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Beyond demographics: Differences in patient activation across new immigrant, diverse language subgroups

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Abstract

Background—The federal government promotes “patient-centered medical homes” to plan care with respect to patients’ cultures and values and support patients’ self-care efforts. To promote self-care, the medical home would be best utilized by activated, engaged patients.

Objective—To measure and compare patient activation scores in English-, Spanish-, and Haitian-Creole speaking patients seen at an inner-city hospital ambulatory care practice.

Methods—Patient activation was measured using the Patient Activation Measure (PAM).

Results—Mean PAM scores and activation levels differed according to survey language (p<. 001). US-born participants had higher mean PAM scores than persons born outside of the US. Participants living in the US longer had higher mean PAM scores than participants newer to the US. Levels of activation and mean PAM scores increased with greater comfort reading, speaking, and thinking in English. The mean PAM (SD) score of 61.5 (16.5) for Haitian-Creole speaking Caribbean Blacks was significantly lower than the mean PAM score of 68.8 (15.6) for English-speaking Caribbean Blacks (p-value= 0.006). Although mean PAM scores did not significantly differ between Haitian Creole and Spanish speakers, PAM stages differed according to language of survey completion (p<0.001), with a greater percentage of Haitian Creole speakers being categorized as stage I (least activated) as well as stage 4 (most activated).

Conclusions—Spanish and Haitian Creole speakers have lower mean PAM scores than English speakers. Mean PAM scores did not differ between Hispanics and non-Hispanics or according to race, illustrating the need to examine the role of language and culture on patient activation.

Keywords

Patient activation; primary care; immigrants

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Introduction

The recent Supreme Count decision to uphold the Affordable Care Act means that primary care will be well positioned to provide coordinated medical care and preventive services that will benefit both patients and communities. The federal government has been promoting the adoption of the "patient-centered medical home" that would plan care with respect to each patient's culture and values as well as support the patient's self-care efforts.[1] In order to promote self-care, the medical home would be best utilized by activated, engaged patients who are interested in forming partnerships with health care practices.[2] Although the medical home has been designed to improve access to care, reduce health disparities, and facilitate shared decision-making, readiness of low-income, ethnic/racial minority patients—many of whom are foreign born and have limited English proficiency— to be engaged in their own health care has been largely unexamined. Certainly, if patients are not at a stage or setting in which shared decision-making is realistic then continuous patient engagement might not be tenable.

To achieve the goal of shared decision making, patients must be informed and active partners in their health care. The term "patient activation" has gained increasing traction and refers to the knowledge, skills, and confidence needed by persons to manage their health and health care.[3] Activation has been most commonly measured by the Patient Activation Measure (PAM), an assessment consisting of 13 items. Participants may be assigned an activation score that can be converted to a score ranging from 0 to 100 and falling into one of four levels of activation.[4] Improving patient activation has been postulated as a means to reduce health disparities, improve quality health care, and reduce costs.[3,5,6]

In 2010, 13% (nearly 40 million) of the United States population was foreign born and, of this group, 17% (7 million) entered the United States after 2005.[7,8] With regard to health disparities, investigators have documented differences in patient activation according to both race/ethnicity and level of acculturation in the general population.[3,9] For instance, an analysis of the 2007 Health Tracking Household survey revealed Hispanics and Blacks had lower PAM scores than Whites, with Hispanics' scores being significantly lower than Blacks.[9] Yet when these data were analyzed according to immigration status, a direct comparison between the three groups was unable to be made, given that the sample included too few Blacks who were foreign-born or second-generation Americans. Among Hispanic immigrants, lower acculturation was associated with lower levels of activation. Similarly, data from the Pew Hispanic Center/Robert Wood Johnson Foundation Latino Health Survey revealed that US born Hispanics had higher mean PAM scores than did foreign born Hispanics.[10] Viewing primary data collected from three low-income community health centers in the Bronx, no statistically significant differences in activation were noted between Hispanics and Blacks, although participants whose native language was not English were found to have lower PAM scores.[11]

