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Brave New World: Mental Health Experiences of Puerto Ricans, Immigrant Latinos, and Brazilians in Massachusetts

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Depression and anxiety are of the most commonly occurring mental health disorders in the United States. Despite a variety of efficacious interventions for depression and anxiety, it is clear that ethnic minorities experience mental health care disparities in their access to mental health services and the quality of treatment they receive. Research indicates that Latino heterogeneity impacts access to depression and anxiety treatment. In addition, Brazilians are becoming an increasingly visible minority within the United States and are often depicted as Latinos. The current study sought to understand the role of acculturation and stigma in mental health symptom endorsement and treatment seeking among Puerto Ricans, immigrant Latinos, and Brazilians. A total of 250 self-identified Latinos and Brazilians were interviewed about their mental health symptom and treatment experience, acculturation, and stigma toward mental illness. Results indicated considerable variability across the three groups, with Puerto Ricans endorsing higher rates of depression and anxiety, as well as higher rates of treatment seeking, than either the immigrant Latinos or the Brazilians. Acculturation played a differential role in the endorsement of anxiety treatment seeking for Brazilians. Finally, although the three groups differed in the extent to which they experienced stigma about mental health issues, stigma did not predict symptom endorsement or treatment-seeking behavior for any of the three groups. These findings underscore the importance of attending to both between-groups and within-group differences in the mental health and mental health treatment experiences of different ethnic groups.

Keywords: acculturation, community-based participatory research, mental health service use, Latinos, Brazilians

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Depression and anxiety are the most commonly occurring mental health disorders in the United States, with lifetime prevalence rates ranging as high as 17.1% and 22.4%, respectively (Cassano & Fava, 2002; Kessler, Chiu, Demler, & Walters, 2005). Although there exist a variety of efficacious psychosocial and pharmacological interventions for both depression and anxiety (e.g., Blanco, Raza, Schneier, & Liebowitz, 2003), it is clear that these interventions are not reaching everyone in need. In particular, ethnic minorities in the United States have well-documented mental health care disparities in their access to mental health services and the quality of treatment they receive (Alegría, Chatterji, et al., 2008; U.S. Department of Health and Human Services, 2001). Researchers have attributed these mental health care disparities for ethnic minorities to a variety of factors, including factors at the community level (e.g., dearth of mental health services in particular communities), systemic level (e.g., lack of insurance, inability to pay), provider level (e.g., lack of cultural competency), and the patient level (e.g., mental health stigmatization). Unfortunately, the implications from these research findings have not found their way to practical, logistical health care system changes in local communities with specific clinical populations and needs.

Community-based participatory research (CBPR) is one way that national-level knowledge can be better integrated with the local clinical needs of specific communities. CBPR is an action research paradigm that prioritizes a partnership approach between academic researchers and community members with the goal of understanding community issues (Green et al., 1995; Lantz, Viruell-Fuentes, Israel, Softley, & Guzman, 2001). This partnership approach attempts to give equal weight to academic research expertise and the lived experiences of the community (Israel, Schulz, Parker, & Becker, 1998). As a result of actively engaging and fostering respectful research collaborations between the community and research organizations, the CBPR approach is particularly well positioned to promulgate a mutually empowering process that addresses social inequalities (e.g., Cardemil et al., 2007; Tajik, Galvão, & Siqueira, 2010; Rhodes, Malow, & Jolly, 2010).

In the present article, we describe the Framingham Mental Health and Substance Abuse Health Disparities Project, henceforth, the Framingham Disparities Project (FDP). The FDP was a CBPR project that investigated the mental health experiences and mental health care needs of a sample of Puerto Ricans, immigrant Latinos, and Brazilians in the Metro West area of Massachusetts. The FDP provides a good example of how community organizations can use CBPR methodology in an ongoing, iterative manner that builds on earlier local CBPR efforts. In addition, we will show through the FDP how CBPR efforts can also address novel research questions that extend our knowledge base about health care disparities for vulnerable populations.

Importance of Local Needs Assessment: The Case of Framingham

The FDP emerged from an earlier CBPR effort spearheaded by several community organizations from the city of Worcester, Massachusetts (see Cardemil et al., 2007). Like its predecessor in Worcester, the FDP represented a collaboration between the Massachusetts Department of Mental Health and various community organizations and health centers. Together, these organizations had the goal of understanding and addressing the mental health care disparities in their local community, and so constructed a community partnership that was based on its specific needs and the needs of its community. One particular community need recognized by the FDP team members was that the growing immigrant population in Framingham included not just Latinos, but also a large and understudied Brazilian community. The FDP team noted that for both Latinos and Brazilians the growth of these communities had not been commensurate with the mental health services that were available to them. Thus, one primary aim of the FDP was to increase the community's understanding of the mental health experiences and issues faced by Latinos and Brazilians.

Latinos and Brazilians: A Tale of Multiple Communities

The FDP is in a particularly propitious place to ask questions about the mental health experiences of Latinos and Brazilians. With regard to Latinos, national statistics have indicated that they are the largest and fastest-growing ethnic minority population in the United States: Between 2000 and 2010, the Latino population grew 43%, increasing the total population of Latinos in the United States from 13–16% (U.S. Census Bureau, 2011a). An increase in the Latino population is also found at the local level, with recent census data indicating that the Latino population in Massachusetts grew 30% from 2000–2010, and now is 8.5% of the overall Massachusetts population (Granberry & Torres, 2010). This growth rate in the Latino population in Massachusetts has been fueled by immigration from a variety of locations, with the greatest increases coming from Central American countries (Granberry, 2011). The town of Framingham has a large and diverse population, with Latino individuals accounting for 13.5% of the population (Ennis, Ríos-Vargas, & Albert, 2011).

