



Psychometric Properties of the Parenting Sense of Competence Scale Among Low-Income Mexican American Mothers

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Abstract

The Parenting Sense of Competence Scale (PSOC) is one of the most commonly used self-report measures of parenting competence, yet there exists limited work documenting its psychometric properties among ethnically and culturally diverse populations of parents. We evaluated the factor structure and validity of the PSOC (administered in English and Spanish) among a sample of low-income, predominantly Spanish-speaking Mexican-origin mothers of infants in the United States. Two hundred and five women (mean age 27.8) reported on their parenting competence, parenting stress, depressive symptoms, and infant's temperament at 12 months postpartum. A two-factor structure (*parenting satisfaction* and *parenting self-efficacy*) emerged as the best fit to the data. Both subscores demonstrated acceptable internal consistency and validity evidence. Findings extend existing work documenting a two-factor structure of the PSOC and provides preliminary validity support for use of the PSOC and Spanish-translated PSOC among Mexican American mothers.

Keywords Maternal mental health · Parenting sense of competence · Psychometric evaluation · Mexican American · Parenting

Highlights

- Psychometric evaluation of the PSOC scale among Mexican American (MA) mothers.
- Two factor structure emerged: parenting satisfaction and parenting self-efficacy.
- Results support use of PSOC scale in Spanish among MA mothers.

The degree to which mothers feel competent in their parenting role has important implications for their mental health, and their children's well-being and development (Coleman & Karraker, 1998; Jones & Prinz, 2005; Coleman & Karraker, 1998). Mothers who derive more value from the parenting role report less depression and parenting stress (Crnic & Greenberg, 1990; Rogers & Matthews, 2004). Accordingly, self-appraisal of parenting competence is a targeted mechanism in a variety of parenting-based interventions (Gilmore & Cuskelly, 2009). Efforts to deliver these interventions effectively will be enhanced by the

availability of reliable and valid measures of parenting self-esteem and feelings of competence.

Given cultural differences in parenting practices and cross-cultural differences in the degree of importance placed on the parental role (Bornstein & Cheah, 2006), it is important to validate measures of parenting self-esteem among culturally and ethnically diverse samples. Members of the second-fastest growing ethnic minority group in the U.S. (Pew Research Center, 2017), Mexican-origin mothers (e.g., first-generation Mexican immigrants and women with Mexican heritage who are living in the U.S.) may straddle two cultures, each with potentially different expectations for the maternal role. The traditional Mexican cultural values of *familism* and *marianismo* place high value on motherhood, emphasizing the importance of putting children and family members above one's own needs (Castillo & Cano, 2007). Embedded in these values is the expectation that Mexican mothers will be successful and self-sacrificial mothers (Connelly et al., 2013). In contrast, European-American

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values reflect egalitarian beliefs about parenting and expectations that women can successfully maintain dual roles as parents and providers (Thornton & Young-DeMarco, 2001). European-American mothers also tend to express high levels of confidence in their parenting role relative to immigrant mothers in the U.S. (Bornstein & Cote, 2004). Thus, self-appraisal of one's own parenting may be especially relevant to the well-being of Mexican-origin mothers in the U.S.

According to recent reviews (Jones & Prinz, 2005; Hurley et al., 2014), one of the most commonly used and psychometrically acceptable measures of parenting cognitions and perceived competence is the Parenting Sense of Competence Scale (PSOC; see Table 1; Gibaud-Wallston & Wandersman, 1978; Johnston & Mash, 1989). Derived from Wallston & Wandersman's (1978) measure, the PSOC is comprised of items aimed at measuring parenting self-esteem, the degree to which parents feel competent in and satisfied by the parenting role. Johnston and Mash (1989) first documented the PSOC's factor structure, concluding that an interpretable two-factor structure existed among their sample of Canadian parents (297 mothers and 215 fathers of children ages 4 to 9 years). Their commonly used, two-factor structure is comprised of parenting satisfaction, the degree to which individuals derive value from the parenting role, and parenting self-efficacy, the degree to which individuals believe they are capable of successful parenting. Ohan et al. (2000) replicated the two-factor structure (satisfaction and self-efficacy) among a Canadian sample of 110 mothers and 110 fathers (children ages 5 to 12 years), suggesting that the underlying structure of the PSOC remains stable across parental gender. Gilmore and Cuskelly (2009) evaluated factor structure stability among an Australian community sample of 586 mothers and 615 fathers (children ages 0 to 18 years), finding evidence of a three-factor solution (satisfaction, self-efficacy, and interest). The "parenting interest" factor was comprised of two items and contributed to a smaller proportion of overall variance accounted for than the first two factors among both mothers (8.4%) and fathers (8.5%). Others found similar evidence suggestive of a third factor reflecting parenting interest (Rogers & Matthews, 2004). Gilmore and Cuskelly (2009) also found preliminary evidence of a potential fourth factor (control), but given differential item loading for mothers and fathers, this factor was removed.

Although evidence for a two-factor structure (satisfaction, self-efficacy) of the PSOC has been reported across multiple studies, the majority of prior work is derived from samples of Canadian (Johnston & Mash, 1989; Ohan et al., 2000) and Australian (Gilmore & Cuskelly, 2009) parents. Few psychometric evaluations of the PSOC have been conducted among non-English-speaking or ethnically diverse parents. Of those studies, there exists variability in the number of factors and underlying factor constructs that emerge.

