SCREENING LATINO FARMWORKERS FOR DEPRESSION IN PRIMARY CARE

by

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April, 2016

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Latino farmworkers experience depression at significantly higher rates than non-Latino Whites and usually they seek help for their mental health needs at primary care settings. Despite the high prevalence of depression in this population, primary care providers fail to detect the disorder in approximately 60% of the clinically depressed Latino farmworkers. Several depression-screening instruments have been translated into Spanish to address the mental health needs of monolingual Spanish speaking Latinos in the US, however the adequacy of these instruments is still unclear. The objective of this dissertation was to evaluate the effectiveness of the Latino Farmworker Affective Scale (LFAS-15) as compared to the Patient Health Questionnaire (PHQ-9), Centers for Epidemiological Studies Depression scale (CESD-10), Brief Symptom Inventory (BSI), and the DSM-IV Structured Clinical Interview for Depression (SCID) in accurately detecting depressive symptoms in Latino farmworkers. The LFAS-15 demonstrated good internal consistency with a Cronbach's alpha of .925 (n=15), good convergent validity with the Structured Clinical Interview for Depression (r=.669, p<.001), and good sensitivity and specificity (AUC) of .939, SE=.024, p,.001).

SCREENING LATINO FARMWORKERS FOR DEPRESSION IN PRIMARY CARE

A Dissertation Presented to

The Faculty of the Department of Human Development and Family Science

East Carolina University

In Partial Fulfillment of the Requirements for the Degree

Doctor of Philosophy in Medical Family Therapy

by

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DEDICATION

This work is dedicated to the millions of men, women, and children who survive through the desperation of poverty and difficult circumstances, with the hope for a better life. For as long as the history of this country, it is these individuals and families who have found themselves enriching the product of the American farmland with their labor, through oppression, their sweat, their suffering, and their dreams of a better life. To the many who have spent their youth, health, and even their lives pursuing the only option presented to them as the means to providing for their families, my gratitude is extended to you. This dissertation was written to honor those who have found the courage to stand up to the oppressive power of the American agricultural industry and who have selflessly fought to improve the lives of the most vulnerable and unprotected people in this country.

ACKNOWLEDGEMENTS

I want to express my gratitude to my Dissertation Chair, Dr. Angela Lamson, for patiently and diligently guiding me through the process of completing this work and for helping me to voice the advocacy needed toward social justice on behalf of the farmworkers of Eastern North Carolina. I also want to thank Dr. Lamson and Dr. Jennifer Hodgson for challenging me throughout the courses within the program and helping me to reach a new level of competency that will empower me to continue to work on behalf of the Latino community.

I want to thank the participants in this study for the trust that they deposited in me to make this study possible. They allowed me to come into their lives and gave me what little time they had left after long days of hard work in the fields to answer questions that for some have been difficult to answer. I hope that this work increases others' awareness about their contribution to the US economy, their needs, and their humanity.

I also want to thank the farmers, and specifically Mrs. Pamela Read Dawson and her husband Earl Dawson for welcoming me to their farm and trusting me to interview their employees. During my interactions with the Dawson's, I learned of the great pressures that small American farmers experience in this economic environment and how through these struggles, they find the compassion to treat the farmworkers in their employment with respect, dignity, and generosity.

Finally, I want to thank my wife and children for their support. For waiting patiently for the few minutes I would have available for them as I worked to meet the demands of the program. For being there for me with a ready smile and words of encouragement, but specially for making me feel proud of the work I have done and for who I am.

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PREFACE

As an immigrant and minority individual living in the US, I have had firsthand experience of the effects from a system of economic inequality and racial/ethnic marginalization on every aspect of life, including health. The health of Latino immigrants has often been described in the literature in terms of the disparities that exists between immigrants and non-Hispanic Whites, particularly with regard to the incidence and prevalence of illness, as well as quality of healthcare, and health outcomes (Cabassa, Zayas, & Hensen, 2006). In contrast, other researchers have described the health of Latino immigrants in terms of the "Hispanic Paradox" (Morales et al., 2002). This term alludes to epidemiological data showing relatively good health outcomes for Latinos when negative outcomes are typically expected, especially given the most common psychosocial and structural factors (e.g. poverty, high stress levels due to the migration experience, and discrimination) (Askim-Lovseth & Aldana, 2010). The "Hispanic Paradox" however may be a result of inaccurate or insufficient methods for collecting and analyzing data that do not take into account contextual variables of Latino family life and cultural attitudes about health and illness (Morales et al., 2002).

The contextual variables of Latino family life and cultural attitudes about health and illness (e.g., family cohesiveness, the belief that illness is inevitable) have influenced the interactions of Latinos with the healthcare system (Morales et al, 2002). Latino immigrants often do not seek help from the institution of medicine, but instead resort to culturally informed methods to manage illness and maintain health (i.e., herbal remedies, natural cures) (Askim-Lovseth & Aldana, 2010). This dynamic also influences Latino farmworkers, in particular, with

regard to the identification, treatment, and outcomes of depression (Liang et al., 2011; Schmaling & Hernandez, 2005).

Depression is common among Latino immigrants due to factors related to the process of immigration (Grzywacz et al., 2010) and the social and economic conditions they find at their arrival in the US (Arcury et al., 2005). For farmworkers, living and working conditions can be particularly conducive to developing depression (Grzywacz et al., 2010). In order to effectively detect and treat depression, it is necessary to account for the influence of economic, social, legal, historical, and individual variables (Grzywacz et al., 2010).

My understanding of health disparities in the Latino population (among those living in the US) has been informed by: (a) my experience working in the most impoverished neighborhoods of Chicago as a mental health professional, (b) my experience working with Latino farmworkers in South Florida in an education setting, (c) my focus on the mental health of Latinos while working on my master's degree in marriage and family therapy at Purdue University Calumet, and (d) my extensive work in policy, research, and practice with Latino farmworkers through my doctoral program in eastern North Carolina, and most particularly through my assistantship and internship with Greene County Health Care, Inc. The compilation of these experiences, have led me to see the dynamics of mental health disparities in Latino farmworkers from a social justice perspective. These experiences allowed me to incorporate the larger social and historical contexts into my doctoral program of study and dissertation, as such, I have worked to understand how to better attend to the mental health needs of Latino farmworkers. Through my experiences as a Medical Family Therapist in a Federally Qualified Healthcare Center, I have worked to instill social justice into the healthcare context, particularly as I engage with Latino patients who present with symptoms of depression.

The idea for this dissertation grew organically from my observations of the inadequacy of the depression-screening instruments that had been used as a routine procedure to assess for depression among Latino farmworkers. Such observations led me to begin compiling a list of terms that Latino farmworker patients used to describe their mental and affective states in the context of life events and situations that are commonly associated with depression. Eventually, this list became a depression-screening instrument titled Latino Farmworker Affective Scale-15 (LFAS-15) that evolved directly from the experience of talking with farmworkers about their symptoms of depression. As a result, I have attempted through this dissertation, to honor the voice of Latino farmworkers so that detection of depression and its treatment can flow from their unique experience, instead of from the experience of the dominant culture.

My goal is that the work reported herein can change the practice from one of simply translating depression-screening instruments created in English or by dominant cultures into a process whereby an assessment can be implemented that was created and tested with Latino farmworkers. I also hope to stimulate the development of an effective instrument and treatment modality that reflects the biopsychosocial-spiritual context of Latino farmworkers and other marginalized populations. Perhaps this approach will result in decreasing mental health disparities and promote active engagement of Latino farmworkers in their own mental health care and maintenance. My work as an ambassador of Medical Family Therapy is to improve the practice, research, and policy pertaining to the biopsychosocial health of Latino farmworkers.

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CHAPTER 1: INTRODUCTION

As of 2008, Latinos in the US accounted for approximately 50% of the population growth (Pew Hispanic Center, 2008) and as of 2012 there were nearly 53 million Latinos living in the US or about 16.9% of the population (Brown & Patten, 2014). The growth of the Latino population however has not translated into an improvement in their economic conditions; according to the Pew Research Center, in 2010 the poverty rate in the Latino population was 28.2% as compared to 11.1% for non-Hispanic Whites and 25.4% for African Americans (Lopez & Cohn, 2011). The condition of poverty and racial discrimination among other factors are risk factors that render Latinos more vulnerable to mental health problems (Hovey & Magaña, 2003). Some researchers reported that Latinos are twice as likely to experience significant depressive symptoms than non-Hispanic Whites (Alegria, Canino, Stinson, & Grant, 2006). Some researchers indicated that low SES Latinos experience depression with a prevalence of up to 22.3% in comparison to 11.8% of low SES non-Hispanic Whites (Olfson et al., 2000) whereas the rate of depressive symptoms in Latino farmworkers has been found to even higher (Crain et al., 2012).

Migrant and Seasonal Farmworkers

According to the US federal government statute regulating farm work, a migrant farmworker "is a seasonal farmworker who had to travel to do the farm work so that he/she was unable to return to his/her permanent residence within the same day (Migrant and Seasonal Agricultural Worker Protection Act, 1997)." Whereas a seasonal farmworker is defined as a person who during the preceding 12 months worked at least an aggregate of 25 or more days or parts of days in which some work was performed in farm work, earned at least half of his/her

earned income from farm work, and was not employed in farm work year round by the same employer (US Government Publishing Office, 2015). Estimates on the number of migrant and seasonal farmworkers within the US varies by state and time of year; nevertheless, the overall number of farmworkers is estimated to be between 3 and 12 million annually (Winkelman, Chaney, & Bethel, 2013). Most of these workers are either contracted laborers or undocumented immigrants from Mexico (Winkelman, Chaney, & Bethel, 2013). American farmers have a long history of contracting foreign workers (Martin, 2002), and despite improvements in the laws regulating farm labor, farmworkers are still exposed to working and living conditions that make them vulnerable to health and mental health problems (Arcury et al., 2005).

Farm Work and Depression

The history of migrant and seasonal farmworkers workers (MSFW) in the US is long and complex (Martin, 2002) and most MSFWs admitted to the US from Mexico and Central America come to work agricultural jobs (Arcury & Quandt, 2007; Grzywacz et al., 2010). Work conditions associated with farm work and the conditions associated with poverty represent risk factors for the development of depression, anxiety, and other health conditions (Arcury et al., 2005). Several researchers reported high levels of depressive symptoms (e.g., a score of 16.2 on the Centers for Epidemiological Studies Depression scale [CESD-20], in which a score of 16 represented significant symptoms that can impair functioning) in Latino MSFWs (Crain et al., 2012). In addition, Hovey and Magaña (2000) reported that 30 to 40% of Latino MSFWs had high levels of depressive symptoms in Michigan and Ohio, whereas Hiott et al. (2008) reported that 40% of Latino MSFWs had high levels of depressive symptoms in the Eastern part of North Carolina. Other researchers have offered prevalence rates of 52% for farmworkers who experienced high levels of depressive symptoms (Crain et al., 2012). In comparison, prevalence

of depressive symptoms in MSFWs living in California are approximately 20% (Grzywacz et al., 2010). Some researchers suggested that this difference can be explained by the relatively recent and fast growth of the Latino MSFW population in rural areas in the eastern US, where mental health services are limited or lacking all together (Grzywacz et al., 2010).

Mental Health Disparities

Oftentimes, farmworkers have experienced poor health and mental health outcomes in part due to the lack of access to health care, inadequate identification of health needs, and inadequate treatment of health and mental health conditions (Cabassa, Zayas, & Hensen, 2006). Mental health disparities in the MSFW population have been linked to several factors, including: (a) acculturative stress (Grzywacz et al., 2010)- stress experienced by immigrants that results from the tension between the norms, values and believes of the culture of origin and those of the host culture (Caetano, Ramisetty-Mikler, Vaeth, & Harris, 2007); (b) English language proficiency (Grzywacz et al., 2010); (c) separation from family and social networks (Hovey & Magaña, 2000); and (d) discrimination and social isolation (Hovey & Magaña, 2003). In fact, researchers found that MSFWs are at a high risk for developing depressive symptoms (Hiott et al., 2008) and that structural conditions associated with farm work such as living in rural isolated areas, among others, contribute to poor access to mental health services (Hovey & Magaña, 2003). Even when Latino MSFWs are able to access healthcare, they usually seek care in primary care settings (Georges et al., 2013) and when they do, primary care providers are often ill equipped to adequately assess for mental health concerns, such as depression (Schmaling & Hernandez, 2005)

Researchers have reported difficulties in detecting depression in Latino farmworkers (Reuland et al., 2009), even though there have been studies reporting evidence of depression-

screening instruments that were created for or implemented with the Latino population (Merz et al., 2011). Unfortunately, several problems have been identified in the detection of depression in Latino farmworkers (See Chapter 3). Thus, effective detection of depression in Latino MSFWs will be the focus of this dissertation.

Through my work as a behavioral health provider (BHP) in a primary care setting where all patients are routinely assessed for depression and anxiety, I noticed that the depression-screening instrument being used was not effective in identifying depressive symptoms in Latino MSFWs. I then began researching different depression-screening measures that were available in the Spanish language and any research findings addressing their validity with MSFWs. Following that process, I compiled a list of words and short phrases used by Latino farmworker patients to describe their experience of symptoms associated with depression. These words and short phrases were then used to develop the Latino Farmworker Affective Scale (LFAS-15), which were evaluated for its effectiveness in accurately detecting depressive symptoms in Latino MSFWs. As with any rigorous research initiative, a theory should ground the study. For this dissertation, I selected critical multiculturalism theory (CMT) as the foundation for my work.

Critical Multiculturalism Theory

Critical multiculturalism theory (CMT) emphasizes the scrutiny of unequal power relations and critiques and exposes the role of institutionalized inequities (McLaren, 1995; May & Sleeter, 2010). Its' proponents also advocate for an active stance against all forms of social injustice (Berlak & Moyenda, 2001). Hall (1994) proposed that we need to interrogate the "otherness" of oppressed populations by keeping an open dialogue from the perspectives of all of different histories, life experiences, languages, and family and peer cultures and values, with the objective of increasing my understanding of how differences between people are socially and politically

constructed. Within this framework, the researchers conducting this dissertation believe that adopting depression-screening instruments developed with observations and data from a different social group; is an uninformed way of maintaining discourses about Latino MSFWs mental health that are not meeting their needs. Furthermore, maintaining these discourses prevents the development of effective tools to tend to the Latino MSFWs mental health needs, which in part may explain the mental health disparities observed in this group. Critical multiculturalism theory was chosen to guide this dissertation, because it reflects my intent of understanding depression in Latino MSFWs' own terms (rather than through the terms constructed by the dominant population) in order to provide a better informed way to develop a depression-screening measure that will be effective in this unique population.

Purpose and Design

The purpose of this dissertation is to interrogate the "otherness" (Hall, 1994) of Latino farmworkers to learn more about the manifestations of depression on their own terms and not through the cultural values of mainstream America. A literature review on the issue of depression in Latino MSFWs shows that depression is highly prevalent and difficult to identify due to several factors. These factors include cultural values that influence how Latino MSFWs view and respond to depression, as well as language differences between providers and Latino MSFWs that impact how patients and providers talk about the disorder. To address the difficulty in identifying depressive symptoms in Latino MSFWs, I evaluated the effectiveness of the Latino Farmworker Affective Scale (LFAS). The items used to create the LFAS are those from the voices of farmworkers, and backed by the literature, representing a construct of depression in this population. To study the effectiveness of the LFAS the research question was asked: Can the LFAS-15 identify symptoms of depression more accurately in the Latino farmworker population

than the PHQ -9, the CESD-10, or the BSI-18 when their accuracy is checked against the diagnostic results provided by the structured clinical interview for depression?

Conclusion

An in-depth literature review is presented in Chapter 2 describing the prevalence and risk factors of depression in Latino immigrants in general and then discussing the much higher incidence of the disorder in Latino farmworkers. Along with that, evidence is presented showing that depression is significantly under-detected in this population. The critical multiculturalism theory (Hall, 1994; May & Sleeter, 2010; Nylund, 2006) grounds the investigation of the structural and cultural factors that account for such under-detection.

A systematic review addressing the evaluation of depression screening instruments in the Spanish language is then presented in Chapter 3. This systematic review offers an update to a systematic review that was conducted by Reuland et al., in 2009, including a new search for literature that assesses the accuracy of depression screening instruments in Spanish-speaking Latinos. The objective of this systematic review is to extend improvements made in the detection of depression in Latino MSFWs. The results point to the need to develop and validate more effective depression screening instruments. The results from the systematic review showcased the need for an assessment that may be able to better capture depressive symptoms for Latino farmworkers.

In Chapter 4 the study's methodology is discussed. Farmworkers accessing healthcare services in a primary care setting were identified as the needed sample for this study. The selected measures are described in this chapter, including the Latino Farmworker Affective Scale (LFAS) created by me for this study, the Brief Symptom Inventory-18 ([BSI] Derogatis & Spencer, 1982), the Centers for Epidemiological Studies Depression scale ([CESD-10] Radloff,

1977) and the Patient Health Questionnaire-9 ([PHQ9] Kroenke, Spitzer, & Williams, 2001) followed by a structured clinical interview conducted by the PI.

Chapter 5 is prepared in a publishable manuscript format and includes the results from this research study with Latino farmworkers. Outcomes from the four depression measures described in Chapter 4 are presented. An exploratory factor analysis and an item analysis was conducted as part of this study, including the psychometric properties of the LFAS-15. Regression analyses were performed to compare the LFAS-15 with the other three instruments. In addition, the sensitivity and specificity of the LFAS-15 was assessed with a receiver-operating characteristic curve analysis with the scores obtained from the structured clinical interview.

Finally, Chapter 6 offers research, clinical practice, and policy implications for the dissertation, including the relevance of the dissertation for the Medical Family Therapy field and Critical Multiculturalism Theory (Nylund, 2006). These implications will facilitate further research to investigate the psychometric properties and the clinical utility of the measure.

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CHAPTER 2: LATINO FARMWORKERS AND DEPRESSION: A REVIEW OF THE LITERATURE

The National Institute of Mental Health (2012) reported that approximately 6.9% of adults in America suffer from depression and that about 16 million individuals experienced at least one depressive episode in 2011. The most common symptoms of depression include fatigue, withdrawal from activities, impaired concentration, and a heightened sensitivity to a broad range of unpleasant somatic symptoms such as pain, and tightness of chest (Simon, 2003). These symptoms often result in impairment in social functioning (Rappaport, Clary, Fayyad, & Endicott, 2005) and as a result the effects of depression go beyond the intra-psychic individual experience of the sufferer and impact family members, employers, healthcare systems, and tax payers (Simon, 2003).

