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Cross-cultural validation of the parent-patient activation measure in low income Spanish- and English-speaking parents

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Abstract

Objective—(1) To measure healthcare activation among low-income parents by language (English/Spanish); and (2) to assess the psychometrics of the Parent-Patient Activation Measure (P-PAM) in the study population.

Methods—We surveyed parents/guardians of publicly-insured children who were established patients at a pediatrics clinic for 6 months. Surveys included the Parent-Patient Activation Measure (P-PAM), a 13-item measure adapted from the well-validated Patient Activation Measure (PAM).

Results—Of 316 surveys, 68% were completed in Spanish. Mean activation score in the English-language survey group was 79.1 (SD 16.2); mean score in the Spanish-language group was 70.7 (SD 17.9) ($p < 0.001$). Scale reliability was high (English $\alpha = 0.90$; Spanish $\alpha = 0.93$). The P-PAM had acceptable test-retest reliability, but no previously reported PAM factor structure fit the study data adequately for either language.

Conclusions—Healthcare activation among low-income parents was greater for parents surveyed in English compared with those surveyed in Spanish. The P-PAM has acceptable reliability and validity in English and Spanish, but a different factor structure than the PAM.

Practice implications—Activation as measured by the P-PAM may not have the same associations with or impact on health/healthcare outcomes in pediatrics compared with adults owing to possible measure differences between the P-PAM and PAM.

Keywords

Pediatrics; Patient engagement; Limited english proficiency; Primary care; Latino; Disparities

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1. Introduction

Patient engagement is heralded as a key component of health system redesign and achieving the “triple aim” of improved health outcomes, better patient experiences, and lower costs [1,2]. Individual level engagement has frequently been characterized as patient activation. Patient activation is defined as the patient's willingness to manage their health and healthcare based on understanding one's role in the care process and having the knowledge, skills, and confidence to do so [3–5]. Adults with greater patient activation have better health outcomes and report better healthcare experiences [3–6]. Interventions have demonstrated efficacy in increasing activation with subsequent improvement in health and healthcare quality for adult patients [3].

There is interest in measuring parent activation as an intermediary outcome for interventions to reduce healthcare disparities in children. To do so, a better understanding of parent activation on behalf of the health and healthcare of children is needed. The Patient Activation Measure (PAM), a well-known measure to characterize patient activation, is validated for use across diverse adult populations [3]. This measure has been adapted for use among caregivers of pediatric patients (Parent-Patient Activation Measure (P-PAM)) [7,8]. There has been limited study, however, of parental activation on behalf of their children though the measure is licensed for commercial and research use by the developers. Psychometric assessments of the P-PAM across diverse populations, to our knowledge, have not yet been performed [7]. Thus, it is premature to assume that the P-PAM reflects the same theoretical construct among parents and could be used, in its current licensed form, in research and clinical care in the same manner as in adult patients. There is a particular need for information about activation among parents who have difficulty accessing and using the healthcare system, such as those with low-income, limited English proficiency (LEP), and/or limited health literacy [1,9]. Failing to engage these patients and families may worsen healthcare disparities and reduce the potential of patient engagement to contribute to health system improvement for all populations. In this study, our aims were to (1) measure parent activation among English- and Spanish-speaking low-income parents in the pediatric primary care setting and (2) provide an initial assessment of the validity and reliability of the P-PAM in this study population.

2. Methods

We conducted a cross-sectional study at an urban, academic general pediatrics clinic in the US to examine parents' healthcare activation on behalf of their children and assess the psychometrics of the Parent-Patient Activation Measure (P-PAM) in a diverse sample of low-income parents/legal guardians (hereafter referred to as “parents”). The Institutional Review Board at Johns Hopkins Medicine approved the study. All participants provided informed consent after the consent form was orally read to them and understanding ascertained. Respondents received \$10 for participation.

The P-PAM was designed to evaluate parents' knowledge, skills and confidence in managing their child's health and healthcare. The P-PAM was adapted from the well-validated PAM by its creators for use in parents and pediatric healthcare. The P-PAM, similar to the PAM,

consists of 13 declarative statements. Response options are on a four-point Likert scale ranging from disagree strongly to agree strongly, without a neutral option. Sample items include: “When all is said and done, I am the person who is responsible for taking care of my child's health” and “I am confident I can tell a doctor concerns I have about my child's health, even when he or she does not ask.” The P-PAM is licensed by Insignia Health and was used with their permission [8]. The PAM has been validated in Spanish, but different translations have been used. We used a professional translator to generate a draft Spanish language P-PAM. This was then pilot tested and edited by bilingual research team members based on feedback from low-income primarily Spanish-speaking parents.