Ngai et al. (2007) found evidence supporting the two-factor structure (satisfaction and self-efficacy) of the Chinese-translated PSOC among a sample of Chinese mothers. Among a sample of Thai fathers, researchers found additional evidence in support of the two-factor structure, valuing/comfort (satisfaction) and skill/knowledge (self-efficacy) (Suwansujarid et al., 2013). Nunes et al. identified a three-factor structure (dissatisfaction, self-efficacy, and controllability) of the Portuguese-translated PSOC among at-risk Portuguese mothers (Nunes et al., 2016). Among a sample of 259 at-risk Spanish mothers, Menéndez Álvarez-Dardet et al. (2011) propose a shortened 10-item PSOC assessing two subscales: self-efficacy and controllability. Another study with 600 Spanish mothers concluded the original two-factor structure, satisfaction and efficacy, to be the best fit to the data (Oltra-Benavent et al., 2020). Haack et al. (2011) demonstrated good internal consistency and convergent validity for the original parenting self-efficacy subscale (7 items; from Johnston & Mash, 1989) of a Spanish-translated PSOC among a sample of Spanish-speaking, Latino parents in the United States (85% of the sample identified as Mexican); the authors did not evaluate the psychometric properties of the full PSOC or other subscales.

Among a sample of Mexican American mothers, we had the following study aims: (1) evaluate the factor structure of the PSOC at 12 months postpartum, (2) provide validity evidence by comparing the current factor structure to existing research, and (3) compare scores on the PSOC to relevant maternal (age, parity, country of birth, language use, depressive symptoms, parenting stress) and child (temperament) characteristics as a preliminary test of validity. Relevant maternal and child characteristics were selected for tests of validity consistent with prior psychometric work on the PSOC, which supports a negative association between maternal depressive symptoms and parenting sense of competence during infancy (Ngai et al., 2007), a negative association between maternal parenting stress and parenting sense of competence (Nunes et al., 2016), and a negative association between child behavior problems and parenting sense of competence (Johnston & Mash, 1989). No specific hypotheses were made surrounding maternal sociodemographic characteristics, given significant variability in direction and significance of effects across existing psychometric work with ethnically and linguistically diverse samples.

Method

Participants

The sample included 205 mothers (176 Spanish-speaking, 29 English-speaking) participating in the *Las Madres*

Table 1 PSOC Item Loadings onto EFA Two-Factor Solution at 12 months^a

Item No.	Item (English; Spanish)	Item Loadings	
		Parenting Satisfaction	Parenting Self-Efficacy
1.	The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding which I have acquired. <i>Los problemas del cuidado de un niño/a son fáciles de resolver una vez que conoces como tus acciones afectan a tu hijo/a, conocimiento que he adquirido.</i>	−0.051	0.352
2.	Even though being a parent could be rewarding, I am frustrated now while my child is at his/her present age (reverse-coded). <i>Aunque el ser madre puede ser gratificante, me siento frustrada ahora a la edad que tiene mi hijo/a en este momento.</i>	0.728	−0.094
3.	I go to bed the same way I wake up in the morning—feeling I have not accomplished a whole lot (reverse-coded). <i>Me voy a dormir por las noches de la misma manera que me levanto por las mañanas—sintiéndome que no he realizado mucho.</i>	0.741	0.076
4.	I do not know what it is, but sometimes when I'm supposed to be in control, I feel more like the one being manipulated (reverse-coded). <i>No sé lo que es, pero a veces cuando se supone que yo debería tener el control, siento más como que soy yo la que está siendo manipulada.</i>	0.749	−0.155
5.	My mother was better prepared to be a good mother than I am (reverse-coded). <i>Mi madre estaba mejor preparada que yo para ser una buena madre.</i>	0.444	0.139
6.	I would make a fine model for a new mother to follow in order to learn what she would need to know in order to be a good parent. <i>Sería un buen modelo seguir para que una madre nueva aprenda lo que necesita saber para ser una buena madre.</i>	0.147	0.580
7.	Being a parent is manageable, and any problems are easily solved. <i>El ser madre es controlable, y cualquier problema se resuelve fácilmente.</i>	0.105	0.609
8.	A difficult problem in being a parent is not knowing whether you're doing a good job or a bad one (reverse-coded). <i>Un problema difícil del ser madre es el no saber si uno está haciendo un buen o un mal trabajo.</i>	0.316	0.057
9.	Sometimes I feel like I'm not getting anything done (reverse-coded). <i>A veces siento como que no logro hacer nada.</i>	0.697	−0.091
10.	I meet my own personal expectations for expertise in caring for my child. <i>Cumplo con mis propias expectativas personales en cuanto a mis habilidades para cuidar a mi hijo/a.</i>	−0.005	0.437
11.	If anyone can find the answer to what is troubling my child, I am the one. <i>Si alguien puede encontrar la respuesta a lo que le preocupa a mi hijo/a, esa persona soy yo.</i>	0.003	0.463
12.	My talents and interests are in other areas, not in being a parent (reverse-coded). <i>Mis talentos e intereses están en otras áreas, no en ser madre.</i>	0.556	0.008
13.	Considering how long I've been a mother, I feel thoroughly familiar with this role. <i>Considerando el tiempo que he sido madre, me siento completamente familiarizada con este rol.</i>	−0.123	0.363
14.	If being a mother of a child were only more interesting, I would be more motivated to do a better job as a parent (reverse-coded). <i>Si tan solo el ser madre de un niño/a fuera más interesante, estaría motivada para hacer un mejor trabajo como madre.</i>	0.380	0.203*
15.	I honestly believe I have all the skills necessary to be a good mother to my child. <i>Honestamente, creo que tengo todas las habilidades necesarias para ser una buena madre para mi hijo/a.</i>	−0.016	0.764
16.	Being a parent makes me tense and anxious (reverse-coded). <i>El ser madre me hace sentir tensa y ansiosa.</i>	0.582	0.053

^aBolded values indicate significant factor loadings at $p < 0.05$ level. Asterisks (*) indicate significant loading onto factor at $p < 0.05$ level, but stronger loading onto another factor. Note: Although Item 14 loaded onto both factors in the EFA, as presented here, it was included under the parenting satisfaction construct in the CFA

Nuevas study of low-income, Mexican American mothers and children. Women were recruited from a hospital-based prenatal clinic. Eligibility criteria included: (1) self-identification as Mexican or Mexican American, (2) English or Spanish fluency, (3) at least 18 years of age, (4) low-income status (defined as family income below \$25,000 or eligibility for Medicaid or Federal Emergency Services coverage for the childbirth), and (5) anticipated delivery of a singleton birth with no prenatal evidence of health or developmental problems. The Arizona State University IRB and the Maricopa Integrated Health System IRB approved all study procedures prior to recruitment.