The direct costs of treating depression across the population are estimated to be upwards of 20 billion dollars per year (Medical Expenditure Panel Survey, 2009). In addition, Kessler (2012) reported that the estimated annual cost of the effect of depression on lost work productivity to be between 30.1 and 51.5 billion dollars in the US (Kessler, 2012). However, one group of workers not often considered in the literature, are Latino farmworkers, a population disproportionally affected by depression in comparison to the general population (Olfson et al., 2000). Thus, the purpose of this literature review is to (a) describe critical multiculturalism theory (May& Sleeter, 2010); a theoretical foundation that helps to deconstruct the disparities that Latino farmworkers experience in relation to depression in comparison to majority populations, (b) provide a brief history of Latino farmworkers in the US, (c) discuss the risk factors and prevalence of depression, as well as the structural and cultural issues that have been linked to under-detection of depression in Latino farmworkers in the US and low utilization for

healthcare services, (d) and offer recommendations that may benefit providers and researchers who can better serve Latino farmworkers based on the outcomes from this literature review.

Critical Multiculturalism Theory

Critical multiculturalism theory (CMT) has origins that date back to the 1990's and is the integration of critical race theory (Delgado, 2001), critical pedagogy (McLaren, 1998) and anti-racist education (May & Sleeter, 2010). CMT first appeared in the field of Education to address the inadequacies of multicultural education, and more recently, it has been associated with achieving a higher degree of cultural competency in the field of Social Work (Nylund, 2006). Hall (1994) posited that merely looking at or celebrating differences between people does not change the structure of power that marginalizes minority ethnic individuals. Rather, we must be moved to investigate the "otherness" of marginalized populations by having an open dialogue from the perspectives of all of the different histories, life experiences, languages, family and peer cultures, and values to bring into focus how our differences are socially and politically constructed. CMT tenets emphasize the examination of unequal power relations by critiquing and exposing the role of institutionalized inequities (May & Sleeter, 2010) and advocate toward the active involvement of naming and challenging all forms of social injustice (Berlak & Moyenda, 2001).

Through this literature review, we assess the "otherness" (Hall, 1994) of the population of interest (i.e., migrant and seasonal Latino farmworkers) in an effort to understand the manifestation of depression as well as the dynamics that influence assessment and detection for depression. The researchers acknowledge the influence of the power of the dominant discourse on the lives of Latino farmworkers (described below through the history of migrant and seasonal farmworkers) and recognize that power differentials exist based on many factors including

citizenship, race, social class, gender, nationality, sexuality and capitalism. Hall (1994) stated that "we speak from a particular place, out of a particular history, and out of a particular experience" … suggesting that a people's discourse is shaped by those people's lived experience. Hall supported the importance of speaking from the multiple voices that make up our social system. This literature review attempts to capture the lived experience of depression in the Latino farmworker population. However, in order to better understand the current experiences and concerns (i.e., prevalence of depression) of Latino farmworkers, the history of farmworkers in the US must first be explained.

The History of Farmworkers in the US

After the abolition of slavery in 1865, thousands of African Americans were freed from the hands of their oppressors with many seeking work in other sectors of the economy. Through this movement, farmers in the US needed to find other sources of cheap labor, given that free labor was no longer an option, in order to remain financially viable (Vivian, 2005). By the 1840s, American farmers had established a network of contractors in China to bring Chinese citizens to work in agricultural industries (Guerin-Gonzalez, 1994). Chinese immigration was followed by new waves of immigrants from Japan, India, Pakistan, and Mexico that continued to supply cheap labor for American farmers (Martin, 2015).

In 1931, the Midwestern and Southern plains experienced a severe eight-year drought that became known as the "Dust Bowl." The longstanding drought resulted in financial hardships that displaced thousands of Americans, who were forced from their home states into a more lucrative state, mostly into California (Hurt, 1981). During this significant migration of Americans from one part of the US to another, the need for and supply of Mexican laborers to farmlands across the US slowed down (Martin, 2015).

The lives of the Dust Bowl migrants depicted in the novel "*Grapes of Wrath*" prompted President Franklin D. Roosevelt to propose legislation to change the working conditions of agricultural workers by ending what was known as "agricultural exceptionalism" (Martin, 2015). Agricultural exceptionalism was a term used to describe the laws that excluded the agricultural sector from labor laws that protected the rights of workers (Martin, 2015). Through the doctrine of agricultural exceptionalism American farmers were legally able to pay substandard wages, continue to employ child labor, and deny their workers compensation for lost wages due to injuries and claims arising from workplace accidents (Luna, 1998).

Unfortunately, Roosevelt's legislation coincided with severe economic challenges and a shortage of unskilled labor associated with WWII, forcing him to set aside his agricultural reform. Instead he began negotiating a guest worker program with the Mexican government (Martin, 2015). By 1942, the governments of the US and Mexico signed the Bracero program agreement, which supplied cheap labor to American farmers and was in motion for 22 years. During this time, approximately 4.6 million Mexicans became temporary workers in US agriculture (Massey & Liang, 1998).

In 1964, the Mexican government ended the Bracero program over concerns of exploitation and abuse of Mexican workers (Massey & Liang, 1998). Over the next two decades, farmers relied on labor via a wave of illegal immigrants from Mexico that were encouraged by an unofficial "open door" policy from the US that allowed a small number of legally admitted immigrants and "ignored" the massive entry of undocumented individuals (Vivian, 2005). During this time, the US allowed unauthorized entry to thousands of Mexican nationals who would then be arrested by the immigration law enforcement agency and then delivered to American farmers as a source of cheap labor (Vivian, 2005). The small number of immigrants,

who were being legally admitted for temporary farm labor during this time, were admitted under provisions of the H-2 visa program enacted by the US Congress in 1952 (Immigration and Naturalization Act, 1952).

In 1986, the US Congress passed the Immigration Control and Reform Act (ICRA), and with it, two special programs; the Special Agricultural Workers program (SAW) and the Replenishment Agricultural Worker program (RAW) (Vivian, 2005). The SAW program was designed to prevent labor shortages from the enforcement of IRCA (Massey & Liang, 1898). The SAW program provided a means for individuals who were able to prove that they worked at least 90 days in agriculture to apply for a Temporary Worker Card, and after three years they could apply for permanent residency (Massey & Liang, 1998). Understanding that once farmworkers obtained permanent residency status they were going to pursue employment in other sectors of the economy, the US Congress also authorized the Replenishment Agricultural Worker program (RAW), which authorized the admission of temporary workers whenever a shortage of farm labor was identified (Massey & Liang, 1898).

In addition to the SAW and the RAW programs, IRCA (1986) also contained a provision to modify the H-2 visa program, which is the visa classification for admission of temporary workers in the US (Vivian, 2005). The changes in the H-2 visa program increased the number of temporary workers for farmers who were able to show that they were unable to recruit domestic workers (Vivian, 2005). Under this program, temporary workers have been permitted to stay in the US up to 10 months at a time and then they must return to their country of origin before they were eligible to apply for a new H-2 visa (Martin, 2015). Approximately 150,000 temporary nonimmigrant workers are admitted annually in the US under the H-2 visa program (Hanson, 2007).

By 2010, increases in the educational level of the US population had created a shortage in the laborers needed in farming industries, particularly on farms that maintain labor-intense crops. This shortage of native-born laborers has resulted in the need for farmers to hire foreign workers via the H-2 visa program or as undocumented foreign workers (Hanson, 2010). Once again, economic conditions have made it necessary for American farmers to rely on the temporary workers from Mexico and Central America in order to remain financially viable (Hanson, 2010). Unfortunately, the social and working conditions continue to expose farmworkers to risk factors for mental health problems, most particularly, depression (Grzywacz et al., 2006).

Risk Factors for Depression in Latino Farmworkers

It is estimated that there are approximately 3-12 million individuals employed as migrant and seasonal farmworkers in the US and that about 60% live below poverty level (Winkelman, Chaney, & Bethel, 2013). Factors that contribute to farmworkers' conditions of poverty include the fact that farm work tends to be seasonal and dependent on weather conditions, as well as the low wages that are characteristic of farm work (Carroll et al., 2005). Arcury at al., (2006) documented that poverty, along with the high mobility inherent in the seasonality of farm work, render farmworkers vulnerable to depression, anxiety, and other health conditions. Beyond poverty, several other structural, social, and cultural variables have been linked to depression in Latino farmworkers. One such variable is acculturation stress.

Acculturation stress has been defined as the stress experienced by immigrants that results from the tension between the norms, values, and beliefs of the culture of origin and those of the host culture (Caetano, Ramisetty-Mikler, Vaeth, & Harris, 2007). For Latinos in general and farmworkers in particular, acculturation stress related to life conditions in the US can result in social maladjustment, psychopathology, and substance abuse (Smokowski & Bacallao, 2007);

depression and suicidal ideation (Gonzales, Knight, Morgan-Lopez, Saens, & Sirolli, 2002; Torres, 2010); family dysfunction and negative expectations (Hovey & King, 1996); and self-derogation (Vega, Gil, Warheit, Zimmerman, & Apospori, 1993). English language competence and racial discrimination have also been identified as acculturation stressors (Romero & Roberts, 2003).

The multidimensional experience of migration itself can propel some to experience symptoms of depression, which may only worsen due to separation from families and social networks, social marginalization, and discrimination in the US (Grzywacz, et al., 2006). The physical separation from friends and family networks through the process of migration constitutes a significant loss of social support. This loss in social support and lack of familiarity with the new social and physical environment deprives the farmworker of information relevant for self-appraisal, which has been known to contribute to symptoms of depression (Grzywacz, et al., 2005). Racism and discrimination (whether perceived or real) toward immigrants/farmworkers also exert significant influence in the development of mental health symptoms including depression (Pascoe, & Smart Richman, 2009). Unfortunately, the literature regarding the heightened risks for mental health problems in Latino farmworkers is further reflected in the prevalence for depression in this population (Hiott et al., 2006).

Prevalence and Detection of Depression Among Latinos

Latino farmworkers are at high risk for developing depression (Grzywacz et al., 2013) and they are also unlikely to seek mental health services (Lewis-Fernandez et al., 2005) due to a variety of cultural, social, and structural challenges (Georges et al., 2013). Olfson et al., (2000) reported that low SES Latinos in the US (who include farmworkers) are twice as likely to experience mental health disorders (23.2%) as compared to non-Hispanic Whites (11.8%), and

there is evidence that Latinos experience persistent and more severe depressive symptoms throughout their lives than non-Hispanic Whites and African Americans (Liang et al., 2011). Interestingly, Latino migrant farmworkers have been found to be at an even higher risk for depression than Latinos who do not migrate for work (Bhugra, 2004).

The disparity in prevalence rates for depression among Latino farmworkers (compared to other Latinos or other races) seems to vary from state to state, with some states in the US reporting a higher incidence for depression among the Latino farmworker population than in other states. For example, depression has been reported to affect approximately 20% of Latino farmworkers in California (Alderet, Vega, Kolody, & Aguilar-Gaxiola, 1999), whereas research from the Midwest reported prevalence at 37.8% (Hovey & Magana, 2002), and 41.6 % in North Carolina (Hiott et al., 2006). Unfortunately, even with these seemly high rates of depression, there is concern that depression is under-detected among Latinos and that Latinos who struggle with mental health symptoms may be underutilizing mental health services (Pincay & Guarniccia, 2007).

Under-detection of Depression Among Latinos

Under-detection of depression in Latino farmworkers has been linked, among other factors, to (a) primary care providers inaccurate or inadequate assessment for depression among this specific population, and (b) low utilization of healthcare services by Latino farmworkers. Below are details pertaining to the complexities from both patient and providers that contribute to the underreporting of depression among Latino farmworkers.

Primary Care Provider Factors in Under-detection of Depression. Latino farmworkers who struggle with mental health symptoms are more likely to attempt to get their mental health needs met in a primary care setting opposed to a mental health context (Georges et

al., 2013) however, primary care providers are often insufficiently trained to screen for depression (Vega, Rodriguez, & Ang, 2010). Schmaling and Hernandez (2005) reported that primary care providers (PCPs) failed to recognize (i.e., detect) depression in about 80% of primary care patients, who were predominately Mexican immigrants. One of the reasons that account for the under-detection of depression in Latino farmworkers includes language differences in how depression symptoms are expressed by Latinos as compared to non-Hispanic Whites (Lewis-Fernandez et al., 2005). Interian et al. (2010) reported that language differences between patients and PCP might lead to poor patient-provider communication hindering PCPs ability to detect depression symptoms.

Other reasons associated with PCPs low rates of detection include the limited time PCPs have with each patient (Mitchell & Coyne, 2007). This may lead PCPs to prioritize their attention to somatic symptoms and fail to recognize symptoms of depression (Lake, 2008) Furthermore, Lake (2008) posited that PCPs limited training in mood disorders may lead them to think that depression symptoms do not warrant intervention, or that they do not have the time to tend to what they perceive as minor conditions as they struggle to meet the high demands of medical practice.

Language Factors. Some of the most significant difficulties in adequately assessing for depression in Latino farmworkers are related to language issues (Carroll et al., 2005). Most migrant workers are from Mexico (84%) and they speak Spanish as their primary language (Mehta et al., 2000). However, there is wide variability of regional dialects. For example, some farmworkers speak Mixteco, Tarasco, Quiche, and other dialects as their primary language and their Spanish language skills are limited (Alderet et al, 2000). To complicate matters further, farmworkers generally have low educational levels. Quandt et al. (2004) reported that in their

sample of farmworkers primarily from Mexico, 46% had an elementary school level of education and 45% had between six and nine years of schooling. Therefore, the terminology often used to assess for depressive symptoms make it difficult for farmworkers to understand what is being asked, thereby making standardized depression instruments and even formal clinical interviews, depending on the clinician's command of language variations, lack relevance or value (Lewis-Fernandez et at., 2005). Additionally, low literacy levels may prevent farmworkers from understanding important terms in depression instruments whereas a clinician's re-interpretation of the questions on the instruments my compromise their validity (Lewis-Fernandez et at., 2005). However, the under-detection of depression per providers only captures one side of this concern. Equally concerning are the reasons for low utilization of mental health services by Latino farmworkers.

Low Utilization. Difficulty in detecting depression in Latino farmworkers (LFW) has been linked to their low participation in the health care system (Arcury et al., 2005). Low participation in healthcare is in part attributed to structural barriers (Arcury et al., 2005; Carroll et al., 2005; Ricketts, 2000), English language competency (Carroll et al., 2005) and low literacy (Lewis-Fernandez et al., 2005). Structural barriers that account for Latino farmworkers low utilization of mental health services include: (a) high mobility rates as they migrate with the seasonal agricultural cycles (Arcury et al., 2005), (b) lack of health insurance (Carroll et al., 2005), and a limited number of healthcare facilities in the rural areas where these individuals live and work (Ricketts, 2000), but perhaps most influential are (c) cultural factors associated with mental health and mental illness.

The mobility rates for LFWs is a significant concern related to low utilization of healthcare services. When farmworkers are forced to move following the agricultural cycles,

they are unable to establish ties with the communities where they work and therefore may be under-informed as to medical and mental health services available to them (Arcury et al., 2005). Additionally, most LFWs live and work in rural areas away from cities and towns where mental health clinics are usually located (Ricketts, 2000), thereby significantly limiting their ability to learn about services available to them and being able to access them.

A second reason for low utilization has to do with lack of income to pay for expensive healthcare costs as well as lack of insurance. Because most Latino farmworkers tend to be poor (Winkelman, Chaney, & Bethel, 2013) they are also likely to lack health insurance making mental health services unaffordable to them (Carroll et al., 2005). It is estimated that at least 75% of LFWs and 90% of their children do not have health insurance (Carrol et al., 2005). Despite being unable to pay for health insurance, LFWs often do not qualify for Medicaid coverage either because they are undocumented or because they don't meet other eligibility requirements (Arcury et al., 2007).

A third reason for underutilization of mental health services by Latino farmworkers are the cultural factors associated with mental health and mental illness. Several health beliefs that are common among Latino farmworkers can often lead to low utilization of mental health services and therefore under-detection of depression (Lantz et al., 1994). For example, farmworkers often postpone or fail to seek medical treatment when they attribute the cause of their problems to folk health beliefs such as "humor" (an imbalance between hot and cold qualities of the body, the environment, food, and herbal remedies) (Rubel, 1960; Weller, 1983); mal de ojo (the evil eye), susto (fright), or caida de mollera (a term used to described an infant's inability to eat due to the believe that the roof of the mouth cavity caves in [Baer & Bustillo, 1998]); or when they believe that the use of traditional herbal remedies will resolve their health

concern (Poss & Rangel, 1997). Similarly, Guarnaccia and colleagues (1993) found that Latinos experiencing depression might report inability to control their mood, emotional reactivity, difficulty coping and excessive worrying. Latino immigrants usually referred to these symptoms as "nervios" or "susto" (Falicov, 1999). Thus, in cases where cultural health beliefs are incongruent or in contradiction with the Western model of health and illness, individuals refrain from endorsing depression symptoms when they access healthcare services and attempt to heal in ways that are congruent with their beliefs about the cause of symptoms (Garcés, Scarinci, & Harrison, 2006). These cultural expressions of depression-related symptoms have important consequences in how Latino farmworkers respond to depression screening tools (Caplan et al., 2013).

Cultural beliefs common among Latino immigrants in the US have also been thought to influence the manner in which Latinos respond to depression screenings (Caplan et al., 2013). Among these beliefs is the attribution of mental illness to spells and witchcraft (Falicov, 1999); the belief that the onset and course of illness is out of one's control, God's punishment for ill will, or destiny (Falicov, 1999). All of these beliefs are referred to in the literature as fatalism and are believed to negatively affect help seeking behaviors because individuals do not trust that conventional treatment will be effective (Chaves, Hubell, & Mishra, 1996).

Another important cultural factor influencing the accurate screening and diagnosis of depression is the stigma associated with the disorder. Depression is often seen as the result of having "weak character" (Caplan, et al., 2013) and therefore Latinos may find it more socially acceptable to endorse somatic symptoms rather than accepting to be weak and endure the social stigma. Unexplained somatic symptoms that include trembling, heart palpitations, paralysis, fainting, numbness or tingling, chest pains, dizziness, and difficulty breathing have been

identified as a common expression of depression (Guarnaccia et al., 1993) among Latino immigrants. Unexplained somatic symptoms associated with depression have also been found to be more common among persons who are lower SES, of lower education, and of an older age (Escobar et al., 1989).