P-PAM responses were converted to activation scores ranging from 0 to 100 using the same methodology as for the PAM [5]. Higher scores represent higher activation. The activation score corresponds to one of four activation levels generated using a proprietary algorithm from the licensor. At Level One, parents may not understand how or why they can play an active role in their child's health; at Level Two, parents lack some needed knowledge and confidence to take actions; at Level Three, parents are beginning to take action to improve their child's health, and at Level Four, parents are taking action and have proactive behaviors that reflect their knowledge, skills and confidence to effectively manage their child's health [4–10].

From September 2014 through March 2015, a convenience sample of participants was recruited from an urban, academic pediatric primary care clinic. The majority of the clinic's patients have public insurance and are Latino children with LEP immigrant parents. The clinic, however, serves a racially and ethnically diverse patient population of immigrant and non-immigrant families. Providers at the clinic include board-certified pediatricians, resident physicians, and a pediatric nurse practitioner. The clinic averages ~11,000 visits annually. Nearly all providers at the clinic communicate directly in Spanish with patients and parents for whom this is their preferred healthcare language. All providers who communicate directly in Spanish have had their language proficiency assessed according to health system policy.

This study included parents of children aged 6 months to 5 years. Additional inclusion criteria were: minimum respondent age of 18 years, preferred healthcare language of English or Spanish, and a child in the target age range with public health insurance who had been a clinic patient for at least 6 months.

Trained research assistants proficient in both English and Spanish screened parents for inclusion during regular clinic hours. They then administered the survey in the parents' preferred healthcare language during any available time gap while the parent was waiting in clinic. The default mode of survey administration was oral administration because of known limited literacy among many parents. Parents, however, could request to complete the survey themselves; 21% of respondents elected this option. Survey responses were captured simultaneous with survey administration via recording of responses onto a touchscreen tablet computer using REDCap (Research Electronic Database Capture) software [11–13]. A small minority of surveys were completed using the paper survey form, either due to

participant preference or tablet malfunction. Paper survey responses were subsequently double-entered into REDCap.

Parents were asked to consider only one of their children in the specified age range when responding to questions. For parents with more than one eligible child, the child with an appointment on that day was the index child. If this method failed to identify a single child, RAs selected one child at random.

Surveys consisted of four parts: (1) Information about the parent and family, (2) Information about the index child and their health status, (3) the P-PAM, and (4) a validated measure of health literacy.

Parent information included parent age, gender, race/ethnicity, educational attainment and health status. Family information included number of children in the household, family income, language(s) spoken at home, US nativity and English language proficiency. English proficiency was assessed using the US Census Bureau question, “How well do you speak English?” [13]. Foreign-born parents completed questions on country of origin and years of residence in the US. Child information included age, gender, US nativity, and health status. The child's health conditions were identified via electronic medical record review of the problem list and visit diagnoses in the past 12 months (since birth for children <12 months). Few children met criteria for a complex chronic condition (CCC) so we elected to specify children with health conditions inclusive of less severe diagnoses [14]. We defined children with a health condition if any of the following were documented in the problem list: asthma/chronic cough/wheezing, prematurity with gestational age <35 weeks, developmental disorder or delay (autism or similar), or if they met ICD-9 criteria for CCC designation [14].

We measured health literacy using the Newest Vital Sign (NVS), a validated and widely used measure of health literacy available in both English and Spanish [15]. The NVS requires participants to examine a nutrition label and respond to six questions based on the label content. Research assistants administered the health literacy assessment in a nonjudgmental manner and encouraged participants to try their best on each item. Scores on the NVS correspond to three categories of health literacy based on the number of correct answers: Limited (0–1), Marginal (2–3), and Adequate (4–6). As the NVS requires reading the nutrition label even during oral administration, participants who indicated they could not read the label or preferred not to complete the NVS were assigned a score of 0.