At the time of enrollment, women were between 18 and 42 years of age ($M = 27.8$, $SD = 6.48$) and had completed, on average, 10 years of education. Most women were born in Mexico (86.0%) and spoke Spanish as their primary language (82.0%). The modal family income was \$10,001–\$15,000 for an average household of four people. Most women were married or living with a romantic partner (77%). The number of other biological children ranged from zero to nine (22.2% of the women were first-time mothers) at the time of enrollment.

Procedures

Data for the current study were collected at a prenatal home visit and laboratory visit when children were 12 months old. During a prenatal care appointment, women were approached by a bilingual interviewer who explained the study and evaluated eligibility. The interviewer obtained informed consent at a prenatal home visit between 26–38 weeks gestation. Interviews were conducted in participants' choice of Spanish (85%) or English (15%). Survey questions were read aloud and participants were given visual aids with written and graphic descriptions of item response formats. The 12-month visit was conducted in the laboratory at Arizona State University. Participants were compensated \$50 and given small gifts for the baby (e.g., rattles, bibs) at the prenatal visit, and \$100 at the laboratory visit.

For administration in Spanish, all measures not already available in Spanish were translated and back-translated by certified translators fluent in English and Spanish, with discrepancies resolved by the principal investigators and lead translators, following standard procedures (Behling & Law, 2000). Spanish-translated measures were adapted and field tested to ensure cultural sensitivity and fit for our population. Measures that had previously been validated in Spanish were also reviewed for local relevance and cultural sensitivity for our population.

Measures

Parenting sense of competence scale

At the 12-month visit, mothers completed the 17-item Parenting Sense of Competence Scale (PSOC). Items are responded to on a 6-point scale from “strongly disagree” to “strongly agree”. Higher scores indicate higher sense of competence. One item (Item 17—“*Being a good mother/father is a reward in itself.*”) was removed preceding data collection due to prior research indicating a failure of that item to load onto any factor (Johnston & Mash, 1989; Suwansujarid et al., 2013). Items reflect general cognitions about parenting, rather than feelings about parenting a specific child. Most mothers completed the PSOC in Spanish ($n = 176$) rather than English ($n = 29$).

Edinburgh perinatal/postnatal depression scale

At the prenatal visit, women completed the 10-item Edinburgh Perinatal/Postnatal Depression Scale (EPDS; Cox et al., 1987; Cronbach's $\alpha = 0.80$). Higher scores indicate more depressive symptoms. The EPDS has been previously validated in both English and Spanish (Garcia-Esteve et al., 2003). A score of 13 or higher is considered clinically significant (Cox et al., 1987).

Center for epidemiological studies depression scale

At the 12-month visit, mothers completed the 20-item Center for Epidemiologic Studies Depression scale (CES-D; Radloff, 1977; Cronbach's $\alpha = 0.88$). Higher scores indicate more depressive symptoms. A score of 16 or more is considered clinically significant. Among ethnic minority women, a score of 24 or higher is considered very high risk (Heilemann et al., 2004). The CES-D has been previously validated in Spanish among Mexican American individuals (Roberts et al., 1990).

Parenting daily hassles scale

At the 12-month visit, mothers reported their parenting stress using the 20-item Parenting Daily Hassles Scale (PDH; Crnic & Greenberg, 1990; Cronbach's $\alpha = 0.95$). Respondents rate the frequency and intensity with which they face common parenting situations, such as “the kids get dirty several times a day requiring several changes of clothes,” on a scale from 1 (none of the time; not at all a hassle) to 5 (an extreme amount of the time; an extreme hassle). Higher scores indicate higher parenting stress. The current study used a sum score of the intensity ratings.

Infant behavior questionnaire

Mothers reported on their infants' temperament at 12 months using the 91-item Infant Behavior Questionnaire—Revised, Short Form (Gartstein & Rothbart, 2003; Putnam et al., 2014). Respondents rate how often during the last two weeks their baby exhibited certain behaviors, such as “cry or fuss before going to sleep for naps” on a scale from 1 (never) to 7 (always). Three overarching constructs are derived: positive affectivity/surgency (Cronbach's $\alpha = 0.69$), negative affectivity (Cronbach's $\alpha = 0.61$), and regulatory capacity (Cronbach's $\alpha = 0.45$). Only the positive affectivity/surgency and negative affectivity constructs were used.

Miscellaneous

Demographic characteristics (maternal age; maternal country of birth coded 1 = United States, 2 = Mexico; language preference, coded 1 = English, 2 = Spanish; number of other children) were reported by mothers at the prenatal visit.

Data Analysis

All analyses were conducted in Mplus v. 8. (Muthén & Muthén, 1998–2017). Given substantial heterogeneity in factor structures across existing psychometric work on the PSOC among ethnically and linguistically diverse populations of parents, exploratory factor analysis (EFA) was first completed to examine the underlying factor structure among this population, given EFA is considered a more conservative approach (Hurley et al., 2014). The EFA was conducted using robust maximum likelihood (ML) factor analysis and oblique geomin rotation to allow for correlations among factors, consistent with existing literature. Robust normal theory ML is considered acceptable for categorical responses when there are 5 or more categories (Rhemtulla et al., 2012). Consistent with best practice recommendations, examination of the scree plot and parallel analysis were used to determine the number of factors to be tested using EFA. Item content was also used to help determine the final recommended factor solution. Confirmatory factor analysis (CFA) was conducted to evaluate model fit statistics [root mean square error of approximation (RMSEA) ≤ 0.08 , comparative fit index (CFI) ≥ 0.95 , and standardized root mean square residual (SRMR) < 0.08 ; Hu & Bentler, 1999] of the factor solution suggested by the EFA. Robust ML was also used for the CFA.

