8-2023

Enhancing Depression Screening and Treatment for Latinxs Residing in the U.S.

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Enhancing Depression Screening and Treatment for Latinxs Residing in the U.S.

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy in Psychology

by

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August 2023
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Abstract

Introduction: In the U.S., Latinxs with Spanish as their preferred language encounter two prominent structural barriers impacting access to treatment for major depressive disorder (MDD). The first is that MDD symptoms commonly go undetected in Latinxs with Spanish compared to English as their preferred language. This might be perhaps because commonly used MDD screeners lack somatic symptom survey items culturally specific in how MDD may present among Latinxs with Spanish as their preferred language. The second structural barrier is that treatment access and completion rates are lower in Spanish-speaking than English-speaking Latinxs, perhaps due to treatments lacking the structure and approaches favored by Spanish-speakers. **Purpose:** This study had two aims (1) Examining whether the sensitivity and specificity of the Patient Health Questionnaire (PHQ-9) could be enhanced by including a modified version of the Brief Symptom Inventiory-18 (BSI-18) somatic items; and (2) better understanding preferences for MDD treatment across linguistic groups. Together, these aims can potentially improve the recognition and treatment of depression in a largely underserved population. **Design and Method:** Participants were 50 Latinx adults who completed online self-report measures and a virtual MDD structured diagnostic and qualitative interview about their preferences for MDD treatment. **Analytic Approach:** Chi-square analyses were used to determine similarities in PHQ-9 responses between the Spanish and English-speaking subsamples. The area under the curve analyses (AUC) helped determine the cut-off in which the PHQ-9 best detected MDD in Spanish-speaking and English-speaking Latinxs and whether sensitivity and specificity improved when the somatic items were added to the screener. Thematic analyses summarized depression treatment preferences. **Results**: English-speaking participants endorsed more symptoms of MDD than Spanish-speaking Latinxs. Regardless of

language preference, Latinx participants met diagnostic criteria for MDD according to the MDD MINI more often than on the PHQ-9 alone. The cut-off points for the PHQ-9, according to the AUC analyses, were substantially lower than the recommended cut-off. Adding the modified somatic items of the BSI-18 to the PHQ-9 did not increase the sensitivity and specificity of the PHQ-9. Qualitative interviews juxtapose differences in the description of depression based on language groups. Spanish- speakers focused on relational ways depression impacts a sense of community connectedness. English-speakers focused on debilitating individual experiences. Both language groups endorsed preferences for therapists versed in cultural considerations. Preferences for treatment placed counseling above medication and in-person above telehealth. **Conclusions:** Adding the modified somatic items of the BSI-18 to the PHQ-9 did not increase the sensitivity and specificity of the PHQ-9. Future work should investigate whether adding relationship quality questions should be included in depression screeners.

Keywords: depression, disparities, Latinx, screening, mental health, treatment preference, patient perspective

Acknowledgments

This dissertation reflects my longstanding interest and dedication to Latinx mental health. I want to highlight my academic mentor and dissertation chair, Dr. Ana J. Bridges, who helped nourish my ideas and grow my knowledge of statistical analysis, research design, and clinical practice. I would also like to thank my dissertation advisors, Drs. Lindsay S. Ham, and Matt R. Judah, for their support and thoughtful feedback on this project. Additionally, I would like to thank Kristin Fite, who helped me with data collection. I thank the National Latinx Psychological Association's 2021 Cynthia de las Fuentes Dissertation Award for helping fund my dissertation project.

Also, I would like to thank my family, community, and other research mentors who have supported me. I want to thank my mother, Maria Esperanza Valdez Acosta, for her continual encouragement in my academic journey. I want to thank my partner Roger and my sister Sharon who have strongly cheered my studies. I thank my research advisors at my pre-doctoral internship training site for their support. I want to thank my undergraduate mentor, who inspired me to enter the clinical psychology field. Importantly, I want to thank the many participants who spent an hour of their time sharing their perspectives with me. Additionally, I thank community organizations for helping spread the word about my dissertation. This project is for all mentioned above, and I hope it makes a difference in Latinx mental health.

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Introduction

Enhancing Depression Screening and Treatment for Latinxs Residing in the U.S.

Increased options for mental health care do not necessarily translate into increased access to care. Major depressive disorder (MDD) as we know it was introduced as a mental health diagnosis when included in the *Diagnostic and Statistical Manual of Mental Disorders* of the American Psychiatric Association in 1980. Since 1980, the general public's awareness of the illness has increased, especially among scientist-practitioners. For instance, significant scientific developments have occurred in psychological, pharmacological, and experimental psychedelic treatments and medically invasive procedures to treat depression. However, the measures used to identify MDD in patients did not include large Latinx samples in their development. Also, the research studies informing current treatments did not always have representative samples of the diverse patients we treat today. Thus, it is unknown if these treatments are acceptable to all patients. Given this context, the patient's decision to access treatment for depression is multifactorial. However, before patients access care, their need for treatment must be appropriately identified by practitioners. Practitioners treating depression need to assess MDD in its many possible presentations in the diverse populations affected by the disorder. Additionally, patients must see MDD as a disorder worth treating with interventions. Also, patients need to believe that the available treatments are acceptable to their understanding of treating the illness.

We benefit from a better understanding of how access to mental health services for MDD is navigated for Latinx patients. Latinxs are less likely to be appropriately diagnosed with and adequately treated for MDD than non-Latinx Whites (Young et al., 2001). Differences in access to care remain after controlling for structural barriers, such as health insurance status (Alegría et al., 2008; Lagomasino et al., 2005; Padgett et al., 1994). Research suggests that limited English

language proficiency is a barrier to healthcare access, as Spanish-speaking Latinxs are less likely to access mental health treatments than English-speaking Latinxs (Lara et al., 2005; Vega et al., 1999). Low treatment access is concerning, given that treatment for MDD is efficacious across groups when there is good engagement in services (Miranda et al., 2005; Voss & Horrell, 2008). Due to the public health effects of untreated MDD and the detriment that untreated MDD can have on an individual's quality of life, efforts to increase the number of persons who access and benefit from treatment are needed. A way to do this is by reviewing how MDD symptoms are currently identified by practitioners and by surveying Latinxs about their understanding of MDD and learning more about their treatment preferences. Suppose alignment does not exist on how depression is traditionally assessed compared to how patients understand the illness and their preferences for treatment. In that case, the patient voice can better inform recommendations for improving the reach of services.

Diagnosing Major Depressive Disorder (MDD)

To meet the diagnostic criteria for MDD, according to the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association, 2013), patients must experience a constellation of at least five out of nine diagnostic symptoms, more days than not, for a consecutive two weeks. The diagnostic symptoms of MDD are: markedly diminished interest or pleasure in activities; significant weight loss or gain; insomnia or hypersomnia; psychomotor agitation or slowness; fatigue; feeling worthless or with inappropriate guilt; impaired concentration or decisiveness; and recurrent thoughts of death or suicide. Complicating matters is that a minimum symptom approach to diagnosing depression results in a large list of symptom profiles patients can present with. Given the parameters for symptom presentation, a patient can meet DSM-5 (American Psychiatric Association, 2013) criteria for

MDD in 227 possible ways. Therefore, two patients with very different symptom presentations can have the same diagnosis of MDD. The most common is exhibiting or experiencing all nine symptoms (Zimmerman et al., 2015). Patients with fewer than five depressive symptoms experience subthreshold depression. Mild depression is diagnosed in patients who have at minimum five of the nine depressive symptoms and experience minor functional impairment. Moderate depression indicates at least five MDD symptoms and difficulty in everyday activities. Severe MDD is diagnosed when a patient has most of the nine symptoms and marked functional impairment. Occasionally, severe forms of MDD include psychotic features. The combination of symptoms and the type of services available inform a patient's treatment options.

It is not uncommon for MDD to go underdiagnosed in patients, mainly when diagnosticians are unfamiliar with identifying MDD in its many unique forms. For instance, when MDD presents in primary care, the primary care provider needs to determine if a patient's somatic symptoms describe possible MDD, an anxiety disorder, a somatoform disorder, a medical condition, a combination of multiple disorders, or even no disorder. A delayed diagnosis of MDD is associated with an increased economic and emotional burden (Williams & Rucker, 2000).

One difficulty with diagnosing MDD is that MDD is typically comorbid with other medical or psychiatric illnesses (Krishnan et al., 2002). In terms of mental health comorbidity, MDD is most commonly comorbid with an anxiety disorder, with an estimated 50% of individuals with an MDD diagnosis also having an anxiety disorder (Fava et al., 1997). Additionally, using a diagnostic cut-off for MDD is controversial because a person with sub-clinical depression stands to benefit from treatment too. A study done in Australia, where mental health care is socialized and structural barriers such as finances are addressed, suggests that

individuals with sub-clinical symptoms of mental health concerns seek treatment because they perceive they need it and benefit from it (Andrews et al., 2001).

MDD Somatic Symptoms

Somatic symptoms are commonly endorsed by Spanish-speaking Latinxs when describing idioms of distress. Some common idioms of distress endorsed by Latinx are *nervios*, *ataques de nervios*, and *susto*. Durà-Vilà and Hodes (2012) conducted a meta-analysis and found descriptions for these three idioms. Headaches, muscle aches, difficulty sleeping, loss of appetite, fatigue, and tension were some of the somatic symptoms used to describe *nervios*. Tremors, palpitations, heat rising from chest to head, and feeling suffocated were some somatic symptoms of *ataques de nervios*. Abdominal pain, loss of appetite, drowsiness, sleeplessness, and feeling weak and tired were some somatic symptoms describing *susto*.

Somatic symptoms play a large part in how mental illness is understood and expressed culturally. However, this is not just true for individuals who might ascribe to cultural idioms of distress, such as some Spanish-speaking Latinxs. Work by Corruble and Guelfi (2000) suggests that 76% of patients with MDD report at least one somatic symptom, with the endorsement of somatic symptoms differing by women and men. The higher number of somatic symptoms a patient has, the higher likelihood their MDD presents severely (García-Campayo et al., 2008).

Practitioners often overlook somatic symptoms when assessing predominantly Spanish-speaking clients for MDD, even when somatic symptoms are listed in the DSM-5 (American Psychiatric Association, 2013), and particularly when the practitioner is not culturally aware that MDD may present differently in ethnic minority populations (Ahmed & Bhugra, 2006). The DSM-5 (American Psychological Association, 2013) criteria for MDD lists four somatic symptoms: psychomotor agitation or slowness, fatigue, changes in sleep, and changes in appetite.

However, other somatic symptoms, such as feeling faint or on pins and needles, are not explicitly labeled in the DSM-5 (American Psychiatric Association, 2013) but are experienced by many individuals with MDD cross-culturally. Some monolingual Spanish-speaking Latinxs living in Latin American countries or recently immigrated to the United States endorse more somatic symptoms of MDD than non-Latinx Whites (Mezzich & Raab, 1980; Rao et al., 2012). Dunlop et al. (2020) found that, within their Latinx sample, somatic symptoms were higher among their participants evaluated in Spanish than in English. English-speaking Latinxs reported similar rates of somatic symptoms compared to non-Latinx Whites. It is hypothesized that one reason Latinxs and other ethnic groups continually go under-detected for MDD is that diagnosticians need to do better in asking about somatic symptoms for MDD (Ahmed & Bhugra, 2006).

Chronicity of MDD

MDD is a chronic, lifelong disorder that requires continual monitoring and treatment. At least 50% of individuals who recover from their first MDD episode experience one or more additional episodes in their lifetime. In fact, after using a long-term antidepressant regimen, an estimated 20-18% of persons with depression will experience another MDD episode within 1-5 years after responding to treatment (Nierenberg & Alpert, 2000). An estimated 80% of individuals who experience two independent MDD episodes will experience a third or more episodes in their lifetime (American Psychiatric Association, 2013; Kupfer et al., 1996). Typically, a person with a history of MDD will have five (Kessler & Walter, 1998) to nine (Kessler et al., 1997) individual MDD episodes in their lifetime. MDD, therefore, may require lifetime self-monitoring of symptoms after the first onset of an episode.

Consequences of Untreated MDD

Untreated depression has been associated with a high economic burden for the self and society and an increased risk of suicide. Among people ages 15-44 years of age, MDD is the leading cause of disability in the United States (Centers for Disease Control and Prevention, 2010). The estimated economic burden of depression rose 7%, from $77.4 billion in 1990 (adjusted for inflation for the year 2000) to $83.1 billion in 2000 (Greenberg et al., 2003). Over half of the reported economic costs in the year 2000 came from absenteeism and presenteeism among individuals in the workforce ($51.5 billion). Absenteeism was measured as days missed at work, and presenteeism was measured as missed or delayed productivity at work. The remaining economic costs came from direct treatment expenses ($26.1 billion) and suicide-related costs ($5.4 billion; Greenberg et al., 2003). Depression is associated with suicidality, with 50% of individuals who have completed suicide having a primary depression diagnosis (Hawton et al., 2013). Compared to the non-derepressed population, the suicide rate among individuals with MDD is estimated to be twenty times higher (Harris & Barrraclough, 1997). Due to depression being identified later in Latinx samples compared to non-Latinx White samples, it is thought that the economic burden of depression is higher for Latinxs and other ethnic minority groups because depression, when identified by providers, is typically so severe it is hard to miss, and by that time MDD might be treatment-resistant (Manson, 2003; Williams & Rucker, 2000). Reducing the emotional and economic burden of MDD for Latinxs will require enhancing timely identification and increasing access to MDD treatment.

Benefits of Treating MDD

A patient is more likely to have a better prognosis of their MDD if their symptoms are identified at first rather than a subsequent depressive episode (Judd et al., 2000). The longer the patient has experienced MDD without remission and appropriate treatment, the more likely their

depression will become hard to treat. The main goal of treating MDD is to help the patient enter remission and manage residual symptoms of MDD (Trivedi & Kleiber, 2001). Remission of symptoms is achieved when the person's functional impairment due to MDD is lowered. Once remission is achieved, the goal becomes to help the patient avoid a relapse of symptoms. However, once a patient has experienced at least three episodes of MDD, the risk of recurrence is 90% (Dunn & Tierney, 2006). Therefore, early intervention is essential to improve quality of life and lower emotional and economic costs associated with this debilitating and often lifelong disorder.

MDD in Latinxs

Prevalence Rates of MDD. Historically, MDD prevalence rates among Latinxs have been hard to measure. Initially, work on the prevalence rates for MDD was conducted with Latinx English-speakers and did not account for the lived experiences of monolingual Spanish-speakers. Also, the first surveys on prevalence rates were completed with a high concentration of Latinxs living in U.S. enclaves (i.e., southern California and parts of Florida) and did not capture the nuanced experiences of other Latinx subgroups. The Epidemiological Catchment Areas (ECA; Eaton et al., 1989), the National Comorbidity Study (NCS; Kessler et al. 1994), and the National Comorbidity Replication Study (NCS-R; Kessler et al., 2003) provided researchers with the first glimpse of MDD prevalence rates among Latinx English-speakers. These studies reported that Latinxs as a whole had lower prevalence rates for MDD than non-Latinx Whites. Later, researchers did a better job of stratifying their samples to include Latinxs who spoke a language other than English and reporting different prevalence rates for MDD based on sub-ethnic group membership and nativity status. Nativity status refers to whether the individual was born in the U.S. or immigrated to the U.S. from another country. The National Latino and Asian

American Study of Mental Health (NLAAS; Alegría et al. 2007) study surveyed Latinxs English or Spanish-speakers. Data from the NLAAS did not provide information on how many Latinxs were bilingual in Spanish and English. The NLAAS surveyed participants about their 12-month prevalence of mental health disorders. In this survey, U.S.-born Latinxs reported higher rates of MDD (18.6%) than Latinx immigrants (13.4%, $p < 0.01$), demonstrating what is referred to in the literature as the *immigrant paradox*. NLAAS Latinx participants reported lower lifetime prevalence rates of MDD (15.2%) compared to NCS-R (Kessler et al., 2003) and non-Latinx White participants (22.1%). The lifetime prevalence rates for MDD were 19.4% for Puerto Ricans, 18.6% for Cubans, 14.7% for Mexicans, and 13.7% for other Latinxs (Alegría et al., 2007). Increased time in the U.S. for immigrants was associated with a higher risk of psychiatric disorders than U.S.-born Latinxs (Alegría et al., 2007). The NLAAS study suggested that although the lifetime risk for MDD is lower among Latinxs as a group compared to the general population, nativity status, subgroup Latinx membership, and length of time immersed in U.S. culture may be factors to consider that partially inform differences in MDD prevalence rates within this heterogeneous group.