All statistical analyses were conducted using STATA/SE Version 13 (StataCorp LP, College Station, TX). Analyses were stratified by preferred healthcare language (English or Spanish) to assess P-PAM test characteristics and their association with sociodemographic characteristics in each language independently. We compared sociodemographic characteristics, mean activation score, and activation levels between language groups using student's *t*-tests, assuming unequal variance, and chi-square statistics. Student's *t*-tests and one-way ANOVA tested for differences in mean activation score and level by sociodemographic characteristics in each language group.

We assessed the characteristics of the P-PAM in three ways: (1) Measurement of overall scale reliability by calculating a Cronbach's alpha; (2) Repeat P-PAM administration in a subsample of the study population to assess test-retest reliability; and (3) Factor analyses.

We characterized test-retest intra-rater reliability in a 10% subset of the study population by contacting randomly selected participants 1–4 months after their initial participation and re-administering the 13-item survey verbally, via telephone. A Shrout-Fleiss intraclass correlation coefficient characterized the correlation between the scores from the initial screening and the phone-administered re-screening. We tested for significant differences between mean initial versus re-test scores using paired t-tests.

To assess if the P-PAM measured similar underlying theoretical constructs to the PAM, we tested for equivalence in factor structure using a confirmatory factor analysis (CFA). The CFA was based on a 4-factor model proposed by Hibbard and 3- 2- and 1-factor alternative models proposed by Skolasky [5–16]. The CFA was conducted using the Structural Equation Modeling Package for STATA 13 using maximum likelihood estimation with missing values [17]. For each model, we estimated Root mean squared error of approximation (RMSEA) and comparative fit indices (CFIs) to assess goodness-of-fit. Good model fit was defined as an RMSEA of 0.05 and a CFI of 0.95 [18,19]. Subsequent to finding poor fit with established factor models, we conducted an exploratory factor analysis (EFA), using an iterative principal factor approach followed by oblique promax rotation. Items with factor loadings 0.40 were included [20]. Factors were retained until Scree plots demonstrated an inflection point and the cumulative proportion of variance accounted by factors surpassed 80% [21].

3. Results

We present analyses based on 316 completed parent surveys, 68% of which were completed in Spanish. More than 80% of approached parents agreed to screening and 92% of screening eligible parents agreed to participate and completed the survey (Fig. 1). Most refusals for screening or survey participation were due to perceived lack of time. Characteristics of the parent, family, and index child stratified by language of survey administration are presented in Table 1. Parents in the Spanish-language survey (SLS) group were nearly all foreign-born; a substantial minority (23%) of parents in the English-language survey (ELS) group were also foreign-born. In both groups all index children were US-born. SLS parents had lower educational attainment than the ELS group; 73% reported less than a high school education compared with 27% in the ELS group ($p < 0.001$). Health literacy was also significantly lower in the SLS group compared with the ELS group. Seventy-four percent of parents in the SLS group had limited health literacy compared with 28% in the ELS group ($p = < 0.001$). The percentage of children in the SLS group without a health condition was higher than the ELS group (79% vs. 71%, respectively; $p = 0.003$). SLS parents, however, reported worse health status for their child than ELS parents.

Mean P-PAM score was significantly different by language; SLS parents had both a mean and median score around 10 points lower than ELS parents (Table 2). Activation levels between the two groups were also significantly different. Forty-three percent of SLS group

parents scored at the highest activation level (Level 4), compared with 62% of ELS parents ($p < 0.001$). Table 3 displays the distribution of responses to each P-PAM question by language group. There was a significant difference in distribution of responses by language for the majority of the 13 questions with SLS parents generally responding less favorably. For the ELS group questions 1, 2, 6 and 7 (perceiving themselves as primarily responsible for their child's health, feeling an active role in their child's health is most important, feeling confident about asking questions of doctors, and feeling confident they could follow through on medical treatments) were notable for having the greatest percentage of parents responding 'strongly agree'. No similar pattern was noted for SLS parents.

Table 4 displays the mean activation score by parent and child characteristics for each language. For the SLS group only child health status was associated with activation score. Lower activation was seen among SLS parents who considered their children to be in good, fair or poor health compared parents who reported excellent or very good child health. In the ELS group there were no significant differences in activation score for the characteristics examined.