Taking into consideration the variability among Latinos is important, because many researchers have documented several substantive differences across subgroups of Latinos. One important construct on which Latinos differ is acculturation—the degree to which Latinos have adopted the attitudes, values, and behaviors of non-Hispanic Whites or mainstream U.S. culture (Berry, 2001; Hovey & Magaña, 2002). Variables used to operationalize acculturation include language use, birthplace, length of time in the United States, attitudes toward family, gender roles in the family, social interaction with non-Hispanics, and cultural values (Cabassa, 2003). Research on acculturation has found associations with mental health outcomes, as researchers have tended to find that less acculturated Latinos have a decreased risk for a variety of disorders than more acculturated Latinos (Breslau, Javaras, Blacker, Murphy, & Normand, 2008), a pattern that has been most evident among Mexican-descent Latinos (Farley, Galvez, Dickinson, & Diaz Perez, 2005). These findings have been termed the *healthy immigrant paradox*, which refers to the idea that, despite stressful experiences, foreign nativity might be a protective factor against psychological disorders (Alegría, Canino, et al., 2008).

In addition to acculturation, differences in national origin have also been shown to be related to mental health outcomes among Latinos. In particular, researchers have found Puerto Ricans to be at elevated risk for mood disorders, substance abuse, and suicidality than other Latino groups (Alegría et al., 2007). Moreover, researchers have generally not replicated the healthy immigrant paradox among Puerto Rican populations and have speculated that

this differential pattern may be due, in part, to the fact that Puerto Ricans have a different acculturative and immigration experience because they are U.S. citizens (Alegría, Canino, et al., 2008). Taken together, the data support the notion that overgeneralizations fostered by the use of the term *Latino* could contribute to health care disparities by ignoring important subgroup differences that might be associated with different community needs (Alegría, Canino, et al., 2008).

In the case of Brazilian immigrants, less is known (Lima & Siqueira, 2007), although population estimates have suggested that the numbers are increasing rapidly. For example, data from the U.S. Census Bureau's American Community Survey have shown that from 2007–2011 the U.S. Brazilian population increased by 7.4% (U.S. Census Bureau, 2007, 2011b). Following a similar pattern, from 2009–2011, Massachusetts residents with Brazilian ancestry had a growth rate of 7.7% (U.S. Census Bureau, 2009, 2011b). Immigration data from 2000–2003 has indicated that Brazilians have accounted for 19% of all new immigrants in Massachusetts and have become the fifth largest immigrant group in Massachusetts. Moreover, Framingham is one of three areas in Massachusetts with the largest concentration of Brazilians (Lima & Siqueira, 2007). Given the limited research that has explored the health and mental health experiences of the Brazilian community, Brazilians have sometimes been described as an "invisible minority" (Margolis, 1998). Indeed, there is currently no consensus on how to classify individuals of Brazilian origin because the term Latino is often used to refer to anyone of Latin American descent, including Brazilians (Marrow, 2003). The classification of Brazilians as members of the Latino community stems primarily from the facts that the two groups share similar geographic national origins (South America) and have similar romance language ancestry (Portuguese). In support of this notion, a few studies have found that a large portion of the Brazilian community is undocumented and faces the same hardships as undocumented Latino immigrants (e.g., Lima & Siqueira, 2007).

However, there are several good reasons to conceptualize Brazilians separately from Latinos. Some researchers have found that Brazilians may be more likely to identify with the labels Latino or Brazilian when they initially immigrate, but then subsequent generations tend to identify themselves as either Brazilian American or American (e.g., Marrow, 2003). Moreover, there are important linguistic, cultural, historical, and ethnic differences between Brazilians and Latinos. For example, many Brazilian immigrants emphasize the language differences that exist between themselves and Latino immigrants (Portuguese vs. Spanish), as well as cultural differences that resulted in part from a history of colonization by Portugal (as opposed to Spain) and a larger African influence than is found in many Latino cultures (which tend to have a greater Amerindian influence) (Lima & Siqueira, 2007).

The community representatives of the FDP team reported clinical experiences that were consistent with this literature. In particular, the FDP recognized problems with existing governmental ethnic categories, whereby Brazilians were considered to be Latinos and so counted as such in population estimates. Some community members of the FDP noted that this categorization has direct implications for the allocation of resources toward the support and provision of interpreter services (i.e., insufficient funds dedicated to Portuguese interpretation and translation), as well as a more general concern that Brazilian immigrants might have unique experiences that do not map perfectly to those of Latinos. The FDP thus aimed to increase its understanding of the mental health experiences and issues faced by Puerto Ricans, immigrant Latinos, and Brazilians, with an eye toward identifying both commonalities and differences among the three groups.

Stigma and Treatment Seeking

In addition to examining general patterns of help seeking among these three ethnic groups, the FDP team was also interested in understanding what might explain any differences among the three groups. Although it is evident that insurance rates and socioeconomic status have a strong influence on service-seeking patterns, differences in service utilization still exist across ethnic groups when controlling for economic factors (Padgett, Patrick, Burns, & Schlesinger, 1994). One variable that may play an important role in mental health service seeking is *stigma*, the negative societal attitudes and opinions toward mental illness or the mentally ill. Stigma is a formidable barrier that stops much needed care from being accessed, and is associated with willingness of an individual to seek and use counseling services (Alvidrez, 1999; Alvidrez & Azocar, 1999; Nadeem et al., 2007). Although we are not aware of any research that has examined stigmatization of mental health illness among Brazilians, stigma appears to be quite salient for Latinos (Nadeem et al., 2007; Van Hook, 1999), with many Latinos perceiving mental health patients as dangerous and seeing stigma as a deterrent to treatment seeking (Nadeem et al., 2007) and treatment adherence (Interian, Martinez, Guarnaccia, Vega, & Escobar, 2007). Thus, the FDP decided to assess the extent to which stigma might be related to help seeking in this study.