Examining patterns of immigration, between 1960 and 2010 the number of foreign born from Latin America and the Caribbean increased from 1 million to 21.2 million.[12] Among individual states, New York has the second highest percentage of foreign born persons (22%).[7] Haitians represent one of the fastest growing Caribbean immigrant populations in the United States.[13] Haitian immigration has dramatically increased in New York City, among other places, as a result of the earthquake on January 12, 2010 and the extension of the Temporary Protected Status classification issued by the U.S. Department of Homeland Security that allows Haitian refugees to live and work in the U.S. for a longer period of time.[14] Queens County, New York City is home to one of the five largest Haitian populations in all United States counties.[15] Of the Haitian population in Queens, 82% claim

that they do not speak English at home and of those not speaking English at home, 14% note not speaking English well or at all.[15]

To date, no studies have been published on patient activation in Haitian Americans. Compared with other ethnic and racial groups, Haitians are less likely to be screened for cancer and may be diagnosed at a later stage of cancer.[16–20] Similarly, with regard to cancer, results from focus groups of Haitians suggest that many Haitians may delay health care, believing that it is "better not to know" about an illness, and may be unfamiliar with the concept of prevention.[21]

The following study aimed to measure and compare patient activation scores in a convenience sample of English-, Spanish-, and Haitian-Creole speaking patients seen at an inner-city hospital ambulatory care practice. We sought to describe assess the performance of the PAM and to describe the levels of activation in the sample according to selected sociodemographic characteristics. In particular, we wanted to examine the impact of race/ethnicity, language of survey completion, and years living in the United States in a sample predominantly comprised of low income new Americans. We hypothesized that Haitian Creole speakers would have lower mean PAM scores that more closely resemble scores of Spanish speakers, as opposed to English speakers.

Methods

Sample

The study was reviewed and approved as exempt research by the Institutional Review Boards at The City College of New York (CCNY) and Memorial Sloan Kettering Cancer Center (MSKCC). This cross-sectional study surveyed people who were aged 18 and older who attended Queens Hospital Center Ambulatory Center between June 2011 and August 2012. Queens Hospital Center is a member of the New York City Health and Hospitals Corporation and serves central and southeastern Queens, communities with a large proportion of New Americans. In 2011 the Hospital received a "Level 3" designation—the highest ranking— as a patient-centered medical home by the National Committee for Quality Assurance.

Administration of questionnaires

Bilingual research study assistants (English/Spanish and English/Haitian Creole) who were native speakers and fluent in both their native languages and English approached patients in the waiting room prior to a health care visit. Potential participants were informed that the study was voluntary and that the interview would be anonymous and confidential. Participants were given the choice of having the study administered in English, Spanish, or Haitian Creole, based on the language with which they had the highest level of fluency. Participants received a transportation card ($15.00) for completing the study. If an eligible patient declined participation, the RSA recorded the patient's gender, language spoken, and reason for nonparticipation.

Patient activation was measured using the Patient Activation Measure (PAM). This measure is a 13-item scale indicating the degree to which individuals take an active role in managing their health and health care.[4] The five possible responses on the PAM range from *disagree strongly* to *agree strongly* and include *not applicable* (NA). The PAM score is based on a scale of 0 to 100 and falls into one of four levels of activation: (1) not yet taking an active role, (2) gaining confidence and knowledge to take action, (3) taking action, and (4) maintaining behavior. Higher PAM scores suggest that individuals are more likely to understand that their active involvement is critical to their health. A five point difference in

PAM scores has been found between persons who engage in healthy behaviors—such as exercising, eating breakfast, and seeking health information—than those who do not.[22] Similarly, a national and Medicaid sample indicated that whites scored four points higher on the PAM than did African Americans.[23] The PAM has strong psychometric properties and has been shown to be valid and reliable.[4,24] Spanish and Haitian Creole versions of the PAM were available from Insignia Health.[25] Two native Spanish and two native Haitian Creole speakers reviewed these versions for face and content validity.