These factors are relevant, because Latino farmworkers tend to be low SES (Winkelman, Chaney, & Bethel, 2013) and generally have low education levels (Quandt et al., 2004). Being that unexplained somatic symptoms are a common and socially accepted expression of feelings of depression (Vega, Rodrigues, & Ang, 2010), Latinos are more likely to present for services in general medical practices (Vega, Rodriguez, & Ang, 2010) opposed to mental healthcare contexts. Therefore, when primary care providers are not adequately trained in screening for depression and lack adequate screening tools they will be more likely to treat physical ailments and fail to accurately detect and treat individuals for depression (Carroll et al., 2005). As such, clinicians and researchers must work together to better attend to the chasm between provider under-detection of depression and Latino farmworker underutilization of services for symptoms related to depression.

Clinical Practice and Research Recommendations

A number of depression screening instruments have been translated into Spanish to better help providers in assessing for mental health needs of Latino immigrants (Reuland et al., 2009). Some of these instruments include the Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996), the Centers for Epidemiological Studies-Depression scale (CES-D10), (Radloff, 1977), the Patient Health Questionnaire (PHQ-9), (Kroenke, Spitzer, & Williams, 2001), the Geriatric Depression Scale (GDS) (Yesavage et al., 1982), the Edinburgh Postnatal Depression Scale (EPDS) (Cox et al., 1987), and the Post-Partum Depression Screening Scale (PDSS) (Beck

& Gable, 2000). However, the literature assessing the effectiveness of these instruments in monolingual Spanish speakers living in the US is limited (Reuland et al., 2009) and insufficient. Thus, the following recommendations for clinicians and researchers are proposed.

Recommendations for Clinicians. As of the time of this study depression is still under-detected in primary care settings. It is recommended that healthcare workers be alert to medically un-explained somatic symptoms presented by Latino farmworkers and when these symptoms are identified, members of the healthcare team need to relate this information to the PCP. There is evidence that when Latino farmworkers are asked directly about mental health problems, they are more likely to disclose their symptoms than if they are not asked (Lake, 2008). The healthcare system places significant burdens on PCPs; therefore, it is important that all members of the healthcare team be educated and trained to assist PCPs in the identification of depression. Behavioral health providers (BHP) can also play an active role in improving the detection of depressive symptoms in primary care. Forming collaborative relationships with the PCPs and their teams working in their catchment area, BHPs can help educate and train PCPs. BHPs and PCPs can also secure permission for the disclosure of information so that they can maintain ongoing communication about clients/patients in need of further assessment, further improving mental health for Latino farmworkers.

Recommendations for Researchers. Researchers invested in the mental health of Latino immigrants and Latino farmworkers, could greatly enhance the utility of their research efforts by adopting a critical multiculturalism theory (CMT) perspective (Nylund, 2006) as they design their research projects. Such perspective can assist researchers in questioning the adaptation of screening instruments, clinical practices, and research methods to "fit" populations in need. Such questioning can lead to the rectification of previous misunderstandings about the mental health,

family, and social processes of Latino farmworkers. Similarly, a CMT perspective might also lead to the development of models of health and illness that grow directly from the life experience of the population of interest, hence interrupting the pattern of subordination and cultural colonization of Latino farmworkers. Social justice in research is better served when there is a true investment of resources into learning about the needs of marginalized populations. The rapid growth of the Latino population indicates that the mental healthcare system stands to experience significant pressure to meet their mental health needs. Failure to do so will just displace this pressure to other social systems such as healthcare, law enforcement, and community life.

Conclusion

This review of the literature revealed that depression is under-detected in Latino farmworkers and evidence was provided that reflects that specific cultural factors account for low utilization for mental health services by Latino farmworkers. Beyond cultural factors, the literature also showed that primary care provider factors that include inadequate training, busy schedules, and patient-provider communication issues are also linked to PCPs low rates of detection. Additionally, structural factors such as poverty, lack of health insurance and social and geographic isolation have been associated with under-utilization of healthcare services by Latino farmworkers and thereby under-detection of depression. Using critical multiculturalism theory, this literature review investigated the "otherness" of Latino farmworkers and attempted to understand the unique factors that make accurate detection of depression difficult (Hall, 1994). Continuing the practice of translating clinical procedures and screening tools developed by and for the majority to minority populations, such as Latino farmworkers, further marginalizes this vulnerable population. In addition, developing and using measures without cultural awareness

can result in mis- or under-identification and worsening of symptoms. Persistent under-detection and under-treatment will continue to result in poor depression outcomes for Latino farmworkers, weakening their families and communities if clinicians and researchers do not take further action.

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CHAPTER 3: SPANISH LANGUAGE DEPRESSION SCREENING [1]INSTRUMENTS: A SYSTEMATIC REVIEW

Depression is one of the most common mental health conditions in the US with an estimated prevalence of 16.2% in the general population (Kessler et al., 2003). The National Institute of Mental Health reported in 2012, that 16 million individuals in the US, age 18 and over, experienced at least one depressive episode in 2011, which represents approximately 6.9% of the adult US population (National Institute of Mental Health, 2012). The Medical Expenditure Panel Survey (2012) reported that a total of 22.8 billion dollars were spent in the year of 2009 to treat depression. Those figures do not account for the findings by the Centers of Disease Control and Prevention who have reported that depression costs employers 14 to 17 billion dollars each year, with up to 200 million work days lost (Centers for Disease Control and Prevention, 2013a). As a result of the prevalence and costs associated with depression, the Medical Expenditure Panel Survey (2009) included depression among the 15 priority conditions that account for 80% of total expenditures in health care in the US.

Prevalence of Depression in Latino Immigrants Living in the US

Latinos in the US are twice as likely as non-Hispanic Whites to experience mental health disorders (Alegria, Canino, Stinson, & Grant, 2006). Specifically, it has been reported that among low SES individuals, Latinos experience depression with a prevalence rate of up to 22.3% in comparison to 11.8% of low SES non-Hispanic Whites (Olfson et al., 2000). According to

[1] A modified version of this chapter has been published. Limon, F. J., Lamson, A. L., Hodgson, J., Bowler, M., & Saeed, S. (2015). Screening for Depression in Latino Immigrants: A Systematic Review of Depression Screening Instruments Translated into Spanish. *Journal of Immigrant and Minority Health*, 1-12.

Lewis-Fernandez et al. (2005), Latinos are twice as likely to seek treatment for mental health concerns from their primary care providers (PCPs), than from specialty mental health providers, for a variety of reasons. Among these reasons are the high incidence of somatic symptoms associated with depression in this population (Escobar, 1987) and the belief that seeking medical help is more socially acceptable and less stigmatizing than seeking mental health services (Vega, Rodriguez, & Ang, 2010).

Under-detection of Depression

Considering the prevalence of depression among Latinos, timely detection is imperative to improving treatment outcomes. Schmaling and Fernandez (2005) found that PCPs were only able to detect depression in about 20% of the 146 participants who had been diagnosed with depression through a structured clinical interview. Their total sample was 486 primary care patients of whom 97.4% were of Hispanic ethnicity and of Mexican origin. In comparison, under-detection of depression in the general population has been estimated to be 50% (Pignone, et al., 2002). These findings suggest that under-detection of depression may be a larger problem in Latino immigrants than in non-Hispanic Whites. Some of the most commonly cited reasons for PCPs low rate of detecting depression among Latinos include: (a) patients primarily present with somatic symptoms (Lewis-Fernandez et al., 2005), (b) a limited time is allotted per patient (Mitchell & Coyne, 2007), (c) cultural differences exist between provider and patient (Interian et al., 2010), and (d) poor communication occurs between PCPs and Latino immigrant patients (Interian et al., 2010).

Somatic Manifestations. Mitchell and Coyne (2007) posited that PCPs might be less likely to detect depression in individuals who present with somatic symptoms and do not disclose psychosocial concerns. Haug, Mykletun, Arnstein, and Dahl (2004) offered that the most

common somatic symptoms presented in primary care are musculoskeletal pain and fatigue. According to Haug and colleagues (2004), these symptoms have been considered the "ticket behavior" to seeking help in primary care because a somatic complaint is perceived to be more appropriate and non-stigmatizing in comparison to psychological symptoms. Furthermore, Kirmayer (2001) reported that when PCPs asked their patients directly about mental health concerns, most reported psychosocial factors that account for their symptoms, including relationship problems, financial hardship, and work related stress.

Time Constrains. PCPs failure to recognize depression in patients with somatic symptoms may also derive from constraints in the time they spend with the patient and the resulting failure to solicit the patient's perspective of their symptoms (Kirmayer, 2001). Lake (2008), also suggested that PCPs may avoid asking about depression symptoms because they do not think they have the time to address "what they perceive as minor conditions under the present-day constrains of managed care" (p. 96); whereas Collins et al. (2004) reported that among other provider factors, busyness of a primary care practice was also related to under-detection of depression.

Cultural Factors. Further complicating the dynamics between PCPs and Latino patients are the cultural differences between patients and providers when assessing for depression. The lack of providers' cultural competence is another contributing factor in the under-detection of depression among exclusively Spanish-speaking Latino immigrants (Leng, Changrani, Tseng, & Gany, 2010). Bauer, Chen, and Alegria (2012), posited that for individuals to seek help for depression they first need to recognize the need for treatment whereas Nadeem et al. (2009), found that depressed Latino women were less likely recognize the need for help than depressed non-Hispanic White women (OR .52 $p< 0.01$). Thus, when busy PCPs are not able or willing to

ask about mental health needs, Latino patients who are already less likely to report symptoms due to unperceived need, may be even less willing to disclose mental health problems to their PCP (Nadeem et al., 2009).

Language Factors. Finally, poor provider-patient communication has been reported as a factor in under-detection of depression (Interian et al., 2010), with language differences prominently accounting for difficulties in adequately assessing for depression in Latinos (Carroll et al., 2005; Pincay & Guarniccia, 2007). It has been suggested that detection of depression in Latinos is complicated by Latinos use of cultural idioms of distress (e.g. *nervios, bilis)* and the disconnect between these cultural expressions and the ones used by the mainstream US healthcare system (Lewis-Fernandez et al., 2005). According to Vega et al. (2007), research on the effect of language on patient diagnosis is limited; however, Castillo (1970) reported that increased disclosure of symptoms by Latinos resulted from interviews conducted in Spanish versus English. Castillo (1970) attributed his findings to the cognitive complexity involved in being evaluated in a second language. The lack of more recent data (than this article from 1970) on the role of language differences in the diagnosis of depression with Latino individuals, point to the paucity of research in this area. What is clear, is that culturally relevant language is important in the accurate detection of depression for Latino patients.

Spanish-language Depression Screening Instruments

Several depression-screening instruments have been translated into Spanish to meet the needs of the growing Latino population. Some of the depression instruments that have been translated into Spanish include the Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996), the Centers for Epidemiological Studies-Depression scale (CES-D10, Radloff, 1977), the Patient Health Questionnaire (PHQ-9, Kroenke, Spitzer, & Williams, 2001), the Geriatric

Depression Scale (GDS, Yesavage et al., 1982), the Edinburgh Postnatal Depression Scale (EPDS, Cox et al., 1987), and the Post-partum Depression Screening Scale (PDSS, Beck & Gable, 2000). The literature evaluating the effectiveness of depression screening instruments translated into Spanish is limited; though some efforts have been made to get a comprehensive account of the validity and accuracy of such instruments (Reuland et al., 2009).

Reuland et al. (2009) recognized the paucity of research in this area and conducted a systematic review of depression screening instruments translated into Spanish and their effectiveness. The researchers found studies that reported the accuracy of instruments in Spanish, including the CES-D10, (Radloff, 1977), the PHQ-9, (Kroenke, Spitzer, & Williams, 2001), the GDS (Yesavage et al., 1982), the EPDS (Cox et al., 1987), and the PDSS (Beck & Gable, 2000). Reuland and colleagues reported that the Spanish version of the CES-D, the PHQ-9, the GDS, PDDS and the EPDS-Spanish were generally adequate in detecting depression in certain sub-groups of Latinos. However, these findings were presented with a note of caution. Whereas they found evidence supporting the effectiveness of the CES-D, the evidence evaluated the instrument merely as "fair" or adequate. In regards to the PHQ-9, it was reported that no studies existed that directly evaluated its effectiveness in Spanish speakers living in the US. Though the authors reported studies that provided evidence in support of the effectiveness of the CES-D and the PHQ-9, they also reported that such studies were of "low quality" because the administration of the instruments and the reference standards were not blinded and/or the language characteristics of the samples were not reported. Although Reuland et al (2009) found studies that reported findings in support of the CES-D and the PHQ-9, they also reported that the findings of those studies should be interpreted with caution due to the poor overall quality of the studies.

Reuland et al. (2009) also found evidence in support of both, the 30-item and 15-item forms of the Spanish version of the GDS in studies conducted in the US and outside the US. The 15-item GDS was found to have adequate sensitivity (76%) but less than adequate specificity (64%). In regards to the PDSS and the EPDS, the authors found only one "fair quality" study that reported limited evidence in support of the PDSS and two "fair-good quality" studies that also reported limited evidence for the EPDS. The authors also noted that the limited number and quality of the studies found, represented a serious limitation to the findings. Most importantly, Reuland and colleagues reported that the high quality studies conducted with Latino participants had to be excluded because they did not report how many of these participants were Spanish speakers.

The high incidence of depression in Latino immigrants (Olfson et al., 2000), paired with the increased understanding of disparities in depression detection (Schmaling & Fernandez, 2005), treatment (Snowden & Yamada, 2005), and outcomes (Willerton, Dankoski, & Martir, 2008) point at the need for more effective methods to accurately detect depression among the Latino population living in the US. Given the limitations in the literature reported by Reuland and colleagues in 2009, this systematic review (presented below) was focused on finding studies between 2009 and the present that assessed the effectiveness of Spanish language depression screening instruments. To address the objective of this systematic review, a Critical multiculturalism perspective was adopted.

Theoretical Foundation

Critical multiculturalism theory (Nylund, 2006) was adopted to guide this systematic review for its focus on the effect of power imbalances on marginalized populations. According to McDowell & Fang (2007), some of the most important tenets of critical multiculturalism theory

(CMT) include the objectives of amplifying marginalized voices, interrogating the politics of knowledge production, ensuring research benefits to those at the center of analysis, attending to culture and context, holding the researchers accountable for their cultural competence, and using diverse methodologies to support social equity. The principles of CMT are useful, in this case, for investigating the under-detection of depression in Latino farmworkers through a social justice lens.

Disparities in the prevalence and outcomes of depression in Latino immigrants can only begin to be addressed if depression is adequately identified in this population. Thus, developing culturally relevant depression-screening instruments amplifies the voices of this marginalized population; whereas the research process for doing so questions the assumptions that norms that apply to the dominant group are also valid for the population at the center of this systematic review. Conducting this research, inevitably leads to honoring both culture and context as we learn more effective methods to improving the detection of depression. Also, consistent with CMT, the outcome of the research directly benefits those at the center of analysis (i.e., Latino immigrants). Therefore, informed by the tenets of CMT, we explore research pertaining to depression in Latino immigrants through the value of the dominant culture and we aim to provide an update to the systematic review conducted by Reuland et al. (2009).

Method

This systematic review aims to provide an update to the systematic review done by Reuland et al. (2009) in an attempt to identify depression screening instruments offered in Spanish and/or studies on the diagnostic accuracy of existing Spanish versions of depression screening instruments for Latinos whose primary language is Spanish. Because of this, this article covers any studies published between 2009 and 2015. Cooper's (2010) seven-step method

for systematic reviews was used as a guide to ensure objectivity and transparency in the literature review process.

Search Strategy. Four databases were selected for this systematic review: PubMed, PyshINFO, CINHAL, and Cochrane Data Base of Systematic Reviews using the medical subject heading (MeSH) terms "depressive disorder" and "mass screening" and "Hispanic Americans" or "Latinos" and "Mexican American" as an effort to replicate the procedure outlined by Reuland et al. (2009). This initial search yielded a significantly large and unmanageable number of studies that were not relevant to the topic of interest, ranging from studies done with Latino samples, but focused on other mental health and medical issues (e.g., hypertension, bipolar disorder), to studies on depression and other mental health issues with different populations (e.g., samples of elderly individuals who were not Latino, i.e.,Chinese samples). We conducted a total of four other searches using different search terms and filters until we identified literature that was relevant to our topic of interest and better reflected the purpose of the study (see Table 1 for details of all search terms and steps).

Inclusion and Exclusion Criteria. We selected articles that reported on the diagnostic accuracy of Spanish screening instruments for depression compared with a reference standard (i.e., a comparison of the criterion validity of the instrument being evaluated with that of a reference standard that has been validated). Croker and Algina (2008) suggested that a common and adequate method to establish construct validity is by establishing evidence of the correlation between scores on one test and the scores of a measure that has been previously validated. Reference standards deemed to be adequate were the DSM-IV structured clinical interview for depression (SCID, First, Spitzer, Gibbon, & Williams, 2012) or a diagnosis of depression made by a qualified mental health professional. Studies were selected, if the screening instrument

being evaluated was specifically and solely designed to detect depression; second, if the instrument(s) were offered in Spanish; and third, if the samples were Latino whose primary language is Spanish.

We excluded studies in which the measures of depression were only secondary to other comorbid conditions; studies in which the focus was not on evaluating the effectiveness of the depression screening instruments used; and studies that selected a sample of bilingual individuals when the individuals selected did not specifically identify Spanish as their primary language. Studies whereby the depression screening instruments were not delivered in Spanish were also excluded even when the sample was primarily Latino, because the objective of this study is to identify depression screening instruments in Spanish language and assess their accuracy in detecting depression in Spanish-speaking Latinos.

Our search for studies that met the inclusion criteria returned several articles published in Europe that focused on evaluating the same depression screening instruments found in the US and Latin America; however, these studies were excluded because European culture typically holds different cultural values and language factors related to depression than those in Latin America (Aranda, & Knight, 1996; Losada et al., 2012). One study was found that compared depression scores on the CES-D between a sample of caregivers from Spain and Mexican caregivers (Losada et al., 2012), whereby the authors found significant differences in the mean scores on seven items, by country. This was interpreted as questionable factor structure invariance across countries and the authors cautioned against making comparisons of depression scores between Spanish speaking countries that do not share common values. The findings from the Losada et al. (2012) study supported the decision to exclude studies conducted in Europe for our systematic review.