Screeners for MDD. Although numerous psychometrically sound instruments have been developed to screen for MDD in the general U.S. population, the sensitivity and specificity of self-administered MDD questionnaires commonly used in practice by clinicians have not been adequately explored in primarily Spanish-speaking populations in the U.S. In clinical practice, these screeners should have good sensitivity and specificity. Sensitivity refers to the probability that a person with depression will meet the survey's cut-off score for MDD (correct identification rate). Specificity refers to the likelihood that people who do not have MDD have a

score lower than the cut-off score (correct rejection rate). Thus, the sensitivity and specificity of MDD measures need to be tested on primarily Spanish-speaking populations living in the U.S.

Service Utilization in Spanish versus English-Speaking Latinxs. Trends in Latinxs seeking treatments for MDD have been found to vary based on their preferred spoken language (i.e., Spanish versus English). Spanish-speaking Latinxs are less likely than English-speaking Latinxs to make health appointments (Fiscella et al., 2002). Additionally, monolingual Spanish-speaking Latinxs reported higher levels of dissatisfaction in their communication skills with their English-speaking primary care provider than Latinxs who were English-speaking (Morales et al., 1999). A study in large urban public hospitals found 62% of monolingual Spanish-speaking patients versus 35% of English-speaking patients did not possess the health literacy skills needed to navigate the current Western healthcare system (Baker et al.,1997).

Despite language interpreters, incongruent language matching between provider and patient has been demonstrated to hinder the provision of clinical health services (Flores, 2005; Ku & Flores, 2005; Woloshin et al., 1997). This is interesting, given that more than 31 million U.S. residents speak Spanish at home (U.S. Census Bureau, 2022). However, statistics of mental health providers are not expected to change much in the upcoming years. In 2017, less than 5% of all psychologists were Latinx, and only 5.5% said they provided services in Spanish proficiently (Smith, 2018). In the late 2010s, among primary care providers, 5.8% identified as Latinx (Association of American Medical Colleges, 2019). A lack of Spanish-speaking providers who are culturally aware of depression-related idioms of distress is a significant challenge Latinx sub-groups face when accessing mental health services (Ruiz, 2002; Woloshin et al., 1995). Some initial work suggests that diagnostic symptom interviews conducted in the patient's dominant language led to increased disclosures of symptoms and better diagnosis and retention

of patients in treatment (Del Castillo, 1970). However, conducting these interviews is often prompted after a positive self-report screener. Many MDD self-report questionnaires have not been normed on Latinx samples of proportionate English and primarily Spanish-speaking participants in non-enclave areas.

MDD Treatment Preferences. Studies have shown that Latinxs preferred psychotherapeutic interventions compared to psychopharmacological ones (Givens et al., 2007; Karasz & Watkins, 2006). This is interesting, given that most Latinxs report preferring accessing care for MDD in primary care settings (U.S. Department of Health and Human Services, 2001). Antidepressants are the most commonly offered treatment in primary care (Robinson et al., 2005). Additionally, Latinx in primary care are less likely to receive evidence-based depression care than non-Latinx Whites (Young et al., 2001) and are likely to encounter a primary care provider who fails to detect mental health issues accurately (Borowsky et al., 2000). Givens et al. (2007) found that Latinxs were likelier than non-Latinx Whites to prefer counseling to medication for MDD (OR = 1.8). In that study, Latinxs were likelier to believe that antidepressants were addictive. The belief that antidepressants were addictive mediated preferences for depression treatment. Work using conjoint analysis, grounded in economic theory, posits that consumers make product decisions based on characteristics and trade-offs among choices. This type of analysis is predictive of behavior (Louviere et al., 2000). In that study, low-literacy Latinx primary care participants in California were presented with a series of products varying in their characteristics and asked to pick one (Dwight-Johnson et al., 2004). These participants ($N = 42$) preferred combined counseling and medication to either counseling or medication alone. They also preferred individual over group treatment. Karasz and Watkins

(2006) found Latinx patients believed both antidepressants and counseling would be helpful treatments but that counseling would be more useful.

As psychotherapeutic interventions seem to be the preference for many Latinxs, questions about which components of psychotherapeutic interventions are enticing to Latinxs remain. Work on psychotherapeutic techniques often describes intervention components as "specific" and "non-specific." Specific factors can refer to components of therapeutic intervention that are particular to a treatment or theoretical approach. For a psychologist or other therapist that uses cognitive behavioral therapy with a client, an example of a specific factor would be finding evidence for or against an automatic thought. A non-specific factor refers to a factor shared across treatments, like establishing rapport with a client. It would be interesting to see which specific and non-specific factors in psychotherapy and psychopharmacology management are preferred among Latinx patients. Such information would provide persons interested in increasing access to treatments with more informed recommendations on better providing service to the growing and diverse Latinx population that can help with treatment engagement.

Limitations to the Current Literature

Problems with Screeners for MDD. When this dissertation was proposed, no studies had examined the sensitivity and specificity of MDD screeners used with predominantly Spanish-Speaking Latinxs living in the United States. When Latinxs were included in U.S. studies of sensitivity and specificity of a depression screener, the language in which the screener was completed was not reported (Spitzer et al., 1999). The screeners used for depression today have been normed with mostly non-Latinx White samples and then translated and back-translated to Spanish to work with Spanish-speaking populations. An example of a depression screener that has been back-translated and is typically used in primary care is the Patient Health Questionnaire

(PHQ-9; Kroenke et al., 2001). The PHQ-9 is a self-report measure completed by interviewees and designed to be administered in medical settings. Individuals answer nine questions on symptoms about how they have felt in the past two weeks. Items are presented on a Likert scale from 0-3. The scores from the individual items are aggregated for a total score and can range from 0-27, with higher scores indicating a high endorsement of depressive symptoms. There is a tenth question on the PHQ-9 questionnaire. This question focuses on the level of functional impairment that the individual endorses. An endorsement of these questions is not necessary to screen positive for depression. A score greater than or equal to five will prompt the administrator to use clinical judgment about treatment based on the patient's symptom duration and level of functional impairment.

No studies have assessed the measure's effectiveness for Spanish-speakers in the U.S. (Limón et al., 2016). Relatedly, studies in the U.S. do not typically report the percentage of native Spanish-speakers in their studies. Latinxs with limited English language proficiency are under-sampled in clinical studies of MDD screening or not included. In a meta-analysis on screening for depression, 6 of 41 studies reported at least 5% of their sample comprised Latinx participants (Pignone et al., 2002). Psychometric equivalence of specific depression measures has been found across English and Spanish versions in bilingual college students (Ruggero et al., 2004) and literate adults (Novy et al., 2001). However, these questionnaires had a low representation of somatic MDD symptoms, so it is not clear if the same level of detection of MDD symptoms will be seen in less acculturated Latinxs, such as those who speak primarily Spanish. Thus, screening for depression might not reflect multicultural patient populations because these screeners were either not developed and normed with diverse samples or failed to report on the diversity characteristics of their samples. It is known that the psychometric

properties of an instrument are sample-dependent and that careful translation of a measure does not ensure similar construct validity across groups (Nair et al., 2009). With research focusing more on patient-centered care, devoting attention to health measures that include patient perspectives is important, as a missed diagnosis of MDD leads to a missed opportunity to close the gap in access to treatments. Thus, clinical interviews are often necessary to rule in a diagnosis. One diagnostic interview is the Mini-International Neuropsychiatric Interview (Sheehan et al., 2014).

The Mini-International Neuropsychiatric Interview 7.0 based on the DSM-5 (MINI; Sheehan et al., 2014) is a short structured diagnostic clinical interview that encompasses 17 DSM-5 diagnoses and, in total takes about 10-25 minutes to administer to patients depending on the number of diagnoses interviewees endorse. Questions are answered with a "yes" or "no." For Major Depressive Disorder (MDD), interviewees answer questions about how they have been feeling for over two weeks. Interviewees might answer "yes" to all questions, but if they answer no to the question of functional impairment, "Did these symptoms cause significant distress or problems at home, at work, at school, socially, in your relationships, or in some other important way, and are they a change from your previous functioning," they do not meet criteria for a current major depressive disorder episode. The MINI (Sheehan et al., 2014) has been translated to Spanish and tested in a primary care community in Spain and was found to be acceptable at detecting major depressive disorder at primary care encounters (Bobes, 1998). Although it is considered a gold standard to use, studies on validating the MINI in primarily Spanish-speaking samples in the United States are unfortunately nonexistent, according to my search.

Problems with Treatments for MDD. Although more than 300 randomized trials have shown several psychotherapies are effective in treating MDD in adults (Cuijpers et al., 2008) and

an extensive list of treatments for depression exists (American Psychiatric Association, 2010; Depression Guidelines Panel, 1993; National Institute for Clinical Excellence, 2005), ethnic minoritized populations are disproportionally underrepresented in clinical trials (Wells, 1999). For MDD, some of the most commonly studied psychotherapeutic treatments for depression are cognitive behavior therapy (Churchill et al., 2001), behavioral activation therapy (Ekers et al., 2008), and interpersonal psychotherapy (Cuijpers et al., 2011), among others. Selective serotonin reuptake inhibitors (SSRIs) and serotonin and norepinephrine reuptake inhibitors (SNRIs) are the first-line medication treatments for treating MDD (Bousman et al., 2017). Fortunately, research has demonstrated that successful treatment engagement has led to comparable treatment outcomes for Latinx and non-Latinx ethnic groups (Miranda et al., 2005; Sue, 1988). However, it is unknown if the treatment components mentioned above are more acceptable to Latinxs than others. The acceptability of treatment components is thought to be a factor informing treatment engagement (Tonigan, 2003).

Purpose

MDD is a common disorder for which evidence-based treatments exist. However, Latinxs often do not access these treatments, possibly because depression among this group is not adequately identified and treatments for MDD do not match their treatment preferences. Additionally, how MDD presents in primarily Spanish-speakers may differ from primarily English-speaking Latinxs. Therefore, the current study seeks to inform better screening and matching of treatment preferences for this population to see if differences in symptom endorsements and treatment preferences correlate to participant language proficiency. This study had two aims. First, the study examined the sensitivity and specificity of the PHQ-9 in Spanish-speaking and English-speaking Latinxs, exploring whether adding somatic items to the PHQ-9

items would result in increased sensitivity and specificity. Second, the study examined Latinxs' preferences for MDD treatment.

Hypotheses

For this dissertation, I proposed four hypotheses. However, a smaller sample size was collected due to time and personal power limitations, and not all the analyses could be run. Hypotheses 1, 2, and 4 were run with a reduced sample size. An insufficient sample size impeded me from testing my third hypothesis. The original hypotheses are listed here for transparency. Hypotheses only applied to the quantitative aim of the study. No hypotheses were examined for the qualitative aim of the study.

- H1: The sensitivity and specificity of the PHQ-9 will be higher in Latinxs who endorse English rather than Latinx who endorse Spanish as their preferred language.
- H2: Spanish-speaking participants will be more likely than English-speaking Latinxs to meet diagnostic criteria for current MDD from a structured diagnostic interview than screen positive for MDD on the PHQ-9.
- H3: Added somatic symptoms will load significantly onto a depression factor in Spanish-speaking Latinxs, and depression and somatic items will appear as two separate factors among English-speaking Latinx participants.
- H4: The sensitivity and specificity of the PHQ-9 will be enhanced for Spanish-speaking Latinxs by including somatic items.

Method

Recruitment and Sample

Data for the current study were collected from participants over seven months (from May 2022 to December 2022). A sample of $N = 50$ Latinx adults (ages 19 - 79 years, $M = 40.06$, $SD =$

16.99) residing in the continental U.S. (n = 33, 66% from the South; n = 17; 34% from non-Southern states) participated. Participants were recruited by word-of-mouth (n = 28; 56.0%), social media (n = 16; 32.0%), or flyers (n = 6; 12.0%). Thirty-one participants (62%) were born outside the continental United States. Inclusion criteria were persons aged 18 or older, living within the continental United States, identifying as Latinx, and having internet access. Descriptive statistics for demographic variables are reported in Table 1. Demographic statistics of the sample by language status are reported in Table 2. Twenty-four participants (48%) completed the interview in Spanish. The average time lived in the United States was 21.62 years, with an average of 22.31 years for English-speakers and 20.88 years for Spanish-speakers, respectively. Demographic statistics based on PHQ-9 scores are reported in Table 3. Demographic statistics based on the MINI without functional impairment are reported in Table 4. Demographic statistics based on the MINI with functional impairment are reported in Table 5. Data were collected on Qualtrics (Snow & Mann, 2013). All analyses were conducted using IBM SPSS 26 (Version 27).

In order to increase the study's reach, this study was advertised on social media, via email, and by word of mouth. I advertised the study on Twitter on October 2, 2022, @Guzman_L_E (Guzman, 2022). The tweet featured a project description, a link to the sign-up form, and pictures of the flyer with the QR codes in both languages. By the end of data collection on January 1, 2023, the tweet was retweeted 12 times, liked 6 times, and garnered 2,219 impressions, with 86 engagements. I also posted the study on a known Latinx Facebook page on October 2, 2022. The post was liked by three persons and shared six times. Emails were sent to one non-profit primary care clinic in Arkansas, one mental health clinic in North Carolina, and a non-profit in Rhode Island known to serve the Latinx community. The three sites either received

an email or physical paper copies of the flyers. One of the three sites mentioned above showcased the study in its community monthly newsletter and social media outlets.

Additionally, emails were sent more broadly through the United States to seven universities to share with their students (emails sent May 13, 2022). One email was sent to a national psychological association known to reach various persons interested in Latinx mental health (email sent May 13, 2022). I also met with the manager at a local Latinx-immigrant grocery produce store in Rhode Island to describe the study, and they posted my study on their flyers page. With permission, my research assistant also posted flyers at three local community centers (July 22, 2022). The study was also shared among participants with their friends and family through word-of-mouth.

Procedure

Persons interested in participating in the study used a phone, tablet, or computer with internet access to scan a quick response (QR) electronic code to open a link to complete an online form. This form described the study's details and was the first step in assessing the interested person's eligibility to participate in the research. The online form asked for the participant's demographic data, such as their contact information, preferred language, age in years, gender identity, and ethnic background. Participants were also asked to complete the PHQ-9 (Kroenke et al., 2001) measure. Participants received a confirmation email that their data would be reviewed. A study coordinator contacted participants via phone or email within two weeks if they were eligible to participate. Participants had to identify as Latinx, be 18 or older, and reside in the continental United States at sign-up. Eligible participants completed follow-up surveys and set up a time to complete a qualitative interview. Due to the importance of obtaining an adequate sample size of depressed persons who preferred Spanish language interviews,

participants with a PHQ-9 score of ≥ 10 or who spoke Spanish as their preferred language were preferentially selected to call and were scheduled as soon as possible. Kroenke et al. (2001) index a score of ≥ 10, signifying potential MDD. Given the time-delimited nature of MDD, an attempt was made to schedule all eligible participants within two weeks.