The final section contained a number of sociodemographic characteristics, including age, gender, education, race and ethnicity, years living in the United States, country of birth, employment, and martial status. Acculturation was assessed with the language subscale of the Short Acculturation Scale for Hispanics[26] that has been modified and validated for use with other populations.[27,28]

Data analysis

Data were analyzed using SAS software, Version 9.2 of the SAS System for Windows (SAS Institute Inc., Cary, NC, USA, 2009). Differences across language group were compared using the Chi-square test for categorical variables and one way analysis of variance (ANOVA) for continuous variables. Linear regression and ANOVA examined univariable relationships between sociodemographic characteristics and PAM scores and activation levels. Variables with $p<0.1$ on univariable analysis were incorporated into a multivariable ANOVA.

Results

Five hundred and seventy one patients 18 and older who spoke English, Spanish, or Haitian Creole were approached by RSAs in the ambulatory center waiting room and 460 patients (80.6%) agreed to participate in the study (Table 1). “Not interested” was the most common reason for refusal to participate in the study (59% of refusals) followed by “time constraints” (34% of refusals).

One hundred fifty participants (33%) completed the survey in Haitian Creole, 159 (34%) completed the survey in Spanish, and 151 (33%) completed the survey in English. The mean (SD) age of the sample was 48 (15) and nearly 60% was female. With regard to race, 41.7% of participants reported being Caribbean Black, 13.9% reported being Black, 8.5% reported being White, and 30.2% reported being “Other.” Nearly 38% of participants reported being Hispanic. More than 84% of participants were not born in the U.S. but nearly three quarters (67%) who were not born in the US reported having been in the US for more than 10 years. Nearly 55% of the sample had a high school level of education or lower and more than 46% reported making less than $30,000. Participants completing the survey in Haitian Creole, Spanish, and English differed from one another with regard to all sociodemographics examined except for gender (Table 1).

Responses to all four acculturation items differed according to language of survey response ($p<0.001$) (Table 1). A post-hoc analysis revealed that patients completing the survey in Haitian Creole were more acculturated compared to patients completing the survey in Spanish ($p<0.001$ for three items and $p=0.004$ for ‘in which language(s) do you usually think?’).

Mean (SD) PAM scores for the sample were 64.4 (16.7). Univariable associations (Table 2) revealed that mean PAM scores and activation levels differed according to survey language ($p<.001$ for both). In particular, mean (SD) PAM scores were 69.2 (17.2), 63.5(15.2), and 60.8 (16.8) for persons completing the survey in English, Spanish, and Haitian Creole,

respectively. Participants who reported being born in the US had higher mean PAM scores than persons born outside of the US [69.5 (19.4) vs. 63.7 (16.1); p=0.010]. In addition, participants who reported living in the US for a longer period of time had higher mean PAM scores than participants who were newer to the US. Scores also differed according to acculturation, with levels of activation and mean PAM scores increasing with greater comfort reading, speaking, and thinking in English. For example, participants who reported usually speaking with their friends only in their native language had a mean PAM score of 58.9 (14.2) while participants who reported usually speaking with their friends only in English had a mean PAM score of 70.7 (16.8). Employment status was associated with mean PAM scores, as students had the lowest mean PAM scores and retired persons had the highest mean PAM scores. No significant differences in activation were found according to age, gender, race or ethnicity, marital status, education, or income.

In multivariable analysis (Table 3), differences in mean PAM scores continued to be significant, with English speakers having higher scores than Spanish or Haitian Creole speaking participants ($p<0.001$). Employment status also was of borderline significance ($p=0.046$). A multivariable ANOVA examining the association between the four acculturation variables and mean PAM scores revealed no significant differences in level of acculturation and mean PAM scores.

Based on these findings, a post-hoc analysis was conducted to determine if mean PAM scores differed between the 56 Caribbean Blacks who answered the survey in Haitian Creole and 127 Caribbean Blacks who answered the survey in English. The mean PAM (SD) score of 61.5 (16.5) for Caribbean Blacks who completed the survey in Haitian Creole was significantly lower than the mean PAM score of 68.8 (15.6) for Caribbean Blacks completing the survey in English (t-test p-value= 0.006). Of these Caribbean Blacks who responded to the survey in English, only 7% were from Haiti while the majority of patients were from Jamaica (46%), Guyana (16%), and Trinidad and Tobago (13%).