Data Extraction. We proceeded to extract data from the selected studies using a data abstraction form (see Appendix C) previously used by Gibson et al. (2009). Data abstraction included sensitivity and specificity statistics that were reported according to a standard cut point. Receiver Operating Characteristic curve ROC or area under the ROC curve ([AUC] Zweig, & Campbell, 1993) data was also abstracted as an overall measure that combines the sensitivity and specificity of the diagnostic accuracy of screening instruments. An AUC of 1 represents a perfect test and an AUC of .5 represents a completely inaccurate test (Zweig, & Campbell, 1993). Furthermore, correlational data was obtained as a measure of convergent validity between instruments being compared (Anastasi, 1988).

Quality Appraisal. To assess the quality of the studies included, emphasis was placed on comparisons of depression screening instruments with a reference standard. Using the study quality appraisal criteria reported by Gibson et al. (2009) studies were classified as high quality if they included a blind comparison of the instrument to a reference standard in an appropriate population spectrum; and a letter grade of A was assigned to such studies. A letter grade B was assigned to studies that met at least two of the following conditions considered to lower the quality of the study: a) conducted with a narrow population spectrum (i.e., only clinical samples, pregnant women), b) made differential use of a reference standard (i.e., a structured clinical interview or a diagnosis made by a qualified mental health professional), c) the comparison to the standard was not blind, or d) it was a case control study. A letter grade C was assigned to studies that met all of the conditions considered to lower the quality of the study; thus a letter grade C was assigned to those studies with the lowest quality.

Results

The search of all databases with all of the variations in the search terms yielded a total of 1,342 studies, however 1,274 studies were excluded after reading titles and abstracts. A total of 68 studies were found that were potentially relevant based on the inclusion and exclusion criteria and content from the titles and abstracts. From these, 40 studies were found to be redundant across the search engines and were purged from the list; thus 28 studies remained for inspection. Thirteen more studies were excluded because they were published in Europe leaving a total of 15 studies for full text review. The reference pages were reviewed in the remaining 15 studies to identify other potentially relevant studies that might have not turned out in the electronic search. Through that process three new studies were identified and their reference lists were also reviewed to identify other studies that we might have missed; however, no new studies were identified. After reviewing all 18 studies, 14 were excluded because the focus was not on evaluating the diagnostic accuracy of a Spanish language depression-screening instrument. One study was excluded because the scale was not specifically designed for detection of depression (instead the focus was on neurologic depression in individuals with epilepsy); and one study was excluded because it did not use a reference standard, it was focused on a narrow population, and it did not report on whether the reference standard was blind. One final article (Reuland et al., 2009) was excluded, because it was the systematic review that served as the foundation for this systematic review. Thus a total of four studies were selected for analysis for this systematic review that captured the years 2009-2015 (see Figure 1 for flow chart depicting the selection process and Table 2 describing the studies selected for analysis).

Discussion of the studies selected for analysis will start with those who received the least value to those receiving the highest value in relation to the diagnostic accuracy of the measure(s)

studied. The study by Rivera-Medina et al. (2010) was conducted in the San Juan metropolitan area in Puerto Rico and the sample consisted of 135 youth between the ages of 13 and 15 years old. The study was appraised and received a letter grade of B. Though the reference standard (DISC-2.3) was only used to educate the interviewers on depression symptomatology, the study's validity was strengthened by the fact that the interviewers were blind to the aims of the study. For the actual interview, the interviewers used a symptom checklist based on the DSM-IV (APA, 1994) to generate a depression diagnosis. Furthermore, the focus of the study was on demonstrating predictive validity for each of the items on the Children's Depression Inventory-Spanish (CDI-S) and not on diagnostic accuracy of the instrument with this population. Thus, the sensitivity and specificity statistics reported herein are an average of those reported for the final 10 items (of the original 27) recommended by the authors as most useful in predicting depression. As per Rivera-Medina and colleagues (2010), the average sensitivity of the 10 best performing items was 23% and the specificity was 80% with a cut point of > 13; no confidence interval values were reported. Given the values reported, the CDI-S seems to be adequate in correctly identifying participants who do not have depression (specificity = 80%) but not adequate in correctly identifying those with the diagnosis (sensitivity = 23%). The authors did not report statistics of the data's significance.

The second study was conducted by Lara et al. (2013) in Mexico City and evaluated the validity, reliability, sensitivity, specificity, and predictive value of the Postpartum Depression Screening Scale-Spanish version (PDSS-S). This study also received a B grade because the authors did not report whether this was a blind study. The authors reported the psychometric properties of the measure with the statistic known as the area under the curve of a receiver-operator characteristic (AUROC). The AUROC is a combined measure of the sensitivity and

specificity of the instrument (Fawcett, 2006; Metz, 1978). The area under the curve of the receiver-operator characteristic (AUROC) was reported for two different testing times; six weeks after giving birth (T1) and then again four to six months later (T2). AUROC for T1 was .91 ($p \leq$ .001; *SD* = 0.02; IC = .87-.96) and for T2 was .87 ($p \leq .001$; *SD* = .02; IC = .81-.92) when the PDDSS-S was compared to the Beck Depression Inventory (BDI-II). When the PDSS-S was compared to the Structured Clinical Interview DSM-IV (SCI) the AUROC for T1 was .88 95% ($p \leq .001$; *SD* =.03; IC=.81-.95) and .86 ($p \leq .001$;*SD*=.05;IC= .75-.98) for T2. Total sensitivity and specificity statistics for both comparisons on both times were described as excellent by the authors. This evidence supports the use of the PDDSS with post-partum women. Given that Mexico is the largest contributor of Latino immigration to the US and that this study was carried out in Mexico City, these findings may be generalizable to Mexican post-partum women living in the US, but unfortunately are limited to this population only (i.e., not generalizable to men or women who are not post-partum).

The third study was conducted by Vega et al. (2011) in the city of Lima, Peru with a clinical sample of ambulatory psychiatric patients. This study also received a B grade because the population spectrum was narrow (i.e., a clinical sample). Vega and colleagues evaluated the Depression Psychopathology Scale (DPS) by comparing it to the SCI DSM-IV and the Zung Depression Scale-Spanish version (ZDS-S) as well as to the Clinical Global Impression-Severity Scale (CGI-S). When using the SCI as best practices the AUROC was .872 with a sensitivity of 76.92% and specificity of 88%. No confidence interval data was reported. The authors established a measure of concurrent validity of the DPS with the ZDS-S (*rho*= .804, p<.001) and CGI-S (*rho*= .621, p<.001). Thus, the evidence of the diagnostic accuracy of the DPS supports its use with Latinos from Peru living in the US.

Ruiz-Grosso et al. (2012) conducted the fourth and final study evaluated in this systematic review. Ruiz-Grosso and colleagues evaluated the validity of the CES-D 20 and the ZDPS-S with a sample of 194 participants in Lima Peru. This study also received a B grade. In this case, the population was of an appropriate spectrum (a clinical subsample, and a sample from the general population) but it was uncertain if, or how a reference standard was used. The authors reported using a clinical diagnosis based on the DSM-IV, but did not specify whether this diagnosis was obtained through a structured clinical interview. The authors reported the lack of a reference standard as a limitation of the study. When the group of participants who had major depression was compared to the group who had other psychiatric disorders the AUROC was .83 (95% CI ,76-.90) and .84 (95% CI .76-.91) for CES-D. When the group who had major depression was compared to the group with no evidence of psychiatric disorders, the AUROC was .98 (95% CI .97-.99) for the CES-D and .96 (95% CI .93-.99) for the ZDS-S. The authors also reported good correlation between the CES-D and the ZDPS-S (rho=.86 p<.001), the CES-D and CGI (rho=.51, p<.001) and the ZDPS-S (rho=.50, p<.001). This study analyzed the validity of the CES-D and the ZDPS-S with a sample from a general hospital population and with a clinical sample. The authors concluded that the Spanish version of both instruments is valid for detecting depression in clinical settings with Latino immigrants from Peru.

Discussion

The Latino population in the US has grown by 55.6% between 2000 and 2010 (Pew Hispanic Research Center, 2010) and it is expected to continue growing at a faster pace than other ethnic groups (US Census Bureau, 2012). According to the 2010 US Census figures, 30.2% of Latinos in the US are foreign born and according to the Pew Hispanic Research Center (2010) English proficiency in foreign-born Latinos varies widely.

Latino immigrants experience high rates of depression as compared to non-Hispanic Whites (Olfson et al., 2000) and they are more likely to seek help at primary healthcare settings rather than at a mental health facility (Pincay & Guarniccia, 2007). Given these facts, it is important to improve the ability of PCPs to detect depression in this population (Lewis-Fernandez et al., 2005). To this end, several depression-screening instruments have been translated into Spanish, yet little research exists as to the validity of these instruments with the Latino Spanish-speaking population (Reuland et al., 2009).

Reuland et al. (2009) conducted a systematic review to identify studies that validated depression-screening instruments in the Spanish language and the present systematic review aims at providing an update to the work of Reuland and colleagues. Of the studies selected by Reuland and colleagues, six studies conducted in Europe would have been excluded from our study for reasons mentioned above. The study conducted by Wulsin et al. (2002) would have also been excluded because the authors didn't report whether the administration of the SCI and the PHQ-9 was blinded, and the number of participants who completed the SCI was small. The small number of participants completing the SCI compromised any assertions as to the criterion validity of the instrument. Additonally, Wulsin and colleagues did not report whether the sample was clinical or from the general population. The remaining five studies, would have earned a B grade because they utilized a reference standard and all included diverse samples of Spanish-speaking individuals representing countries that included Puerto Rico, Mexico, El Salvador, Nicaragua, and Peru. However, these studies would not have earned an A grade because of the authors did not provide evidence that the administration of the screening instruments and the reference standard were blinded (see Table 3).

Of the 28 studies found in this systematic review that reported on validity of depression-screening instruments in Spanish between 2009 and 2015, only four were found to meet all of the inclusion criteria. The instruments evaluated were the Children's Depression Inventory (CDI), the Postpartum Depression Screening Scale (PDSS), the Depression Psychopathology Scale (DPS), the Zung Depression Scale (ZDS), the Centers for Epidemiological Studies Depression instrument (CES-D), and the Beck Depression Inventory (BDI-II). Interestingly, all four studies selected were conducted in Latin America, whereas all of the studies conducted in the US were excluded because they focused on the internal structure of the instruments they were assessing, but did not use a reference standard, or they did not focus specifically on evaluating the diagnostic accuracy of a Spanish version of a depression-screening instrument. The lack of research in the accurate detection of depression in Latinos living in the US is a serious concern considering the high prevalence of depression and the low access to mental health care for this population.

Overall, the CDI showed the least validity with an average sensitivity of 23% and specificity of 80% (for the best 10 performing items in the analysis). Thus, the diagnostic utility of this instrument is debatable at this time. Similarly, the PDSS's generalizability of psychometric properties is limited to post-partum women, though its utility in the US is wide, considering that the fertility rate for Mexican women in the US was reported to be 73 per 1000 as of 2011 (Centers for Disease Control and Prevention, 2013b). The DPS, the CES-D and ZSDS were all evaluated in Peru and the authors of both studies reported sensitivity, specificity, and area under the ROC curve statistics that provide strong support to the instruments' efficiency in detecting depression in the Peruvian population. The extent to which these findings can be

generalized to the Latino US population outside of Peruvians living in the US will require further research given language and cultural differences.

Limitations

The first limitation of this study is that despite our effort to conduct an exhaustive search of the literature, there may have been studies that we failed to identify due to differences between our searching criteria and how data was reported by the different publications. Second, the low number of studies identified, represents a significant limitation in our ability to make recommendations for clinicians and PCPs pertaining to accurate detection of depression in Latino Spanish-speakers. Third, the cultural diversity and language differences among different Latino groups in the US makes it difficult to generalize any supporting evidence of depression screening instruments validated with individual subgroups. Fourth and last, only one of the four identified studies reported evidence that the administration of the screening instrument and the reference standard were blinded, thus limiting our ability to determine the effectiveness of the screening instruments despite the results reported by those studies.

Recommendations

The systematic review conducted by Reuland and colleagues (2009) and the present study both show the limited existing research in the accurate detection of depression in the Latino immigrant population living in the US whose primary language is Spanish. Further studies are needed to evaluate depression-screening instruments that have been translated into Spanish not only for their internal structure but also for their accuracy in correctly identifying individuals with depression and correctly identifying those without the disorder. The quality of future studies can be enhanced by:

- Using a validated reference standard such as the DSM structured clinical interview for depression (First et al., 2012) to provide a valid comparison.
- Reporting information via the methodology on how all assessments were administered, particularly including instruments that reflect detailed psychometrics and also the inclusion of a 'reference standard' that is blinded in order to enhance credibility of the study.
- Documenting the samples' language characteristics (e.g., monolingual, level of proficiency in the English language), to account for language factors that influence participants' ability to accurately respond to the instruments.
- Evaluating Spanish-language depression screening instruments with non-clinical samples to increase the variability of symptoms thereby enhancing the inferences that can be made about the population of monolingual Spanish speaking Latino farmworkers.

As mentioned in the limitations section above, the low number of studies found that met the inclusion criteria for the study makes it difficult to make any recommendations for primary care behavioral health providers regarding the use of the aforementioned depression screening instruments. What is clear from our results is that until we find strong support for any Spanish language depression screening instrument, particularly for Latino immigrants, PCPs may not be effective in detecting the disorder among Latino Spanish-speaking patients, thus under or misdiagnosing and under or mistreating this population.

Conclusion

The research on the diagnostic accuracy of Spanish language depression-screening instruments continues to be scarce in the US. We identified several articles published in the US between 2009 and 2015 that studied the internal structure of some of those instruments.

However, they did not address the instruments' diagnostic accuracy using an adequate reference standard with Latinos who speak Spanish as their primary language. Under-detection of depression by PCPs is approximately 50% in the general population (Pignone, et al., 2002) and this rate may be even higher for Latino immigrants (Leng et al., 2012) for whom the depression rate tends to be higher than in the general population (Olfson et al., 2000). Reuland et al. (2009) reported "limited evidence that directly guides primary care-based depression screening for Spanish speakers" (p. 459) and five years later this gap in the literature has not improved. The economic (Geenberg & Birnbaum, 2005), social, and human costs of depression are high and complex (Thase, 2003); yet improvements in the effectiveness of treatment cannot be made available to sufferers of the disorder if they go undetected.

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Table 1

Search Terms

PubMed	PsychINFO	CINAHL	Cochrane
((((depression) AND questionnaire) OR tool) OR screening instrument) AND Spanish Filters: Last 5 years Found: 2229 Added search term "psychometrics" Found: 221 Possible: 16	((((depression) AND questionnaire) OR tool) OR screening instrument) AND Spanish Filters: 2009-2015, academic journals, major depression, Found: 3112 Added additional filter "psychometrics" Found: 260 Possible: 8	((((depression) AND questionnaire) OR tool) OR screening instrument) AND Spanish Filters: 2009-2015, academic journals, depression Found: 5739 Added filter "instrument validation" Found: 174 Possible: 7	((((depression) AND questionnaire) OR tool) OR screening instrument) AND Spanish Filters: Last 5 years Found: 233 Added search term "psychometrics" Found: 1 Possible: 0
((((depressive disorder) AND questionnaire) OR tool) OR screening instrument) AND Spanish Filters: Last 5 years Found: 1850 Added search term "psychometrics" Found: 174 Possible: 8	((((depressive disorder) AND questionnaire) OR tool) OR screening instrument) AND Spanish Filters: 2009-2015, academic journals, major depression, Found: 2797 Added additional filter "psychometrics" Found: 202 Possible: 5	((((depressive disorder) AND questionnaire) OR tool) OR screening instrument) AND Spanish Filters: 2009-2015, academic journals, depression Found: 2818 Added additional filter "instrument validation" Found: 102 Possible: 3	((((depressive disorder) AND questionnaire) OR tool) OR screening instrument) AND Spanish Filters: Last 5 years Found: 220 Added search term "psychometrics" Found: 1 Possible: 0
((((depression) AND screening instrument) AND Spanish version Filters: Last 5 years Found: 35 Possible: 3	((((depression) AND screening instrument) AND Spanish version Filters: Last 5 years, academic journals Found: 13 Possible: 6	((((depression) AND screening instrument) AND Spanish version Filters: Last 5 years, academic journals, depression Found: 72 Possible: 3	((((depression) AND screening instrument) AND Spanish version Filters: Last 5 years Found: 0 Possible: 0
((((Depressive disorder) AND screening instrument) AND Spanish version) Filters: Last 5 years Found: 16 Possible:3	((((depressive disorder) AND screening instrument) AND Spanish version Filters: 2009-2014, academic journals Found: 7 Possible: 4	((((depressive disorder) AND screening instrument) AND Spanish version Filters: 2009-2014, academic journals, depression Found: 63 Possible: 2	((((depressive disorder) AND screening instrument) AND Spanish version Filters: Last 5 years Found: 0 Possible:0

Table 2

Studies that Evaluated the Diagnostic Accuracy of Depression Screening Instruments in the Spanish Language

Study	Sample Characteristics, Recruitment, Setting, Country	Reference Standard DD Prevalence	Measure # of items	Score Range/ Cut Point	Sensitivity 95% CI	Specificity 95% CI	AUC 95% CI	Quality Rating
Rivera-M. C.L 2010	130, 13 to 18 years old, Spanish speaking Puerto Rican youth. Clinical sample referred from the public school system in San Juan PR	DISC-2.3	CDI 27	0-34 >13	23%* NR	80%* NR		B
Vega. J. M. 2011	226 ambulatory psychiatric patients ages 18-60 recruited at a psychiatric clinic in Lima Peru	SCID rho=.589 ZSDS rho=.804	DPS 20	25–100 26/27	81%	80%	.872 NR	B
Ruis-Grosso, P. 2012	194 (133 participants recruited at a psychiatric clinic and 61 recruited at internal medicine clinic) 18-65 years old with or without a psychiatric diagnosis in Lima Peru	CGI	CES-D 20 ZSDS 20	0-60 > 29 25-100 >47			.98, 95%CI .97-.99 .96, 95%CI .93-.99	B
Lara, M. A. 2013	149 pregnant women 18 years or older with depressive symptoms recruited at a prenatal care clinic in Mexico city	SCID r=.43 BDI-II r=.75	PDSS-S 35	35-175 >80 SCI >14 BDI			.88(T1) CI .81-.95 .86(T2) CI .75-.98 .91(T1) CI .87-.96 .87(T2) CI .81-.92	B