Missing Data

Because funding was not initially available for a 12-month lab visit, only 266 of 322 families were eligible for the

12-month lab visit. Of those eligible, 206 (77%) families completed the 12-month interview. One case was missing on the PSOC measure, such that the total sample size for all analyses was 205 mothers.

Results

Preliminary Analyses

Descriptive statistics for individual items comprising the PSOC are shown in Table 2. Several items were negatively skewed (skewness < -1 ; items 1, 10, 11, 13, and 15), and one was positively skewed (skewness > 1 ; item 12). Intra-item correlations reflected the traditional separation of the overall PSOC scale into satisfaction and self-efficacy subscales.

Primary Analyses

The scree plot for PSOC items suggested evaluation of one-, two-, three-, and four-factor models (see Fig. 1). The first four sample eigenvalues were 3.85, 2.72, 1.33, and 1.20. Comparison of parallel analysis and the scree plot suggested evaluation of a one-, two-, and three-factor solution (see Fig. 1). The first four eigenvalues from parallel analysis were 1.52, 1.39, 1.31, and 1.24. Factors are considered significant if the associated eigenvalue is bigger than that derived from the random data (Horn, 1965), and thus one-, two-, and three-factor solutions were evaluated. In the three-factor model, the third factor (significant loadings for items 14 and 16) was similar to the *parenting interest* factor previously documented in the literature, but not an exact replication of that factor (which consists of items 12 and 14). However, the third factor contributed minimal additional variance accounted for in the overall PSOC scale (5%) and consisted of two items only. Items loading onto the first and second factors aligned with prior psychometric evaluations of the PSOC. Therefore, the two-factor model was considered to be the most promising).

Within the two-factor solution, the first factor (*parenting satisfaction*) consisted of 8 unique items assessing enjoyment in the parenting role, with loadings ranging from 0.32 to 0.75 (see Table 1). Factor 2 (*parenting self-efficacy*) consisted of 7 unique items assessing feelings of competence in the parenting role. Item loadings onto factor 2 ranged from 0.35 to 0.76 (see Table 1). Item 14 loaded significantly onto both factors, though neither loading was large (0.38 loading on the parenting satisfaction factor; 0.20 loading on the parenting self-efficacy factor). The correlation between the parenting satisfaction and parenting self-efficacy factors was not significant ($r = -0.07$), contrary to

other work (e.g., Johnston & Mash, 1989; Ohan et al., 2000; Menéndez Álvarez-Dardet et al., 2011).

Scale scores for the parenting satisfaction subscale and parenting self-efficacy subscale were calculated by summing the relevant items identified in the EFA. Given that Item 14 loaded more strongly onto the satisfaction factor and is traditionally conceptualized to be part of the satisfaction subscale, it was included in the satisfaction subscale (Cronbach’s $\alpha = 0.81$). The parenting self-efficacy subscore had internal reliability of Cronbach’s $\alpha = 0.71$.

The concluded two-factor model solution from the EFA was then tested in a CFA¹. Nine items (2, 3, 4, 5, 8, 9, 12, 14, and 16) assessed the construct of parenting satisfaction. The error terms for Item 14 and Item 16 were allowed to covary given their loadings onto a potential third factor in the EFA. Seven items (1, 6, 7, 10, 11, 13, and 15) assessed the construct of parenting self-efficacy. The two-factor model had an acceptable fit to the data according to RMSEA and SRMR fit indices (CFI = 0.829, RMSEA = 0.077, SRMR = 0.075). Modification indices suggested that there remained residual covariance among subsets of the items. Seven such residuals were added (Item pairs 14/16, 14/7, 14/12, 15/8, 10/8, 6/3, and 13/3) and the resulting model had better fit (CFI = 0.92, RMSEA = 0.055, SRMR = 0.065; see Fig. 2) with minimal impact on the factor loadings (loadings with and without the modification indices were correlated over 0.99). Parenting satisfaction was not significantly correlated with parenting self-efficacy ($r = -0.098, p = 0.32$).

Correlates of Parenting Competence

Maternal well-being

Prenatal depressive symptoms were negatively correlated with parenting satisfaction ($r = -0.187, p < 0.01$) and the parenting self-efficacy ($r = -0.257, p < 0.001$). Concurrent maternal depressive symptoms were negatively correlated with parenting satisfaction ($r = -0.523, p < 0.001$) and parenting self-efficacy ($r = -0.286, p < 0.001$). Concurrent parenting stress was negatively correlated with parenting satisfaction ($r = -0.250, p < 0.001$) and parenting self-efficacy ($r = -0.361, p < 0.001$).

¹ An additional CFA tested the two-factor solution of the PSOC (parenting self-efficacy, parenting satisfaction) among only Spanish-speaking mothers (n = 176). The two-factor model among Spanish-speaking mothers had similar fit to the model tested with the full sample: CFI = 0.90, RMSEA = 0.064, SRMR = 0.069. Factor loadings in the Spanish-only CFA were highly correlated with the loadings in the CFA among the full sample ($r > 0.99, p < 0.001$).