A final post-hoc comparison between PAM scores for patients completing the survey in Haitian Creole and patients completing the survey in Spanish revealed that although mean PAM scores did not significantly differ between Haitian Creole (60.8 [16.8]) and Spanish speakers (63.5 [15.2])(p-value=0.144), PAM stages differed according to language of survey completion ($p<0.001$), with a greater percentage of Haitian Creole speakers being categorized as stage I (least activated) as well as stage 4 (most activated).

Discussion

This study is the first to examine patient activation in a sample of English, Spanish, and Haitian Creole speakers. Our results were in accordance with our prediction that Spanish and Haitian Creole speakers have lower mean PAM scores than English speakers. By contrast, when data were analyzed according to race and ethnicity, mean PAM scores did not differ between Hispanics and non-Hispanics or according to race. In fact, the category “Caribbean black” masked the heterogeneity of its constituents, as English speaking Caribbean blacks had higher scores than Haitian Creole speaking Caribbean blacks.

The finding of lower mean PAM scores for Spanish and Haitian Creole speakers as compared to English speakers persisted after adjusting for number of years living in the U.S. The magnitude of these decrements in mean scores—greater than five points— is considered clinically significant, given that similar differences have been noted between persons who engage in healthy behaviors than those who do not.[22]

Although the mean PAM scores for Haitian Creole speakers were nearly three points lower than the mean PAM scores for Spanish speakers, these differences were not statistically or

clinically significant. By contrast, the distribution of PAM activation levels differed between the two language groups, revealing that Haitian Creole speakers had a greater percentage of respondents both in stage I and stage IV as compared to Spanish speakers. These findings have implications for crafting effective strategies to improve activation for the segment of the Haitian Creole patients with low levels of activation as well as maintaining current levels of activation for the segment of the Haitian Creole patients with high levels of activation. Patients in stage I would benefit from motivational interviewing so that they grasp the role that they need to play in their own health. Patients in stage IV might benefit from focusing on ways to maintain behaviors under times of stress.[25] In designing such interventions, attention should be paid to who will be the interventionist as well as the location for this intervention. A recent investigation of help-seeking behaviors revealed that Haitian immigrants were most likely to seek help from family and least likely to seek help from professionals. This finding has important implications for the implementation of patient-centered medical care, as many patients may prefer family-focused interventions or even interventions that are implemented outside of the health care system, such as faith based organizations or through the media.[21] Additionally, within the medical home, Haitians might lack a familiarity with Western medicine and may prefer traditional remedies.[29,30]

Future studies should be conducted to examine the use of the PAM in Haitian Creole speakers. In particular, cognitive testing might be employed to elicit potential differences in the concepts of activation and the role that a given individual needs to play in his/her own health. Although the measure has been linguistically translated, it is critical to consider the need for cultural translation since the notion of not knowing about the existence of a disease/condition is incongruent with Western medicine's emphasis on prevention.[21] In particular, items such as "when all is said and done, I am the person who is responsible for taking care of my health" or "I know how to prevent problems with my health" may be in conflict with traditional beliefs or practices. If future studies continue to demonstrate a similar distribution of PAM levels, it would be interesting to examine the characteristics of patients with regard to degree that religious determinism impacts patient engagement.[31] This is especially important since the National Committee for Quality Assurance mentions the need to train and assign care teams to support patients and families in self-management, self-efficacy, and behavioral change and highlights the needs to provide culturally and linguistically appropriate services.[32]

Our findings were notable for a lack of association between patient activation and age, gender, race/ethnicity, education, and income. Although these results differ from findings seen in the general population,[3] they bear similarities to studies from community health centers and ambulatory clinics. In particular, one study at a single community health center found a lack of an association between patient activation and race/ethnicity, gender, or education,[33] a second study at three community health centers found a lack of a relationship between patient activation and age and race/ethnicity,[11] and a third study at four ambulatory HIV clinics found a lack of a relationship between patient activation and age, race/ethnicity, and gender.[34]

Our study had a number of limitations. Patients were seen at a single ambulatory care practice in New York City, thus limiting the generalizability of these findings to the general population of English, Spanish, and Haitian-Creole speakers as well as to other primary care practices. Because these patients have access to health care, our resultant PAM scores may be higher than PAM scores for persons with similar sociodemographic characteristics who are seen outside of the health care system.