Table 3

Studies Analyzed

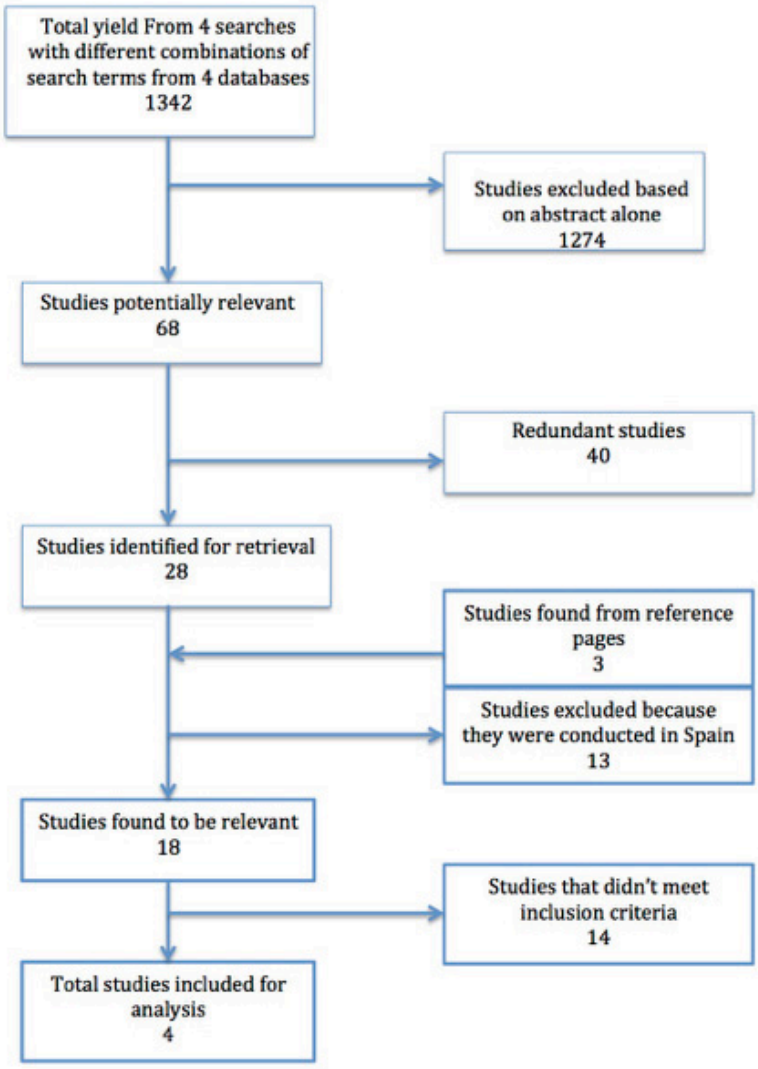
Study	Sample Characteristics, Recruitment, Setting, Country	Reference Standard DD Prevalence	Measure # of items	Score Range/ Cut Point	Sensitivity 95% CI	Specificity 95% CI	AUC 95% CI	Quality Rating
Robinson, 2002	303 Middle-aged and older patients from urban primary care/acute care clinics in CT (Puerto Rico 100%)	CIDI	Yale-1 PRIMEMD-2 GDS-30 GDS-15 CESD-20 CESD-10	0-1 0-2 0-30 0-15 0-20 0-10	86(70-95) 92(78-98) 84(68-93) 76(60-87) 73(57-85) 76(60-87)	42(40-44) 44(42-45) 53(51-55) 64(62-66) 72(70-74) 70(68-71)	NR .68(.61-.76) .75(.67-.82) .76(.69-.84) .77(.70-.85) .77(.69-.85	B
Beck, 2005	150 Postpartum women aged 16-44 in TX and CT (PR 43%, MX 43%, other 14%)	SCID	PDSS-35 Short -7	35-175 7-35	84(71-92) 78(65-88)	84(75-91) 85(76-91	.93(.02) .88(.03)	B
Ring, 1991	48 Adult outpatients at 1 medical clinic in San Francisco, CA (EL Salvador 40%, Nicaragua 32%, Mexico 16%)	SCID	CESD-20	0-60	95(62-100)	74(56-87)	NR	B
Aguilar-Navarro, 2007	199 Patients ages>64; outpatient, geriatric (Mexico)	SCID	MHAS-9	0-9	81(72-88)	69(58-78)	.79(.73-.86)	B
Vega-Dientsmaier, 2002	321 Postpartum women (Peru)	SCID	EPDS-10	0-30	89(67-99)	72(67-77)	NR	B
Wulsin, 2002	34 Mothers of young children; (Honduras)	SCID	PHQ-9	0-27	77(46-94)	0(81-100)	NR	EX
Aragones Benaiges, 2001	350 Outpatients; primary care (Spain)	SCID	SDS-20	25-100	94(83-100)	70(67-75)	.93	EX

Baca, 1999	312 Primary care patients (Spain)	SCAN	PRIME_MD-9	0-9	72(62-81)	86(80-90)	NR	EX
Garcia-Steve, 2003	334 Women, routine postpartum care (Spain)	SCID MD MD+MinD	EPDS-10	0-30	86(77-92) 63(44-79)	95(91-97) 98(96-99)	.98(.97-.99) .98(.97-.98)	EX
Martinez Dela Iglesia, 2002	249 Outpatients >65 (Spain)	MADRS Depression Severity	GDS-15	15	81(71-88) 73(63-82)	77(69-83) 86(80-91)	.84(.78-.89) NR	EX
Ortega-Orcos, 2007	301 Primary care patients >64 (Spain)	DSM-IV-based diag. Depression severity	GDS-5 GDS-15	0-5 0-15	86(72-94) 82(67-91)	85(80-89) 98(95-99)	.86(.80-.92) .90(.83-.97)	EX

Analysis of studies reviewed by Reuland et al. (2009) applying quality sandard in this sustematic review

Figure 1

Flow Chart of Studies Selection Process



Flow chart showing the selection of studies addressing depression screening in the Spanish language

CHAPTER 4: METHODOLOGY

It has been suggested that Latinos have a high prevalence for depression (Pincay & Guarnacia, 2007) although specific prevalence rates reported in the literature vary considerably (Schmaling & Hernandez, 2005). Latinos are more likely to access care for their depressive symptoms through medical healthcare contexts instead of mental health practices. This occurs for reasons including, stigma associated with mental illness, lack of insurance coverage for mental health services, language barriers, and immigration status (Pincay & Guarniccia, 2007). There seems to be a consensus among researchers that depression is under-diagnosed in this population for three main reasons: (a) the wide variability of social experience and cultural characteristics in the Latino population that influence how depression is experienced and expressed (Vega, Rodriguez, & Ang, 2010); (b) physicians' inadequate training in detecting and treating depression in general, as well as poorer doctor-patient communication with Latinos in particular (Interian et al., 2011; Vega, Rodriguez, & Ang, 2010); and (c) the stigma of depression among Latinos (Vega, Rodriguez, & Ang, 2010).

Latinos in the US emigrate from many different Latin American countries (Lewis-Fernandez et at., 2005). This accounts for differences in cultural norms that are important with respect to detection and treatment of mental health issues (Lewis-Fernandez et at., 2005). The ability to recognize and interpret another's words is considered an important factor that influences primary and behavioral healthcare providers' likelihood for and accuracy in screening for depression in Latino farmworkers (Carroll et al., 2005; Reuland et al., 2009). The success in interpreting languages is challenging for any provider, but even more complicated when patients represent a wide variability in languages and dialects based on their home regions in Latin America (Noël & Whaley, 2013). While most migrant workers speak Spanish as their primary language (Mehta et

al., 2000), there is a wide variability of regional dialects. Some of the most common dialects used by farmworkers are Mixteco, Tarasco, and Quiche. Given these different dialects and languages, it is not uncommon for patients and providers to experience miscommunication or misunderstandings (Alderet et al, 2000). Therefore, instruments that have been translated into Spanish do not necessarily reflect such variability in the many different Spanish regional forms. The language used on standardized depression screening instruments (such as "tener poco interes or placer en hacer las cosas") may represent significant barriers to accurately screen for depression in the Latino farmworker population who tend to be poor (National Center for Law and Economic Justice, 2013), and typically has less formal education (Pew Hispanic Center, 2009), is afraid of the stigma associated with depression, and does not believe that conventional treatment will be effective.

In addition to differences in languages and dialects, physician's ability to recognize depression in primary care needs to be considered. Löwe and colleagues (2004) reported that primary care physicians (PCPs) were able to correctly identify depression symptoms in only 40% of participants that were diagnosed via a structured clinical interview. Löwe et al. (2004) further cautioned that the actual rate might have been even lower if the participating physicians had not been asked specifically if the participants had any comorbid psychiatric disorder. This question may have prompted them to focus on identifying symptoms of psychiatric disorders.

In regard to physicians' low detection rates of depression, Gask (2013) suggested that simply educating PCPs about detection and treatment of depression has not resulted in improved rates of detection or treatment of the disorder. Gask (2013) suggested that addressing the physician's level of confidence in their ability to effectively identify and treat patients with depression should involve two different components. First, physicians should receive training in detection

and treatment of depression by age groups, comorbidity, stage of treatment (acute, continuation and maintenance), and setting (medical illness, pregnancy, breast-feeding). Second, training should address physicians' attitudes toward anti-depression drugs; such attitudes may lead to inadequate dosage rendering treatment ineffective.

Along with language issues and physicians' low detection rates, stigma about depression is also associated with the difficulties in identifying the disorder. Vega et al (2010) reported that many primary care patients who are Latino might actually be struggling with clinical depression, but not seeking treatment due to the stigma associated with mental health conditions. Personal internal processes including shame, fear of being labeled as mentally incompetent, and fear of becoming addicted to prescribed anti-depressants have all been documented as perspectives associated with stigma (Interian et al., 2011; Pincay & Guarnaccia, 2007; Vega et. al, 2010). Furthermore, social processes that involve negative attitudes from the community toward the mentally ill and social discrimination that excludes the individual from important roles in family life and economic activity promote further stigmatization (Vega et al., 2010). Therefore, depression screening in this population can be improved if the screening instruments used limit language or ideas that may trigger thoughts related to stigma such as the word "depression" itself.

The proposed depression-screening instrument titled Latino Farmworker Affective Scale (LFAS-15), included as part of this study, was formulated after a series of clinical sessions between the principal investigator (PI) and farmworker patients. The PI observed that often farmworker patients did not understand the questions that were embedded in commonly used standardized depression-screening instruments (the Patient Health Questionnaire-9 (PHQ-9)) or did not relate to the terminology in the questions. The PI further observed through more

elaborate clinical interviews that patients would endorse symptoms that corresponded to the construct of depression such as “sentirse desanimado” (feeling empty as if your soul has left you) even after they had declined to endorse the items on the PHQ-9. The PI also observed that the language used by patients to describe their experience was significantly different from the language used in the PHQ-9. For instance, the first item states “tener poco interes o placer en hacer las cosas”; instead many patients report “me siento desganado” or “no tengo animo”.

As a result of these three circumstances, the researcher began compiling a list of words commonly used by the patients at a community healthcare center that primarily serves farmworkers. At one point, the list that farmworkers used to describe their symptoms consisted of more than 40 words. After eliminating redundant words, as well as those that there were not as frequently used, a total of 15 words or short phrases remained. The proposed instrument was designed to be accessible for individuals with low Spanish-literacy and/or low Spanish comprehension. Thus, individuals who receive the LFAS-15 only need to know how to read and understand the meaning of the word(s) instead of understanding the structure of a sentence. Because the words and short phrases that make up this assessment reflect the words collected from the population of interest, it is assumed that most Latino farmworkers will likely be able to understand the meaning of the words on the instrument. However, the psychometrics of this measure have not been evaluated or compared to other standardized assessments. Thus the purpose of this study was to evaluate the effectiveness of the Latino Farmworker Affective Scale (LFAS-15) as compared to the PHQ-9, (Kroenke, Spitzer, & Williams, 2001) the Centers for Epidemiological Studies Depression Scale (CESD-10; Radloff, 1977), and the Brief Symptom Inventory (BSI-18; Derogatis & Spencer, 1982). The CESD-10 Spanish version was chosen for comparison in this study because of the significant number of studies found that evaluated its

effectiveness with Spanish-speaking Latinos in the US and in Latin America (Reuland et al., 2009). The BSI-18 was selected over other instruments that have also been translated into Spanish because it contains a scale that addresses somatic symptoms often linked with depression in the Latino population (Kirmayer, 2001).

Project Aims and Rationale

The current limitations in the detection of depression for Latino farmworkers have pointed to the need to develop a depression-screening instrument that adequately identifies Latino farmworkers' symptoms of depression. To this end, the researchers ask the question: Does the LFAS-15 capture Latino farmworkers' symptoms that are equivalent to the phenomenon of depression more accurately than the PHQ-9 (Kroenke, Spitzer, & Williams, 2001), CESD-10 (Radloff, 1977), and BSI-18 (Derogatis & Spencer, 1982).

Study Design

Three essential elements are important to describe in relation to the design of the current study: (a) the role of integrated behavioral health care (IBHC), (b) observations of farmworkers not understanding the items on the PHQ-9, and (c) patients endorsed symptoms of depression within a conversation, even when they did not have an indicated score of depression on the selected standardized assessments. The culmination of these experiences then resulted in the development of an assessment (to be described below) that was tested in comparison to standardized depression instruments with Latino farmworkers.

Over the past 24 months, the principal investigator (PI) served as a behavioral health provider in an integrated behavioral healthcare team (i.e. attending to medical and mental health concerns simultaneously alongside medical healthcare providers). As part of this team, the PI was able to observe PCPs and health care staff interactions with Latino farmworkers (both, male

and female). The staff seemed to have built strong relationships with the Latino farmworkers seeking medical services at these community healthcare centers. Patients often expressed their trust for the clinic's staff and this usually lead to increased participation in their medical treatment. The community healthcare centers were chosen for this study in order to capitalize on the strong relationships between the clinic's staff and Latino farmworkers.

Secondly, the PI worked closely with farmworker patients who often did not understand the questions in the standardized depression assessment instruments (e.g., PHQ-9). For instance, the first question in the PHQ-9 asks: "Little interest or pleasure in doing things" (PHQ-9 Kroenke, Spitzer, & Williams, 2001) and the Spanish translation of this item reads: "tener poco interes o placer en hacer las cosas." This question sounds incomplete and confusing as such patients express uncertainty or simply do not endorse the symptom. Other times patients did not relate to the terminology in the questions as in the case of the second question: "feeling down, depressed or hopeless" and the Spanish translation: "sentirse desanimado(a), deprimido(a) or sin esperanza." In the case of the second item on the PHQ-9 the word depressed is problematic because depression is understood in Latino culture as a very serious problem (Cabassa, Lester, & Zayas, 2007) and often Latinos do not believe their symptoms are as extreme.

The PI of this study developed a depression assessment instrument from terms used by Latino farmworker patients based on several sessions provided at a rural community healthcare clinic in North Carolina. This assessment was created in order to reflect common descriptions of symptoms that are perceived to be associated with depression. For the present study, the PI evaluated the extent to which this instrument reflects and captures Latino farmworkers' experience of depression-related symptoms and then compared the screening accuracy between the LFAS-15 and the PHQ9 (Kroenke, Spitzer, & Williams, 2001), CES-D10 (Radloff, 1977),

and the BSI-18 (Derogatis & Spencer, 1982). The DSM-IV (American Psychiatric Association, 2013) structured clinical interview for depression (SCID) will be used to compare the accuracy of all instruments.

Can the LFAS-15 identify symptoms of depression and their severity more accurately in the Latino farmworker population than the PHQ9, the CESD-10, or the BSI-18 when their accuracy is checked against the diagnostic results and symptom severity provided by the structured clinical interview for depression? To address this question, the following hypotheses were developed.

Hypothesis 1: Scores on the LFAS-15 will be positively related to scores on the SCID.

Hypothesis 2: Scores on the PHQ-9, CESD-10, and BSI-18 will be positively related to scores on the SCID.

Hypothesis 3: When predicting scores on the SCID, the LFAS-15 will demonstrate incremental validity over the PHQ-9, CESD-10, and BSI-18.

Hypothesis 4: The LFAS-15 will have higher levels of sensitivity and specificity than the PHQ-9, the CESD-10, and BSI-18.

Hypothesis 5: The LFAS-15 will more accurately detect symptoms of depression than the PHQ-9, the CESD-10, and the BSI-18.

Setting

The study was conducted at a community healthcare center in Eastern North Carolina operated by Greene County Health Care Inc. (GCHC). The ECU Medical Family Therapy Doctoral Program has a long history of collaboration in the delivery of integrated behavioral healthcare and completion of several research projects. An agreement of collaboration with GCHC and support for this study was secured prior to IRB submission. Prior to the beginning of

this study the principal investigator (PI) of this research project had worked at the aforementioned facility for about 18 months and was able to establish a close working relationship with several of the medical providers, administrators, and patients. These relationships enhanced the PI's ability to secure access to the population of interest and to recruit participants.

Participants

Participants were selected from a pool of patients accessing primary healthcare at a community healthcare center. Participants were recruited if they were Latino and their main occupation had been farm work for the majority of their time living in the US. Potential participants also had to be immigrants and their first language had to be Spanish, Quiche, Mixteco or Tarasco. The PI screened them for eligibility for the study with the following questions: 1a) Are you an immigrant? 1b) if yes, what country are you from? 2) Is Spanish, Tarasco, Mixteco or Quiche your first language? 3) Have you received or are you receiving medical care or psychotherapy for feelings of sadness (tristeza)? 4) Are you currently receiving medical or behavioral treatment for any mental health condition? 5) What is your occupation?

Individuals with a confirmed diagnosis of a psychotic disorder as determined by existing data in their electronic health record (EMR) or by personal account were excluded from the study. Individuals who were taking anti-depression medication, or had been on antidepressants in the last six months as per their EMR or personal account were also excluded to prevent confounding the study with symptomatology that may be under control through medical treatment. Individuals were included in the study if they: 1) presented with symptoms of depression during the routine behavioral health interview; 2) they were farmworkers, migrant, seasonal or permanently residing in the US, or work in an occupation closely related to farm

work; 3) they were not receiving pharmacological or psychological treatment for depression; 4) they didn't have a comorbid psychotic disorder and 5) they had not lived in the US for more than 15 consecutive years (to prevent confounding the study with acculturation issues). The literature on acculturation shows that although acculturation is a lifelong process and can take several paths, people adapt to a new culture by learning their norms, beliefs and values (Lopez-Class et al., 2011) thus a 15-year limit provides a reasonable time frame within which Latino immigrants have not yet learned the host culture's values around depression (Abraido-Lanza, 2005).