Once participants were screened as eligible and completed follow-up surveys, they were scheduled to complete a 30-minute qualitative interview via a video Zoom link or phone call. The qualitative interview included a semi-structured diagnostic interview (the MDD component of the MINI; Sheehan et al., 2014) and open-ended questions with prompts about their preferences for MDD treatments (see Appendix G).

Regarding the persons who conducted the interviews, one of two persons conducted the interviews. I was one of the interviewers. I am a bilingual and bicultural Latina clinical psychology doctoral student trained to discuss non-suicidal self-injury, suicide, and depression. I supervised a White undergraduate female research assistant—the research assistant identified as a monolingual English speaker. I trained the research assistant on the study protocol, running the protocol with her four times. The research assistant and I did a mock study interview together. I supervised one interview she conducted independently before she conducted the remainder of the interviews alone, which were audio-video recorded. I then watched her solo interviews for protocol fidelity. Given the nature of the research, the researcher assistant additionally completed supplemental training on suicide prevention. When participants endorsed any thoughts related to self-injury or suicide, the research assistant was instructed to contact me immediately via phone. I was to log onto the video to help if needed.

Per study protocol, all interviewers were audio recorded and transcribed. I completed 44 interviews (n = 24 Spanish and n = 20 English). The research assistant conducted six English-

language interviews. Issues of non-suicidal self-injury or suicidal ideation did not surface with the research assistant. When non-suicidal self-injury or suicidal ideation came up in the interviews I conducted, participants were discussing them in the context of describing what depression might look like, but not that they experienced it.

The role of technology in the provision of services was prominent. The study took place through video conferencing software. However, not all participants experienced a smooth process in their participation and went to the effort to participate. Some participants got support from the research team to help facilitate the process. When support was provided, it often involved me or my research assistant calling the participant to help troubleshoot technology concerns. Some participants preferred not to share their faces on camera for various reasons, although the participant did not always disclose reasons for this. Many participants also verbally self-disclosed limitations in their reading ability. In those cases, a researcher would read all the quantitative questions aloud to the participant.

All participants, regardless of their depression symptom endorsement or experience with non-suicidal self-injury or suicide, were provided with a list of mental health resources at the end of the interview and debriefed about the study. The findings of this study are made public through the publication of this dissertation online. I provided a copy of my dissertation to community organizations who agreed to post flyers for the research study to help disseminate the findings to community members who participated in the research.

Once all study components were completed, participants were thanked for their contributions, debriefed about the study, and received a $10 Amazon gift card, via email, for their participation. The ethics committee of the University of Arkansas at Fayetteville approved the study protocol. The administration of the study materials took approximately 60 minutes,

regardless of administration format. See Appendix A for the IRB approval letter. See Appendix B for the consent form.

Measures

Demographics. Age, number of children, and number of depressive episodes were measured continuously. Participants preferred language, gender, U.S. state of residency, country of origin, marital status, work status, and education level completed were measured dichotomously. Family income was measured categorically. See Appendix C for the procedure flow chart. See Appendix D for the screener. See Appendix E for the follow-up survey.

Depressive Symptoms. The PHQ-9 (Kroenke et al., 2001) is a 9-item self-report measure that assesses current levels of depressive symptoms. The items are answered on a 4-point scale from 0 to 3 as follows: 0 (not at all), 1 (several days), 2 (more than half the days), and 3 (nearly every day). Total scores range from 0 to 27 points, with 0–4 points indicating no depressive symptoms, 5-9 points indicating mild depressive symptoms, 10-14 points indicating moderate depressive symptoms, and 20–27 points indicating severe depressive symptoms, respectively. A score of ≥ 10 indexes the presence of potential MDD. Kroenke et al. (2001) have made the Spanish-language version of the PHQ-9 available for public use. The PHQ-9 was chosen because it is cost-effective (i.e., free), reliable, and a valid screening instrument used to assess depressive symptoms in clinical practice (American Psychological Association, 2021) among English-speaking individuals and is available in Spanish. For this sample, the Cronbach alpha coefficient was acceptable at .80 for Spanish-speakers and .77 for English-speakers, respectively.

Kroenke et al. (2001) found the PHQ-9 to have 88% sensitivity and 88% specificity in detecting MDD in primary care patients. Comparable values have been obtained with the Spanish version of the PHQ-9 in Spain in an inpatient setting with 88% sensitivity and 87%

specificity (Diez-Quevedo et al., 2000) and in rural Mexico with 80% sensitivity and 87% specificity (Arrieta et al., 2017). Measures for the sensitivity and specificity of Spanish-speakers living in the broad U.S. did not exist during this study.

Somatic Symptoms. A modified version of the somatic subscale items from the Brief Symptom Inventory-18 (BSI-18; Derogatis, 2001) was used to assess somatic symptoms. The BSI-18 is an 18-item self-report measured on a 5-point Likert scale from 0 (not at all), 1 (rarely/occasionally), 2 (sometimes), 3 (often), and 4 (extremely often), measuring psychological distress over the past 7 days. The three subscales are somatization (SOM), depression (DEP), and anxiety (ANX). The somatization subscale consists of six items, with scores ranging from 0 to 24 and higher scores indicating the presence of more somatic symptoms. In the current study, the Likert scale was modified to reflect the PHQ-9 scale. Thus, items were answered on a 4-point scale from 0 to 3 as follows: 0 (not at all), 1 (several days), 2 (more than half the days), and 3 (nearly every day). The internal consistency for the original SOM BSI-18 is reported at .74 with test-retest reliability of .68 (Derogatis, 2001). For this study, the Cronbach alpha coefficient of the modified version was poor at .60 for Spanish-speakers and .67 for English-speakers, respectively.

Number of Physical Health Conditions. As somatic endorsement could be a product of a physical or mental health condition(s), participants were asked to complete one question on their known current health condition(s). The question read, "Do you have any of the following health conditions? If so, please mark the box next to each condition you have." Participants could elect to check one or more of 16 conditions: allergy and immunology; blood & circulation; brain & nervous system; cancer; digestive system; endocrine system; eye/ear/nose/throat; heart and vascular disorders; infectious diseases; musculoskeletal; psychological; reproductive system;

respiratory; skin, nails, and hair disorders; other; or I have none of these conditions. Participants were allowed to write a description in the other category.

Enhanced PHQ-9 Survey. The PHQ-9 and BSI-18 SOM were combined to create a composite enhanced PHQ-9 survey. The Cronbach alpha coefficient with the included 6 somatic items from the BSI-18 SOM was acceptable at .81 for Spanish-speakers and .84 for English-speakers, respectively.

MDD MINI The Mini-International Neuropsychiatric Interview (MINI; Sheehan et al., 2014) is a structured interview that can assess current and past episodes of major depressive disorder. For this survey, I focused on current endorsement of depressive symptoms. The MINI uses decision-tree logic to arrive at diagnoses consistent with the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association, 2013). The MDD module took less than five minutes on average to administer. Given the discrepancy between how functional impairment is measured on the PHQ-9 (Kroenke et al., 2001) and the MDD MINI module (Sheehan et al., 2014), two MINI variables were calculated for each person: one that said yes/no to current MDD without considering the functional impairment question "did these symptoms cause significant distress or problems at home, at work, at a school., socially, in your relationships, or in some other important way, and are they a change from your previous functioning" and one that was coded as yes/no to current MDD with considering the functional impairment question. Research has found the diagnostic sensitivity/specificity of the MDD MINI with the functional impairment question was 0.67 to 0.79 for the PHQ-9 (Negeri et al., 2021). I could not find one that had the diagnostic sensitivity/specificity of the MDD MINI without the functional impairment question. The reason for calculating the two variables was to describe the sample descriptively.

Before selecting the MDD MINI module as the structured interview, I reviewed the Structured Clinical Interview for DSM Disorders (SCID; Shabani et al., 2021) and the Diagnostic Interview for Anxiety, Mood, and OCD and Related Neuropsychiatric Disorders (DIAMOND; Tolin et al., 2018), all of which are structured interviews. All diagnostic interviews had similar questions. However, the DIAMOND has not been translated nor validated in Spanish. The SCID requires specific permission to use for research purposes. As the laboratory had a license to use the MINI and the MINI has a Spanish-version of the MDD module, the MINI was selected as the screener for this study.

Acculturation. Scores on the Psychological Acculturation Scale (PAS; Tropp et al., 1999) and the Short Acculturation Scale for Hispanics (SASH; Marin et al., 1987) were obtained for descriptive purposes. The PAS (Tropp et al., 1999), a 10-item self-report scale, assessed acculturation based on cultural affiliation (U.S. culture or Latinx culture). Higher scores indicate more Latinx cultural affiliation. Items on the PAS are averaged to yield an overall score. The scale was found to have good internal consistency in a Puerto Rican sample, with a .90 alpha for Spanish-speakers and a .83 alpha for English-speakers (Tropp et al., 1999). The Cronbach alpha coefficient for this sample was very good at .87 for Spanish-speakers and .90 for English-speakers, respectively. The SASH (Marin et al., 1987), a 4-item self-report scale, was used to assess the acculturation level of participants based on language affiliation. Response on the items is given on a five-point Likert scale where 1 is "Only Spanish," and 5 is "Only English." Scores are totaled and averaged, with a score above 2.99 indicating higher levels of acculturation to English language culture. The Cronbach alpha coefficient for this sample was very good at .87 for Spanish-speakers and .90 for English-speakers, respectively. See Appendix F for the acculturation surveys.

Qualitative Interview. Composed of open-ended questions related to a person's definition of depression, listing symptoms of depression, personal perception if they have experienced depression, and their preferences for treatment. Participants were also asked that "Based on your definition of depression have you experienced episodes of depression?" If they said yes, they were asked how many. At the interview's end, participants were asked to give their thoughts on the questions and areas of research that they wished researchers explored more. The interview process was an interactive one. The interview for this study was semi-structured, and the prompts are found in the Appendix.

Data Analysis

A Prior Power Analysis for Quantitative Data. According to a power analysis using MedCalc Statistical Software version 20.01.3 (MedCalc Software Ltd, 2020), a sample of 154 participants would need to be recruited (77 Spanish-speaking Latinxs and 77 English-speaking Latinxs). While the prevalence rate of MDD is approximately 15%, potential participants who screened positive on the PHQ-9 during the prescreening phase were to be oversampled so that they comprised 30% of the study participants. AUC power analyses suggested that to detect an AUC of .7 (versus a null of .5) with 30% of the sample in the positive group and for 80% power with alpha = .05, 77 participants would be needed. Because the study aimed to examine the PHQ-9 sensitivity and specificity in two Latinx subsamples (Spanish and English-speakers), twice that many participants would need to be recruited. Among the recruited, twenty-three cases were expected to be positive, and 54 were expected to screen negative in each language sub-group.

Many factors contributed to completing this dissertation with a smaller sample size. The Institutional Review Board (IRB) approved this study in December 2022 (see Appendix A for

the IRB approval letter), delaying the start of recruitment (see Appendix B for IRB approved consent form). I started a pre-doctoral internship in July 2023, working full-time in clinical practice, and all interviews and data analysis occurred typically on the weekends or late evenings. The total person power for this project was two people. Although a valiant effort was made to recruit the postulated sample size, an N =50 was what was feasible. I contacted my committee and communicated my efforts toward recruitment. My committee permitted me to analyze and defend my dissertation with reduced sample size.

Qualitative Analyses. Qualitative interviews were conducted until saturation was met (Saunders et al. 2018). Saturation is a term commonly used in qualitative research to describe a gold standard criterion (for discontinuing data collection). Saturation is reached once the interviewer starts to see the same themes repeatedly in the interviews after a concerted effort has been made to recruit a diverse enough sample to collect a wide range of ideas. I used the thematic analysis that Braun and Clark (2021) outlined to examine the qualitative data. I watched all the interviews, read all the transcriptions, generated initial themes, and worked on finalizing themes with efforts culminating in a written report presenting the findings.

Results

Quantitative Data

The relationship between PHQ-9 at pre-screener (M = 5.42, SD = 4.33) and PHQ-9 at follow-up (M = 5.00; SD = 4.15) was investigated using Pearson product-moment correlation coefficient. The average time between sign-up and follow-up was 12.74 days (SD = 24.15). The average time between follow-up and interview was 5 days (SD = 11.54). Preliminary analyses were performed to ensure no normality, linearity, and homoscedasticity assumptions were violated. There was a strong, positive correlation between the PHQ-9 scores at the pre-screener

and at follow-up, $r = .77$, n = 50, p <.001, with high levels of depression at the pre-screener associated with high levels of depression at follow-up. Broken down by language, for participants who filled out measures in English, the relationship between PHQ-9 at pre-screener ($M = 7.08$; $SD = 4.05$) and PHQ-9 at follow-up ($M = 6.73$; $SD = 4.30$) had a strong, positive correlation between the two variables, $r = .74$, $n = 26$, $p < .001$. For participants who filled out measures in Spanish, the relationship between PHQ-9 at pre-screener ($M = 3.63$, $SD = 3.95$) and PHQ-9 at follow-up ($M = 3.13$; $SD = 3.08$) had a strong, positive correlation between the two variables, $r = .71$, $n = 24$, $p < .001$, with high levels of depressions at pre-screener associated with high levels of depression at follow-up.

Regarding differences, English-speakers, compared to Spanish-speakers scored higher on the PHQ-9. An independent-samples *t*-test was conducted to compare the PHQ-9 scores for English and Spanish-speakers at follow-up. There was a significant difference in scores for English-speakers ($M = 6.73$, $SD = 4.30$) and Spanish-speakers, $M = 3.13$, $SD = 3.08$, t (48) = 3.39, $p = .001$ (two-tailed). The magnitude of the difference in the means (mean difference = -3.61, 95% CI: --1.47 to 5.75) was large (eta squared = .20).

English-speakers also endorsed more somatic items of the Enhanced PHQ-9. On the Enhanced PHQ-9, English-speakers endorsed more fatigue ($M = 1.23$; $SD = 1.03$) than Spanish-speakers, M = 0.63, $SD = 0.63$, t (48) = -2.46, $p = .017$. They also endorsed more changes in appetite ($M = 1.04$; $SD = 1.00$) than Spanish-speakers, $M = 0.42$; $SD = 0.72$, t (48) = -2.51, $p = .016$. They also reported more nausea or upset stomach ($M = 0.50$; $SD = 0.76$) than Spanish-speakers, $M = 0.13$; $SD = 0.34$, t (48) = -2.22, $p = .031$. Table 6 shows the *t*-tests for PHQ-9 and BIS-19 SOM item endorsement in the Enhance PHQ-9 by language preference. Out of the 50 participants, 19 participants endorsed at least one depressive episode in their past based on their

definition of depression, with Spanish-speaking Latinxs (M = 5.14, SD = 4.49) having slightly more episodes than English-speaking Latinxs (M = 2.67, SD = 1.44). Spanish-speakers (M = 1.75; SD = 1.51) had more health conditions than English speakers (M = 0.50; SD = 1.24).

H1. To answer H1, if the sensitivity and specificity of the PHQ-9 would be higher in English-speaking Latinxs than Spanish-speaking Latinxs, area under the curve (AUC) analyses were performed using data from participants who completed the follow-up PHQ-9 (Kroenke et al., 2001). Analysis of participants' status of the MDD MINI (Sheehan et al., 2014) without functional impairment and with functional impairment was assessed for each language group. A description of the ACU analysis is found below.