In conclusion, our study illustrates the need to drill deeper than ethnic and racial categories and to focus on the role of language and culture on patient activation. Further research

should explore the needs of Haitian Creole speaking patients with regard to the provision of cultural and linguistic appropriate care for Haitian Creole speaking patients, with respect to both systems of belief and informational needs, and in terms of how to most effectively provide health care.

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Table 1

Selected characteristics of participants

		Survey language			
	Overall (n=460)	**Haitian Creole (n=150; 33%)**	**Spanish (n=159; 34%)**	**English (n=151; 33%)**	**p-value[1]**
Age (years), Mean (SD)	48 (15)	49 (15)	50 (13)	44 (15)	<.001
Gender, N (%)					0.093
Male	185 (40.2)	62 (41.3)	54 (34.0)	69 (45.7)	
Female	272 (59.1)	88 (58.7)	104 (65.4)	80 (53.0)	
Hispanic ethnicity					<.001
No	281 (61.1)	146 (97.3)	0 (0.0)	135 (89.4)	
Yes	173 (37.6)	4 (2.7)	157 (98.7)	12 (7.9)	
Race, N (%)					<.001
White	39 (8.5)	0 (0.0)	32 (20.1)	7 (4.6)	
Black	64 (13.9)	23 (15.3)	1 (0.6)	40 (26.5)	
American Indian or Alaskan Native	6 (1.3)	0 (0.0)	2 (1.3)	4 (2.6)	
Asian/Pacific Islander	15 (3.3)	0 (0.0)	0 (0.0)	15 (9.9)	
Other	139 (30.2)	0 (0.0)	113 (71.1)	26 (17.2)	
Caribbean Black	192 (41.7)	127 (84.7)	9 (5.7)	56 (37.1)	
Years living in US, N (%)					<.001
< 1 year	18 (3.9)	9 (6.0)	2 (1.3)	7 (4.6)	
1–10	110 (23.9)	46 (30.7)	30 (18.9)	34 (22.5)	
11–20	112 (24.3)	47 (31.3)	41 (25.8)	24 (15.9)	
>20	149 (32.4)	42 (28.0)	77 (48.4)	30 (19.9)	
Born in the US	66 (14.3)	6 (4.0)	7 (4.4)	53 (35.1)	
Marital status, N (%)					<.001
Married/living with partner	246 (53.5)	58 (38.7)	120 (75.5)	68 (45.0)	
Single	126 (27.4)	50 (33.3)	22 (13.8)	54 (35.8)	
Divorced/Separated	61 (13.3)	31 (20.7)	11 (6.9)	19 (12.6)	
Widowed	21 (4.6)	11 (7.3)	4 (2.5)	6 (4.0)	

		Survey language			
	Overall (n=460)	**Haitian Creole (n=150; 33%)**	**Spanish (n=159; 34%)**	**English (n=151; 33%)**	**p-value[1]**
Education, N (%)					<.001
Less than 7th grade	42 (9.1)	11 (7.3)	26 (16.4)	5 (3.3)	
Junior HS or partial HS	70 (15.2)	25 (16.7)	25 (15.7)	20 (13.2)	
High school/GED	139 (30.2)	40 (26.7)	60 (37.7)	39 (25.8)	
Partial college or vocational	122 (26.5)	40 (26.7)	34 (21.4)	48 (31.8)	
Standard college +	80 (17.4)	34 (22.7)	12 (7.5)	34 (22.5)	
Employment status, N (%)					<.001
Employed	245 (53.3)	80 (53.3)	86 (54.1)	79 (52.3)	
Disabled	31 (6.7)	8 (5.3)	11 (6.9)	12 (7.9)	
Homemaker	44 (9.6)	3 (2.0)	34 (21.4)	7 (4.6)	
Retired	48 (10.4)	22 (14.7)	18 (11.3)	8 (5.3)	
Unemployed	48 (10.4)	18 (12.0)	5 (3.1)	25 (16.6)	
Student	35 (7.6)	19 (12.7)	2 (1.3)	14 (9.3)	
Income, N (%)					0.003
<$10,000	78 (17.0)	14 (9.3)	31 (19.5)	33 (21.9)	
$10,000–$29,999	134 (29.1)	44 (29.3)	53 (33.3)	37 (24.5)	
$29,999–$49,999	110 (23.9)	38 (25.3)	43 (27.0)	29 (19.2)	
≥$50,000	31 (6.7)	8 (5.3)	5 (3.1)	18 (11.9)	
In general, what language(s) do you read and speak?					<.001
Only your native language	94 (20.5)	29 (19.3)	64 (40.8)	1 (0.7)	
More your native language than English	103 (22.5)	52 (34.7)	51 (32.5)	0 (0.0)	
Both Equally	75 (16.4)	28 (18.7)	36 (22.9)	11 (7.3)	
More English than your native language	57 (12.4)	40 (26.7)	0 (0.0)	17 (11.3)	
Only English	123 (26.9)	1 (0.7)	4 (2.5)	118 (78.1)	
What language(s) do you usually speak at home?					<.001
Only your native language	119 (26.0)	41 (27.3)	73 (46.5)	5 (3.3)	
More your native language than English	100 (21.8)	46 (30.7)	43 (27.4)	11 (7.3)	