Sample Size

An alpha level at .05 has traditionally been considered a reliable measure with an acceptable margin of error in research, whereas power to reject the null hypothesis has been traditionally considered to be acceptable at .80 (Sprenkle & Piercy, 2005). Sprenkle and Piercy (2005) suggested that a small effect size, specifically .40 be used when comparing mean scores for which small differences are expected. This study compared differences in the mean scores between screenings and assessments that measured the same construct, therefore differences were expected to be small; as a consequence, a conservative effect size of .40 was used to capture such difference. Given these statistical values, an alpha level of .05, power at .80 and effect size of .40; the researchers used Cohen's (1988) table to determine that 99 was the number of participants needed to conduct this research project. The PI expected that there will be a number of confounding variables that might need to be controlled for in the statistical analyses; to ensure that the number of participants was adequate for statistical power after controlling for confounding variables it was determined that 150 participants would be recruited for the study.

Each participant participated in a drawing for a $15 dollar Walmart card as an incentive for participation. A total of 15 cards were awarded or approximately one out of every 10

participants received an incentive. An incentive was warranted because participants spent time completing the instruments and the clinical interview beyond the time that is typically allotted for their medical appointment.

Measures

One of the issues related to the accuracy of a depression screening with Latino immigrants include the lack of a reference standard for evaluating the construct validity of depression measures (Grzywacz et al., 2010). The Latino Farmworker Affective Scale (LFAS-15) was compared to the PHQ-9, the CES-D10, and the BSI-18 because these instruments have been reported to adequately detect depression in the Latino population (Acosta, Nguyen, & Yamamoto, 1994; Derogatis, 2001; Grzywacz et al., 2010; Interian et al., 2005; Merz et al., 2011; Reuland et al., 2009). The following is a brief description of these instruments and a case will be made as to the limitations associated with their adequacy for detecting depression in Latino farmworkers.

The PHQ-9 is a nine-item screening instrument extracted from the full PHQ. The PHQ-9 asks individuals being screened to report a numeric value ranging from zero to three (0=not at all, 1=several days, 2=more than half the days, and 3=most days) for how frequently they experienced the symptoms listed on every item during the last two weeks. The total score ranges from zero to 27 points and the cut off points for varying degrees of severity of depression are 0-4 not depressed, 5-9 for mildly depressed, 10-14 for moderately depressed, 15-19 for moderately severe, and 20-27 for severely depressed. A diagnosis is only made after physical causes for depression, normal bereavement, and history of maniac episode are ruled out. The PHQ-9 has been found to have good internal consistency reliability (α=.89) and good criterion validity (r=84) with the clinical structured interview as reference standard (r = .79; Spitzer et al., 1999).

While the PHQ-9 has strong reliability and validity, in a systematic review conducted by Reuland et al., (2009), they failed to find studies supporting the use of the PHQ-9, or the ultra-short PHQ-2 with the population of interest. In a more recent study, Merz et al., (2011) reported the PHQ-9 Spanish form to be adequate for detecting depression in urban Latina women who were also considered to be of low SES. It is worth noting that, to the best of our knowledge, the PHQ-9 has not been evaluated with Latino farmworkers and as discussed earlier, the PI of this study has identified several problems with the usefulness of the PHQ-9 in screening for depression in Latino farmworkers in a primary care setting. Approval to use the PHQ-9 in this study is attached herein as "Appendix B".

The CESD-10 (Radloff, 1977) is a 10-item depression-screening instrument extracted from the CES-D scale and it assesses symptoms of depressed affect, interpersonal relationships and positive affect. The frequency of the symptoms is assessed in reflection of the last seven days (prior to completing the measure) on a scale of 0 to 4 indicting the number of days in which symptoms were present. The CESD-10 has been reported to have adequate internal consistency (α=.73) in a sample of Latino immigrants (Grzywacz et al., 2006). However, there are limitations to our understanding of the CESD-10 adequacy in detecting depression in Latino farmworkers. Grzywacz et al., (2010) reported that the CESD-10 is an adequate instrument to detect depression in Latino farmworkers, though the authors reported concerns regarding participants' endorsement of symptoms when they did not understand the questions. Another limitation associated with the CESD-10 and adequate screening for depression in this population is that the literature has firmly established that Latinos tend to report somatic symptoms when they experience depression (Asner-Self, Schreiber, & Marotta, 2006) and the CESD-10 does not

contain any items that could detect somatic symptoms. Approval to use the CESD-10 in this study is documented in Appendix B.

The Brief Symptom Inventory -18 ([BSI] Derogatis & Spencer, 1982) is an abbreviated version of the BSI scale that consists of 53 items. The BSI-18 assesses for anxiety, depression and somatic symptoms. The instrument assesses the level of distress on a Likert scale that ranges from zero (not at all) to four (extremely). Internal consistency estimates have been reported to be adequate (α=.89; Asner-Self et al., 2010) using the Symptom Checklist as the reference standard with a concurrent validity reported to be high (α=.73; Asner-Self et al., 2010).

The BSI-18 has received some support in assessing for depression on monolingual Spanish speaking Latino immigrants (Acosta, Nguyen, and Yamamoto, 1994, Derogatis, 2001). However, Prelow and colleagues (2005) found that the instrument lacks discriminant validity of the depression, anxiety, and somatization scales. In response to this limitation, Asner-Self et al. (2006) conducted a study with a sample of Central American individuals to evaluate the BSI-18's factor structure and found that the instrument reliably identified psychological distress. However, the authors cautioned against using it to diagnose specific disorders. Their sample was composed of self-selected individuals in an urban setting who had been in the US an average of 13.5 years, making it difficult to apply these results to Latino farmworkers who usually migrate to the US for the agricultural season and live in small groups isolated from US culture.

The Latino Farmworker Affective Scale ([LFAS-15] Limon, 2014) consists of 15 words or short phrases that Latino farmworkers have used to describe their experience of emotions and cognitions that correspond to symptoms of depression. Participants were instructed to report the severity of each of the items on the instrument on a 5-point likert scale. The LFAS-15 is available in Appendix D.

The order in which the items in the LFAS were presented was considered and it was decided to first present items that reflect somatic symptoms related to eating, sleeping, generalized pain, and chest pressure (e.g., no tengo hambre, sin sueño, todo me duele, con el pecho apretado). It was decided to present these items first because the literature shows that somatic symptoms are more likely to be presented by Latino individuals who suffer from depression (Asner-Self, Schreiber, & Marotta, 2006). The items presented next are those that indicate negative symptoms indicating the absence of emotions, cognitions or behavior. These items included "desganado" (lack of will to do anything), "no me importa nada" (lack of interest in anything), "nada me complace" (nothing pleases me), and "desanimado" (feeling empty inside). Next, positive symptoms indicating the presence of unproductive emotions cognitions and behaviors were presented and they included "con mal genio" (short temper), "desesperado" (without hope), "nervioso" (nervious), "tengo ansias" (I feel anxious), and "con susto" (I feel fright). The last two items introduced were "triste" (sad) and "con ganas de morirme" (feeling like I want to die). These items were introduced at the end because the words feeling sad and wanting to die may prompt participants to associate these symptoms with cultural stigma about being weak and wanting to die (Vega, Rodriguez, & Ang, 2010). Finally, in order to test our hypothesis that the LFAS-15 reduces response bias associated with stigma about depression, two items were included at the end of the instrument. The first item will ask, "How comfortable did you feel completing this questionnaire?" and participants answered on a Likert scale where 0= very uncomfortable, 1= uncomfortable, 2= neither uncomfortable nor comfortable, 3= comfortable, and 4= very comfortable. The second item asked "were there any questions in this questionnaire that you felt were not easy to respond to?" if yes, which one(s)?

Participants were asked to participate in a structured clinical interview for depression (SCID) to determine the presence and severity of their symptoms; the administration of the SCID took between 15 to 35 minutes as compared to the 45 minutes to one hour that was originally estimated. The structured clinical interview has been modeled after the Structured Clinical Interview for DSM Axis I disorders Module A Depression (Spitzer, Gibbon, & Williams, 2012). There has been no update to the SCID after the publication of the DSM-IV. Considering that the DSM-5 did not change the diagnostic criteria for major depression, the existing SCID are still considered adequate. Therefore, its Spanish version was deemed to be appropriate for use as the reference standard to compare the effectiveness of the LFAS-15, the PHQ-9, The CESD-10, and the BSI-18. The structured clinical (SCID) interview instrument is attached herein as "Appendix E".

Ethical Considerations

This study was conducted with Latino Farmworkers who are considered a vulnerable population (Grzywacz, et al., 2010), therefore special ethical considerations were made. The research team ensured that participants fully understood the informed consent process by providing the inform consent form and discussion of the form in Spanish and in simple lay terms. Emphasis was placed on participants' right to decline participation with no adverse consequences of any kind; stressing that medical care at the time of the study or in the future would, in no way be affected by not participating in the study. While participants were offered a chance at receiving an incentive for participation; the incentive was not considered unreasonable given the length of time needed to complete the assessments. Acknowledging that participants were going to be required to spend more time at the site than they normally would, they were entitled to participate in a drawing for a chance to receive a gift card at a value of $15.00 dollars (a one out

of ten chance for the incentive). Latino farmworkers live in small communities of immigrants thus the research tem protected participants' confidentiality and anonymity. This prevented any adverse consequences that could have resulted from other community members learning about their participation in the study. Procedures to safeguard participants' confidentiality and anonymity are outlined below.

Procedures and Data Collection

The PI works at a community primary care center that provides medical services for mostly low SES individuals. A large proportion of the patient panel of this medical center is Latino and most of the Latino patients are farmworkers. All individuals routinely receive a brief behavioral assessment and the PHQ-9 as part of such assessment. The PI conducted a trial run to gain familiarity with the SCID. The trial run also gave the PI an opportunity to practice conducting the SCID in a systematic manner to control for potential researcher's factors that could have confounded the study. The protocol for this study was also shared with a second researcher (Institutional Review Board approved) in order to crosscheck the PI's determination of the presence and severity of depressive symptoms and to establish inter-rater reliability in the administration of the SCID.

Upon approval from the ECU Institutional Review Board (see appendix A), the PI began to invite individuals during the integrated behavioral health care (IBHC) consultation when patients attended their regularly scheduled medical appointment. Individuals who expressed interest completed the eligibility questionnaire and those who were determined to be eligible were explained the informed consent form in Spanish. The informed consent document contained explicit information as to how to contact any relevant parties should they have had any questions or concerns. The PI affirmed the participant's freedom to decline participation and end

participation at any time during the study. The informed consent form is available in Appendix F. Participants then completed the eligibility questionnaire presented earlier (attached herein as "Appendix G"). Each participant selected for the study was assigned a unique number and this number was used as a case identifier so that any identifiable information could be omitted from the data when entered and prepared for analysis. The PI maintained identifiable data (i.e., the informed consent) in a separate locked file to ensure participants' confidentiality.

Once participants agree to be part of the study and informed consent was obtained, participants completed a brief questionnaire of demographic information including age, gender, and whether participant is a guest worker or full time resident of the US (see Appendix H). Then the interviewer (either the PI or one of the research assistants) asked each participant to complete the PHQ-9, the CESD-10, the BSI-18 and the LFAS-15.

The PI controlled for any influence of the order in which participants completed the instruments, by having participants complete the instruments in random order (Beck & Gable, 2001). The PI remained blind to the scores of the instruments before the SCID was completed. Once the instruments were completed, the PI conducted the SCID to determine the presence and severity of depressive symptoms if any. At the end of the interview participant's questions regarding the study, their participation, the handling of the data collected, or any other questions will be answered.

Analyses

The data were inspected for completeness and accuracy and then descriptive statistics were performed to ensure that assumptions for the different statistical tests are met (Field, 2009). An exploratory factor structure analysis was performed on the responses to the LFAS-15 to ascertain its factor structure. Item analysis was also be performed to determine whether each

item contributes to the overall structure of the instrument and possibly eliminate redundant items that do not add to structure of the instrument (Moore, McCabe, Craig, & Freeman, 2009). Following, a multiple regression analysis was performed on the scores of all instruments against the scale for the severity of depression symptoms determined through the SCID to determine the relationship between the instrument's scores and the symptom severity from the SCID (Moore, McCabe, & Craig, 2009. A receiving-operating characteristic curve or ROC analysis (Fawcett, 2006; Metz, 1978) on the LFAS-15 scores against the data obtained from the SCID was also performed. This analysis provided information regarding sensitivity and specificity of the LFAS-15.

Summary

A new depression-screening instrument is proposed to address the problems associated with screening for depression in Latino farmworkers. Stigma about depression, low literacy, and cultural variations to the expression of depression in this population are considered as influential factors in the difficulty in screening Latino farmworkers for depression. There is limited empirical support as to the effectiveness of three existing depression-screening instruments in Latino farmworkers, namely the PHQ-9, the CESD-10, and the BSI-18. Finally, a description of the study design and methodology for collecting and analyzing data was presented.

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CHAPTER 5: IMPROVING DEPRESSION SCREENING IN LATINO FARMWORKERS

Research findings indicate that low SES Latinos in the US, experience mental health disorders at a rate of 23.2% whereas non-Hispanic Whites experience mental health disorders at a rate of 11.8% (Olfson, et al., 2000) There is also evidence to suggest that depressive symptoms are more persistent and severe for Latinos than that of non-Hispanic Whites (Liang et al., 2011). In a study conducted by Liang et al. (2011) the researchers found that Latinos showed a three- and two-fold relative risk (odds ratio OR=2.949, p,<.001, and OR=1.989, p<.001 respectively) as compared to non-Hispanic whites to experience moderate or high and resistant symptoms of depression. Among all Latino group in the US, Latino farmworkers are particularly at high risk for developing depression due to working and living conditions inherent of farm work (Grzywacz et al., 2010). The prevalence of depression in LFWs has been estimated to be up to 41% (Hiott et al., 2006) and it has been reported that LFWs are unlikely to seek mental health services (Lewis-Fernandez et al., 2005), due to a variety of cultural, social, and structural factors (Georges et al., 2013).

Prevalence rates for depression among LFWs (compared to other Latinos or other races) vary from state to state. For example, depression has been reported to affect approximately 20% of LFWs in California (Alderet, Vega, Kolody, & Aguilar-Gaxiola, 1999), 38% in the Midwest (Hovey & Magana, 2002), and 41.6 % in North Carolina (Hiott et al., 2006). Unfortunately, even with these high rates of depression, there is concern that depression is under-detected among in this population and that Latino farmworkers who struggle with mental health symptoms may be underutilizing mental health services (Limon, Lamson, Hodgson, Bowler, & Saeed, 2015).

Under-detection of depression in LFWs has been linked, among other factors, to (a) primary care providers' inaccurate or inadequate assessment for depression among this specific population, and (b) low utilization of healthcare services by LFWs. Below are details pertaining to the complexities from both providers and patients that contribute to the underreporting of depression among LFWs.

Primary Care Provider Factors in Under-detection of Depression

Under-detection of depression in Latinos, particularly in primary care, has been linked to: (a) the limited training that primary care providers (PCPs) receive in identifying and treating depression (Vega, Rodriguez, & Ang, 2010), (b) language differences between Latino patients and providers in how depression symptoms are described (Lewis-Fernandez et al., 2005), (c) PCPs' lack of awareness regarding the role of low literacy levels among LFWs in relation to care, which limits their ability to read screenings, understand treatment plans, or adhere to prescriptions from the PCP (Lewis-Fernandez et al., 2005), and (d) PCPs' limited time with each patient in busy medical practices (Lake, 2008). Combined, these four factors heavily influence the quality of health care that Latinos receive in relation to depression or symptoms associated with depression.

Latinos who experience mental health symptoms often attempt to address their mental health needs in a primary care setting (presenting with somatic symptoms) opposed to a mental health setting (presenting with emotional health symptoms) (Georges et al., 2013). Commonly, Latino immigrants present to a PCP with unexplained somatic symptoms that include: trembling, heart palpitations, paralysis, fainting, numbness or tingling, chest pains, dizziness, and difficulty breathing as expressions of depression (Guarnaccia et al., 1993). These symptoms may prompt PCPs to prioritize the treatment of somatic symptoms, preventing them from completing a more

thorough assessment that also prevents them from correctly identifying depression (Carrol, Samardic, Bernard, & Hernandez, 2005). One reason why this under-detection may occur is because, primary care providers (PCPs) do not typically receive adequate training in how to screen for mental health concerns, even among the most common of mental health diagnoses, such as depression (Vega, Rodriguez, & Ang, 2010). Most PCPs receive between 3-6 credit hours of training in mental health during their degree program (Chavez, D., 2016. Personal communication), it is not surprising that depression is under-detected. Given the lack of mental health training, it is likely that most Latinos who have depression and are seeking care from a PCP have psychosocial health concerns that are going unnoticed or under-detected.

Another reason PCPs may fail to detect depression in LFWs includes language differences in how symptoms of depression are describes by Latinos as compared to non-Hispanic Whites (Lewis-Fernandez et al., 2005). Interian et al. (2010) reported that language differences between patients and PCPs might undermine patient-provider communication decreasing PCPs' ability to identify symptoms of depression. For example, many LFWs often report feeling "tired" or "exhausted" and they attribute their symptoms to the hard physical work they do, when in fact they may be describing lack of interest in daily life activities or feeling disheartened. This miscommunication between PCP and patient may lead the PCP to disregard the complaint as being something beyond their scope of practice and move on to address physical health complaints. Furthermore, though most farmworkers are from Mexico (84%), and they speak Spanish (Mehta et al., 2000), many of them are of indigenous origin. The most common languages spoken by Mexican indigenous farmworkers are Mixteco, Tarasco, and Quiche (Mehta et al., 2000). This further complicates the problems associated with the accurate detection of depression symptoms due to language differences between PCPs and Latino patients

(i.e., differing dialects may result in further language barriers or assumptions by monolingual or bilingual providers that all Latinos speak Spanish).

Low literacy is another factor associated with language that results in the under-detection of depressive symptoms. Researchers have shown that the average years of schooling for farmworkers is approximately six years (i.e., the fifth grade) (Ward, 2010). Thus, the language used on depression screening tools and even formal clinical interviews to assess for depression may be challenging for farmworkers to understand (Lewis-Fernandez et al., 2005). Besides PCPs limited training in mental health conditions and cultural differences (Vega et al., 2010), PCPs limited time with patients further constrains their ability to adequately and accurately detect depression in LFWs (Lake, 2008).