The AUC is the most important summary index of the ROC curve. A ROC curve with an AUC of >.5 suggests that the test is better than classifying participants randomly. A ROC curve with an AUC of 0.7 to 0.8 is generally considered to indicate an accurate test. A ROC curve with an AUC of 0.8 to 0.9 is considered excellent. A ROC curve with an AUC above 0.9 is considered outstanding. The closer the curve is to the upper left corner, point (1.0), the greater the AUC and the more accurate the test is. Regardless of the functional impairment piece of the MINI, both language groups performed well, with AUCs of ≥ .80. The sensitivity and specificity were calculated for each group. The response rate was 100%, and the results are reported by language groups below (see Table 7). Given that AUC analyses require a larger sample size than the one I collected, my results must be interpreted with caution (Bujang & Adnan, 2016; Hanczar et al., 2010).

In the English-speaking group, n = 3 (11.53%) participants had a PHQ-9 ≥ 10 at follow-up. A total of n = 7 (26.9%) were classified as depressed based on the MINI interview without functional impairment. The AUC was 0.82 (95% CI 0.63 - 1.00) (Figure 1). The sensitivity and

specificity to estimate the optimal cutoff score was the PHQ-9 was assessed compared to the published cutoff scores. The optimal cutoff score was 6, with a sensitivity of 0.86 and a specificity of 0.53 (Table 8). When functional impairment was included in the MINI, $n = 4$ (15.40%) was classified as depressed. The AUC was 0.85 (95% CI 0.64 - 1.00) (Figure 1). The optimal cutoff score was 7, with a sensitivity of 0.75 and a specificity of 0.55 (Table 9).

In the Spanish-speaking group, $n = 0$ (0.00%) participants had a PHQ-9 ≥ 10. A total of $n = 5$ (20.83%) were classified as depressed based on the MINI interview without functional impairment. The AUC was .92 (95% CI 0.80 - 1.00) (Figure 2). The sensitivity and specificity to estimate the optimal cutoff score was the PHQ-9 was assessed compared to the published cutoff scores. The optimal cutoff score was 6, with a sensitivity of .60 and a specificity of .90 (Table 7). When functional impairment was included in the MINI, $n = 4$ (16.70%) was classified as depressed based on the MINI interview. The AUC was .92 (95% CI 0.81 - 1.00) (Figure 2). The optimal cutoff score was 6, with a sensitivity of .75 and a specificity of .90 (Table 8).

Overall, I found that AUC of the PHQ-9 was good in the English-speaking group (MINI without functional impairment ACU = .82; MINI with functional impairment ACU = .85) and excellent in the Spanish-speaking group (MINI without functional impairment ACU = .92; MINI with functional impairment ACU = .92). When the status of the MDD MINI was assessed without functional impairment, the optimal cutoff score was ≥ 6 for both languages. The optimal cutoff score increased from a 6 to a 7 for the English-speaking group when functional impairment was included in the MDD MINI and remained at a 6 for the Spanish-Speaking group. Kroenke et al. (2001) stated that a score of ≥ 10 signals potential MDD. This finding furthers the argument that things could be done to enhance this measure.

H2. For H2, I sought to see if Spanish-speaking participants would be more likely than English-speaking Latinxs to meet diagnostic criteria for current MDD from the MINI than screen positive for MDD on the PHQ-9. Similarly, to H1, for descriptive purposes, I tested this hypothesis with the MINI dichotomized as with or without functional impairment. Unfortunately, I could not calculate a Chi-square test for independence with Yates Continuity Correction with the Spanish-speaking sample, as zero Spanish-speakers had a PHQ-9 score ≥ 10, and a minimum sample size of five or greater in at least 80% of cells is needed to run the analysis (see Table 10 for frequencies of PHQ-9 scores based on language group membership). This being the case, I describe what I found with my sample. None of my Spanish-speaking participants had a PHQ-9 with a score ≥ 10. However, four Spanish-speaking participants had a positive MDD MINI diagnosis with the functional impairment component, and this number increased to five participants when the MDD MINI was assessed without the functional impairment piece. I sought to see if this trend was similar or different from my English-speaking sample, described below.

In the English-speaking sample, three participants had a score ≥ 10. Although a sample size of five is needed to run the Chi-square test for independence with Yates Continuity Correction, I was able to run it in SPSS 26 (Version 27). My results need to be interpreted with caution as I did not meet the assumption that the expected value of cells should be five or greater in at least 80% of cells. In my English-speaking sample, four participants had a positive MDD MINI diagnostic with the functional impairment component, and this number increased to seven participants when the MDD MINI was assessed without the functional impairment piece. A Chi-square test for independence (with Yates Continuity Correction) indicated no significant association between PHQ-9 and MDD MINI with functional impairment, $\chi^2\,(1, n = 26) = 3.12, p$

= .08, ϕ = -.51. A Chi-square test for independence (with Yates Continuity Correction) indicated a significant association between PHQ-9 and MDD MINI without functional impairment, χ^2 (1, n = 26) = 5.49, p = .02, ϕ = -.60.

Overall, I found that regardless of language group membership, participants were more likely to screen positive on the MDD MINI, with or without functional impairment, than on the PHQ-9. These findings are consistent with the work of Del Castillo (1970), that diagnostic symptom interviews conducted in the patient's dominant language led to increased disclosures of symptoms.

H3. I was unable to answer H3, regarding factor loading of depression, due to my limitations in sample size.

H4. For my fourth hypothesis, I sought to see if the sensitivity and specificity of the PHQ-9 would be enhanced for Spanish-speaking Latinxs by including somatic items. I labeled this new survey the Enhanced PHQ-9 (see Table 6 for items). Analysis of participants' status on the MINI without functional impairment and with functional impairment was assessed for each language group. My findings based on language groups are described below.

In the English-speaking group, n = 9 (34.62%) participants had an Enhanced PHQ-9 ≥ 10 at follow-up, and n = 7 (26.92%) were classified as depressed based on the MINI interview without functional impairment. The AUC was .76 (95% CI 0.55 - 0.98) (See Figure 3). The sensitivity and specificity to estimate the optimal cutoff score was the PHQ-9 was assessed compared to the published cutoff scores. The optimal cutoff score was 6 (see Table 9), with a sensitivity of .86 and a specificity of .42 based on the MINI interview with functional impairment, n = 4 (15.38%) was classified as depressed. The AUC was 0.77 (95% CI 0.50 - 1.00) (Figure 3). The sensitivity and specificity to estimate the optimal cutoff score was the

PHQ-9 was assessed compared to the published cutoff scores. The optimal cutoff score was 7 (Table 10), with a sensitivity of 0.75 and a specificity of 0.41 (Figure 3).

In the Spanish-speaking group, $n = 3$ (12.50%) participants had a PHQ-9 ≥ 10, and $n = 5$ (20.83%) were classified as depressed based on the MINI interview without functional impairment. The AUC was .93 (95% CI 0.82 - 1.00) (Figure 4). The sensitivity and specificity to estimate the optimal cutoff score was the PHQ-9 was assessed compared to the published cutoff scores. The optimal cutoff score was 7, with a sensitivity of 0.80 and a specificity of 0.90 (Table 9). These scores are below the PHQ-9 ≥ 10 recommended by Kroenke et al. (2001). Based on the MINI interview with functional impairment, $n = 4$ (16.70%) classified as depressed. The AUC was .94 (95% CI 0.85 - 1.00) (See Figure 4). The optimal cutoff score was 8, with a sensitivity of 0.75 and a specificity of 0.90 (Table 10). Both scores are below the PHQ-9 ≥ 10 recommended by Kroenke et al. (2001).

Overall, similar to my H1, I found that the sensitivity and specificity of the Enhanced PHQ-9 were higher in the Spanish-language group [AUC was .93 (95% CI 0.82 - 1.00 for the MINI without functional impairment and the AUC was .94 (95% CI 0.85 - 1.00) for the MNI with functional impairment] compared to the English-speaking group [the AUC was .76 (95% CI 0.55 - 0.98) for the MINI without functional impairment and the AUC was 0.77 (95% CI 0.50 - 1.00) for the MINI with functional impairment]. Table 7 describes the findings in table format. Similar to my H1, the optimal cutoff score was ≥ 6 for both languages and MINI conditions (with or without functional impairment). Kroenke et al. (2001) index a score of ≥ 10 signifying potential MDD. I found that my Enhanced PHQ-9 did not increase the sensitivity or specificity of the PHQ-9.

Qualitative Data Results

The interviews yielded rich data and three major themes with numerous sub-themes of exploration based on participants' perceptions regarding depression and treatment preferences. The themes included: (1) description of depression, (2) the want for bilingual and bicultural therapists versed in cultural considerations, and (3) preferences for treatment.

Theme 1: Description of Depression. Responses highlighted behavioral, social, and emotional definitions of depression, with descriptions varying based on language group membership. English language participants provided depression definitions very similar to how it is presented in the PHQ-9 (Kroenke et al., 2001) and DSM-5 (American Psychiatric Association, 2013), focusing on how depression affected them as an individual. Spanish-speaking participants focused more on describing how depression affected their ability to engage meaningfully in their interpersonal relationships. Many Spanish-speaking participants described what they considered unusual social isolation and withdrawal from friends and family, focusing on how depression could impact someone's sense of belongingness. Many described hiding their depressive symptoms from family not to burden them with their experience. Some also commonly said that shame, regarding a decreased ability to be present for family and friends, can worsen depression.

A commonality between both groups is that many participants described the hidden nature of depression, saying, "It's like wearing a mask. It's an illness that can go unnoticed." Many participants who identified as emerging adults had experiences with parents or caregivers who differed in how they understood depression. Often participants said that divergent definitions of depression between family members impacted help-seeking behavior. One participant described wanting to keep the peace, sometimes at the cost of their mental health, because the risks of getting professional support could cause family tension and the risk of family decohesion was not worth the stress.

Variations of knowledge regarding symptoms of depression were apparent based on participant age and language group membership. Although many persons could describe depression, individuals with limited educational achievement were more likely to be unfamiliar with specific DSM-5 symptoms (American Psychiatric Association, 2013) criteria than recent graduates or those with professional degrees. Participants often provided their definitions of depression, informed by anecdotal observation or lived experiences, but could not label the particular symptoms. The recognized symptoms were somatic, such as appetite, sleep, or energy changes. Cultural idioms of distress, such as *susto* or *ataque de nervios,* did not come up, suggesting a separation of depression from those experiences that might be more consistent with anxiety symptoms. The cultural value of family connectedness was apparent in the definitions.

Theme 2: Desire for Bicultural Providers. Many participants were bilingual. However, when it came time to discuss preferences for their providers, almost all said they would find ways to manage with language interpreters but hoped to have providers who spoke both Spanish *and* English. Some participants described feeling better able to switch languages when needed. Some participants said that talking about mental health is a sensitive subject and that having an interpreter in the room would lead to slower disclosure of presenting concerns. However, many also discussed the nuances of having a provider who was bilingual but not bicultural. A participant described a sense of relief at not having to explain the intricacies of their family dynamics to bicultural practitioners. Many said it would be disheartening to be labeled "enmeshed" by a mental health provider just because they did not fit the mold of what is understood as emerging adulthood (Arnett, 2010). Specifically, many described wanting their way of relating to their family not to be labeled as atypical due to differing from dominating American family dynamics.

Most participants focused on interpersonal discussions of how providers should broach conversations regarding treatment for depression at a clinical encounter. Both language groups described the need for more providers who understood the diversity within the Latinx community. Many described wanting their provider to get to know them and take their time to answer questions. Many participants discussed the importance of paying attention to the provider's body language and listening skills. Many discussed sociopolitical factors impacting access to care and wished their providers to show cultural skills in discussing these topics. The topics of interest were immigration history, trauma history, generational status, experiencing discrimination, observations of inequitable health outcomes, growing up in a multigenerational household, growing up in a mixed documentation household, and growing up in homes with differing health literacy levels.

Many participants highlighted the importance of clinics taking proactive steps focused on diversity, equity, inclusion, and belongingness. Some participants said they were worried about completing paperwork and listing an address and phone number. One participant highlighted how health paperwork is written, with a focus on using non-biased terms or not asking for documentation status, can help individuals feel at ease when seeking help because their worries regarding jeopardizing their documentation status might be lowered. Many participants described the importance of having personnel available to help them fill out paperwork, specifically if seeking help for mental health was new for them. Many participants stated that having paperwork in their native language was preferable.

Limitations in access to services based on geographical location and a need for mental health providers led some participants to problem-solve regarding their need for therapists. It also left many participants wishing for more bilingual and bicultural-trained providers. A handful

of Spanish-speaking participants who had an assessed need and a perceived need for services went to such lengths as sometimes finding telehealth options for providers in their home countries. One participant described how receiving telehealth services across country lines was more cost-effective than receiving services within the United States as the U.S. dollar went further. The participants described telehealth meetings during the pandemic and how they appreciated that the services were in Spanish and felt their cultural heritage was understood.

Theme 3: Treatment Barriers and Preferences. Barriers to treatment were discussed. Apart from a lack of health care providers in their geographical area, other barriers highlighted were waitlist times, cost of services, and availability of appointments outside of the traditional 9 AM – 5 PM hours of operation. Some participants reported they would benefit from seeing a clinical psychologist for therapy; however, many did not know where to start finding a provider. If cost was discussed as a barrier, some said they would go to their primary care provider for a referral. However, not all said they would seek help from a mental health professional. Many described that they would try other things, such as reading information, talking to family, or waiting to see the time pass, hoping that the depressive episode would clear on its own. Some participants described coping strategies such as regular meditation or physical activity such as running to help curb symptoms of depression. Many described the benefits of "keeping busy," which might suggest behavioral activation (Santiago-Rivera et al., 2008) might be a good fit for certain participants. English-speaking participants with a college education were more likely to say they knew of cognitive behavioral therapy as a treatment. Most Spanish-speaking participants were not aware of the names of psychotherapy treatments.

Most participants voiced being aware of psychotherapy and medications as treatment options. Younger generations discussed often finding conflict in having older generations differ

in their belief of depression as a disorder worth treating with psychotherapy or psychopharmacological intervention. The time-intensive nature of psychotherapy did not seem to deter participants. Specific types of medications rarely came up, and many described wanting to avoid the side effects of certain medicines. Also, many participants feared relying on the medication and wished to explore other things they could do, behaviorally or cognitively, to relieve symptoms. Many had secondhand recollections of either friends or family members who experienced adverse effects of medications. Most participants saw medication as an avenue for treatment in severe cases of depression. A handful of participants said they were prescribed a Selective Serotonin Reuptake Inhibitor (SSRI) by providers at medical encounters. Many said they would not or have not filled their prescription. Some participants reported not being convinced that medication was the proper treatment for them. They said they would seek a second opinion and other strategies to cope with their symptoms if they had the option. Others said they tried medication after information about their condition was explained thoroughly but discontinued taking their medication once their depressive symptoms subsided.

Participants described their preferences for how to receive information regarding mental health resources for depression. Many participants wanted their medical provider to tell them in a primary care visit if they suspected depression and the possible treatment options. Others wished that general community awareness regarding depression would increase through the use of video informatics, perhaps on social media sites, depicting reputable persons demystifying the symptoms of depression using everyday non-jargoned language

Differences in describing the frequency and duration of services became apparent based on language group. English-speakers would describe time-limited therapy, most commonly at the frequency of once weekly for a few months. Spanish-speaking participants often described more

contextual factors impacting the duration of therapeutic encounters. Many described wanting to do things with *respecto*, deferring to the expertise to make the clinical decision regarding the frequency of clinical sessions. Many said that it depended on how badly the depression presented and what the professional viewed as good per their clinical judgment. Also, all participants voiced a preference for individual therapy compared to family or group. Most stated that although depression might impact their social group, it is a personal experience that co-exists within a larger structure and would benefit from being treated individually.

Privacy considerations came up often. Some participants described that meeting with a provider would also help with privacy considerations, especially those who lived with friends or family who might have dissenting views on therapy. Some participants described how the process of attending the session in person might become part of their treatment.