P-PAM measure characteristics were similar between the two language groups. Internal reliability was excellent (SLS group $\alpha = 0.92$, ELS group $\alpha = 0.90$). We also found acceptable test-retest reliability. Among the retest participants ($n = 20$ for Spanish, $n = 10$ for English), we saw significant correlation between the PAM-13 score collected in our initial screening and the retest (Shrout-Fleiss Intraclass correlation coefficient = 0.416; $p = 0.010$). A paired t-test comparing the mean initial score to the re-test scores found a non-significant increase over time (mean difference = 3.22; $p = 0.3311$). There was no significant difference in the sociodemographic characteristics of the test-retest sample compared with the balance of the study sample. Confirmatory factor analyses demonstrated that no previously reported PAM models fit the study data adequately for either language group. The 4-factor model proposed by Hibbard and the alternative 3-, 2-, and 1-factor models proposed by Skolasky resulted in RMSEAs ranging from 0.088–0.147 and CFIs between 0.80 and 0.93. The EFA revealed that for both language groups 2 factors related to behavior change (Questions 10 and 13) and knowledge (8, 9, and 11) explained most (>80%) of the observed variance in our sample. When we examined within scale reliability based on the two-factor model, we found acceptable to good reliability for the subscales in each language group. For Factor 1 (Questions 10 and 13) in the SLS group $\alpha = 0.78$ and for the ELS group $\alpha = 0.87$. For Factor 2 (Questions 8, 9, and 11) in the SLS group $\alpha = 0.85$ and for the ELS group $\alpha = 0.80$.

4. Discussion and conclusions

4.1. Discussion

In this study of low-income parents with publicly insured children, we found that the P-PAM had high internal consistency and reliability in both English and Spanish. We also found that, for both languages, there was a different underlying factor structure than the PAM suggesting the two measures may not be assessing equivalent constructs among adult patients and parents. Parents whose preferred healthcare language was Spanish had lower activation than parents whose preferred healthcare language was English. Similar

psychometrics indicate that differences in measure characteristics by language likely do not fully explain differences in activation. To our knowledge, this is the first study to address the validation of the P-PAM in a diverse sample of low-income parents and among the first assessments of the P-PAM for use to inform clinical care and intervention research in pediatrics. Our findings underscore the need to further study the psychometrics properties of the P-PAM and its performance in diverse populations before widespread application in pediatric healthcare and health services research.

Though we found a difference in activation between parents by language, both groups of parents had somewhat higher activation than has been generally found when assessing adult activation using the PAM [4,6,10,16,22,23]. Higher activation scores among parents underscores the need to further assess the construct being measured by the P-PAM and how measure characteristics may differ from the PAM. Mean PAM scores in studies in varied populations and settings were most often in the 60 s (equivalent 100 point scale scoring), compared with means in the 70 s for our sample. In another activation study with a sample of parents of children undergoing stem cell transplants, P-PAM scores were similar to our sample, and were higher than PAM scores from a comparison sample [7]. Higher activation scores among parents may not reflect increased knowledge, skills, and confidence about health and healthcare, but may indicate differences in measure interpretation. Our factor analysis demonstrates that the variation in P-PAM scores was primarily attributable to response variation in only five of the thirteen questions. Other P-PAM questions may not resonate well with low-income parents of generally healthy children. Additionally, the face validity of the questions that primarily contributed to response variation in our sample is of concern. Three of these questions (8,9 &11) concern the child's 'health problems', but our sample had few children with chronic conditions. Additionally the other two questions generating response variation deal with behavior change with eating right and exercising as examples of behavior change, which may be less relevant for parents of young children. Research is needed to better understand how parents choose their response to P-PAM questions, which would aid the interpretation of scores.

Higher mean P-PAM scores in our sample may also be attributable to including all respondents in our analyses. Some adult studies have excluded participants who responded 'strongly agree' to all PAM questions, as this could reflect lack of sincere consideration of responses [4,24]. We chose to include those with responses of 'strongly agree' to all P-PAM questions in our analyses as we do not feel there is sufficient evidence about the P-PAM to consider these responses as invalid. Exclusion would have resulted in loss of 26% of participants from the ELS group and 18% from the SLS group. Sensitivity analyses where we excluded scores of 100 did not change main findings. Mean activation scored remained significantly higher in ELS parents, but means were lower for both groups (ELS Mean: 71 (SD: 12), SLS Mean 64 (SD: 13)) Higher activation may also be related to social desirability bias. Adults may be more willing to admit they face challenges in healthcare interactions for themselves, compared with interactions on behalf of their child.