The Current Study

The FDP designed the needs assessment to locally explore these issues among the two most salient immigrant groups in the area: Latinos and Brazilians. The current study further made the distinction between immigrant Latinos (persons coming from Spanish-speaking Latin American countries) and Puerto Ricans, given the literature highlighting the important differences between Puerto Ricans and other immigrant Latino groups. Although there are valid reasons to avoid grouping the non-Puerto Rican Latinos into one group, our sample size precluded an analysis of multiple countries of origin.

This study had several broad research questions. First, were there differences in rates of endorsement of depression and anxiety symptoms across the three ethnic groups? Relatedly, what role did acculturation play in the prediction of depression and anxiety symptoms? Second, were there differences in rates of help seeking for depression and anxiety across the ethnic groups? Again, what role did acculturation play in the prediction of treatment seeking for depression and anxiety? Third, what role did stigma play in the treatment seeking for anxiety and depression?

Method

Participants

We recruited participants from a variety of locations, including mental health community-based organizations, general medical

clinics, churches, laundromats, coffee shops, and train stations. In addition, participants often referred other participants. Recruitment location was not associated with any of the outcome measures. A total of 50 Puerto Rican, 75 immigrant Latino, and 125 Brazilian participants were recruited and successfully interviewed, for a total of 250 participants in the study. Inclusion criteria were intentionally broad: any individual, over the age of 18, who lived in Framingham and self-identified as either Latino or Brazilian. The demographic profile of the sample is presented in Table 1.

Procedure

After obtaining informed consent, participants completed an approximately hour-long interview that gathered demographic information, history of mental health and substance abuse symptoms, and history of and experiences with mental health and substance abuse services. The assessment also asked about acculturation status and stigma about mental illness. Recruitment was conducted by a group of 10 trained interviewers, five of whom were bilingual in Spanish and English, four of whom were bilingual in Portuguese and English, and one who was trilingual (Spanish, Portuguese, and English). Interviewers participated in a day-long training workshop, during which they learned how to administer the assessment tool in a culturally competent manner. Trained interviewers conducted the assessment interviews in the participant's preferred language (English = 34.4%, Spanish = 31.2%, Portuguese = 34.4%); participants were paid $25 after completion of interview assessment.

Measures

All measures were administered in the context of a structured interview. The FDP team translated the structured interview into both Spanish and Portuguese, back-translated it into English, and

Table 1
Demographic Profile of Community Sample by Ethnic Group (Puerto Ricans, Immigrant Latinos, and Brazilians)

Demographics	Puerto Ricans % (*n*)	Immigrant Latinos % (*n*)	Brazilians % (*n*)	χ^2
Sex				
Male	38.8 (19)	64.0 (48)	28.5 (35)	24.44***
Female	61.2 (30)	36.0 (27)	71.5 (88)	
Education				
> High school degree	22.4 (11)	47.3 (35)	33.1 (40)	9.56*
High school degree/GED	44.9 (22)	25.7 (19)	39.7 (48)	
< Higher than high school	32.7 (16)	27.0 (20)	27.3 (33)	
Employed	53.1 (26)	57.3 (43)	84.6 (104)	24.85**
Medical insurance (overall)	85.4 (41)	62.7 (47)	65.0 (80)	8.20*
Private	28.6 (14)	22.7 (17)	15.3 (19)	
Medicaid	53.1 (26)	25.3 (19)	10.5 (13)	
Free care	—	10.7 (8)	24.2 (30)	
Commonwealth	4.1 (2)	4.0 (3)	4.8 (6)	
Other		—	10.5 (13)	
Country of origin				
United States	26.5 (13)			
Puerto Rico	73.5 (36)			
Mexico		2.7 (2)		
Guatemala		16.0 (12)		
Dominican Republic		24.0 (18)		
El Salvador		16.0 (12)		
Ecuador		10.7 (8)		
Peru		9.3 (7)		
Chile		1.3 (1)		
Colombia		2.7 (2)		
Honduras		5.3 (4)		
Bolivia		12.0 (9)		
Brazil			100% (125)	
Means	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*F*
Age (years)	38.63 (13.72)	33.22 (12.04)	37.23 (11.01)	3.80*
Years in United States	26.12 (12.27)	10.11 (7.51)	8.86 (4.92)	12.36**
BAS acculturation	2.39 (1.23)	1.75 (0.10)	1.61 (0.61)	16.85**
Average yearly income	$28,886 ($18,347)	$38,741 ($12,345)	$34,245 ($27,226)	0.80
Composite acculturation	0.91 (0.93)	−0.22 (0.69)	−0.28 (0.46)	57.70**
Stigma	3.02 (0.48)[a,b]	2.64 (0.39)	2.77 (0.39)	12.94**

Note. GED = General Educational Development; BAS = Brief Acculturation Scale.
[a] Pairwise comparisons indicate significantly different from immigrant Latinos. [b] Pairwise comparisons indicate significantly different from Brazilians.
* $p < .05$. ** $p < .01$. *** $p < .001$.

then presented it to three focus groups for validity checks. The FDP team then incorporated all suggested changes to the language and content of the structured interview into the final interview. In addition, measures used to examine the mental health needs of Latinos and Brazilian in Framingham were included as a part of the structured interview.