Table 2 Descriptive Statistics for 12-month PSOC Items^{a†}

Item No.	Mean (SE)	Intra-Item Correlations															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	5.2 (0.07)	1.000															
2	2.7 (0.11)	-0.109	1.000														
3	2.7 (0.10)	-0.025	0.525	1.000													
4	2.7 (0.11)	-0.085	0.589	0.582	1.000												
5	3.2 (0.12)	0.070	0.296	0.398	0.286	1.000											
6	4.7 (0.09)	0.256	-0.014	0.203	-0.019	0.161	1.000										
7	4.2 (0.10)	0.173	-0.034	0.077	-0.101	0.114	0.358	1.000									
8	4.5 (0.08)	0.112	0.136	0.207	0.245	0.164	0.073	0.140	1.000								
9	3.2 (0.10)	-0.019	0.553	0.486	0.577	0.241	-0.019	0.325	0.325	1.000							
10	5.0 (0.06)	0.271	-0.107	0.035	-0.067	0.014	0.338	0.229	0.229	-0.038	1.000						
11	5.3 (0.06)	0.221	-0.064	0.025	-0.003	-0.047	0.172	0.243	0.095	-0.044	0.281	1.000					
12	1.9 (0.09)	-0.155	0.460	0.343	0.402	0.217	0.063	0.163	0.337	-0.023	-0.053	1.000					
13	5.2 (0.07)	0.199	-0.007	-0.192	-0.094	-0.118	0.142	0.104	-0.123	0.177	0.324	-0.032	1.000				
14	3.3 (0.13)	-0.061	0.205	0.264	0.146	0.264	0.094	0.199	0.188	-0.043	0.007	0.377	0.000	1.000			
15	5.2 (0.07)	0.213	-0.088	-0.006	-0.176	0.086	0.421	-0.132	-0.132	-0.132	0.387	0.015	0.376	0.166	1.000		
16	3.3 (0.12)	-0.070	0.407	0.411	0.396	0.234	0.115	0.118	0.404	-0.085	-0.064	0.404	-0.129	0.368	0.033	1.000	

^aBolded values indicate significant correlations at $p < 0.05$ level

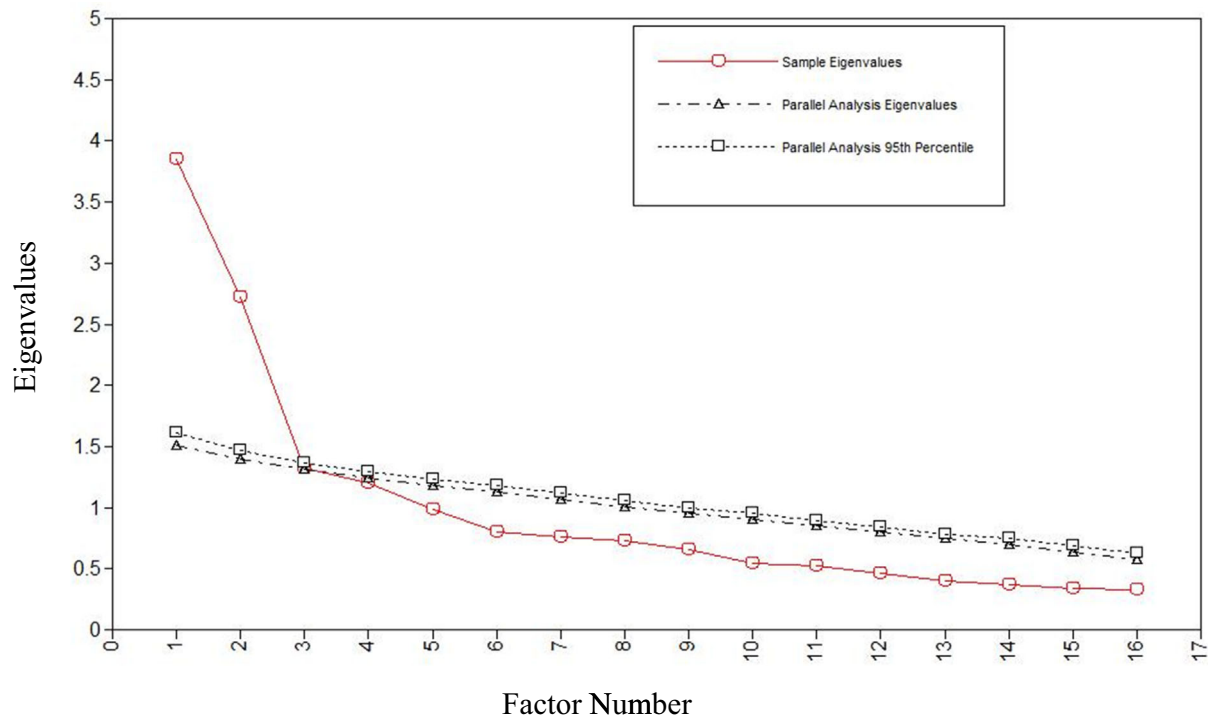


Fig. 1 Scree Plot and Parallel Analysis for 12-month PSOC

Child temperament

Parenting satisfaction was positively correlated with infant positive affectivity/surgency ($r = 0.155$, $p = 0.034$), but not infant negativity ($r = -0.104$, $p = 0.16$). Parenting self-efficacy was negatively correlated with infant negativity ($r = -0.172$, $p = 0.018$), but not infant positive affectivity/surgency ($r = 0.054$, $p = 0.46$).

Demographic correlates

Parenting satisfaction was correlated with maternal country of birth ($r = -0.147$, $p = 0.036$) and maternal age ($r = -0.139$, $p = 0.048$), such that younger mothers and mothers born in the U.S. reported higher parenting satisfaction, but was not significantly correlated with interview language ($r = -0.089$, $p = 0.20$). Parenting self-efficacy was positively correlated with maternal age ($r = 0.148$, $p = 0.035$), such that older mothers reported higher parenting self-efficacy, but was not significantly correlated with interview language ($r = 0.011$, $p = 0.87$) or maternal country of birth ($r = -0.003$, $p = 0.96$). The number of other biological children in the home (parity) was negatively correlated with parenting satisfaction ($r = -0.187$, $p < 0.01$), such that more children in the home was associated with less parenting satisfaction, but not parenting self-efficacy ($r = 0.016$, $p = 0.82$).