The reasons for lower activation among the SLS group in our study are not clear, though it is similar to findings from adults. Patient activation among Latino adults in the US is lower than that of Blacks and Whites, and foreign-born Latinos have lower activation than US-

born Latinos [22–24]. SLS group parents had significantly lower education and health literacy than ELS group parents, but these factors were not associated with activation among SLS parents. Cultural differences for immigrant Latinos could affect parent activation. Less-acculturated Latinos have been shown to defer more often to physicians for decision making [25]. We did not find differences in activation by time in the US for SLS group parents. Length of time in the US has not consistently been associated with PAM scores among immigrant Latino adults [22,24]. When we examined our sample by ethnicity rather than language we found mean activation among Latinos in the ELS group was 73.7, compared with 80.8 for others in the ELS group (data not shown). While this difference was not statistically significant, it suggests, similar to adult studies, that Latino ethnicity regardless of language preferences may be associated with lower activation. This may be due to less cultural orientation to active healthcare participation among Latinos, or could indicate differential item functioning of the P-PAM by Latino ethnicity. Additional research on the P-PAM with sufficient sample size to understand differential item functioning accounting for both Latino ethnicity and language of P-PAM administration among Latinos is needed.

Our findings should be interpreted in the context of certain limitations. This study was performed in a single US clinic serving mostly patients in immigrant families, which could reduce generalizability. In particular, nearly all physician providers have been qualified as proficient for Spanish-language healthcare communication. Parents who have a language-concordant pediatric primary care provider may have higher activation than those who do not. The language concordance with providers in this sample, however, suggests language barriers do not explain activation differences between language groups. Second, our sample includes parents attending a pediatric primary care clinic who were willing to participate in a survey, perhaps leading to selection bias. Study sample demographics reflected the demographics of children seen at the clinic in the past year, but parents who present for primary care visits are likely different from those who do not. Several of the P-PAM questions focus on engaging with healthcare providers. As our study population has healthcare access this could have resulted in more favorable responses, compared with a community sample with respondents that do not have healthcare access. Finally, parents may have responded to questions based more on their primary care experiences, rather than considering their experiences across healthcare settings. LEP Latino parents report that primary care is the setting that is most familiar and has better language accommodation [26]. As such the parents in our sample may still face significant challenges during healthcare encounters in non-primary care settings, despite relatively high activation. For example, a recent study found LEP Latino parents reported more problems with their child's emergency department care than English-proficient respondents even when an interpreter was used [27]. On the whole our sampling limitations may have significantly contributed to parents' relatively high level of activation, underscoring the need to assess activation using a sample drawn from other settings, including those outside of healthcare.

4.2. Conclusions

Our study presents novel data about parent activation in a diverse sample of low-income parents and about P-PAM validity and reliability. With increased focus on patient engagement, it is critical to understand the similarities and differences in activation measures

between adult patients and parents on behalf of their children. We found that the P-PAM has acceptable reliability and validity, but that many questions did not generate response variation in this sample of parents of rather healthy children. The significance of the potential measure differences between the P-PAM and PAM are most salient when considering the relation between activation and healthcare outcomes. Interventions to increase activation among immigrant Latino adults have resulted in increased comfort with asking questions of providers and increased care retention [28,29]. Similar associations between health and healthcare outcomes and P-PAM score would suggest that activation as measured by the P-PAM may still be a useful intervention target in pediatrics despite the measure limitations identified in this study, but this is not yet known.

4.3. Practice implications

Research on patient engagement in pediatrics is in its early stages. Our work makes an important contribution to nascent efforts in pediatric engagement research by providing initial information on the psychometric properties and performance of the P-PAM among parents of vulnerable patients. We identified several areas of concern with the P-PAM in this preliminary work, so it is still unclear how best to apply the P-PAM to clinical practice. Using activation as an intervention target in pediatrics may not have the same impact as in adult patients owing to possible measure differences between the P-PAM and PAM. Further study of P-PAM characteristics across multiple healthcare sites, as is study of the measure among parents of children with varied special healthcare needs is needed. Future research, however, must continue to include children at greater risk for healthcare disparities due to language, income, or race/ethnicity. Improvements in healthcare for all patients will be more likely if patient engagement research and activities reflect the varied and unique needs of diverse populations.

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Fig. 1.
Participant Response Rate Flow Chart.

Table 1

Characteristics of 316 caregivers and children. Data are presented as mean (standard deviation (SD)) or n (%).