Demographics. All participants provided demographic information, including sex, country of birth, parent's country of birth, marital status, medical insurance status, employment, age, years in the United States., and household yearly income.

History of mental health and substance abuse status and treatment. This information was gathered from a measure that was constructed for the current study. It was based on the survey instrument from the Latino Mental Health Program (Cardemil et al., 2007). Focus groups composed of Latino and Brazilian community residents reviewed the assessment instrument in English, Spanish, and Portuguese. During the focus groups, participants assessed the instrument in terms of accuracy of language, appropriate use of culturally relevant terminology, and inclusion of community-relevant questions. The feedback gathered from the focus groups was incorporated into the final version of the survey tool.

The final instrument asked participants to report their experiences with several psychological symptoms that are central to each of the disorders included in the measure in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (American Psychiatric Association, 1994): depression, anxiety, panic attacks, posttraumatic stress disorder, and alcohol and substance abuse. Due to concerns about participant burden, the FDP team limited the questions about symptoms to single items. Following each of the symptom questions were questions about the functional impairment caused by the symptoms and treatment seeking for those symptoms. Sample items regarding depression include the following: "For a period of at least two weeks, have you felt sad, discouraged, or depressed for the most of the day such that it caused you significant problems either at your work, home, or your relations with others?" If respondents answered "Yes" then they were asked: "Did you receive treatment for these symptoms?" Follow-up questions probed about the type of treatment received.

Stigma. To assess stigma, we used the Devaluation–Discrimination Scale (DDS; Link, Cullen, Struening, Shrout, & Dohrenwend, 1989). This scale is a widely used 12-item stigma measure that assesses the extent to which an individual believes that most people will devalue or discriminate against a person who seeks mental health care. Sample questions include: "Most people think less of a person who has been in a mental hospital." Asking respondents what "most people" think is intended to reduce the effect of social desirability on responses, giving them tacit permission to express highly stigmatizing attitudes. It is rated on a 4-point Likert scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The items are written so that anyone can respond to them, not just people who have a mental illness. In this study, the measure had good internal reliability (overall sample = 0.82; Puerto Ricans = 0.85, immigrant Latinos = 0.77, Brazilians = 0.83).

Acculturation. All participants completed a Brief Acculturation Scale (BAS; Norris, Ford, & Bova, 1996), a widely used four-item questionnaire that asks about the frequency of Spanish/English or Portuguese/English usage. Sample questions include: "I speak to my friends and family in. . ." with response options on a 5-point Likert scale (1 = *only in Spanish*, 2 = *mostly Spanish*, 3 = *both English and Spanish*, 4 = *mostly English*, and 5 = *only English*). In this study, the measure had good internal reliability for the overall sample (0.90), Puerto Ricans (0.92), immigrant Latinos (0.92), and Brazilians (0.76).

Although Norris et al. (1996) found that this four-item measure compared favorably with a more comprehensive measure of acculturation, it remains somewhat limited by its exclusive focus on language. To overcome this limitation, we created a composite acculturation score that combined participants' scores on the BAS with the length of time they had spent in the United States (obtained from the demographics measure). Previous researchers have utilized composite scores using time spent in the United States and language proficiency (e.g., Sánchez, Rice, Stein, Milburn, & Rotheram-Borus, 2010). In the current study, the correlation between acculturation and years in the United States ($r = .40$, $p < .001$) provided empirical support for our decision to create a composite acculturation score. To do so, we first standardized the two scores, added the standardized scores together, and then took their mean. This composite acculturation score ranged from −1.05 to 3.61, with a mean of −0.05 ($SD = 0.78$). As expected, the composite acculturation measure correlated with both the BAS ($r = .81$, $p < .001$) and years in the United States ($r = .86$, $p < .001$). We conducted all analyses twice, once with the BAS alone and once with the acculturation composite. In all cases, the results were substantively the same.

Data Analysis

Descriptive statistics were calculated for participants in each of the three cultural groups: Puerto Ricans, Latino immigrants, and Brazilians (see Table 1). We analyzed categorical data using chi-square tests. Continuous scales were analyzed using Pearson correlations and independent-sample *t* tests. We used logistic regressions to examine whether acculturation or stigma would be associated with endorsement of depression or anxiety, as well as help seeking for depression or anxiety. All analyses were conducted using IBM SPSS, Version 20.

Results

Preliminary Analyses

As Table 1 shows, there were significant differences in the distribution of men and women across the three groups, with the immigrant Latinos having a greater proportion of men ($n = 48$, 64%) than either the Puerto Ricans ($n = 19$, 38.8%) or the Brazilians ($n = 35$, 28.5%). There were no differences in the proportion of male and female participants between the Puerto Ricans and the Brazilians. The Puerto Ricans ($M = 38.63$ years, $SD = 13.72$) were also significantly older than the immigrant Latinos ($M = 33.22$ years, $SD = 12.04$), but not the Brazilians ($M = 37.23$ years, $SD = 11.01$).