Summary

In sum, a two-factor solution (parenting self-efficacy, parenting satisfaction) emerged as the best-fitting model of the PSOC administered at 12 months postpartum among a sample of low-income, predominantly Spanish-speaking, Mexican-origin mothers living in the United States. Although a third factor also emerged, it contributed less to the overall variance accounted for and consisted of two items only, and thus was excluded in the proposed factor structure. Parenting satisfaction and parenting self-efficacy were significantly associated with several mother and child characteristics.

Discussion

The current study evaluated the psychometric properties of the Parenting Sense of Competence (PSOC) scale among a sample of low-income, predominantly Spanish-speaking, Mexican-origin mothers living in the United States. Consistent with previous work (Johnston & Mash, 1989; Ohan et al., 2000; Ngai et al., 2007; Suwansujarid et al., 2013), we found support for a two-factor structure (satisfaction and self-efficacy) at 12 months postpartum. The parenting satisfaction and parenting self-efficacy subscores demonstrated acceptable internal consistency and convergent

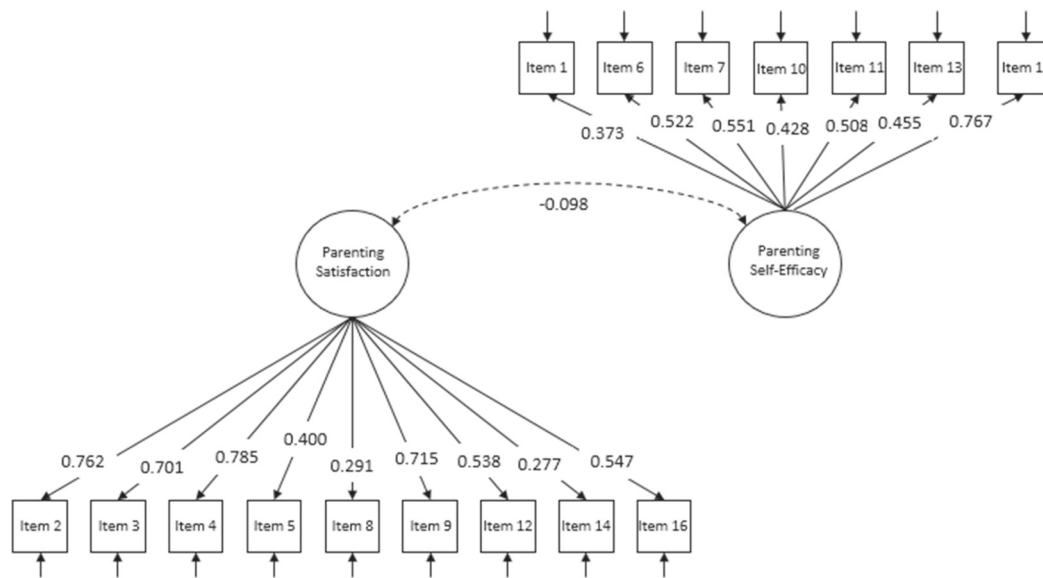


Fig. 2 Confirmatory factor analysis of two-factor model of PSOC¹. ¹Solid lines are statistically significant; dashed lines are non-significant (standardized estimates are shown for both paths); Error terms and correlated residuals not shown

validity evidence, suggesting reliable and valid use of the PSOC scale among Spanish-speaking or Mexican American samples.

Unlike prior research, the satisfaction and self-efficacy subscales were not significantly correlated; thus, the current analyses do not support summing the two subscales to calculate overall feelings of parenting competence among predominantly Spanish-speaking, Mexican-origin mothers. Small to moderate positive correlations between the satisfaction and self-efficacy PSOC subscales have been reported in existing psychometric work on the PSOC scale (Gilmore & Cuskelly, 2009; Johnson & Mash, 1989, Ohan et al., 2000; Suwansujarid et al., 2013). Cultural differences may explain differences in the strength and significance of this correlation across ethnically and linguistically diverse samples. Embedded within traditional Mexican values, *marianismo* values encompass women's self-sacrificial devotion to the maternal role and the centrality of the maternal role within Mexican culture. As such, Mexican American women and their families may be more likely to highly value pregnancy, the maternal role, and childrearing (Gress-Smith et al., 2013; Page, 2004). Among Latina mothers in the United States, increases in acculturation have been associated with less parenting self-efficacy (Ceballos & Hurd, 2008). Although the current study does not directly evaluate acculturation or alignment to traditional cultural values, mothers born in Mexico reported less parenting satisfaction. No differences in parenting satisfaction or parenting self-efficacy were noted based on maternal language preference. Given no other prior psychometric work on the PSOC among Mexican-origin mothers in the United States, future work may aim to

confirm this unexpected nonsignificant correlation or directly evaluate alignment to traditional Mexican cultural values in relation to maternal report of parenting satisfaction and parenting self-efficacy.

Women who reported fewer prenatal depressive symptoms reported higher parenting satisfaction and parenting self-efficacy twelve months later. In line with prior work (Jones & Prinz, 2005), greater parenting satisfaction and parenting self-efficacy were associated with fewer concurrent depressive symptoms and less parenting stress. Greater parenting satisfaction was associated with fewer biological children in the home. Although having more children is frequently thought to promote parenting self-efficacy via greater experience, additional children may contribute to parenting stress, lessening the satisfaction mothers derive from their role. Interestingly, older mothers reported less parenting satisfaction, but greater parenting self-efficacy. Existing literature remains inconclusive regarding the effects of parental age on parental competence (Ngai et al., 2007). More infant positive affectivity was associated greater parenting satisfaction, while less infant negativity was associated with greater parenting self-efficacy. Mothers of less difficult children may consequentially feel more satisfied and efficacious in their maternal role (Coleman & Karraker, 2000); on the contrary, mothers who feel more satisfied and efficacious in their maternal role may report less difficulty in their infants' temperament (Fox & Gelfand, 1994). Consistent with prior work, correlations between maternal parenting self-appraisals and child behavior were smaller (Ohan et al., 2000), while correlations between maternal parenting self-appraisals and concurrent mental health and parenting stress

were in the moderate to large range (Ngai et al., 2007; Nunes et al., 2016).