Characteristic	English ^a n = 102	Spanish ^a n = 214	p-value ^b
Parent age (years)	27.8 (7.7)	29.4 (5.7)	0.065
Parent female gender	87 (86%)	204 (95%)	0.004
Parent race/ethnicity			<0.001
Non-Hispanic Black	41 (40%)	0 (0%)	
Non-Hispanic White	15 (15%)	0 (0%)	
Hispanic/Latino	24 (24%)	210 (99%)	
Other/mixed race	22 (22%)	3 (1%)	
Foreign-born parents	23 (23%)	211 (99%)	<0.001
Parent's Years in the US	15.1 (6.2)	8.3 (4.0)	<0.003
Country of origin:			<0.001
Mexico	7 (32%)	78 (37%)	
El Salvador, Honduras, Guatemala	4 (18%)	109 (52%)	
Other Latin American countries	1 (5%)	22 (11%)	
All other countries	10 (45%)	0 (0%)	
Annual family income			<0.001
<\$20,000	46 (45%)	101 (47%)	
\$20–30,000	18 (18%)	35 (16%)	
>\$30,000	24 (24%)	14 (7%)	
Did not know/Refused	14 (14%)	64 (30%)	
Parent education			<0.001
<High School	28 (27%)	157 (73%)	
High school or GED	41 (40%)	44 (21%)	
Some post-secondary	33 (32%)	13 (6%)	
Parent English proficiency			<0.001
Very well	89 (87%)	4 (2%)	
Well	12 (12%)	25 (12%)	
Not well/Not at all	1 (1%)	184 (86%)	
Parent health literacy (Newest Vital Sign score)			<0.001
High likelihood of limited literacy (0–1)	29 (28%)	158 (74%)	
Possible limited literacy (2–3)	34 (33%)	35 (16%)	
Adequate literacy (4–6)	39 (38%)	20 (9%)	
Number of children in household	2.0 (1.0)	2.0 (1.2)	0.421
Child age (months)	29.4 (18.8)	27.6 (17.2)	0.420
Child health condition(s) ^c			0.003
None	72 (71%)	170 (79%)	
Asthma/Chronic cough/Wheeze	17 (17%)	10 (5%)	
Gestational age <35 weeks	3 (3%)	2 (1%)	
Developmental disorders or delay ^d	3 (3%)	3 (1%)	

Characteristic	English ^a n = 102	Spanish ^a n = 214	p-value ^b
Other complex chronic conditions	1 (1%)	3 (1%)	
Reported Other complex chronic conditionshealth status of child			0.004
Excellent	54 (53%)	89 (42%)	
Very good	30 (29%)	48 (22%)	
Good/Fair/Poor	18 (18%)	77 (36%)	

^aDenotes language of survey completion, selected based on parental report of preferred healthcare language.

^bStudent's *t*-test and chi-square statistics. Bold denotes $p < 0.05$.

^cObtained from EMR, percentages do not sum to 100% because some children had multiple diagnoses.

^dIncludes Autism Spectrum Disorders.

Table 2

Parent Patient Activation Measure (P-PAM) scores and levels by survey language.

	English ^a n = 102	Spanish ^a n = 214	p-value ^b
P-PAM Score			
Mean (SD)	79.1 (16.2)	70.7 (17.9)	<0.001
Median (range)	76.4 (53.2, 100)	65.5 (42.2, 100)	<0.001
P-PAM Level: n (%)			<0.001
1	0 (0%)	6 (3%)	
2	2 (2%)	31 (14%)	
3	37 (36%)	84 (39%)	
4	63 (62%)	93 (43%)	

^a Denotes language of survey completion, selected based on parental report of preferred healthcare language.

^b Student's *t*-test, Wilcoxon rank-sum, and chi-square statistics. Bold denotes $p < 0.05$.

Table 3

P-PAM question response distribution by survey language (n = 316).