		Survey language			
	Overall (n=460)	**Haitian Creole (n=150; 33%)**	**Spanish (n=159; 34%)**	**English (n=151; 33%)**	**p-value[1]**
Both Equally	76 (16.6)	31 (20.7)	36 (22.9)	9 (6.0)	
More English than your native language	31 (6.8)	24 (16.0)	0 (0.0)	7 (4.6)	
Only English	127 (27.7)	8 (5.3)	3 (1.9)	116 (76.8)	
In which language(s) do you usually think?					<.001
Only your native language	144 (31.4)	58 (38.7)	80 (51.0)	6 (4.0)	
More your native language than English	76 (16.6)	37 (24.7)	37 (23.6)	2 (1.3)	
Both Equally	77 (16.8)	32 (21.3)	31 (19.7)	14 (9.3)	
More English than your native language	25 (5.5)	17 (11.3)	2 (1.3)	6 (4.0)	
Only English	131 (28.6)	6 (4.0)	5 (3.2)	120 (79.5)	
What language(s) do you usually speak with your friends?					<.001
Only your native language	102 (22.3)	32 (21.3)	69 (43.9)	1 (0.7)	
More your native language than English	92 (20.1)	49 (32.7)	40 (25.5)	3 (2.0)	
Both Equally	93 (20.3)	42 (28.0)	42 (26.8)	9 (6.0)	
More English than your native language	38 (8.3)	23 (15.3)	2 (1.3)	13 (8.6)	
Only English	128 (27.9)	4 (2.7)	2 (1.3)	122 (80.8)	

[1] p-value from Chi-square test when categorical and Kruskal-Wallis test when continuous; calculated excluding missing data.