As indicated by Table 1, level of education differed significantly across the three ethnic groups, with Puerto Ricans reporting a significantly greater percentage ($n = 22$, 44.9%) of participants who had a high school education. In addition, significantly more Puerto Ricans ($n = 41$, 85.4%) reported having health insurance

than did the immigrant Latinos ($n = 47$, 62.7%) and the Brazilians ($n = 80$, 65%). Puerto Ricans ($M = 2.39$, $SD = 1.23$) also endorsed significantly higher levels of acculturation than both the immigrant Latinos ($M = 1.75$, $SD = 0.10$) and Brazilians ($M = 1.61$, $SD = 0.61$). Additionally, Puerto Ricans ($M = 26.12$, $SD = 12.27$) reported more years spent in the United States than either immigrant Latinos ($M = 10.11$, $SD = 7.51$) or Brazilians ($M = 8.86$, $SD = 4.92$). Unsurprisingly, this pattern was replicated in the composite acculturation score, with the Puerto Ricans ($M = .91$, $SD = .93$) scoring higher than both the immigrant Latinos ($M = -.22$, $SD = .69$) and the Brazilians ($M = -.28$, $SD = .46$). Finally, the Puerto Ricans ($M = 3.00$ $SD = 0.49$) endorsed significantly higher levels of stigma than either the immigrant Latinos ($M = 2.63$, $SD = 0.39$) or the Brazilians ($M = 2.77$, $SD = 0.39$).

Given the differences across the three ethnic groups in gender, age, educational background, and medical insurance, a series of chi-square and independent *t* tests were run to understand their relationships with depression, anxiety, and treatment seeking. Chi-square analyses indicated that neither sex nor educational background was related to depression, anxiety, or treatment seeking (see Table 2). Age was significantly associated with treatment seeking; older participants were more likely to endorse treatment seeking for depression, $t(135) = 3.18$, $p = .002$. Our analyses also indicated that those with medical insurance were more likely to engage in treatment seeking for depression but not for anxiety (see Table 2). Five logistic regression models were conducted to assess associations with symptoms of depression, anxiety, and treatment seeking for depression and anxiety. For the logistic regressions, we therefore controlled for those covariates that were significantly associated with our dependent variables: age and medical insurance status.

First Aim: Were There Differences in Rates of Endorsement of Depression or Anxiety Symptoms Across the Three Ethnic Groups?

Chi-square analyses indicated that there were no significant differences in frequency of endorsement of depression among Puerto Ricans (66.7%), immigrant Latinos (56%), and Brazilians (51.2%; see Table 2). However, there were significant ethnic group differences in the frequency of endorsing anxiety. This overall difference in the endorsement of anxiety was due to a significant difference between the Puerto Ricans (64.6%) and both the Brazilians (44.4%) and immigrant Latinos (40.0%). There was no difference between the Brazilians and the immigrant Latinos in endorsement of anxiety symptoms.

We then conducted two hierarchical multivariate logistic regressions to examine whether the ethnic group differences persisted after including the covariates, as well as whether our acculturation composite was associated with the endorsement of depression and anxiety symptoms (see Table 3). We thus first entered the covariates (i.e., age and medical insurance status), followed by ethnic group, the acculturation composite, and then the interaction between ethnic group and the acculturation composite. With regard to depression, results from this analysis indicated that when controlling for age and medical insurance, ethnic group was not significantly associated with the endorsement of depression. In addition, neither the acculturation composite nor the interaction between the acculturation composite and ethnic group predicted endorsement of depression.

We repeated this analytic approach with anxiety. Results from the hierarchical logistic regression indicated that the ethnic group differences in endorsement of anxiety did persist after controlling for age and medical insurance status. However, there was no main effect for the composite acculturation score and there was no interaction between acculturation and ethnic group (see Table 3).

Second Aim: Were There Differences in Rates of Endorsement of Depression or Anxiety Treatment Seeking Across the Three Ethnic Groups?

To examine rates of treatment seeking, we limited these analyses to those individuals who had reported experiencing either depression or anxiety. Among those participants who reported seeking treatment for depression ($n = 138$), a chi-square analysis

Table 2
Depression, Anxiety Symptoms, and Help-Seeking Patterns for Community Sample by Control Variables and Ethnic Groups

Variables	Depression		Anxiety		Depression treatment		Anxiety treatment	
	% (*n*)	χ^2	% (*n*)	χ^2	% (*n*)	χ^2	% (*n*)	χ^2
Ethnic group		3.37		7.78*		10.59**		12.95**
Puerto Rican	66.7 (32)		64.6 (31)[a,b]		53.1 (17)[a,b]		54.8 (17)[a,b]	
Immigrant Latino	56.0 (42)		40.0 (30)		19.0 (8)		14.3 (4)	
Brazilians	51.2 (64)		44.4 (55)		30.8 (20)		25.0 (14)	
Sex		0.27		2.49		2.13		1.10
Male	39.9 (55)		36.2 (42)		31.1 (14)		28.6 (10)	
Female	60.1 (83)		63.8 (74)		68.9 (31)		71.4 (25)	
Education		1.38		2.56		3.81		0.30
Less than high school	32.1 (44)		(35)		26.5 (9)		25.0 (11)	
High school or GED	38.7 (53)		(44)		41.2 (14)		34.1 (15)	
More than high school	29.2 (40)		(36)		32.4 (11)		40.9(18)	
Medical insurance		0.27		0.01		5.01*		2.10
Yes	66.9 (91)		67.8 (78)		80.0 (36)		76.5 (26)	
No	33.1 (45)		32.25 (37)		20.0 (9)		23.5 (8)	

Note. GED = General Educational Development.
[a] Pairwise comparisons indicate significantly different from immigrant Latinos. [b] Pairwise comparisons indicate significantly different from Brazilians.
* $p < .05$. ** $p < .01$.