This study makes an important contribution to existing literature by extending understanding of the psychometric properties of the PSOC scale to a community sample of low-income Mexican-origin mothers in the U.S. We demonstrated the validity of the PSOC scale among Mexican American mothers, the majority of whom are Spanish-speaking, and provided evidence for factor-structure stability of the Spanish-translated PSOC scale consistent with prior psychometric work among ethnically and linguistically diverse populations. However, there were several limitations. The results may not generalize to higher-income or more acculturated Mexican-origin mothers in the U.S, or to those with older children. Limited power, due to a small sample of English-speaking mothers ($n = 29$), precluded our ability to reliably test the Spanish-translated PSOC for bias using measurement invariance strategies. However, as noted earlier, the two-factor model of the PSOC fit adequately well among Spanish-speaking mothers compared to the full sample of Spanish- and English-speaking mothers. Future work may aim to test measurement invariance across the English PSOC and Spanish PSOC among Mexican American mothers. We only evaluated the factor structure of the PSOC scale among a sample of Mexican-origin mothers. Psychometric evaluation with Mexican-origin fathers would contribute to the literature. Lastly, sample size limited the ability to conduct a CFA on a hold-out sample.

In sum, the current study documents a two-factor structure of the PSOC scale and the use of satisfaction and self-efficacy subscales with low-income Mexican-origin mothers in the U.S., the majority of whom are Spanish-speaking. Women who felt more competent in the parenting role also reported fewer depressive symptoms and less parenting stress. Understanding the construct and correlates of parenting sense of competence among this group is critical given that low-SES Mexican-origin women in the U.S. have higher birth rates than ethnic majority women (Lopez, 2015) and experience more risks to well-being in the postpartum (Institute of Medicine, 2001). As Hurley et al. (2014) highlight, self-appraisal of parenting competence is a targeted mechanism across several parenting-based interventions; thus, psychometric evaluation of measures assessing parenting competence among diverse populations is critical to both research and practice. Our findings suggest the PSOC scale to be an adequate measure of parenting sense of competence among Spanish-speaking and low-income Mexican American mothers in the U.S.

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Compliance with Ethical Standards

Conflict of Interest The authors declare no competing interests.

Consent to Participate Informed consent was obtained from all individual participants included in the study.

Ethical Approval The questionnaires and methodology was approved by the Institutional Review Boards at Arizona State University and Maricopa Integrated Health System. The study complied with the World Medical Association Declaration of Helsinki ethical principles

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References

- Behling, O., & Law, K. S. (2000). *Translating questionnaires and other research instruments: problems and solutions (Vol. 133)*. Sage.
- Bornstein, M. H., & Cote, L. R. (2004). Mothers' parenting cognitions in cultures of origin, acculturating cultures, and cultures of destination. *Child Development, 75*, 221–235.
- Bornstein, M. H., & Cheah, C. S. (2006). The place of "Culture and Parenting" in the ecological contextual perspective on developmental science. In K. H. Rubin & O. B. Chung (Eds.), *Parenting, beliefs, behaviors, and parent-child relations* (pp. 3–34). New York: Psychology Press.
- Castillo, L. G., & Cano, M. A. (2007). Mexican American psychology: Theory and clinical application. In Negy C (Ed.), *Cross-cultural psychotherapy: Toward a critical understanding of diverse client populations* (2nd ed., pp. 85–102). Reno, NV: Bent Tree Press.
- Ceballo, R., & Hurd, N. (2008). Neighborhood context, SES, and parenting: Including a focus on acculturation among Latina mothers. *Applied Development Science, 12*(4), 176–180.
- Coleman, P. K., & Karraker, K. H. (1998). Self-efficacy and parenting quality: Findings and future applications. *Developmental Review, 18*(1), 47–85.
- Coleman, P. K., & Karraker, K. H. (2000). Parenting self-efficacy among mothers of school-age children: Conceptualization, measurement, and correlates. *Family Relations, 49*(1), 13–24.
- Connelly, C. D., Hazen, A. L., Baker-Ericzen, M. J., Landsverk, J., & Horwitz, S. M. (2013). Is screening for depression in the perinatal period enough? The co-occurrence of depression, substance abuse, and intimate partner violence in culturally diverse pregnant women. *Journal of Women's Health, 22*(10), 844–852.
- Cox, J. L., Holden, J. M., & Sagovsky, R. (1987). Detection of postnatal depression: development of the 10-item Edinburgh Postnatal Depression Scale. *The British journal of psychiatry, 150* (6), 782–786.
- Crnic, K. A., & Greenberg, M. T. (1990). Minor parenting stresses with young children. *Child Development, 61*(5), 1628–1637.
- Fox, C. R., & Gelfand, D. M. (1994). Maternal depressed mood and stress as related to vigilance, self-efficacy and mother-child interactions. *Early Development and Parenting, 3*(4), 233–243.