Discussion

In the United States, disparities in treatment for depression exist, with Spanish-speaking Latinxs being less likely to access mental health treatments than English-speaking Latinxs (Lara et al., 2005). One possible reason for low treatment is that providers tend to overlook depression symptoms in Spanish-speaking patients, especially if the practitioner is not aware of how depression might express culturally (Ahmed & Bhugra, 2006).

One way to help identify depression is to administer self-report screeners. However, screeners used in the United States have been created in English and translated into Spanish. Such a measure is the PHQ-9 (Kroenke et al., 2001), a commonly used self-report measure assessing depression symptoms in the past two weeks. Kroenke et al. (2001) argue that a score of ≥ 10 on the PHQ-9 is a cut-off score with good sensitivity and specificity. However, it is unclear if this cut-off score works well with Spanish-speaking populations in the United States, as the

effectiveness of many measures has not been extensively validated in predominantly Spanish-speaking samples in the United States (Limón et al., 2016). Also, many validity studies have less than 5% of their sample representative of Latinx participants (Pignone et al., 2002). Work by Rao et al. (2012) suggests that Spanish-speaking individuals who recently immigrated to the United States from Latin America may endorse more somatic symptoms of MDD than non-Latinx Whites. Givens et al. (2007) found that Latinx are more likely than non-Latinx Whites to prefer counseling to medication and believe that antidepressants are addictive. To address gaps in the literature related to identifying depression and increasing access to depression treatments, I proposed two aims: (1) examining if the sensitivity and specificity of the Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) could be enhanced by including a modified version of the Brief Symptom Inventiory-18 (BSI-18; Derogatis, 2001) somatic items; and (2) better understanding preferences for MDD treatment across linguistic groups.

Screening for Depression

Regarding Aim 1, I evaluated the sensitivity and specificity of the standard PHQ-9 (Kroenke et al., 2001) in a diverse sample of Latinxs. Using Area Under the Curve analysis, I found that the measure was adequate and still missed identifying many positive cases captured by the MDD MINI diagnostic interview in both the English and Spanish-speaking groups. This finding was the most drastic with the Spanish-speaking group, where 0 participants scored positive on the PHQ-9 ≥ 10, four participants scored positive on the MDD MINI with functional impairment, and five scored positive on the MDD MINI with functional impairment. In the English-speaking group, three participants scored positive on the PHQ-9 ≥ 10. In the English-speaking group, seven participants scored positive on the MDD MINI with and without functional impairment. Differences in depression symptom endorsement between the PHQ-9 and

the MDD MINI cannot be attributed to differences in the duration of symptoms, as the PHQ-9 screener and the MDD MINI interview ask for the endorsement of depression symptoms within the past two weeks. I offer potential explanations for this finding below.

The English and Spanish-speaking participants differed drastically based on age group. On average, English-speakers were 27.62 years of age, while Spanish-speakers were 53.54 years of age, t (48) = 3.39, $p < .001$ (two-tailed). PHQ-9 scores have been shown to decrease with age based on work conducted with U.S. samples. Particularly, endorsement on the PHQ-9 shows an inverted U-shaped patterned with age, where the highest symptom endorsement for depression occurs typically in early to middle adulthood and goes down with older age (Dhingra et al., 2011; Prat & Brody, 2014). It is possible that differences in total scores between the two language groups could reflect age differences. However, not a large enough sample size was obtained to look into PHQ-9 symptom endorsement by item or total score to delineate if differences exist based on specific age groups cohorts, such as early adulthood, middle age, or geriatric.

It is possible that participants over or under-endorsed symptoms of depression as measured on the PHQ-9 (Kroenke et al., 2001), and this could be motivated by a myriad of factors other than malingering, which according to the DSM-5 (American Psychiatric Association, 2013), is the intentional overreported of symptoms motivated by financial or legal benefit. One possibility is that individuals might overly endorse symptoms of MDD if they believe their symptoms will be overlooked or unbelieved by their healthcare provider. Qualitative interviews suggested that individuals wanted mental health care providers versed in cultural considerations. An alternative explanation is that lower symptom endorsement could be a symptom of depression, especially if the endorsement of items might entail a connection to services, and connecting to services is considered burdensome. In many qualitative interviews,

many Spanish-speaking participants discussed the need to minimize symptoms and not unintentionally burden the family. Experiential avoidance is an emotion-regulation process involved in suppressing, avoiding, and controlling the frequency of unpleasant thoughts, feelings, or bodily sensations (Hayes et al., 1996). Experiential avoidance is common in persons with depression (Barlow et al., 2004).

Emotional suppression is another emotion-regulation strategy that may have influenced PHQ-9 scores. Although more commonly seen in anxiety, it is also seen among individuals who struggle with severe depression. It is thought that rumination, which is to think excessively and unproductively about past experiences, might be a form of emotional avoidance used to suppressive affective experience (Moulds et al. 2007), which can lead to short-term decreases in somatic symptoms, but a long-term increase in depressed mood. Individuals with severe depression might endorse lower PHQ-9 items and somatic symptoms due to using emotional suppression as an emotion regulation strategy. Many participants suggested in their qualitative interviews that a person with depression might want to hide their symptoms through "masking." It is possible that when people try to hide their symptoms, they tend to isolate more because people may sense something is wrong. Reactive isolation, or experiential avoidance, might also result from wanting not to burden family members or loved ones.

Additionally, seeing individuals within their context is important. The sociopolitical context might influence feelings of safety to endorse items. The data were collected peri-COVID-19 and took place shortly after the Trump presidency. During Trump's administration, the public charge rule made it harder for undocumented individuals to qualify for specific immigration procedures. It could disproportionally place people at risk for not getting the mental health care they need to engage in self-preservation. Although immigration status was not asked

during data collection, many participants from possibly mixed-documentation households said they would forgo obtaining access to care for depression if it meant that seeking help could jeopardize the legal status of family members. A way to circumvent the under or over-reporting of symptoms could entail providing individuals with written and verbal information regarding why these symptoms are asked and what will occur with the data to alleviate or address any concerns they might have when making decisions regarding their mental health.

Work also needs to empirically explore whether verbal versus written endorsement of symptoms illicit differential willingness to disclose among participants. In diagnostic interviews, at least two people are conversing, and such discussions may lend themselves to elicit a heightened emotional response rather than just completing a self-report measure. This might be especially true if participants perceive that they are being understood and can communicate or alternate their use of language (English or Spanish) with a bilingual interviewer. I completed all the Spanish-speaking interviews and am fluent in English and Spanish. I also know about living in the United States as a bicultural Latina identifying as female. In the qualitative interviews, participants discussed how tone of voice is essential for creating a space conducive to self-discourse. This process might have been at play with the Spanish-speaking community sample. Many of my participants heard of the study by word of mouth. By the time the participants came to the qualitative interview, they had already been in contact with either my research assistant or me, which might have helped build trust over a short period of time. The finding of increased disclosure of depressive symptoms on verbally administered diagnostic surveys is what Del Castillo (1970) found in their study. Del Castillo (1970) discussed that diagnostic symptom interviews conducted in the patient's dominant language led to increased disclosures of symptoms, which in turn related to better retention of patients in treatment.

Another thing to consider is that the PHQ-9 and the MDD MINI ask the same questions; however, the PHQ-9 uses a Likert scale regarding the frequency of symptom endorsement during the past two weeks, while the MDD MINI asks participants to answer with a yes/no response Differences in positive screening between both measures may reflect how questions are answered. When administering the MDD MINI, it was not uncommon for participants to answer yes and occasionally provide more contextual information about how they were experiencing the symptom in their everyday life.

Screening for Depression

Adding somatic items to the PHQ-9 to create an Enhanced PHQ-9 did little to improve the sensitivity and specificity of the survey for both language groups. Adding somatic items increased the number of English and Spanish-speaking participants who scored positive on the PHQ-9 but did little to change the cut-off score for both groups. It increased a positive screener on the PHQ-9 ≥ 10 in the English-speaking group from 11.53% to 34.62% and in the Spanish-speaking from 0.0% to 12.50%. The biggest increase was observed in the English-speaking group, not the Spanish-speaking group. In my sample, English-speakers endorsed more BSI-18 SOM items (M = 2.38; SD = 2.76) than Spanish-speakers (M = 1.25; SD = 1.62). These findings go against some work suggesting that Spanish-speaking Latinxs endorse more somatic symptoms than English-speakers (Ahmed & Bhugra, 2006; Dunlop et al., 2020 Mezzich & Raab, 1980; Rao et al., 2012). This is despite Spanish-speakers endorsing more physical health conditions (M = 1.75; SD = 1.51) than English-speakers (M = 0.50; SD = 1.24). I offer a potential explanation for this finding below.

Relationship Questions to Assess for Depression

I recommend retaining these items in the PHQ-9 and, once a large enough sample size is obtained, complete a confirmatory factor analysis between language groups to get a picture of how the items load as factors. This being said, my qualitative interviews suggest that a relational component of depression may be one way that depression manifests in Spanish-speaking Latinxs. Relational behaviors such as decreased social engagement are not assessed explicitly in the PHQ-9 (Kroenke et al., 2001), although referenced in the DSM-5 (American Psychiatric Association, 2013). Based on my qualitative interviews, I would suggest a research study that addresses relational items to the PHQ-9 to see if such items help increase the sensitivity and specificity of the questionnaire for predominantly Spanish-speaking samples. Based on my qualitative interviews, I suggest adding relational items to the PHQ-9 to see if such items help increase the sensitivity and specificity of the questionnaire for predominantly Spanish-speaking samples. I would recommend incorporating questions such as: 1) Have you noticed a need to hide emotions or thoughts from persons you usually share with (masking)? 2) Have you noticed a decrease in the time you want to spend around people you regularly spend time with? And 3) Do you feel less emotionally present in your relationships with family, friends, classmates, or co-workers?

Demographically, Spanish-speakers compared to English-speakers were more likely to be married or partnered (n = 18; 69.2% compared to n = 8; 30.8%), have a higher number of depressive episodes (M = 5.15; SD = 4.49% compared to M = 67; SD = 1.44), and to have immigrated to the United States (n = 22; 71% compared to n = 9; 29.0%). It may be that Spanish-speakers, although living with depression, might not view it as functionally impairing and were not experiencing what they label a depressive episode at the time of the MDD MINI interview. Although the relationship quality of marriages was not assessed, Spanish-speakers may have

more social support in navigating their depression. Perhaps immigrating to the United States gives them a different perspective of well-being, and definitions of functional impairment are relative. It is also possible that they were experiencing a depressive episode but scored negative on the MDD Survey. It would have been beneficial to ask participants after they had completed the MDD MINI if they thought they were depressed. If they were to have said yes and scored negative on the MDD MINI, this would have given me valuable information. For instance, the MDD MINI may also not fully capture a cultural expression of depression in Spanish-speaking Latinxs.

Preferences for Treatment

Regarding Aim 2, I found that English and Spanish-speakers differed in their definitions of depression. English-speaking Latinxs largely described depression in terms consistent with DSM-5 (American Psychiatric Association, 2013) criteria, while Spanish-Speaking Latinxs focused more on interpersonal impairments (e.g., inability to fulfill major roles in their familial lives). In reductionist terms, this might reflect individualistic versus collectivistic cultural values. On measures of acculturation, English-speakers were more acculturated to English culture on the SASH (Marín et al., 1987; $M = 2.48$, $SD = 0.81$) than Spanish-speakers ($M = 4.23$; $SD = 0.59$). The same trend was found on the PAS (Troop et al., 1999; $M = 3.97$; $SD = 1.24$) compared to Spanish-speakers ($M = 2.88$; $SD = 1.23$). English-speakers endorsing definitions of depression similar to how depression is described in the DSM-5 (American Psychiatric Association, 2013) is not surprising given that the psychometric equivalence of specific depression measures has been found across English and Spanish versions in bilingual college students (Ruggero et al., 2004). Given these strong associations, it can be that English language is a proxy measure of acculturation.

Regarding treatment, people vastly preferred individual psychotherapy over medications or other forms of treatment. And people wanted a culturally informed/bicultural clinician who would understand the personal and sociopolitical context of Latinxs' lives. It is known that incongruent language matching between provider and patient can hinder the provision of clinical health services (Flores, 2005; Ku & Flores, 2005; Woloshin et al., 1997). Also, less than 5% of all psychologists in the United States in 2017 were Latinx, with only 5.5% of all psychologists saying they provided services in Spanish proficiently (Smith, 2018). Spanish-speaking providers can help Spanish-speakers feel more comfortable accessing mental health (Ruiz, 2002; Woloshin et al., 1995). Many participants were aware of the shortage of bilingual and bicultural providers.

Clinical Implications

Not all positive depression screeners result in a depression diagnosis (Kroenke et al., 2003). Although a quick way of gathering data at a clinical encounter, solely relying on a depression screener to help identify depression can place both the provider and patient at a disadvantage. Not identifying depression in a timely manner can lead to economic and emotional burden (Williams & Rucker, 2000), and it is thought that this burden is higher in Latinx individuals (Manson, 2003; Williams & Rucker, 2000). Providers might miss identifying depression by relying on responses to survey items that do not depict the way participants might experience depression. Patients might vary on their comfort discussing mental health-related symptoms without further prompting. To help navigate working within an imperfect system of identification and in an effort to reduce disparities in identification and access to timely depression treatment, providers benefit from identifying the limitations of the current clinical screening tools we have today and making slight adjustments in the way depression symptoms are assessed.

Results from this study suggest that providers may benefit from developing relationships with their patients where they feel comfortable describing the various presentations of depression so that patients leave a clinical encounter understanding the many ways depression can present *and* that various treatment options are available. Depression can show in as many as 227 different ways based solely on the nine items described in the DSM-5 (Zimmerman et al., 2015). Researchers studying depression screeners based on those diagnostic criteria often failed to include diverse samples in their measurement validation studies (Pignone et al., 2002).

Some research suggests that Spanish-speaking Latinxs endorse somatic items (Mezzich & Raab, 1980; Rao et al., 2012). However, this was not found in this study. It is known that depression can lead an individual to withdraw from everyday activities and isolate themselves from others. From a theoretical perspective, such isolation can lead to low reinforcement and exacerbate a person's experience with the depression cycle. However, the way that depression can dampen social relationships and lead to interpersonal distress related to feeling unable to connect or be present for others is not highlighted as a cardinal symptom as currently listed in the DSM-5 (American Psychiatric Association, 2013) or the PHQ-9 (Kroenke et al., 2001). This study supports the argument that cultural considerations in how depression might present need to be further described and included in the DSM-5 (American Psychiatric Association, 2013) in its future iterations and consider including scholars who study mood disorders and how such mood disorders present in the diverse and growing U.S. population.

Treatments. The provision of treatment reflects the types of tools that providers can give based on their scope of practice and the context in which they serve. For instance, a physician working in a rural part of the U.S. that experiences a shortage of behavioral health providers would be limited in their ability to refer patients to in-person psychotherapy consultation unless,

say, a behavioral health consultant is a part of their or a surrounding practice. It would, therefore, not be uncommon for a provider to suggest medication as it is an option or bibliotherapy as an intervention. However, many patients described being worried that medications are addictive (Givens et al., 2007). They voiced interest in managing depression based on behavioral interventions that would boost their functioning and interpersonal connectivity. Also, some patients described struggling with literacy and technology. Adaptations of how information is provided might be needed. For instance, pictural depictions such as video versus written information may be a way of communication. Efforts to bridge the digital divide might be required. However, this suggestion is a heavy lift. Additionally, participants said they were hungry to learn more about depression and wished that depression were more openly discussed. Many also said they would try telehealth if in-person psychotherapy consultations were unavailable.