A fourth factor that influences PCP high rates of under-detection (in relation to depression) are due to the limited time PCPs have with each patient (Mitchell & Coyne, 2007). Time constraints may result in PCPs prioritizing physical illness complaints over mental health concerns, thus failing to recognize symptoms of depression (Lake, 2008). Furthermore, PCPs limited training in mental health combined with time constrains lead them to reason that depression symptoms do not warrant intervention (i.e., if they attribute a patient's depressed mood as normative in relation to the presenting physical complaint) over physical health interventions (Lake, 2008). The PCPs may also perceive that they do not have the time to tend to what some providers consider a "minor condition," as they turn their attention to meet the high demands of complex and chronic physical health conditions in their medical practice (Lake, 2008). These PCP factors become even more complex when matched with Latinos' reasons for low utilization of services.

Low Utilization of Mental Health Services

While there are great concerns pertaining to PCPs under-detection of depression among the Latino population, the other side to the story is the low utilization of mental health care by Latinos. Oftentimes, Latinos have a preference for alternative medicine (e.g., herbal infusions, body cleansings performed by "curanderos" or spiritual healers) or forgo care rather than accessing mental health services (Arcury et al., 2005). Factors, that account for LFWs low utilization of mental health services include: (a) lack of access to mental health services due to (i) farmworkers' high mobility rates as they migrate with the seasonal agricultural cycles (Arcury et al., 2005), and (ii) living and working in remote locations isolated from communities where mental health services are available (Rickettes, 2000), (b) lack of health insurance (Carroll et al., 2005), and (c) cultural factors that may prevent LFWs from seeking services that include attributing symptoms to witchcraft, seeking care from curanderos opposed to PCPs, and stigma associated with depression (Leng, Changrani, Tseng, & Gany, 2010).

High mobility is a significant concern related to low utilization of mental health services by LFWs. As farmworkers move from place to place following the seasonal crops, their ability to learn about community resources and medical and mental health services is undermined (Arcury et al., 2005). Approximately 42% of all farmworkers migrate at least once every year, due to following the pattern of the agricultural crops, following their employers, or returning to Mexico at the end of the agricultural season (Arcury et al., 2007).

In addition, LFWs live and work in rural areas far from communities where mental health clinics are usually located (Ricketts, 2000). This significantly limits their ability to learn about, and access mental health services. For example, in North Carolina there are 15 health care facilities designated to provide services for migrant farmworkers, but farmworkers are spread

across 100 counties in the state (Arcury et al., 2007). Farmworkers work long hours and often seven days per week (Arcury & Quandt, 2007) and they lack transportation of their own (Arcury & Quandt, 2007) making access to mental health services challenging (Arcury & Quandt, 2010). Whereas high mobility rates (Ricketts, 2000) and geographical isolation (Arcury & Quandt, 2010) restrict access to mental health services, low wages also influence farmworkers' low utilization of mental health services (Carrol et al., 2005).

Another reason for low utilization has to do with insufficient income and lack of insurance necessary to pay for healthcare costs. It is estimated that at least 75% of LFWs and 90% of their children do not have health insurance (Carrol et al., 2005). Despite being unable to pay for health insurance, LFWs often do not qualify for Medicaid coverage either because they are undocumented or because they do not meet other eligibility requirements. The lack of health insurance has been found to be an important factor in LFWs inability to access healthcare and mental health services (Arcury et al., 2007).

A third reason for underutilization of mental health services are the cultural factors associated with mental health and mental illness (Leng et al., 2010). Guarnaccia and colleagues (1993) found that Latinos experiencing depression often describe the inability to control their mood, emotional reactivity, difficulty coping, and excessive worrying as common struggles rather than attributing them to symptoms of a mental health condition. Latino immigrants usually referred to these symptoms as "nervios" or "susto" (Falicov, 1999). Thus, in cases where cultural health beliefs are incongruent or in contradiction with the Western model of health and illness, Latinos often refrain from endorsing depression symptoms when they access healthcare services. Instead, they attempt to heal in ways that are congruent with their beliefs about the cause of

symptoms such as drinking herbal infusions or seeking out the wisdom from a curandero (a healer who uses folk remedies) to sooth their nerves (Garcés, Scarinci, & Harrison, 2006).

Cultural beliefs common among Latino immigrants in the US also include the attribution of mental illness to spells and witchcraft (Falicov, 1999); the belief that the onset and course of illness is out of one's control, and God's punishment for ill will, or destiny (Falicov, 1999). All of these beliefs are referred to in the literature as fatalism and are believed to negatively affect "help seeking" behaviors because individuals do not trust that conventional treatment will be effective (Chavez, Hubell, & Mishra, 1996). Fatalism, or the belief that the onset and course of illness (including depression) is beyond the individual's control may lead individuals to not seek help for their symptoms (Choi & Gonzalez, 2005) and prevent them from receiving treatment on a timely basis.

Finally, stigma associated with depression is another factor that interferes with detection of depression because Latinos think of depression as the result of having "weak character" (Caplan et al., 2013). The stigma associated with depression may result in underreporting of symptoms or somatic complaints that would have otherwise caught the attention of the PCP and the need for a depression screening.

To improve depression-detection rates in Latino farmworkers; the effectiveness of a new depression-screening measure titled "The Latino Farmworker Affective Scale or LFAS-15 was developed. Then, the following research question was formed: Can the LFAS-15 identify symptoms of depression more accurately in the Latino farmworker population than the PHQ -9, the CESD-10, or the BSI-18 when their accuracy is checked against the diagnostic results provided by the structured clinical interview for depression? I approached this question using the Critical Multiculturalism Theory (Nyund, 2006) to integrate the unique ways in which

depression was experienced by LFWs into the construction and corresponding analysis of the LFAS-15.

Method

The LFAS-15 was constructed after the Principal Investigator (PI) observed that farmworker patients at a Federally Qualified Health Care Center (FQHC) did not entirely understand or relate to the questions on the Patient Health Questionnaire-9 ([PHQ-9] Kroenke, Spitzer, & Williams, 2001) which was the primary depression screening instrument used to screen patients for depressive symptoms at this Center. However, through a clinical interview, patients often endorsed symptoms that corresponded to the construct of depression (i.e., "sentirse desanimado" or feeling empty as if your soul has left you) even after PHQ-9 items were declined. Furthermore, the language used by patients to describe their experience of distress was significantly different from the language used in the PHQ-9 i.e., "tener poco interes o placer en hacer las cosas" (low or lack of interest in doing things); instead many patients report "me siento desganado" (I don't feel like doing anything) or "no tengo animo" (I have no will).

Consequently, the PI began compiling a list of those words commonly used by patients that resulted in a list of 15 words or short phrases that were titled, "The Latino Farmworker Affective Scale" or LFAS-15. The LFAS-15 was designed to be accessible for individuals with low Spanish-literacy (backed by previous research on education levels of LFWs (Quandt et al, 2004). Therefore, individuals who took the LFAS-15 only needed to know how to read and understand the meaning of the word(s), instead of understanding the structure of a sentence. Because the words and short phrases that make up this assessment reflect the words collected from LFWs themselves, it was assumed that most Latino farmworkers would be able to understand the meaning of the words on the instrument.

Thus, the purpose of this study was to evaluate the effectiveness of the LFAS-15 as compared to the Patient Health Questionnaire-9, (PHQ-9; Kroenke, Spitzer, & Williams, 2001) the Centers for Epidemiological Studies Depression Scale (CESD-10; Radloff, 1977), and the Brief Symptom Inventory (BSI-18; Derogatis & Spencer, 1982). The CESD-10 Spanish version was chosen for comparison in this study because of the significant number of studies found that evaluated its effectiveness with Spanish-speaking Latinos in the US and in Latin America (Reuland et al., 2009). The BSI-18 was selected over other instruments that have also been translated into Spanish because it contains a scale that addresses somatic symptoms often linked with depression in the Latino population (Kirmayer, 2001). The structured clinical interview for depression ([SCID] First, Spitzer, Gibbon & Williams, 1995) was used as the reference standard to compare the effectiveness of all of the measures used in the study (a more detailed description of the SCID is provided under the Measure subheading).

To test the effectiveness of the LFAS-15, the following hypotheses were formulated: (a) scores on the LFAS-15 will be positively related to scores on the SCID, (b) scores on the PHQ-9, CESD-10, and BSI-18 will be positively related to scores on the SCID, (c) when predicting scores on the SCID, the LFAS-15 will demonstrate incremental validity over the PHQ-9, CESD-10, and BSI-18, (4) the LFAS-15 will have higher levels of sensitivity and specificity than the PHQ-9, the CESD-10, and BSI-18, and (5) the LFAS-15 will more accurately detect symptoms of depression than the PHQ-9, the CESD-10, and the BSI-18.

Setting

The study was conducted at a community healthcare center in Eastern North Carolina operated by Greene County Health Care Inc. (GCHC). GCHC serves approximately 33 thousand patients each year of whom, 84% are uninsured, 68% are Latino, 60% are migrant seasonal

farmworkers, and the vast majority have incomes at or below 100% of the Federal Poverty Level. An agreement of collaboration with GCHC and support for this study was secured prior to IRB submission.

Participants

Participants were selected from a pool of patients accessing primary healthcare at GCHC. Potential participants were included if they were (a) Latinos, (b) their main occupation was farm work, or work in an occupation closely related to farm work for the majority of their time living in/visiting the US, and (c) fluent in Spanish. Potential participants were excluded if (a) they were receiving pharmacological or psychological treatment for depression, (b) they had a comorbid psychotic disorder, or (c) they had lived in the US for more than 15 consecutive years ([to prevent confounding the study with acculturation issues] Berry, 2005).

Sample Size

Selecting an alpha level of .05, power at .80 and effect size of .40; the researchers used Cohen's (1988) table to determine that 99 participants were needed to conduct this research project. Each participant qualified for a drawing for a $15-dollar gift card as an incentive for participation. A total of 20 cards were awarded or approximately one out of every five participants received an incentive at the conclusion of the data collection period.

Measures

The PHQ-9 (Kroenke, Spitzer, & Williams, 2001) is a nine-item depression-screening instrument that asks individuals being screened to report a numeric value ranging from 0-3 (0=not at all, 1=several days, 2=more than half the days, and 3=most days) for how frequently they experienced the symptoms listed on every item during the last two weeks. The total score ranges from 0 to 27 points and the cut off points for varying degrees of severity of depression are

0-4 not depressed, 5-9 for mildly depressed, 10-14 for moderately depressed, 15-19 for moderately severe, and 20-27 for severely depressed. A diagnosis is only made after physical causes for depression, normal bereavement, and history of maniac episode are ruled out. The PHQ-9 has been found to have good internal consistency reliability (α=.89) and good criterion validity (*r*=84) using the clinical structured interview as reference standard (*r* = .79; Spitzer et al., 1999).

Whereas the PHQ-9 has strong reliability and validity, a systematic review conducted by Reuland et al., (2009) failed to find studies supporting the use of the PHQ-9 or the ultra-short PHQ-2 with LFWs. In a more recent study, Merz et al., (2011) reported the PHQ-9 Spanish form to be adequate for detecting depression in urban Latina women who were also considered to be of low SES. It is worth noting that, to the best of our knowledge, the PHQ-9 has not been evaluated with Latino farmworkers and as discussed earlier, the PI of this study has identified several problems with the usefulness of the PHQ-9 in screening for depression in LFWs in a primary care setting.

The CESD-10 (Radloff, 1977) is a 10-item depression-screening instrument that assesses symptoms of depressed affect, interpersonal relationships and positive affect. The frequency of the symptoms is assessed in reflection of the last seven days (prior to completing the measure) on a scale of 0 to 4 indicating the days that symptoms were present. The CESD-10 has been reported to have adequate internal consistency (α=.73) in a sample of Latino immigrants (Grzywacz et al., 2006). However, there are limitations to the adequacy of the CESD-10 in detecting depression in Latino farmworkers. Grzywacz et al., (2010) reported that the CESD-10 is an adequate instrument to detect depression in LFWs, though the authors reported concerns regarding participants' endorsement of symptoms when they did not understand the questions.

Another limitation associated with the CESD-10 and adequate screening for depression in LFWs is that the literature has firmly established that Latinos tend to report somatic symptoms when they experience depression (Asner-Self, Schreiber, & Marotta, 2006) and the CESD-10 does not contain any items that could detect somatic symptoms.

The Brief Symptom Inventory-18 ([BSI] Derogatis & Spencer, 1982) consists of 18 items and it assesses for anxiety, depression and somatic symptoms. The instrument assesses the level of distress experienced by responders on a Likert scale and asks responders to rate the severity of their distress between 0 (not at all) to 4 (extremely). Internal consistency estimates for the BSI-18 have been reported to be adequate (α=.89; Asner-Self et al., 2010) using the Hopkins Symptom Checklist (Derogatis et al., 1974) as the reference standard with a concurrent validity reported to be high (α=.73; Asner-Self et al., 2010).

The BSI-18 has received some support in assessing for depression on monolingual Spanish speaking Latino immigrants (Acosta, Nguyen, and Yamamoto, 1994, Derogatis, 2001). However, Prelow and colleagues (2005) found that the instrument lacks discriminant validity of the depression, anxiety, and somatization scales. In response to this limitation, Asner-Self et al. (2006) conducted a study with a sample of Central American individuals to evaluate the BSI-18's factor structure and found that the instrument reliably identified psychological distress. However, the authors cautioned against using it to diagnose specific disorders. Their sample was composed of self-selected individuals in an urban setting who had been in the US an average of 13.5 years, making it difficult to apply these results to LFWs who usually migrate to the US for the agricultural season and live in small groups isolated from US culture.

The structured clinical interview for depression ([SCID] First, Spitzer, Gibbon & Williams, 1995) is an instrument modeled after criteria for a diagnosis of depression as stated in

the Diagnostic and Statistical Manual of Mental Disorders ([DSM-IV] American Psychiatric Association, 1994). The SCID was selected for use as a reference standard for the evaluation of the LFAS-15, because it contains all of the criteria for a diagnosis of depression and it allows respondents to expand on answers that can clarify a deeper understanding of the answers obtained. The SCID was also thought to be useful, because it contains questions that allow ruling out symptoms that may be due to medication/substance use, bereavement, or medical conditions.

The Latino Farmworker Affective Scale (LFAS; Limon, 2014) consists of 15 words or short phrases that LFWs have been used to describe LFWs experience of emotions and cognitions that correspond to symptoms of depression. Participants were instructed to report the severity of each of the items on the instrument on a 5-point Likert scale. The order in which the items in the LFAS were presented was considered and it was decided to first present items that reflect somatic symptoms related to eating, sleeping, generalized pain, and chest pressure (e.g., no tengo hambre, sin sueño, todo me duele, con el pecho apretado). It was decided to present these items first, because the literature has shown that somatic symptoms are more likely to be presented and endorsed by Latino individuals who suffer from depression than emotional symptoms (Asner-Self, Schreiber, & Marotta, 2006). The items presented next were those that indicated negative symptoms or the absence of emotions, cognitions, or behavior. These items included “desganado” (lack of will to do anything), “no me importa nada” (lack of interest in anything), “nada me complace” (nothing pleases me), and “desanimado” (feeling empty inside). Next, positive symptoms indicating the presence of unproductive emotions, cognitions and behaviors were presented and they included “con mal genio” (short temper), “desesperado” (without hope), “nervioso” (nervious), “tengo ansias” (I feel anxious), and “con susto” (I feel fright). The last two items introduced were “triste” (sad) and “con ganas de morirme” (feeling

like I want to die). These items were introduced at the end because the words "feeling sad" and "wanting to die" could prompt participants to associate these symptoms with cultural stigma about being weak (Vega, Rodriguez, & Ang, 2010). Thus, if such reaction were evoked in participants, it would be less likely to influence their responses to the rest of the items.

Procedures and Data Collection

Upon approval from the ECU Institutional Review Board (see Appendix A), and approval for the use of the other measures (see Appendix B), the PI invited potential participants to complete the survey when they attended their regularly scheduled medical appointment at the community health center; or at farmworkers' living facilities during research-specific visits to farm camps. Individuals who consented to participate, completed a questionnaire with questions addressing the inclusion and exclusion criteria for the study to determine whether they were eligible for participation. The PI maintained identifiable data (i.e., the informed consent, gift card distribution roster) in a separate locked file to ensure participants' confidentiality.

Once participants agreed to be part of the study and informed consent was obtained, participants completed a demographic questionnaire. Then each participant completed the PHQ-9, the CESD-10, the BSI-18 and the LFAS-15. Once the instruments were completed, the PI conducted the SCID to determine the presence and severity of depressive symptoms, if any. Whenever it was determined that a participant was suffering from symptoms of depression, the PI referred the participant on site to a PCP to determine participant's need for medical and mental health treatment for depression.

Analyses

The data were inspected for completeness and accuracy and then descriptive statistics were performed to ensure that assumptions for the different statistical tests were met (Field,

2009). An exploratory factor structure analysis was performed on the responses to the LFAS-15 to ascertain its factor structure. Item analysis was also performed to determine whether each item contributed to the overall structure of the instrument and possibly eliminate items that are redundant or do not add to structure of the LFAS-15 (Moore, McCabe, Craig, & Freeman, 2009). Using the SCID scores as the reference standard, a multiple regression analysis was performed on the scores of all instruments against the scores of the SCID to determine the relationship between the scores of the LFAS-15 and the symptoms reported on the SCID (Moore, McCabe, & Craig, 2009). However, there was multicolinearity between the measures, which violated the assumptions necessary to make inferences from regression analysis with confidence, thus a relative importance/weight analysis was performed to make a better assessment of the relationship between all of the measures. Finally, a receiving-operating characteristic curve or ROC analysis (Fawcett, 2006; Metz, 1978) was conducted with the LFAS-15 scores against the data obtained from the SCID. This analysis provided information regarding sensitivity and specificity of the LFAS-15.

Results

The focus of the study was to evaluate the effectiveness of the Latino Farmworker Affective Scale-15 to accurately identify individuals with depression as compared to the Patient Health Questionnaire (PHQ-9), the Brief Symptom Inventory (BSI-18) and the Centers for Epidemiologic Studies Depression Scale (CESD-10) using the Structured Clinical Interview for Depression (SCID) as the reference standard.