Table 2

Univariable associations with continuous PAM activation

	PAM Activation Level, N (%)					
	Level 1 (n=54; 12%)	**Level 2 (n=80; 18%)**	**Level 3 (n=143; 32%)**	**Level 4 (n=172; 38%)**	**PAM Activation, Mean (SD)**	**p-value[1]**
Age (years), Mean (SD)	43.3 (15.3)	46.2 (14.5)	49.1 (13.8)	48.9 (14.5)	--	0.115
Gender, N (%)						0.522
Male	24 (44.4)	27 (33.8)	58 (40.6)	74 (43.0)	65.0 (17.2)	
Female	30 (55.6)	53 (66.3)	85 (59.4)	98 (57.0)	64.0 (16.4)	
Hispanic ethnicity, N (%)						0.495
No	45 (83.3)	44 (55.0)	69 (48.3)	117 (68.4)	64.8 (17.4)	
Yes	9 (16.7)	36 (45.0)	74 (51.7)	54 (31.6)	63.7 (15.6)	
Race, N (%)						0.645
White	2 (3.7)	8 (10.0)	17 (11.9)	12 (7.0)	66.8 (19.3)	
Black	12 (22.2)	7 (8.8)	14 (9.8)	29 (16.9)	65.6 (18.6)	
American Indian or Alaskan Native	1 (1.9)	1 (1.3)	2 (1.4)	1 (0.6)	57.0 (12.0)	
Asian/Pacific Islander	3 (5.6)	2 (2.5)	3 (2.1)	7 (4.1)	68.5 (19.3)	
Other	6 (11.1)	28 (35.0)	62 (43.4)	43 (25.0)	63.9 (15.6)	
Caribbean Black	30 (55.6)	34 (42.5)	45 (31.5)	80 (46.5)	63.8 (16.3)	
Years living in US, N (%)						0.005
< 1 year	4 (7.4)	5 (6.3)	4 (2.8)	4 (2.3)	56.6 (12.8)	
1–10	17 (31.5)	25 (31.3)	32 (22.4)	35 (20.3)	61.3 (15.0)	
11–20	13 (24.1)	26 (32.5)	29 (20.3)	44 (25.6)	64.0 (17.1)	
>20	11 (20.4)	19 (23.8)	62 (43.4)	56 (32.6)	65.9 (16.2)	
Born in US	9 (16.7)	5 (6.3)	16 (11.2)	33 (19.2)	69.5 (19.4)	
Marital status, N (%)						0.307
Married/living with partner	24 (44.4)	41 (51.3)	85 (59.4)	94 (54.7)	65.5 (17.2)	
Single	19 (35.2)	23 (28.8)	34 (23.8)	47 (27.3)	62.7 (15.8)	
Divorced/Separated	9 (16.7)	13 (16.3)	18 (12.6)	21 (12.2)	62.7 (16.5)	
Widowed	2 (3.7)	3 (3.8)	6 (4.2)	10 (5.8)	67.2 (16.6)	

	PAM Activation Level, N (%)					
	Level 1 (n=54; 12%)	**Level 2 (n=80; 18%)**	**Level 3 (n=143; 32%)**	**Level 4 (n=172; 38%)**	**PAM Activation, Mean (SD)**	**p-value[1]**
Education, N (%)						0.268
Less than 7th grade	6 (11.1)	10 (12.7)	15 (10.5)	11 (6.4)	60.2 (16.2)	
Junior HS or partial HS	6 (11.1)	10 (12.7)	23 (16.1)	30 (17.4)	66.5 (16.8)	
High school/GED	21 (38.9)	25 (31.6)	43 (30.1)	49 (28.5)	63.4 (17.8)	
Partial college or vocational	15 (27.8)	21 (26.6)	39 (27.3)	46 (26.7)	64.9 (16.0)	
Standard college +	6 (11.1)	13 (16.5)	23 (16.1)	36 (20.9)	66.2 (16.0)	
Employment status, N (%)						0.032
Employed	32 (59.3)	39 (49.4)	72 (50.7)	100 (58.5)	65.3 (17.7)	
Disabled	6 (11.1)	5 (6.3)	6 (4.2)	13 (7.6)	64.5 (20.2)	
Homemaker	3 (5.6)	8 (10.1)	22 (15.5)	11 (6.4)	61.7 (13.0)	
Retired	0 (0.0)	8 (10.1)	17 (12.0)	23 (13.5)	68.7 (14.6)	
Unemployed	4 (7.4)	10 (12.7)	17 (12.0)	16 (9.4)	63.8 (13.9)	
Student	9 (16.7)	9 (11.4)	8 (5.6)	8 (4.7)	56.8 (15.4)	
Income, N (%)						0.613
<$10,000	8 (18.2)	16 (27.6)	31 (27.4)	23 (17.0)	62.7 (15.3)	
$10,000–$29,999	18 (40.9)	17 (29.3)	45 (39.8)	53 (39.3)	65.6 (18.1)	
$29,999–$49,999	13 (29.5)	22 (37.9)	30 (26.5)	43 (31.9)	65.5 (18.9)	
≥$50,000	5 (11.4)	3 (5.2)	7 (6.2)	16 (11.9)	66.6 (17.4)	
Survey language, N (%)						<.001
Haitian Creole	35 (64.8)	28 (35.0)	31 (21.7)	53 (30.8)	60.8 (16.8)	
Spanish	7 (13.0)	32 (40.0)	73 (51.0)	45 (26.2)	63.5 (15.2)	
English	12 (22.2)	20 (25.0)	39 (27.3)	74 (43.0)	69.2 (17.2)	
In general, what language(s) do you read and speak?						<.001
Only your native language	14 (25.9)	21 (26.6)	39 (27.3)	19 (11.2)	58.1 (13.2)	
More your native language than English	14 (25.9)	18 (22.8)	30 (21.0)	39 (22.9)	64.1 (17.5)	
Both Equally	8 (14.8)	14 (17.7)	24 (16.8)	29 (17.1)	65.2 (18.1)	
More English than your native language	11 (20.4)	13 (16.5)	12 (8.4)	21 (12.4)	63.0 (16.2)	
Only English	7 (13.0)	13 (16.5)	38 (26.6)	62 (36.5)	69.9 (16.4)	