Regarding treatments for depression, almost all participants were aware of psychological and psychopharmacology treatments for depression (Baker et al.,1997). However, only a handful could tell you about one type of psychotherapy or psychopharmacological medication available in today's mental health industry. Only one participant provided the names of specific medicines to treat depression. This came up in describing the types of medications and how they affected the participant. Most participants described not wanting to try medication as a first line of treatment. Almost all described wishing to try things such as physical activity or other structured activities to help manage symptoms of depression. When prompted about treatment modality, nearly all participants preferred individual therapy for various reasons. These findings suggest that providing participants with treatment focused on behavioral activation might fit well for

those open to structured community activities. However, these suggestions should be studied empirically.

Presentation of a Clinical Practice. Thinking about the patient experience is crucial (Louviere et al., 2000). Research suggests that Spanish-speakers are less likely to seek care than English-speaking Latinxs (Lara et al., 2005; Vega et al., 1999). The reasons for this might be multifactorial. However, in this study, qualitative interviews reveal that how paperwork is provided may play an important role. Although it is a federal law to provide all patients with a language interpreter if needed, good interpretation services are hard to come by. From a systematic level, health service programs might benefit from discussing this in more detail, particularly issues and concerns about cultural humility to increase health equity. Many participants endorsed a preference for providers versed in their language and cultural consideration and are also flexible in meeting providers where they are.

Health Literacy. My study highlights the importance of taking care in how psychoeducational material regarding symptoms and treatment for depression is presented to Latinx patients. Most participants knew of two treatment camps (psychotherapy and psychopharmacology), but few could name specific names of types (such as cognitive behavioral therapy or names of medications). Clinicians must go into clinical encounters ready to discuss various treatment options and address any possible gaps in patient knowledge. However, in an individual clinical encounter, this can take substantial time. Efforts at a more border scale that can help increase health literacy are indicated. For instance, many participants discussed getting information through video informatics as a feasible way to learn about depression.

Limitations

A strength of this study is that a diverse sample of Latinxs participated, consisting of community members, college students, etc., with and without diagnosed and treated depression. A limitation of this study is that most participants have been in the United States for at least 20 years or more and may not reflect the experiences of recent immigrants. Participants elected to participate. Those with more severe depression may have chosen not to participate.

In the same vein of generalizability, another limitation of this study is that the PHQ-9 is a measure commonly used in medical practice. My participants mainly came from a community sample. Although many described having gone to a primary care provider in the past year, these participants were not necessarily recruited from a primary care practice. Most cases of depression are initially identified and treated by primary care physicians (Olfson et al., 2009). Since this measure is to be used primarily in such clinics, a more concerted effort is needed to recruit participants from such clinics.

Another limitation is that the majority of participants were assessed cross-sectionally. Depression is a chronic illness that can present multiple times during the lifespan and vary in level of functional impairment. Information regarding if a person's knowledge of access to mental health treatments changes with time can provide valuable information.

Future Directions

Regarding work done with participant perspectives, contextual data of participants, such as their history of chronic physical health conditions, and qualitative interviews regarding their understanding of depression and preferences for depression treatment, help better inform these noticeable differences. Such data were collected, and a mediational analysis could be run based on a prior hypothesis. Also, more work on exploring depression and how it presents and how gender identity may impact perceptions of help-seeking can help researchers better understand

gendered disparities in access to care. My sample size did not allow me to make comparisons based on gender, as the majority of my participants identified as female (74%). Further work informing differential rates of depression identification and access to depression treatment between gendered groups and if factors of acculturation are needed.

Additionally, research from the practitioner's perspective is also needed. It is important to research the type of information practitioners consider when running a differential or how they explain treatment options to patients. Additionally, research on comfort and cultural humility in asking patients about depression is important. Given concerns about cultural humility in clinical practices, research on diversity, equity, and inclusion considerations are needed as participants reported wanting to feel comfortable discussing sociopolitical concerns impacting their lives.

Conclusions

The results of this study contribute in important ways to the literature on Latinx depression. First, I found that a commonly used measure to screen for depression frequently missed positive cases. Second, I found that adding somatic items to the PHQ-9 (Kroenke et al., 2001) did not increase the sensitivity of this tool. Finally, qualitative interviews suggested that perhaps adding items related to interpersonal difficulties would be a fruitful avenue for future research.

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Tables

Table 1

Descriptive and Background Characteristic of Participants

Variable	*N*	*M (SD)* or *n (%)*
Age, in years	50	40.06 (16.99)
Gender	50	
Female		43 (86.0%)
Male		7 (14.0%)
Race	50	
Other		24 (48.0%)
White		26 (52.0%)
U.S. state in which residing	50	
Arkansas – South		6 (12.0%)
California – Other		5 (10.0%)
Colorado – Other		1 (2.0%)
Florida – South		1 (2.0%)
Illinois – Other		2 (4.0%)
Maryland – South		1 (2.0%)
New Jersey – Other		4 (8.0%)
North Carolina – South		14 (28.0%)
Rhode Island – Other		5 (10.0%)
Texas - South		11(22.0%)
Country of origin	50	
Bolivia		2 (4.0%)
Columbia		3 (6.0%)
Dominican Republic		1 (2.0%)
Ecuador		2 (4.0%)
Mexico		10 (20.0%)
Nicaragua		1 (2.0%)
Peru		9 (18.0%)
Puerto Rico		3 (6.0%)
United States of America		19 (38.0%)
Years in the United States	50	21.62 (10.62)
Number of children	50	.62 (.90)
Marital status	50	
Never been married		18 (36.0%)
Living with a partner		3 (6.0%)
Married		23 (46.0%)
Divorced or separated		5 (10.0%)
Widowed		1 (2.0%)
Education	50	
Some high school or less		4 (8.0%)
High school diploma or GED		3 (6.0%)
Associates or technical degree		11(22.0%)
Some college, but no degree		8 (16.0)

Bachelor's degree		12 (24.0%)
Graduate or professional degree		12 (24.0%)
Work status	50	
Unemployed		6 (12.0%)
Student		14 (28.0%)
Working class		8 (16.0%)
Professional		20 (40.0%)
Retired		2 (4.0%)
Income	50	
Less than $25,000		21 (42.0%)
$25,000 - $49,999		17 (34.0%)
$50,000 - $74,999		8 (16.0%)
$75,000 - $99,999		1 (2.0%)
$100,000 - $149,999		2 (4.0%)
$150,000 or more		1 (2.0%)
Number of depressive episodes	19	3.58 (3.08)
PHQ-9 score at sign-up	50	5.54 (4.24)
PHQ-9 score at follow-up	50	5 (4.15)
BSI 18 SOM score	50	1.85 (2.33)
SASH score	50	3.32 (1.13)
PAS score	50	3.44 (1.34)
Physical health conditions	50	1.10 (1.50)

Table 2

Demographic and Scores by Language Preference

Variable	ENG *M(SD)* or *N* (%)	SPA *M(SD)* or *N* (%)	Test Statistic	*p*
Age, in years	27.62 (9.56)	53.54 (12.29)	t = -8.36	<.001***
Gender			χ^2 = 0.87 [a]	.352
Female	24 (55.8%)	19 (44.2%)		
Male	2 (28.6%)	5 (71.4%)		
Race			χ^2 = 0.00	.991
Other	13 (54.2%)	11 (45.8%)		
White	13 (50.0%)	13 (50.0%)		
U.S. state residing			χ^2 = 2.53	.112
Other	12 (46.2%)	5 (20.8%)		
South	14 (53.8%)	19 (79.2%)		
Country of origin			χ^2 = 14.90 [a]	<.001***
Abroad	9 (29.0%)	22 (71.0.7%)		
U.S.	17 (89.5%)	2 (10.5%)		
Year in the U.S.	22.31 (10.17)	20.88 (11.26)	t = 0.47	.639
Number of children	0.62 (.94)	0.63 (.88)	t = 0.04	.970
Marital status			X^2 = 8.09	.004**
Other	18 (75.0%)	6 (25.0%)		
Married or partnered	8 (30.8%)	18 (69.2%)		
Education			χ^2= 0.00	.991
Some college or less	13 (50.0%)	13 (50.0%)		
Bachelor's degree/+	13 (54.2%)	11 (45.8%)		
Work Status			χ^2 = 0.40	.525
Other	14 (46.7%)	16 (53.3%)		
Professional	12 (60.0%)	8 (40.0%)		
Income			χ^2 = 2.91	.232
Less than $25,000	13 (61.9%)	8 (38.1%)		
$25,000 - $49,999	6 (35.3%)	11 (64.7%)		
$50,000-$74,999/+	7 (58.3%)	5 (41.7%)		
Num. of dep. episodes	2.67 (1.44)	5.14 (4.49)	t = -1.79	.091
PHQ-9 score at sign-up	7.08 (4.05)	3.63 (3.95)	t = 3.05	.004
PHQ-9 score at f/u	6.73 (4.30)	3.13 (3.08)	t = 3.39	.001***
BSI 18 SOM score	2.38 (2.76)	1.25 (1.62)	t = 1.75	.086
SASH score	2.48 (0.81)	4.23 (0.59)	t = -8.65	<.001***
PAS score	3.97 (1.24)	2.88 (1.23)	t = 3.13	.003**
Phys. health conditions	0.50 (1.24)	1.75 (1.51)	t = -3.21	.002**

[a] Cells have expected count less than 5. Results should be interpreted with caution.

* p < .05; ** p < .01; *** p <.001.

Table 3

Demographics and Scores by PHQ-9 at Follow-Up

Variable	PHQ-9 neg. *M*(*SD*) or *N*(%)	PHQ-9 pos. *M*(*SD*) or *N*(%)	Test Statistic	*p*
Age, in years	40.51 (17.20)	33.00 (13.89)	$t = 0.74$	.464
Gender			$\chi^2 = 0.00$[a]	1.00
Female	40 (93.0%)	3 (7.0%)		
Male	7 (100.0%)	0 (0.0%)		
Race			$\chi^2 = 0.01$ [a]	.943
Other	22 (91.7%)	2 (8.3%)		
White	25 (96.2%)	1 (3.8%)		
U.S. state in which residing			$\chi^2 = 0.36$ [a]	.546
Other	15 (88.2%)	2 (11.8%)		
South	32 (97.0%)	1 (3.0%)		
Country of origin			$\chi^2 = 0.00$ [a]	1.00
Abroad	29 (93.5%)	2 (6.5%)		
U.S.	18 (94.7%)	1 (5.3%)		
Year in the United States	21.87 (10.81)	17.67 (7.23)	$t = 0.66$	.512
Number of children	0.66 (0.92)	0.00 (0.00)	$t = 1.24$	.223
Marital status			$\chi^2 = 0.01$ [a]	.943
Other	22 (91.7%)	2 (8.3%)		
Married or partnered	25 (96.2%)	1 (3.8%)		
Education			$\chi^2 = 0.01$ [a]	.943
Some college or less	25 (96.2%)	1 (3.8%)		
Bachelor's degree or +	22 (91.7%)	2 (8.3%)		
Work Status			$\chi^2 = 0.00$ [a]	1.00
Other	28 (93.3%)	2 (6.7%)		
Professional	19 (95.0%)	1 (5.0%)		
Income			$\chi^2 = 1.23$ [a]	.541
Less than $25,000	19 (90.5%)	2 (9.5%)		
$25,000 - $49,999	16 (94.1%)	1 (5.9%)		
$50,000-$74,999 or +	12 (100.0%)	0 (0.0%)		
Num. of dep. episodes	3.63 (3.28)	3.33 (2.08)	$t = 0.146$	.885
PHQ-9 score at Sign-Up	5.06 (4.07)	11 (5.29)	$t = -2.41$	.020*
BSI 18 SOM score	1.49 (1.92)	7.33 (0.58)	$t = -5.21$	<.001
SASH score	3.36 (1.14)	2.75 (0.90)	t = 0.90	.373
PAS score	3.33 (1.28)	5.23 (0.93)	t = -2.52	.01**
Phys. health conditions	1.17 (1.52)	0.00 (0.00)	$t = 1.32$	.194

Note. A positive PHQ-9 is a score of 10 or higher.

[a] Cells have expected count less than 5. Results should be interpreted with caution.

* $p < .05$; ** $p < .01$; *** p <.001.

Table 4

Dem. and Background Characteristics by MDD MINI without Functional Impairment

Variable	MDD MINI - *M*(*SD*) or *N*(%)	MDD MINI + *M*(*SD*) or *N*(%)	Test Statistic	*p*
Age, in years	41.66 (17.34)	35.00 (15.43)	$t = 1.19$	.241
Gender			$\chi^2 = 0.03$ [a]	.864
Female	32 (74.4%)	11 (25.6%)		
Male	6 (85.7%)	1 (14.3%)		
Race			$\chi^2 = 0.03$	.863
Other	19 (79.2%)	5 (20.8%)		
White	19 (73.1%)	7 (26.9%)		
U.S. state in which residing			$\chi^2 = 0.09$	.769
Other	12 (70.6%)	5 (29.4%)		
South	26 (78.8%)	7 (21.2%)		
Country of Origin			$\chi^2 = 0.00$ [a]	.967
Abroad	23 (74.2%)	8 (25.8%)		
U.S.	15 (78.9%)	4 (21.1%)		
Year in the United States	22.26 (10.91)	19.58 (9.81)	$t = 0.76$	.759
Number of children	0.68 (0.96)	0.42 (0.67)	$t = 0.90$	.895
Marital Status			$\chi^2 = 1.33$ [a]	.249
Other	16 (66.7%)	8 (33.3%)		
Married / Partnered	22 (84.6%)	4 (15.4%)		
Education			$\chi^2 = 0.00$	1.00
Some college or less	21 (80.8%)	5 (19.2%)		
Bachelor's degree +	17 (70.8%)	7 (29.2%)		
Work Status			$\chi^2 = 0.00$	1
Other	23 (76.7%)	7 (23.3%)		
Professional	15 (75.0%)	5 (25.0%)		
Income			$\chi^2 = 0.60$ [a]	.742
Less than $25,000	15 (71.4%)	6 (28.6%)		
$25,000 - $49,999	13 (76.5%)	4 (23.5%)		
$50,000-$74,999 or +	10 (83.3%)	2 (16.7%)		
Num. of Dep. Episodes	2.43 (0.98)	4.25 (3.70)	$t = -1.26$	.223
PHQ-9 Score at Sing-Up	4.55 (3.81)	10.00 (4.21)	$t = -3.65$	< .001
PHQ-9 Score at F/U	4.10 (3.33)	9.75 (4.95)	$t = -4.06$	< .001
BSI 18 SOM Score	1.60 (2.13)	3.13 (3.04)	$t = -1.73$	.089
SASH Score	3.30 (1.18)	3.41 (0.910	$t = -0.23$	.817
PAS Score	3.37 (1.37)	3.84 (1.15)	$t = -0.91$	.367
Phys. Health Conditions	1.17 (1.51)	0.75 (1.49)	$t = .716$	.478

[a] Cells have expected count less than 5. Results should be interpreted with caution.

* $p < .05$; ** $p < .01$; *** p <.001.