Table 3
Odds Ratios (and 95% Confidence Intervals) From Logistic Regression Analyses Predicting the Effects of Demographic Characteristics, Ethnicity, Acculturation, and Interaction of Ethnicity and Acculturation on the Likelihood of Depression, Anxiety, and Treatment Seeking

Steps	Depression symptoms	Anxiety symptoms	Depression help seeking	Anxiety help seeking
Step 1				
Age	0.99 [0.97, 1.01]	1.00 [0.98, 1.03]	1.05 [1.01, 1.09]**	1.02 [0.99, 1.07]*
Medical insurance	1.06 [0.60, 1.87]	1.01 [0.57, 1.77]	0.51 [0.21, 1.22]	0.82 [0.28, 2.41]
Step 2				
Puerto Rican	1.00	1.00	1.00	1.00
Immigrant Latino	0.61 [0.27, 1.40]	0.33 [0.15, 0.76]**	0.27 [0.09, 0.85]*	—
Brazilian	0.49 [0.23, 1.03]	0.40 [0.19, 0.84]*	0.37 [0.14, 0.97]*	0.29 [0.12, 0.81]*
Step 3				
Composite acculturation	1.01 [0.66, 1.54]	1.46 [0.94, 2.27]	1.35 [0.74, 2.44]	2.10 [0.94, 4.69]
Step 4				
Acculturation × Puerto Rican	1.00	1.00	1.00	1.00
Acculturation × Immigrant Latino	0.43 [0.15, 1.22]	0.76 [0.27, 2.14]	0.81 [0.20, 3.19]	—
Acculturation × Brazilian	0.62 [0.22, 1.85]	1.58 [0.52, 4.79]	1.85 [0.31, 8.62]	5.55 [1.06, 29.04]*

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

indicated that there were significant differences in the frequency of endorsing treatment seeking for depression across the three groups (see Table 2). Those who were Puerto Rican reported significantly higher rates of treatment seeking for depression (53.1%) than either the immigrant Latinos (19.0%) or Brazilians (30.8%; see Table 2).

Similarly, a chi-square analysis of only those participants who reported seeking treatment for anxiety ($n = 115$) also indicated that there were significant differences in the frequency of endorsing treatment seeking for anxiety across the three groups, $\chi^2(2, N = 115) = 12.95$, $p = .002$. Again, the Puerto Ricans (54.8%) reported significantly higher rates of treatment seeking for anxiety than both the Brazilians (25.0%) and the immigrant Latinos (14.3%). No differences were found in the endorsement of depression or anxiety treatment seeking between immigrant Latinos and Brazilians.

We again used hierarchical multivariate logistic regressions to examine the relationship between ethnic group, the acculturation composite, and their interaction in treatment seeking for depression, after controlling for age and medical insurance status (see Table 3). Results indicated that, after controlling for these covariates, ethnic group continued to predict treatment seeking for depression. However, neither the acculturation composite nor the interaction between the acculturation composite and ethnic group predicted treatment seeking for depression.

With regard to treatment seeking for anxiety, there were only four immigrant Latinos who reported treatment seeking for anxiety symptoms, and so we limited the analyses to the Puerto Rican and Brazilian participants. The hierarchical multivariate logistic regressions indicated that there was a main effect of ethnic group after controlling for the covariates, but not for the acculturation composite. However, the interaction of ethnic group and the acculturation composite was significant. Specifically, the more acculturated Brazilians (odds ratio = 5.55, 95% confidence interval [1.06, 29.04], were significantly more likely to endorse seeking treatment for anxiety than the acculturated Puerto Ricans. Probing the interaction indicated that acculturation was significantly associated with treatment seeking for Brazilians only ($b = 1.89$, $p = 2$; see Figure 1).

Third Aim: What Role Did Stigma Play in the Treatment Seeking for Anxiety and Depression?

To understand the role of stigma on help seeking for depression and anxiety across Puerto Ricans, immigrant Latinos, and Brazilians, we conducted two separate hierarchical multivariate logistic regressions. In neither case (i.e., treatment seeking for both depression and anxiety) did stigma emerge as a significant predictor. The interaction with the acculturation composite was also not significant.

Discussion

The FDP was a partnership among various community organizations that extended our knowledge base concerning the experiences with both symptoms of mental disorders and mental health treatment for Puerto Ricans, immigrant Latinos, and Brazilians. There are several important findings that emerged from the FDP that highlight the importance of attending to the variability within the Latino and Brazilian populations.

First, results indicated that the Puerto Rican participants reported higher rates of depression and anxiety symptoms than immigrant Latinos and Brazilians, although the difference in rates of depression symptoms was not significant when controlling for age and insurance status. However, the different rates of endorsement of anxiety symptoms still remained even after we controlled for age and insurance status. Although the current study is not an epidemiological survey and the results should be interpreted with caution, these findings generally mirror some previous research that has documented higher rates of depression and anxiety among Puerto Ricans living in the United States (e.g., Oquendo et al., 2001). Although it remains unclear why Puerto Ricans living in the United States have higher rates of mental health problems than other Latinos, researchers have suggested several possible explanations. Previous research has indicated that the relatively low socioeconomic status of Puerto Ricans could contribute to risk for worse mental health outcomes (Guarnaccia, Martinez, & Acosta, 2005). Our findings regarding depression symptoms are consistent