P-PAM Question	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree	p-value ^a
1) When all is said and done, I am the person who is responsible for taking care of my child's health.					
English ^b		2%	20%	78%	<0.001
Spanish ^b			44%	56%	
2) Taking an active role in my child's health care is the most important thing that affects his/her health.					
English		1%	22%	77%	<0.001
Spanish		10%	39%	51%	
3) I am confident I can help prevent or reduce problems associated with my child's health.					
English		2%	33%	65%	0.037
Spanish	1%	4%	47%	48%	
4) I know what each of my child's immunizations are for.					
English		3%	38%	59%	0.070
Spanish	1%	7%	49%	43%	
5) I am confident that I can tell when I need to go get medical care and when I can handle my child's health problem myself.					
English		2%	30%	68%	0.012
Spanish	1%	3%	48%	48%	
6) I am confident I can tell a doctor concerns I have about my child's health, even when he or she does not ask.					
English			24%	76%	<0.001
Spanish		1%	47%	52%	
7) I am confident that I can follow through on medical treatments I need to do for my child at home.					
English			26%	74%	<0.001
Spanish	1%	2%	48%	49%	
8) I understand my child's health problems and what causes them.					
English		6%	39%	55%	0.006
Spanish	1%	14%	50%	35%	
9) I know what treatments are available for my child's health.					
English	1%	7%	41%	51%	0.060
Spanish		15%	45%	40%	
10) I have been able to help my child maintain (keep up with) recommended changes like eating right or exercising.					
English		4%	37%	59%	0.017
Spanish		1%	52%	47%	
11) I know how to prevent problems with my child's health.					
English		5%	40%	55%	0.010
Spanish	2%	9%	52%	37%	
12) I am confident I can figure out solutions when new situations arise with my child's health.					
English		4%	43%	53%	0.051
Spanish	1%	6%	56%	37%	
13) I am confident I can help my child maintain changes, like eating right and exercise, even during times of stress.					
English		1%	39%	60%	0.033

P-PAM Question	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree	p-value ^a
Spanish		3%	52%	45%	

^a Chi-square statistic. Bold denotes $p < 0.05$.

^b Denotes language of survey completion, selected based on parental report of preferred healthcare language.

Table 4

Mean P-PAM scores by demographic characteristics by survey language.

Characteristic	Mean English ^a P-PAM Score(SD)	p-value ^b	Mean Spanish ^a P-PAM Score(SD)	p-value ^b
Parent Race/Ethnicity				
Non-Hispanic White	82.5 (16.1)	0.092	- - -	
Non-Hispanic Black	74.4 (15.9)		Limited race specification in addition to Latino ethnicity	
Hispanic/Latino	73.7 (15.5)			
Other/mixed race	81.8 (15.9)			
Parent Nativity				
US-Born	77.3 (17.9)	0.584	- - -	
Foreign-born	79.6 (15.8)		Nearly all Foreign-born	
Latino Parent's Years in the US				
8 years	- - -		70.6 (17.7)	0.985
>8 years	(Small cell size)		70.8 (18.2)	
Latino Parent Country of Origin				
Mexico	- - -		70.6 (18.3)	0.871
El Salvador, Honduras, Guatemala	(Small cell size)		70.2 (17.6)	
Other Latin American Countries			72.4 (19.1)	
Annual Family Income				
<\$20,000	80.4 (17.1)	0.555	71.5 (18.7)	0.567
\$20,000	78.4 (15.2)		70.1 (17.3)	
Parent Education				
<High School	79.3 (17.0)	0.948	70.6 (18.6)	0.929
High School	79.0 (16.0)		71.1 (16.1)	
Parental Health Literacy (Newest Vital Sign score)				
High likelihood of limited literacy (0–1)	81.4 (18.2)	0.431	71.5 (18.7)	0.379
Possible limited literacy (2–3)	80.0 (16.3)		76.9 (17.8)	
Adequate literacy (4–6)	76.6 (14.5)		75.4 (14.1)	
Number of Children in Household				
1 Child	80.1 (15.5)	0.625	70.8 (18.2)	0.887
2 Children	78.5 (16.8)		70.4 (17.4)	
Child Age				
<12 months	77.0 (15.9)	0.499	69.5 (18.4)	0.639
12 months	79.7 (16.3)		71.0 (17.9)	
Child's Health Condition(s)				
None	79.6 (16.1)	0.660	70.9 (18.1)	0.827
1 Health Condition	78.0 (16.7)		70.2 (17.3)	
Reported Health Status of Child				
Excellent	82.1 (14.9)	0.129	73.6 (17.6)	0.025
Very Good	76.2 (17.0)		72.5 (18.1)	
Good/Fair/Poor	74.8 (17.6)		66.3 (17.7)	

^aDenotes language of survey completion, selected based on parental report of preferred healthcare language.

^bStudent's *T*-test or ANOVA.

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