Table 5

Dem. and Background Characteristic by MDD MINI with Functional Impairment

Variable	MDD MINI - *M*(*SD*)/ *N*(%)	MDD MINI + *M*(*SD*) / *N*(%)	Test Statistic	*p*
Age, in years	40.43 (17.22)	38.13 (16.75)	$t = 0.35$	.729
Gender			$\chi^2 = 0.00$ [a]	.894
Female	36 (83.7%)	7 (16.3%)		
Male	6 (85.7%)	1 (14.3%)		
Race			$\chi^2 = 000$	1.00
Other	20 (83.3%)	4 (16.7%)		
White	22 (84.6%)	4 (15.4%)		
U.S. state			$\chi^2 = 0.03$	.858
Other	15 (88.2%)	2 (11.8%)		
South	27 (81.8%)	6 (18.2%)		
Country of Origin			$\chi^2 = 1.50$ [a]	.221
Abroad	24 (77.4%)	7 (22.6%)		
U.S.	18 (94.7%)	1 (5.3%)		
Year in the United States	21.81 (10.91)	20.63 (9.59)	$t = .286$	.776
Number of children	0.69 (0.95)	0.25 (0.46)	$t = 1.28$	.208
Marital Status			$\chi^2 = 1.64$ [a]	.200
Other	24 (92.3%)	2 (7.7%)		
Married / Partnered	18 (75.0%)	6 (25.0%)		
Education			$\chi^2 = 0.00$	1.00
Some college or less	22 (84.6%)	4 (15.4%)		
Bachelor's degree +	20 (83.3%)	4 (16.7%)		
Work Status			$\chi^2 = 0.00$	1.00
Other	25 (83.3%)	5 (16.7%)		
Professional	17 (85.0%)	3 (15.0%)		
Income			$\chi^2 = .704$ [a]	.703
Less than $25,000	17 (81.0%)	4 (19.0%)		
$25,000 - $49,999	14 (82.4%)	3 (17.6%)		
$50,000-$74,999 or +	11 (91.7%)	1 (8.3%)		
Num. of Dep. Episodes	2.36 (1.29)	5.25 (4.06)	$t = - 2.23$	.040*
PHQ-9 Score at Sing-Up	4.32 (3.88)	8.92 (3.92)	$t = - 3.56$	< .001***
PHQ-9 Score at F/U	3.74 (3.17)	9.00 (4.45)	$t = - 4.54$	< .001***
BSI 18 SOM Score	1.39 (1.87)	3.25 (3.11)	$t = - 2.53$	.015*
SASH Score	3.35 (1.15)	3.20 (1.10)	$t = 0.39$	.699
PAS Score	3.35 (1.29)	3.73 (1.49)	$t = -0.83$	. 406
Phys. Health Conditions	1.26 (1.55)	0.58 (1.24)	$t = 1.38$	.174

[a] Cells have expected count less than 5. Results should be interpreted with caution.

* $p < .05$; ** $p < .01$; *** p <.001.

Table 6

T Test for PHQ-9 and BIS-19 SOM Item Endorsement by Language Preference

PHQ-9 and BSI-18 SOM Items	English $n = 26$ $M(SD)$	Spanish $n = 24$ $M(SD)$	t	p
Little interest or pleasure in doing things?	0.73(0.67)	0.21(0.42)	-3.29	.002**
Feeling down, depressed, or hopeless?	0.69(0.55)	0.38(0.58)	-1.99	.052*
Trouble falling or staying asleep or sleeping too much?	1.27(1.04)	0.46(0.59)	-3.35	.002**
Feeling tired or having little energy?	1.23(1.03)	0.63(0.65)	-2.46	.017*
Poor appetite or overeating?	1.04(1.00)	0.42(0.72)	-2.51	.016**
Feeling bad about yourself – or that you are a failure or have let yourself or your family down?	0.65(0.80)	0.42(0.50)	-1.25	.219
Trouble concentrating on things, such as reading the newspaper or watching television?	0.62(0.75)	0.46(0.78)	-0.73	.472
Moving or speaking so slowly that other people could have noticed? Or so fidgety or restless that you have been moving a lot more than usual?	0.38(0.75)	0.13(0.34)	-1.55	.127
Thoughts that you would be better off dead, or thoughts of hurting yourself in some way?	0.12(0.33)	0.04(0.20)	-0.95	.347
Faintness or dizziness	0.38(0.75)	0.29(0.69)	-0.45	.652
Having pain in the heart or chest	0.15(0.37)	0.13(0.34)	-0.29	.775
Nausea or upset stomach	0.50(0.76)	0.13(0.34)	-2.22	.031**
Trouble getting your breath	0.27(0.60)	0.08(0.28)	-1.38	.175
Numbness or tingling in parts of your body	0.27(0.53)	0.29(0.55)	0.15	.884
Feeling weak in parts of your body	0.81(1.20)	0.33(0.57)	-1.76	.084

* $p < .05$; ** $p < .01$; *** p <.001.

Table 7

Optimal cut-off scores based on language type (English; Spanish), positive PHQ-9 type ≥ 10 (H1: PHQ-9; H2: Enhanced PHQ-9), and MDD MINI type (without (w/o) functional impairment; with functional impairment)

H	Lang.	Total	MDD MINI w/o Functional Impairment					MDD MINI with Functional Impairment				
		N(%)	*N*(%)	AUC	Cut-off	Sen.	Spec.	*N*(%)	AUC	Cut-off	Sen.	Spec.
H1	EN	3(11.53%)	7(26.9%)	0.82	6	0.86	0.53	4(15.40%)	0.85	7	0.75	0.55
	SP	0(0.00%)	5(20.83%)	0.92	6	0.60	0.90	4(16.70%)	0.92	6	0.75	0.90
H2	EN	9(34.62%)	7(26.92%)	0.76	6	0.86	0.42	4(15.38%)	0.77	7	0.75	0.41
	SP	3(12.50%)	5(20.83%)	0.93	7	0.80	0.90	4(16.70%)	0.94	8	0.75	0.90

Table 8

Sensitivity, specificity of different cut-off scores of the standard PHQ-9 and MINI (without functional impairment)

Language	Positive if ≥ or Equal To	Sensitivity	Specificity
English	0.50	1.00	0.11
	2.00	1.00	0.16
	3.50	1.00	0.21
	4.50	1.00	0.42
	5.50	0.86	0.53
	6.50	0.71	0.58
	7.50	0.71	0.68
	8.50	0.57	0.84
	10.50	0.43	1.00
	13.00	0.29	1.00
	17.00	0.14	1.00
	21.00	0.00	1.00
Language	Positive if ≥ or Equal To	Sensitivity	Specificity
Spanish	0.50	1.00	0.32
	1.50	1.00	0.53
	2.50	1.00	0.63
	3.50	1.00	0.84
	4.50	1.00	0.90
	6.00	0.60	0.90
	7.50	0.40	0.90
	8.50	0.20	0.95
	10.00	0.00	0.00

Table 9

Sensitivity, specificity of different cut-off scores of the standard PHQ-9 for MINI (with functional impairment)

Language	Positive if ≥ or Equal To	Sensitivity	Specificity
English	0.50	1.00	0.09
	2.00	1.00	0.14
	3.50	1.00	0.18
	4.50	1.00	0.36
	5.50	1.00	0.50
	6.50	0.75	0.55
	7.50	0.75	0.36
	8.50	0.75	0.63
	10.50	0.50	0.82
	13.00	0.50	0.00
	17.00	0.25	0.00
	21.00	0.00	0.00
Language	Positive if ≥ or Equal To	Sensitivity	Specificity
Spanish	0.50	1.00	0.30
	1.50	1.00	0.50
	2.50	1.00	0.60
	3.50	1.00	0.80
	4.50	1.00	0.55
	6.00	0.75	0.90
	7.50	0.50	0.90
	8.50	0.25	0.95
	10.00	0.00	0.00

Table 10

Frequencies of PHQ-9 scores Based on Language Group Membership

Language	Score	Frequency	Percent
English	0	2	7.69%
	1	1	3.85%
	3	1	3.85%
	4	4	15.38%
	5	3	11.53%
	6	2	7.69%
	7	2	7.69%
	8	4	15.38%
	9	4	15.38%
	12	1	3.85%
	14	1	3.85%
	20	1	3.85%
Spanish	0	6	25.00%
	1	4	16.66%
	2	2	4.17%
	3	2	16.66%
	4	1	4.17%
	5	1	8.33%
	7	1	4.17%
	8	1	8.33%
	9	2	8.33%

Table 11

Sensitivity, specificity of different cut-off scores of the enhanced PHQ-9 and MINI (without functional impairment)

Language	Positive if ≥ or Equal To	Sensitivity	Specificity
English	0.50	1.00	0.05
	2.50	1.00	0.16
	4.50	1.00	0.32
	5.50	0.86	0.42
	6.50	0.71	0.42
	7.50	0.71	0.58
	8.50	0.71	0.68
	9.50	0.57	0.74
	11.50	0.57	0.80
	13.50	0.43	0.90
	15.00	0.43	0.95
	18.00	0.43	0.00
	20.50	0.29	0.00
	24.00	0.14	0.00
	28.00	0.00	0.00
Language	Positive if ≥ or Equal To	Sensitivity	Specificity
Spanish	0.50	1.00	0.21
	1.50	1.00	0.37
	2.50	1.00	0.47
	3.50	1.00	0.68
	5.00	1.00	0.84
	6.50	0.80	0.90
	7.50	0.60	0.90
	8.50	0.60	0.95
	9.50	0.40	0.95
	12.00	0.20	0.95
	15.00	0.00	0.00

Table 12

Sensitivity, specificity of different cut-off scores of the enhanced PHQ-9 and MINI (with functional impairment)

Language	Positive if ≥ or Equal To	Sensitivity	Specificity
English	0.50	1.00	0.05
	2.50	1.00	0.14
	4.50	1.00	0.18
	5.50	1.00	0.41
	6.50	0.75	0.41
	7.50	0.75	0.55
	8.50	0.75	0.64
	9.50	0.50	0.68
	11.50	0.50	0.73
	13.50	0.50	0.86
	18.00	0.50	0.96
	20.50	0.50	0.00
	24.00	0.25	0.00
	28.00	0.00	0.00
Language	Positive if ≥ or Equal To	Sensitivity	Specificity
Spanish	0.50	1.00	0.20
	1.50	1.00	0.35
	2.50	1.00	0.45
	3.50	1.00	0.65
	5.00	1.00	0.85
	6.50	1.00	0.90
	7.50	0.75	0.90
	8.50	0.75	0.95
	9.50	0.50	0.95
	12.00	0.25	0.95
	15.00	0.50	0.00

Figures

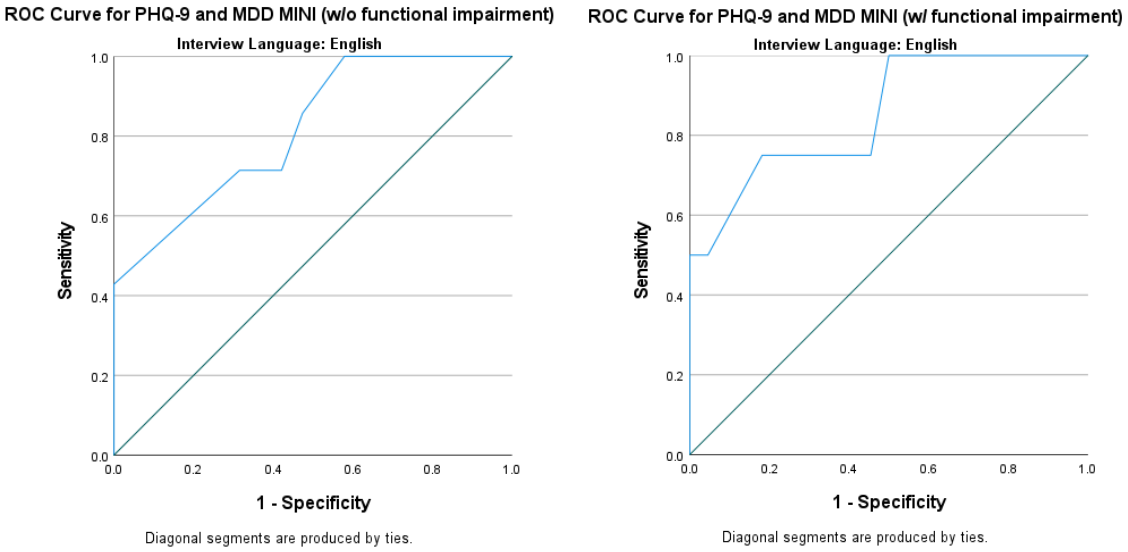


Figure 1. Receiver operating cures for PHQ-9 and MDD MINI for English-speaking participants.

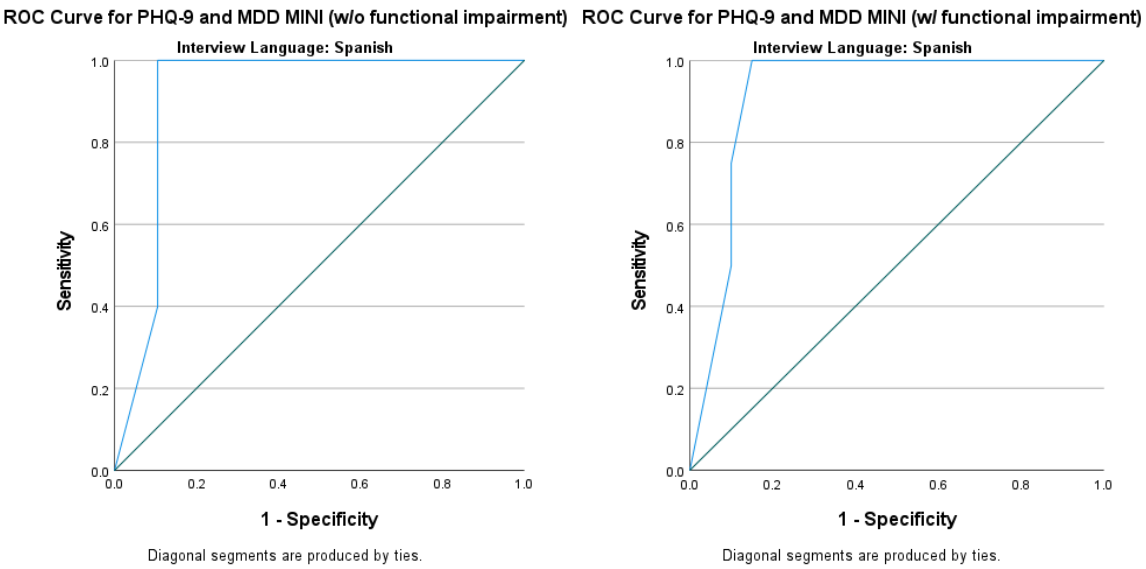


Figure 2. Receiver operating cures for PHQ-9 and MDD MINI for Spanish-speaking participants.

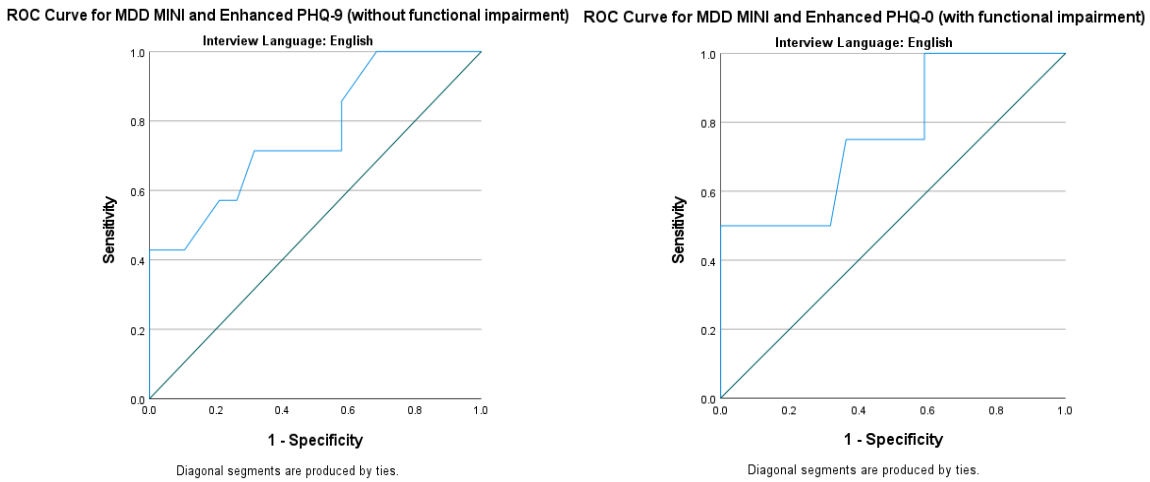


Figure 3. Receiver operating cure for PHQ-9 and MDD MINI for English-speaking participants.