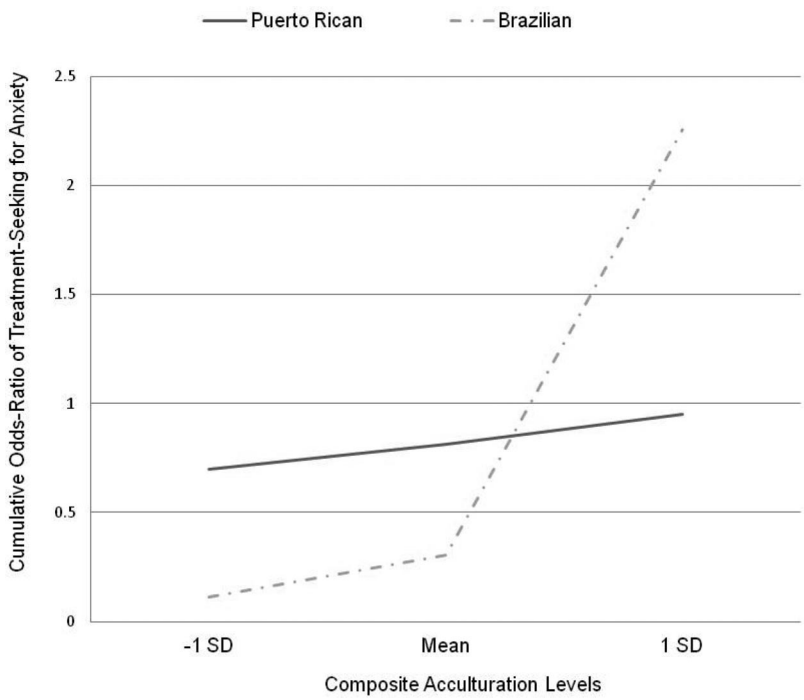

Figure 1. Graph representing the relationship between composite acculturation and ethnicity predicting help seeking for anxiety, presented in cumulative odds ratio.

with this interpretation, because the ethnic differences disappeared after controlling for insurance status, which is likely associated with socioeconomic status. This explanation does not explain the ethnic differences in anxiety symptom endorsement, however, which still persisted even after controlling for demographic variables. Another possible explanation that researchers have postulated for the relatively poor health outcomes for Puerto Ricans is related to the circular migration patterns afforded to Puerto Ricans due to their status as U.S. citizens. In particular, some studies have suggested that many Puerto Ricans come to the United States for treatment of medical problems (Guarnaccia et al., 2005). If that is the case, it might prove useful to examine the comorbidity between mental health problems and physical health problems, which might help researchers understand this pattern. Relatedly, it is possible that the more difficult immigration process to the United States for other Latinos could result in a selection bias for healthier immigrants prior to immigration (Sorlie, Backlund, Johnson, & Rogot, 1993).

A second notable finding is that the Brazilian pattern of symptom endorsement more closely resembled that of the immigrant Latinos than the Puerto Ricans. Previous studies that have examined immigrant communities other than Latinos have also found similar patterns of symptom endorsement by recent immigrants (Breslau et al., 2008). There are a host of reasons given by researchers to explain this pattern among recent immigrants, including selection bias, as described above. Additionally, researchers have speculated that many traditional cultures have cultural norms that might serve as protective factors, such as taboos on smoking and drinking for women (Sánchez et al., 2010), or more tightly knit family structure. It is plausible that the immigrant Brazilians benefit from a similar selection bias, and that their cultural norms provide some protection against mental health problems. However, more research is needed to further explore these possibilities.

Results from our study also showed that, among those participants who endorsed either depression or anxiety symptoms, Puerto Ricans reported higher rates of formal treatment seeking than immigrant Latinos and Brazilians, and that this relationship held after controlling for age and insurance status. Puerto Ricans had overall higher rates of treatment seeking for depression symptoms than immigrant Latinos and Brazilians and higher rates of treatment seeking for anxiety symptoms than Brazilians. Again, the data from the Brazilian participants more closely resembled those from the Latino immigrants. Our findings are similar to previous research that has documented higher rates of mental health treatment use among Puerto Ricans (Schur, Bernstein, & Berk, 1987; Vega & Lopez, 2001). It is plausible that an important factor is the similarity between the mental health systems in Puerto Rico and the United States. This similarity may make it easier for Puerto Ricans to connect with and subsequently navigate the system when they are in the United States (Treviño & Rendón, 1994). Although we controlled for insurance status, familiarity with the system is not something that we assessed and could be a future area of research. Another important factor may be the Puerto Ricans' status as U.S. citizens. Although we did not explicitly assess for documentation status among the immigrant Latinos and Brazilians, it is plausible that some of our participants were undocumented immigrants and so may have been less likely to make use of formal health services due to a fear of deportation.

Again, further research is needed to investigate these possibilities.

The fourth set of notable findings was the differential relationship between acculturation and treatment seeking for anxiety symptoms evidenced by the Brazilians and the Puerto Ricans. In particular, acculturation was significantly associated with increased treatment seeking only for the Brazilians, with the more acculturated Brazilians being more likely to endorse treatment seeking for symptoms of anxiety than the less acculturated Brazilians. The findings are similar to previous studies that have found various positive effects of acculturation, including an increased likelihood of seeking mental health treatment (Vega, Kolody, & Aguilar-Gaxiola, 2001; Guarnaccia et al., 2005; Breslau et al., 2008). Researchers have suggested that greater acculturation could lead to a reduction in instrumental barriers to access, such as higher insurance rates, more education, and greater ability to speak English (e.g., Vega & Lopez, 2001). Of note, the significant association between acculturation and treatment seeking for anxiety for the Brazilians resulted in the more acculturated Brazilians being more likely than the more acculturated Puerto Ricans to seek treatment for anxiety disorders. This finding is curious, because it runs counter to the general finding (in both this research study and the prior literature) that Puerto Ricans are more likely to use mental health services in this research. Indeed, the findings of the study suggest that there may be a decrease in treatment seeking for more acculturated Puerto Ricans. Previous studies have found that Puerto Ricans have reported disillusionment with their experiences in migrating to the United States (Cortés, 2003). This disillusionment may be related to a variety of factors, including perceived discrimination, lack of employment opportunities, and increased isolation from family (Cortés, 2003), and it might contribute to less willingness to use mental health services. If disillusionment is indeed a relevant factor, it is unclear why it was not also relevant for either the Brazilian or the immigrant Latino participants. Future research should explore more carefully the contextual nature of acculturation.