	PAM Activation Level, N (%)					
	Level 1 (n=54; 12%)	**Level 2 (n=80; 18%)**	**Level 3 (n=143; 32%)**	**Level 4 (n=172; 38%)**	**PAM Activation, Mean (SD)**	**p-value[1]**
What language(s) do you usually speak at home?						<.001
Only your native language	17 (31.5)	28 (35.0)	42 (29.4)	29 (17.1)	59.4 (14.7)	
More your native language than English	15 (27.8)	20 (25.0)	33 (23.1)	32 (18.8)	62.6 (16.8)	
Both Equally	6 (11.1)	16 (20.0)	27 (18.9)	27 (15.9)	63.5 (15.7)	
More English than your native language	9 (16.7)	1 (1.3)	6 (4.2)	15 (8.8)	66.3 (19.3)	
Only English	7 (13.0)	15 (18.8)	35 (24.5)	67 (39.4)	70.7 (16.7)	
In which language(s) do you usually think?						<.001
Only your native language	22 (40.7)	33 (41.3)	51 (35.7)	35 (20.6)	59.1 (14.2)	
More your native language than English	7 (13.0)	10 (12.5)	29 (20.3)	30 (17.6)	67.3 (17.8)	
Both Equally	13 (24.1)	19 (23.8)	21 (14.7)	24 (14.1)	61.3 (17.2)	
More English than your native language	4 (7.4)	5 (6.3)	4 (2.8)	12 (7.1)	64.8 (16.4)	
Only English	8 (14.8)	13 (16.3)	38 (26.6)	69 (40.6)	70.2 (16.5)	
What language(s) do you usually speak with your friends?						<.001
Only your native language	15 (27.8)	23 (28.8)	39 (27.3)	23 (13.5)	58.9 (14.2)	
More your native language than English	12 (22.2)	16 (20.0)	31 (21.7)	33 (19.4)	64.5 (17.2)	
Both Equally	10 (18.5)	22 (27.5)	27 (18.9)	34 (20.0)	62.7 (16.3)	
More English than your native language	10 (18.5)	4 (5.0)	11 (7.7)	12 (7.1)	62.1 (17.0)	
Only English	7 (13.0)	15 (18.8)	35 (24.5)	68 (40.0)	70.7 (16.8)	

[1] p-value from regression when continuous and ANOVA when categorical.

Table 3

Multivariable ANOVA for associations with continuous PAM activation

	Parameter estimate	Standard error	Standardized parameter estimate	p-value
Years living in US				0.181
Born in US	Ref	Ref	Ref	
< 1 year	−8.39	4.55	−0.10	
1–10	−4.26	2.76	−0.11	
11–20	−1.68	2.80	−0.04	
>20	−0.60	2.72	−0.02	
Employment status				0.046
Employed	Ref	Ref	Ref	
Disabled	−2.26	3.17	−0.03	
Homemaker	−3.05	2.76	−0.05	
Retired	3.85	2.68	0.07	
Unemployed	−2.57	2.63	−0.05	
Student	−7.59	3.10	−0.12	
Survey language				<.001
English	Ref	Ref	Ref	
Haitian Creole	−8.33	2.07	−0.23	
Spanish	−6.68	2.13	−0.19	