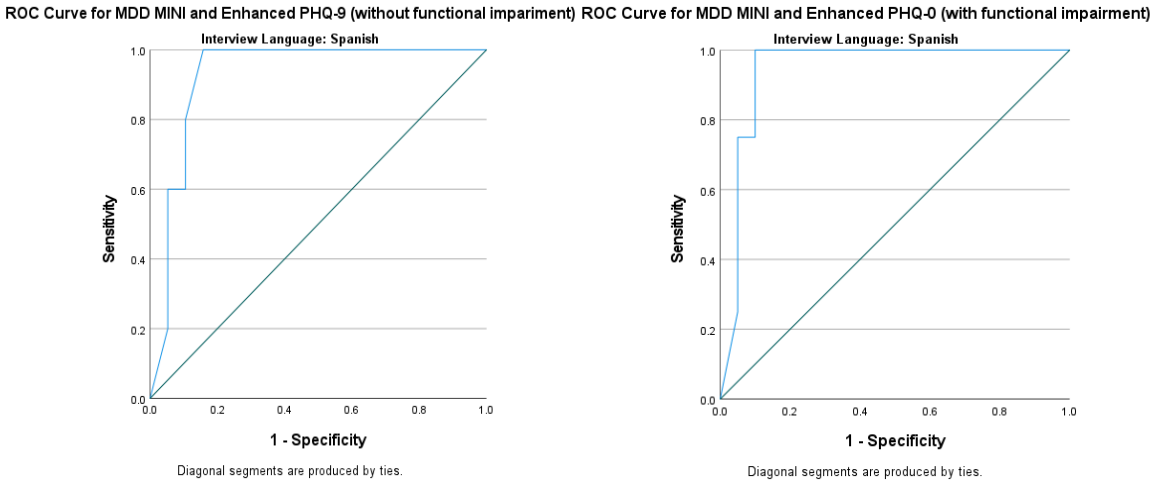


Figure 4. Receiver operating cure for PHQ-9 and MDD MINI for Spanish-speaking participants.

Appendices

Appendix A: Institutional Review Board Approval Letter

UNIVERSITY OF ARKANSAS

To:	Linda Esperanza Guzman
From:	Douglas J Adams, Chair IRB Expedited Review
Date:	02/28/2023
Action:	**Expedited Approval**
Action Date:	02/17/2023
Protocol #:	2112375993R001
Study Title:	Enhancing Depression Screening and Treatment for Latinxs Residing in the U.S.
Expiration Date:	12/16/2023
Last Approval Date:	02/17/2023

The above-referenced protocol has been approved following expedited review by the IRB Committee that oversees research with human subjects.

If the research involves collaboration with another institution then the research cannot commence until the Committee receives written notification of approval from the collaborating institution's IRB.

It is the Principal Investigator's responsibility to obtain review and continued approval before the expiration date.

Protocols are approved for a maximum period of one year. You may not continue any research activity beyond the expiration date without Committee approval. Please submit continuation requests early enough to allow sufficient time for review. Failure to receive approval for continuation before the expiration date will result in the automatic suspension of the approval of this protocol. Information collected following suspension is unapproved research and cannot be reported or published as research data. If you do not wish continued approval, please notify the Committee of the study closure.

Adverse Events: Any serious or unexpected adverse event must be reported to the IRB Committee within 48 hours. All other adverse events should be reported within 10 working days.

Amendments: If you wish to change any aspect of this study, such as the procedures, the consent forms, study personnel, or number of participants, please submit an amendment to the IRB. All changes must be approved by the IRB Committee before they can be initiated.

You must maintain a research file for at least 3 years after completion of the study. This file should include all correspondence with the IRB Committee, original signed consent forms, and study data.

cc: Ana J Bridges, Investigator

Appendix B: Consent to Participate in an Experimental Study

ONLINE SCREENING FORM TO DETERMINE ELIGIBILITY
FOR A STUDY ON HEALTH AND MOOD

Title: Health and Mood Study

Researchers:	Administrator:
Linda E. Guzman, M.A.	Ro Windwalker, CIP
Ana J. Bridges, Ph.D.	IRB Coordinator
Department of Psychological Science	Office of Research Integrity and Compliance
University of Arkansas	University of Arkansas
Fayetteville, AR 72701	Fayetteville, AR 72701
leguzman@uark.edu	479-575-2208; irb@uark.edu

Restrictions. You must be at least 18 years of age to participate in this study eligibility screening.

Purpose. The purpose of this screening is to determine your eligibility for a study the researchers are conducting on health and mood. This screening will take about five minutes. If you are found eligible to participate in the Health and Mood Study, a research assistant will contact you. The Health and Mood Study will involve completing a virtual interview with a research assistant and completing a few self-report measures of your physical and psychological health. There is no compensation for completing this study eligibility screener. Eligible participants who complete the Health and Mood Study interview will receive a $10 e-gift card.

Description. For this study eligibility screener, you will be asked to provide demographic information, complete a brief survey of your mood, and provide contact information (i.e., name, telephone, and/or email address) where a research assistant can reach you.

Risks and benefits. There are no anticipated risks to participating in this screener. You are free to skip any item you like. There is no compensation for completing this study eligibility screener.

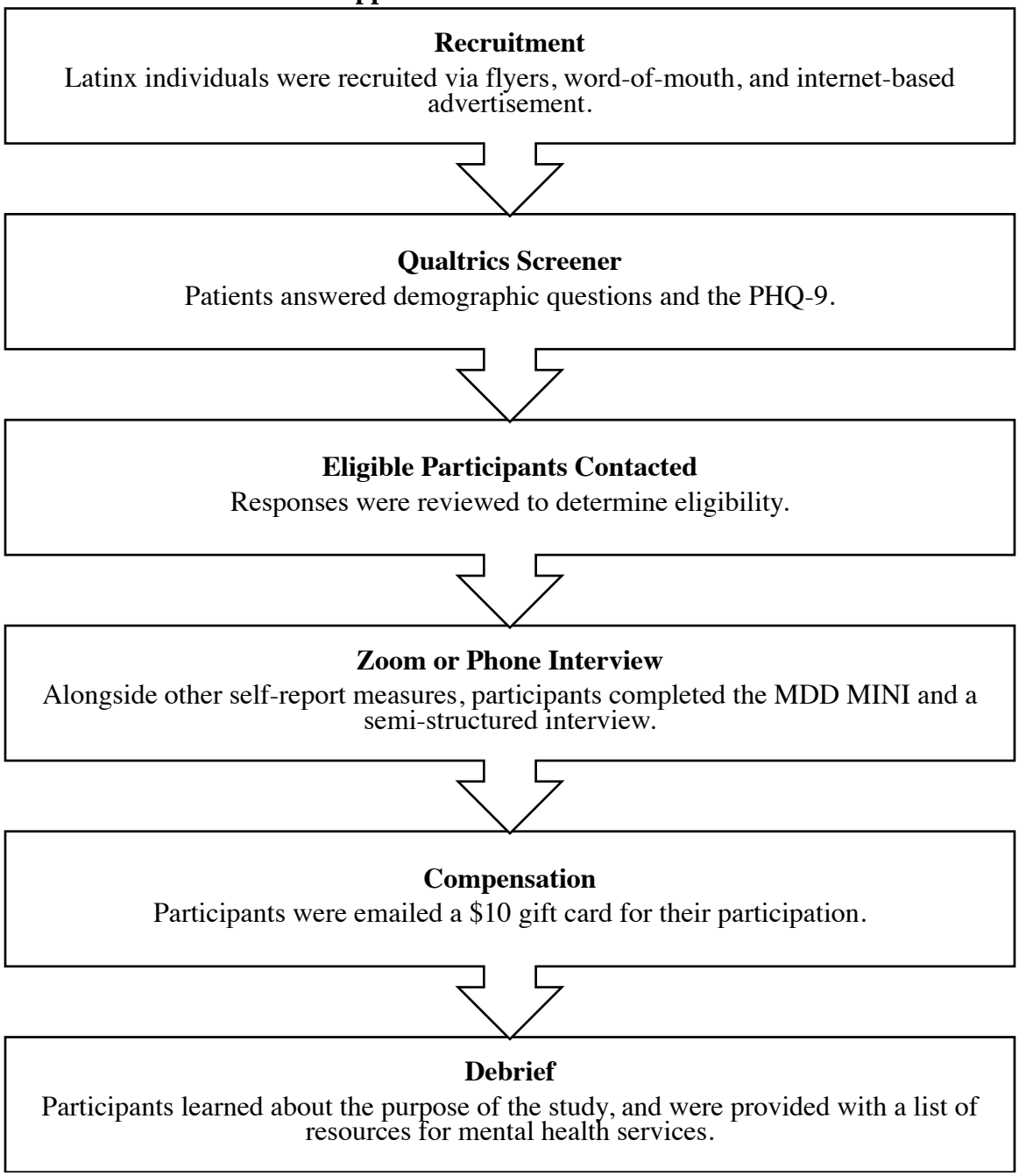
Voluntary participation. Your participation in this screener eligibility survey is voluntary. You may skip over any items you would like and exit the survey at any time.

Confidentiality. Your responses will be kept confidential to the extent allowed by law and University policy. If you are recruited from a medical clinic, remember that your answers will not be part of your medical record and will not be shared with your medical provider. If you have any questions about the study, you have the right to contact the researchers.

Informed consent. I understand the description, the risks and benefits, voluntary participation, confidentiality, and the right to discontinue participation at any time. I understand the purpose of this screening eligibility study and have no further questions. By clicking agree below, I indicate my voluntary participation to be screened for the Health and Mood Study.

Signature: _____ Date: _____

Appendix C: Procedure Flow Chart



Appendix D: Screener Assessing Study Eligibility

Provided in English or Spanish

1. Administration __ Spanish __ English	2. Age ___
3. Gender __ Male __ Female __ Non-Binary __ Prefer to self-describe 4. __ Prefer not to say	5. Ethnicity __ Latino/Hispanic __ Non-Latino/Hispanic
6. Choose one or more races that you consider yourself to be: __ White __ Black or African American __ American Indian or Alaska Native __ Asian __ Native Hawaiian or Pacific Islander __ Other	7. In which U.S. sate do you currently reside?

PHQ-9
English Version (Kroenke et al., 2001)

Participant # _____
Time to complete the measure: ____ mins

Patient HealthQuestionnarie-9 (PHQ-9)				
Over the last 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
Little interest or pleasure in doing things	0	1	2	3
Feeling down, depressed, or hopeless	0	1	2	3
Trouble falling or staying asleep, or sleeping too much	0	1	2	3
Feeling tired or having little energy	0	1	2	3
Poor appetite or overeating	0	1	2	3
Feeling bad about yourself – or that you are a failure or have let yourself or your family down	0	1	2	3
Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

If you checked off any problems how difficult these problems have made if for you to do your work, take care of things at home, or get along with other people?			
Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
___	___	___	___

Appendix E: Follow-Up Survey

1. In which U.S. state do you currently reside?	2. What is your country of origin?
3. How long have you live in the United States in years?	4. What is your current marital status?
5. How many children under 18 years of age live with you?	6. What is your highest level of education you have completed?
7. What is your profession?	8. What was your total household income before taxes during the past 12 months?
9. Do you have health insurance?	10. How did you learn about this study?
11. Age ___	12. Employment status: __ unemployed __ employed part-time up to 39 hours __ employed full time at 40 or more hours
13. PHQ-9 and BSI-18 SOM questions	14. PAS questions
15. Health Questions (yes/no) Allergy & Immunology Blood & Circulation Brain & Nervous System Cancer Digestive System Endocrine System Eye/ear/nose/throat Heart and Vascular Disorder Infectious Diseases Musculoskeletal Psychological Reproductive System Respiratory Skin/nails/and hair disorders Other I have none of these conditions	16. SASH questions

Brief Symptom Inventory 18 SOM
English Version (Derogatis, 2001)

How much were you distressed by	Not at all	Several days	More than half the days	Nearly every day
1. Faintness or dizziness	0	1	2	3
2. Pains in heart or chest	0	1	2	3
3. Nausea or upset stomach	0	1	2	3
4. Trouble getting your breath	0	1	2	3
5. Numbness or tingling in parts of your body	0	1	2	3
6. Feeling weak in parts of your body	0	1	2	3

Appendix F: Follow-Up Survey

Short Acculturation Scale for Hispanics (SASH)
(Marín et al., 1987)

These answers will range from only English to Spanish.	Only English	English more than Spanish	Both equally	Spanish more than English	Only Spanish
1. In general, what language(s) do you read and speak?					
2. What language(s) do you usually speak at home?					
3. In what language do you usually think?					
4. In what language(s) do you usually speak with your friends?					

Psychological Acculturation Scale (PAS)
(Troop et al., 1999)

1. With which group of people do you feel you share most of your beliefs and values?
2. With which group of people do you feel you have the most in common?
3. With which group of people do you feel most comfortable?
4. In your opinion, which group of people best understands your ideas (your way of thinking)?
5. Which culture do you feel proud to be a part of?
6. In what culture do you know how things are done and feel that you can do them easily?
7. In what culture do you feel confident you know how to act?
8. In your opinion, which group of people do you understand best?
9. In what culture do you know what is expected of a person in various situations?
10. Which culture do you know the most about (for example: its history, traditions, and customs)?

Only with Hispanics/Latinos 1-—- 2-— 3-— 4 Equally with Hispanics/Latinos 5-— 6-— 7-— 8-— 9 Only with Anglos (Americans)

Appendix G: Qualitative Interview

Prompt 1	Follow up questions
Tell me what your definition of depression is.	

Prompt 2	Follow up questions
Name as many symptoms of depression that you are aware of.	

Prompt 3	Follow up questions
If you were experiencing the symptoms we discussed today, how would you like to be treated for these?	How would this look like in your ideal world? What would get in the way? Have you had any episodes of depression? If so, how many?

Prompt 4	Follow up questions
Describe what treatment would look like	Who would be providing treatment? Where would treatment be provided? How often would it be provided? What would it consist of? How long would it last? <u>Method</u> Medically Psychologically Both <u>Mode</u> Individual Group Family <u>Platform</u> In-person Telehealth

Appendix G: Debrief Form

Thank you for participating in this study. We appreciate your efforts and patience.

The purpose of this study is to investigate the validity of a mental health screener for depression and to understand better preferences for how depression should be treated.

Many people who have depression do not get any kind of help. This is because the screeners we use in practice may not capture the disorder culturally or because the treatments they are offered are not congruent with the way individuals think the disorder is to be treated. We want to understand better so that we can get more people the services they need. If you or someone you know is struggling with a mental health concern, such as depression, there are services available to you. These included.

- Information about depression and treatments and therapies (Spanish) https://www.nimh.nih.gov/health/publications/espanol/depresion-sp
- Information about depression and treatments and therapies (English): https://www.nimh.nih.gov/health/topics/depression
- Finding a therapist in your community https://www.psychologytoday.com/us

Please note that the University of Arkansas is not responsible for any costs you may incur as a function of seeking such treatment. Also, the researchers are not responsible for any experience you have with navigating the Psychology Today resource. If you have questions or concerns regarding this study or would like to learn more about the results, please contact Linda Guzman at leguzman@uark.edu or Dr. Ana Bridges at abridges@uarke.edu. For questions about the ethical conduct of the study, please contact Ro Windwalker at irb@uark.edu.

Again, thank you for your participation!