In addition, results from the study indicated that the three ethnic groups differed in the extent to which they experienced stigma about mental health issues, although stigma was not associated with treatment seeking for depression and anxiety. Previous research has found stigma to be related to both treatment seeking and treatment adherence for depression (Interian et al., 2007), and it is unclear why this relationship did not emerge in the current study. One possible explanation could be that prior research has compared Latinos with non-Latino Whites and Blacks (Nadeem et al., 2007), but has not examined stigma across Latino subgroups or with Brazilians. It is possible that the measure used to capture stigma might not have adequately captured the experience and expression of stigma among the participants in this study. The scale we used (DDS; Link et al., 1989) was a general measure for community and societal attitudes toward people with mental health issues. Moreover, Latino values such as *personalismo* might bias their responses and reflect more socially acceptable answers than what they actually hold. This measure relies heavily on enacted stigma (e.g., characterized by episodes of discrimination), as opposed to felt stigma (internalized negative view of being mentally ill), which would measure the feeling of stigma felt by people experiencing mental health problems and place respondents in the position of having to "judge" people experiencing mental health problems. Although the results of our study found no connection, perhaps future studies are needed to explore the ways in which Latinos experience stigma, both from an enacted and a felt perspective; doing so would help us understand its affect in mental health disparities.

Limitations and Strengths

There are several limitations to this study that should be noted. First, we used a sample of convenience; thus, our sampling biases are unknown. Although we believe that we have accurately described the specific local needs and mental health experiences of community members in Framingham, the generalizability of our findings is limited. Second, FDP's tool to assess history of mental health experiences and treatment seeking was formatted more as a symptoms checklist, not a clinical interview. A clinical interview would have allowed us to more accurately assess current and lifetime prevalence of clinical depression and anxiety and more accurately compare them with national levels. Third, the "immigrant Latino" group is a composite of participants from many different Latin American countries. Although the limited number of participants made it impossible to differentiate by national group, it is important to recognize the unique experience of each national group. Fourth, our assessment of acculturation was a composite score comprised of the BAS, a four-item language-based measure, and years in the United States; this composite score did not reflect variations in cultural values. We used the measure due to the limited space in our assessment protocol, and although previous research has shown that language is a high indicator of acculturation (Norris et al., 1996), it was simply not possible for our measure to capture the unique and complex acculturative experience of the community sample in Framingham. Clearly, a multilayered assessment of the acculturative experience would provide a better understanding of the interaction of acculturation and health outcomes. Fifth, we used a cross-sectional design for the CBPR, due to its ease of implementation. However, a longitudinal assessment would allow us understand the effects acculturation on symptom endorsement and treatment seeking over time.

Finally, one important limitation is our reliance on ethnic group labels (i.e., Brazilians, Puerto Ricans, and immigrant Latinos) to reflect individual identity and behavior. The use of ethnic group labels relies on assumptions that the underlying psychological variables do in fact map directly to the superordinate group category. This may not be true, and there are likely important within-group differences that are obfuscated by this approach. For example, there has been recent attention to the intersection between race and ethnicity among Latinos (Breland-Noble, 2013). It is plausible that some unmeasured variables in this study, like skin tone or color, play important roles in how individuals self-identify. These questions could be better investigated with future research that probes below the ethnic group category level.

Despite these limitations, there are several strengths to this study that should be noted. First, the CBPR methodology we used in this study helped build connections between agencies,

developed deeper understanding for community consumers' needs, and outlined concrete responses to those needs. As a result of the needs assessment, community organizations were able to integrate suggestions and outreach to key community centers. The community organizations in the FDP were able to create information sessions about signs and symptoms of common mental health conditions, in addition to providing information about services provided in Framingham. In particular, the CBPR approach led to a focus on the diversity of the "Latino" population in Framingham, such that important differences were found among Brazilians, Puerto Ricans, and immigrant Latinos, and how acculturation might operate differently for these groups. By focusing our lens to reflect the different ways in which each of these community groups search for information about health and mental health services (i.e., Puerto Ricans used the Internet and their churches, immigrant Latinos listened to the Spanish radio station, and Brazilians used the Portuguese television station), community providers were able to target these outreach and dissemination of information. Second, this is the first study of which we are aware that explores acculturation and mental health treatment seeking for Brazilians. Although more research is needed to replicate these findings, results from this study suggest that Brazilian experiences with mental disorders and the mental health system more closely resembles that of immigrant Latinos than Puerto Ricans.

Conclusion

The FDP has provided a good example of how CBPR can shed light on the mental health care disparities faced by vulnerable communities. The integration of national-level theory of information to particular communities can assure that mental health care disparities are accurately identified and, thus, can inform the adaptation of mental health interventions to those specific needs. The FDP was constructed not just to explore and understand Latinos experience with mental health services in Framingham, but also to acquire information that can be helpful in addressing mental health disparities for Brazilians, a growing and relatively understudied population. Although this is beyond our scope in this article, it should be noted that the FDP's work continues to be used in the Framingham community. Community members have used information from the needs assessment to efficiently target community organizations that have a broad base of participants and to disseminate knowledge about mental health and the availability of treatment services. Taken together, the findings of the current study highlight the importance of exploring and understanding the acculturative experiences of Latinos, while creating collaborations among various community organizations that can empower these agencies to understand and address better the mental health disparities within their community.

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