conceptualized as biologically based resources, on the other hand, the second and third levels, which describe more specific situations, would reflect culturally specific attitudes toward parenting that are conceptualized as more cognitive and experience-based. Therefore, the groups of elements that make up the subcategories found in these last two levels may change depending on the culture (Miller, 1994, 1995).

These theoretical assumptions can help us reflect on the results found in the NCM analysis. The scale presented, in the Peruvian sample, a one-factor solution that corroborates the existence of a general negative motivational disposition. On the other hand, the subcategories found in the US population, which reflect specific cultural attitudes towards procreation (Miller, 1995), were not found in Peru, which establishes the possibility that there are differences in the specific categories in both countries, such as what has been found in studies of adaptation and validation of the CBQ in contexts with characteristics different from the US (Ghazanfarpour et al., 2018; Khadivzade et al., 2018; Mynarska & Rytel, 2017; Pezeshki et al., 2005).

When adapting the CBQ for Poland included items on aspects of parenting that the authors considered important for young people in Poland based on previous qualitative research findings (Mynarska & Rytel, 2017). On the other hand, Pezeshki et al. (2005) conducted studies with the CBQ in Iran starting with an assessment of face and content validity to later adjust 2 PCM items in order to make them more appropriate for Iranian culture and add 5 new items (3 in PCM and 2 in NCM) considered, by the authors, as important motivations in Iranian culture. Ghazanfarpour et al. (2018) conducted the first study evaluating the CBQ factor structure in Iran, obtaining good RMSEA indices, but inadequate TLI and CFI indices, which is why the researchers made adjustments to the scale, such as removing items with low factor loads and adding 13 correlated error terms. The modified model resulted in acceptable indices, demonstrating that both the PCM and NCM are reliable measures for the overall assessment of positive and negative motivations to have children, but also cautioning that the subcategories presented in each should be carefully observed in relation to country characteristics. In view of the above, it is important to deepen what is perceived as negative aspects of having children in Peru, which will enrich the CBQ and specifically the NCM scale for future use in research.

Another finding found in the present study is the negative, weak, and significant correlation between PCM and NCM. This finding corroborates the data found in studies conducted with CBQ in other countries where the association was very low or null, indicating independence between PCM and NCM (Mynarska & Rytel, 2017, 2020; Pezeshki et al., 2005). In the study conducted with CBQ in Iran (Pezeshki et al., 2005), a significant correlation of 0.21 was found between PCM and NCM in women; in Poland, the correlations were -0.15 in people with children and 0.01 in people without children (Mynarska & Rytel, 2020); while in other studies the correlations found were not significant (Mynarska & Rytel, 2017) supporting the hypothesis that these are two separate aspects of MP (Miller, 1995).

Conclusion

The purpose of this study was to adapt and validate the CBQ for its use in Peru and to hypothesize independence between the two scales that comprise it. The results provide information that contributes to the hypothesis that there are two general traits (positive and negative) that underlie an individual's overall motivational disposition toward childbearing, but do not support the theory that both the Positive Childbearing Motivation (PCM) and the Negative Childbearing Motivation (NCM) are independent components. Overall, a satisfactory fit was observed in the original version of the PCM and the single-factor version of the NCM, which points to the CBQ as a useful instrument for assessing positive and negative motivation to have children in the Peruvian context.

The CBQ is an easily applicable instrument that can be used individually and collectively. Moreover, its adaptation to Peru fills a gap in studies on the motivation to have children, as it is a

necessary instrument for the development of research to help understand reproductive behavior.

Furthermore, this work also provides evidence of the importance of taking into account complementary statistics when analyzing a two-factor model, since the use of statistics provided only by factor analysis is insufficient to determine the specific explanatory weight of each of the factors and the overall factor.

As for the study's limitations, it should be noted that the results presented should be weighed against the constraints of the samples used, as well as the data collection method and measurement estimation models, which limits the extrapolation of the results to a generalization. It is important to note that this study represents only the first steps in the process of validating the CBQ for a Latin American cultural context and further studies will be needed to find additional evidence of the validity of the CBQ in Peru. Studies using Differential Item Functioning (DIF) and Item Response Theory techniques will be useful to assess item similarity of the instrument across different groups. Additionally, validity evidence based on the relationship with other variables (convergent, external, discriminant, among others) can be obtained by comparing CBQ scores with the results of other instruments that assess related constructs. Finally, it is recommended, based on all the previous discussions, that future research seeks to replicate the results in different samples taking into consideration the temporal stability of the measure, to corroborate or not the robustness of the findings found in this study.

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