- García-Esteve, L., Ascaso, C., Ojuel, J., & Navarro, P. (2003). Validation of the Edinburgh postnatal depression scale (EPDS) in Spanish mothers. *Journal of Affective Disorders, 75*(1), 71–76.
- Gartstein, M. A., & Rothbart, M. K. (2003). Studying infant temperament via the revised infant behavior questionnaire. *Infant Behavior and Development, 26*(1), 64–86.
- Gibaud-Wallston, J., & Wandersman, L. P. (1978). *Parenting sense of competence scale*. Lawrence Erlbaum Associates.
- Gilmore, L., & Cuskelly, M. (2009). Factor structure of the parenting sense of competence scale using a normative sample. *Child: Care, Health and Development, 35*(1), 48–55.
- Gress-Smith, J. L., Roubinov, D. S., Tanaka, R., Cirnic, K., Gonzales, N., Enders, C., & Luecken, L. J. (2013). Prenatal expectations in Mexican American women: development of a culturally sensitive measure. *Archives of Women's Mental Health, 16*(4), 303–314.
- Haack, L. M., Gerdes, A. C., & Schneider, B. W., et al. (2011). Advancing our knowledge of ADHD in Latino children: psychometric and cultural properties of Spanish-versions of parental/family functioning measures. *J Abnorm Child Psychol, 39*, 33–43.
- Heilemann, M. V., Coffey-Love, M., & Frutos, L. (2004). Perceived reasons for depression among low income women of Mexican descent. *Archives of Psychiatric Nursing, 18*(5), 185–192.
- Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30*(2), 179–185.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural equation modeling: a multidisciplinary journal, 6*(1), 1–55.
- Hurley, K. D., Huscroft-D'Angelo, J., Trout, A., Griffith, A., & Epstein, M. (2014). Assessing parenting skills and attitudes: a review of the psychometrics of parenting measures. *Journal of Child and Family Studies, 23*(5), 812–823.
- Institute of Medicine. 2001. Coverage Matters: Insurance and Health Care. Washington, DC: The National Academies Press. <https://doi.org/10.17226/10188>.
- Johnston, C., & Mash, E. J. (1989). A measure of parenting satisfaction and efficacy. *Journal of Clinical Child Psychology, 18*(2), 167–175.
- Jones, T. L., & Prinz, R. J. (2005). Potential roles of parental self-efficacy in parent and child adjustment: a review. *Clinical Psychology Review, 25*(3), 341–363.
- Lopez, G. (2015). *Hispanics of Mexican origin in the United States, 2013*. Pew Research Center. <https://www.pewresearch.org/hispanic/2015/09/15/hispanics-of-mexican-origin-in-the-united-states-2013/>. Accessed 10 Oct 2019.
- Menéndez Álvarez-Dardet, S., Jiménez García, L., & Hidalgo García, M. V. (2011). Estructura factorial de la escala PSOC (Parental Sense of Competence) en una muestra de madres usuarias de servicios de preservación familiar. *Revista Iberoamericana de Diagnóstico y Evaluación Psicológica, 32*(2), 187–204.
- Muthén, L., & Muthén, B. (2017). *Mplus (Version 8)[computer software]. (1998–2017)*. Los Angeles, CA: Muthén & Muthén.
- Ngai, F. W., Chan, S. W. C., & Holroyd, E. (2007). Translation and validation of a Chinese version of the Parenting Sense of Competence Scale in Chinese mothers. *Nursing Research, 56*(5), 348–354.
- Nunes, C., Jiménez, L., Menéndez, S., Ayala-Nunes, L., & Hidalgo, V. (2016). Psychometric properties of an adapted version of the parental sense of competence (PSOC) scale for Portuguese at-risk parents. *Child & Family Social Work, 21*(4), 433–441.
- Ohan, J. L., Leung, D. W., & Johnston, C. (2000). The parenting sense of competence scale: evidence of a stable factor structure and validity. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement, 32*(4), 251.
- Oltra-Benavent, P., Cano-Climent, A., Oliver-Roig, A., Cabrero-García, J., & Richart-Martínez, M. (2020). Spanish version of the Parenting Sense of Competence scale: Evidence of reliability and validity. *Child & Family Social Work, 25*(2), 373–383.
- Page, R. L. (2004). Positive pregnancy outcomes in Mexican immigrants: what can we learn? *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 33*(6), 783–790.
- Pew Research Center. (2017). U.S. Hispanic population growth has leveled off. Retrieved from <https://www.pewresearch.org/fact-tank/2017/08/03/u-s-hispanic-population-growth-has-leveled-off/>.
- Putnam, S. P., Helbig, A. L., Gartstein, M. A., Rothbart, M. K., & Leerkes, E. (2014). Development and assessment of short and very short forms of the Infant Behavior Questionnaire–Revised. *Journal of Personality Assessment, 96*(4), 445–458.
- Radloff, L. S. (1977). The CES-D scale: a self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*(3), 385–401.
- Rhemtulla, M., Brosseau-Liard, P. É., & Savalei, V. (2012). When can categorical variables be treated as continuous? A comparison of robust continuous and categorical SEM estimation methods under suboptimal conditions. *Psychological Methods, 17*(3), 354.
- Roberts, R. E., Rhoades, H. M., & Vernon, S. W. (1990). Using the CES-D scale to screen for depression and anxiety: Effects of language and ethnic status. *Psychiatry Research, 31*(1), 69–83.
- Rogers, H., & Matthews, J. (2004). The parenting sense of competence scale: Investigation of the factor structure, reliability, and validity for an Australian sample. *Australian Psychologist, 39*(1), 88–96.
- Suwansujarid, T., Vatanasomboon, P., Gaylord, N., & Lapvongwatana, P. (2013). Validation of the parenting sense of competence scale in fathers: Thai version. *Southeast Asian Journal of Tropical Medicine and Public Health, 44*(5), 916.
- Thornton, A., & Young-DeMarco, L. (2001). Four decades of trends in attitudes toward family issues in the United State: The 1960s through the 1990s. *Journal of Marriage and Family, 63*, 1009–1037.