The final sample consisted of 99 participants. The average age of the participants was 38.44 years (*SD*=10.78), the youngest was 18 and the oldest was 62 years old. The sample was primarily male (88 male, 11 female), a result that was expected because most participants were

recruited at farm labor camps where women are less likely to be contracted. Four of the 11 female participants were recruited at labor farm camps and seven were recruited at a primary care clinic whereas seven male participants were recruited at a primary care clinic and 81 were recruited at farm camps. The average participant had worked in the US for 11 seasons (i.e., for eleven consecutive years), 89 lived in employer provided housing (in farm camps) and 10 reported living with their families in communities nearby the farms where they worked.

In total, 12 participants were identified through the SCID to be experiencing significant symptoms of depression and three reported some form of suicidal ideation. In addition, 22 participants were identified as experiencing significant depressive symptoms through at least one of the depression screening measures. All participants who experienced suicidal ideation or significant depressive symptoms were referred for mental health services. None of the participants with suicidal ideation reported having an intent or plan. They reported that their thoughts of dying reflected a desire to relieve emotional distress, and all stated specific reasons for wanting to live. A total of 12 participants with, or without current symptoms of depression, reported at least one occasion in which they felt significant emotional distress. Five individuals reported experiencing between two and four episodes of depression, and seven individuals reported more than five episodes of depression in their lifetime, but only one individual reported having received medical treatment for his symptoms at some point in the past. A total of 23% of the sample reported having had at least one episode of some kind of mood disturbance during their lifetime, a figure consistent with the high incidence of depression in LFWs in North Carolina (30%) (Hovey & Magaña, 2002). All participants in the sample were born in Mexico and 97 reported Spanish as their first language, the other two reported Otomi and Mixteco respectively as their first language.

Statistical Analysis

Before conducting any statistical analysis, a test of sphericity was performed to determine the fit of the data for exploratory factor analysis. A Barlett's test of sphericity was conducted and a KMO of .855 with a X^2=1085.59, 105(df), p=.000 was obtained suggesting that the data were adequate for factor analysis. An exploratory factor analysis (EFA) was conducted on the 15 items of the LFAS-15 resulting in support for a one-factor structure. The EFA results showed that three factors accounted for 69.3 % of the variance and showed eigen values above 1; however, the difference between factors 2 and 3 was relatively small (factor two =11.156%, factor three = 7.56%) and together they only accounted for 18.7% of the variance whereas the first factor accounted for 50.59% of the variance suggesting a one-factor structure. Thus, the result from the EFA indicates that the LFAS-15 measures depression.

To test for the internal consistency of the LFAS, a reliability analysis of the scale was performed and returned a Cronbach's alpha of .925 (n=15) providing further evidence that the scale effectively measures the construct of depression. The item-total statistics revealed that the Cronbach's alpha could be slightly improved to .929 if the first item on the scale (lack of appetite) was deleted (Table 1). The same item also showed correlations of less than .3 with nine other items on the scale (Table 2) indicating that the scale can be improved if item 1 is deleted.

Hypothesis one stated that the scores on the LFAS-15 were positively and significantly correlated to the scores on the SCID and hypothesis two stated that the PHQ-9, the CESD-10, and the BSI-18 were positively related to the SCID. To assess the effectiveness of the LFAS as compared to the PHQ-9, the BSI-18, and the CESD-10, a multiple regression analysis was performed between scores of the screening instruments and the scores of the SCID (Table 3). The PHQ-9 had the highest correlation (r=.733, p<.001) with the SCID, followed by the BSI-18

(r=.730, p<.001), and the LFAS (r=.669, p<.001). The instrument with the lowest correlation with the SCID was the CESD-10 (r=454, p<.001). Thus, hypothesis one and two were supported by the data. Given the poor correlation of the CESD-10 with the SCID the CESD-10 was excluded from further analysis.

It was observed however that the scores on all of the measures were highly correlated (Table 4), therefore a collinearity diagnosis was performed (Table 5) for the PHQ-9, the BSI-18 and the LFAS-15. The diagnostic analysis returned tolerance levels of .373 for the LFAS-15 with a Variance Inflation Factor (VIF) of 2.685, tolerance of .360 and VIF of 2.777 for the BSI-18, and .352 tolerance and 2.841 VIF for the PHQ-9. Menard (1995) suggested that tolerance levels below .2 may indicate multicollinearity and may bias multiple regression statistics, whereas Myers (1990) suggested that VIF values greater than 10 may indicate multicollinearity. Hence, according to the recommendations from Menard (1995) and Myers (1990) the collinearity diagnostic analysis results do not indicate multicollinearity. Nevertheless, Bowerman & O'Connel (1990) recommended that if the average VIF is greater than one, multicollinearity can bias the multiple regression results. According to Bowerman and O'Connell's recommendations, the collinearity diagnostic VIF do in fact average more than one, indicating that multicollinearity may be a problem. To address this problem, a Johnson's relative importance/weight analysis (Johnson, 2000) was performed (Table 6). The relative weight analysis results show that the PHQ-9 and the BSI-18 explain 29.4% and 29.75 of the variance accordingly ,whereas the LFAS-15 only explains 21.2 % of the variance in the regression model. Thus, these results combined with the multiple regression analysis indicate that the LFAS-15 performs different than the PHQ-9 and the BSI-18 in detecting depressive symptoms in LFWs.

Hypothesis three was not supported by the data. The regression analysis showed that the LFAS did not contribute significantly more to the regression model (t=1.286, p=.2) than the other two screening instruments (Table 2). However, the PHQ-9 (t=3.25, p=.002,) and the BSI-18 (t=3.29, p=.001) both contributed significantly to the regression model indicating that the scores on the SCID can be effectively predicted from the scores on the PHQ-9 and the BSI-18, but not by the scores on the LFAS-15. These results are not surprising, because the PHQ-9 and the Structured Clinical Interview for Depression were both constructed directly from the DSM-IV criteria for major depression, as such this outcome would be expected. Again, these results indicate that the LFAS-15 performs differently than the two other measures in detecting depressive symptoms in LFWs, perhaps because the criterion the LFAS-15 is measuring is different from what the PHQ-9, the BSI-18, and the SCID measure.

Hypothesis four was supported by the data. According to the instructions of the SCID, a diagnosis of depression can be made when an individual endorses at least five of the items on the SCID and two of those items are the first two (lost interest and feeling sad), and bereavement or medically/substance abuse induced symptoms are ruled out (First, Spitzer, Gibbon & Williams, 1995). Cases that met the SCID criteria for depression were coded and a receiving operating characteristic (ROC) curve was performed on the LFAS-15 scores against the coded data for individuals with or without depression as per the SCID. The total area under curve (AUC) for the LFAS was .939, indicating that the scale has excellent combined sensitivity and specificity and can discriminate effectively between individuals with and without depressive symptoms. The AUC for PHQ-9, and BSI-18 were .927, and .888 respectively, indicating that the PHQ-9 and the BSI-18 effectively discriminated between depressed and non-depressed participants.

The LFAS-15 showed good internal consistency, good convergent validity with the SCID and good sensitivity and specificity but a poor contribution to the multiple regression model when predicting SCID scores. To better understand these results, sensitivity and specificity scores were calculated. In order to calculate sensitivity and specificity, a cutoff point had to be selected. An initial a cutoff point of 10 ≥ was selected in consideration of studies that determined that a cutoff point of 10 ≥ provided an adequate balance of sensitivity and specificity for both the PHQ-9 (Stafford, Berk, & Jackson, 2007) and the BSI-18 (Prelow, Weaver, Swenson, & Bowman, 2005). Thus, with a cutoff point of 10 ≥, the LFAS-15 showed a sensitivity of 90.4% and specificity of 58.3%, X^2=18.697, *df(1), p=.000.* The cutoff point that optimized both sensitivity and specificity was ≥20. With a cutoff score of ≥20, the LFAS-15 showed a sensitivity of 98.9% and specificity of 75%. These results demonstrate that the LFAS-15 is performing at least as strongly as other established measures such as the PHQ-9 and the BSI-18; but also that its performance (particularly its specificity) can be improved by revising items one and 15, which showed poor performance in the internal consistency analysis.

Hypothesis five stated that the LFAS-15 would more accurately detect symptoms of depression than the PHQ-9, and the BSI-18. This hypothesis was not supported by the data. Although the LFAS-15 demonstrated convergent validity with the SCID, good internal structure, and higher sensitivity and specificity than the PHQ-9, and the BSI-18; the regression analysis did not show that the LFAS-15 was adequate in predicting the scores on the SCID. Grzywacz et al., (2010) advocated for the development of new methods for validating measures of farmworkers mental health. The authors posited that instruments that can be used as reference standard present problems in their structure and language that are problematic for LFWs who tend to have an average of six years of schooling, their literacy is low, have no experience taking highly

structured tests, and have difficulties with abstract thinking (Grzywacz et al., 2010). Thus, the problems observed in assessing LFWs for depression with the PHQ-9 and the poor performance of the LFAS-15 in predicting depressive symptoms on the SCID might both point to the need of developing a reference standard specific to this population. Nevertheless, the findings in this study contribute to the limited body of research in the detection of depression in Latino farmworkers and offer a new alternative to the repertoire of depression screening measures in the Spanish language.

Discussion

Research evaluating the diagnostic accuracy of depression screening instruments in the Spanish language is limited (Reuland et al., 2009). Research findings indicate that Latinos of Mexican origin, including Latino farmworkers, have difficulty understanding and responding to highly structured mental health assessments (Johnson et al., 2006). The LFAS-15 was constructed in congruence with the principles of CMT (Nylund, 2006) by learning directly from LFWs the unique way depression is manifested in this population. Thus, this study evaluated the effectiveness of the LFAS-15 in detecting depressive symptoms in LFWs as compared to the PHQ-9, the CESD-10, and BSI-18 using the SCID as the reference standard.

The CESD-10 was excluded from the analysis due to low correlation with the SCID in the multiple regression analysis. It is important to note that the CESD-10 has been found to have good internal consistency and to adequately assess for depression in LFWs (Grzywacz et al., 2010) even if the evidence in support of the instrument is limited at this time. Of all of the instruments compared, the CESD-10 is the only one that contains reversed items. Attention was paid to properly code these items during the statistical analysis. However, it is possible that

participants were inconsistent in how they read, understood, and responded to those items, which may account for the poor performance of the instrument.

Consistent with the literature on depression screening, both the PHQ-9 and the BSI-18 demonstrated good internal consistency and convergent validity with the SCID. To the best of the PI's knowledge only one study has evaluated the effectiveness of the PHQ-9 with LFWs and that study reported evidence in favor of the use of the measure with LFWs (Donlan & Lee, 2010). Similarly, previous researchers have reported support for the BSI-18 with different Latino subpopulations such as low SES Latina mothers (Prelow et al., 2005), Central American immigrants in the US (Asner-self, Schreiber, & Marotta, 2006) and Latino undocumented migrant day-laborers (Negi & Iwamoto, 2014), yet, it appears as though the BSI-18 has not been evaluated with LFWs prior to this study. This study provides preliminary evidence of the BSI-18 measure's viability to screen for depression with LFWs.

The findings reported by Donlan and Lee (2010) together with the findings in this study, directly contradict the PI's observations on the performance of the PHQ-9 in LFWs. In the study by Donlan and Lee (2010), the PHQ-9 was administered verbally by a researcher and the authors did not specify whether the researcher administering the measure merely read the items or whether the items were further explained or elaborated upon to increase the participants' understanding of the language and structure of the measure. The participants in this study took the measure independently and they received assistance only when they requested help with understanding items or words; thus it cannot be determined if participants accurately understood the language and structure of the instrument or whether their responses reflected response bias. The procedures in both studies preclude us from being able to determine confidently that the participants' responses accurately reflect their depression symptoms. This brings into focus the

need to carefully control, document, and refine both screening and research procedures in order to increase our confidence in our research findings.

The objective of this study was to evaluate the effectiveness of the LFAS-15 in screening for depression in LFWs as compared to PHQ-9, the BSI-18, and the CESD-10. The LFAS-15 demonstrated good internal consistency, convergent validity with the SCID, and sensitivity and specificity comparable to that of the two other measures. These findings indicate that the LFAS-15 is performing at least as well as the PHQ-9 and the BSI-18; however, the measure can be improved by revising item one. As mentioned before, the literature pertaining to depression screenings in the Latino community continues to be undermined by the lack of a valid reference standard. Grzywacz et al., (2010) have advocated for improved methods for validating measures for Latino farmworkers' mental health and the outcomes from this study further support this need. When the SCID was selected as the reference standard for this study, it was determined that the ability to probe deeper into participants' responses would likely be sufficient to obtain reliable data. However, based on the PI's observations of participants' hesitation and guarded stance with some of the questions it is no longer deemed to be an appropriate reference standard for use with LFWs. The SCID was developed from data based on the dominant majority, and this finding highlights the underlining assumption of this study that cultural adaptations to tools and measures created for the dominant majority do not necessarily translate into culturally competent measures. Rather, as Hall (1994) proposed, we need to investigate the "otherness" of the LFWs experience of depression and develop a clinical interview guide that is culturally relevant for this population. Developing a valid reference standard will require further investigation on the issues of under detection of depression in LFWs from the populations' perspective. Until we do, we will continue to lack the confidence necessary to interpret research results.

Limitations

One important limitation to this study was the small number of individuals who actually reported depressive symptoms. Though the minimum of 99 participants was reached, a larger sample of those who were struggling with depressive symptoms would have provided more reliable statistics in regards to the LFAS-15 psychometric properties. From the 99 participants, 12 were found to have significant symptoms of depression by the SCID. This low number of individuals with symptoms made it difficult to make inferences from the data with confidence. As previously mentioned, selecting the SCID as the reference standard may have also biased the findings.

The relationship and trust that the PI had established with the participants and the absolute assurance of confidentiality might not have been enough to overcome participants' sense of vulnerability. For example, most participants appeared to become guarded when asked about their energy level or moving too slowly that people could notice. Almost invariably participants assured the interviewer that even when they appeared tired, that they are ready for the hard work of their occupation. The inconsistency between what was seen versus what was reported gave the impression that they might have been afraid of losing their jobs, if low energy was reported. Similarly, the PI observed that most participants became guarded when asked if they have felt depressed, and again, most of them tended to deny feeling depressed adding to the dialogue their disposition to be strong and quickly bounce back from life events that might have made them feel depressed. Thus, the participants' vulnerability in their condition of employment and the stigma associated with depression might have biased the findings in this study.

Recommendations for Researchers

After the preliminary study of the LFAS-15 internal structure, a second study is now needed with a larger sample (particularly those who may have depressive symptoms) to improve the confidence in the instrument's psychometric properties. It is also recommended that item 1 (lack of appetite) be reworded to frame the experience of not feeling hungry within the context of the respondents' affective experience. To address the stigma about depression, it is recommended that item 15 (wanting to die) be re-worded to reflect a decreased interest in life, using terms that are easier for this population to accept (i.e., "Not finding meaning to my life") and gradually ask clarifying questions that allow the responders to lead us to information that can help us to differentiate between decreased interest in life and true suicidal ideation.

In the absence of an adequate reference standard (Limon et al., 2015; Reuland et al., 2009) to compare the screening accuracy of depression screening instruments in the Spanish language, a qualitative study is recommended to develop a clinical interview guide. A reference standard (clinical interview guide) that addresses the cultural nuances of the manifestation of depression, the stigma associated with depression, and the vulnerability of LFWs would allow researchers to confidently evaluate the depression screening instruments that were designed for use with LFWs.

Recommendations for Clinicians

Limited evidence exists in support of the previously tested Spanish versions of depression screening instruments. It is recommended that clinicians in primary care settings be vigilant of cultural manifestations of depression (i.e., somatic complains, nervios, explosive temper, etc.) and expand their assessment beyond the administration of brief depression screening instruments. A theme that was consistently observed throughout the implementation of this

study, and not captured by any of the instruments, was the participants' tendency to deny or minimize their experience of symptoms involving low energy, having trouble getting going, and feeling like they do not want to do anything. Invariably, when participants denied or minimized these symptoms, they emphasized their disposition to work hard, be productive, and be invited for work again the following season. This dynamic may point to the participants' sense of vulnerability related to their employability. Their fear of losing their work contracts may prevent them from accurately reporting symptoms of depression. Thus, clinicians may need to purposefully frame their depression screening questions apart from the work environment and more closely attached to the farmworkers' social and personal context.

Another common observation was that participants denied symptoms that made them appear weak or emotional i.e., "feeling bad about yourself....", "feeling depressed", or "I felt lonely." Participants' hesitation when answering these questions may be due to the stigma about depression (Vega, Rodriguez, & Ang, 2010). Clinicians may facilitate more accurate responses to these questions by placing these symptoms in a relational or situational context so that the symptom is not seen as a reflection of a flaw of character but rather a product of the individual's social echo-system (e.g., "not being supported by important people in your life makes you feel alone") (Meade and Morris, 1962).

Recommendations for Policy

As discussed earlier, farmworkers appear to feel vulnerable to their working conditions. Specifically, their ability to secure a work contract to return to work in the US the following season depends on their employer's appraisal of their employability. This vulnerability appears to influences farmworkers' disposition to tend to their mental health needs. Thus, a recommendation is made to advocate for changes in the H2A visa program that provides for

agricultural work contracts to be awarded to non-immigrant foreign nationals. Such change should include explicit protection for workers guaranteeing that no worker be denied subsequent work contracts when workers, following health care and/or mental health professionals' recommendations, take time off from work to tend to their medical/mental health needs. Enforcement of such a clause should mandate the documentation of time off for health care reasons and a specific ratio of hours of employment offered and time taken off for health care needs that would trigger an automatic review when a contract is denied.

Additionally, it is recommended that funding entities create billing codes for depression screening with higher reimbursement rates. This would incentivize mental health and other qualified health professionals to consistently screen for depression whenever they are providing services for vulnerable populations. Higher reimbursement rates for screening for depression in vulnerable populations will also allow mental health providers working in primary care settings to adequately assist with the screening process when longer time is necessary to conduct an adequate clinical interview.

Finally, it is also recommended that licensing boards in the different medical and mental health fields require a certain minimum of continuing education credits in the screening of depression. These policies should also require that such continuing education must include training in using culturally appropriate screen tools and that clinicians themselves receive training toward cultural competence, awareness, and sensitivity. Other policies concerning the delivery of culturally appropriate mental health services should also require that mental health training programs demonstrate diligence in their recruitment efforts to enroll more culturally diverse trainees.

Summary

Given the limited research on the accuracy of depression screening instruments with LFWs (Reuland et al., 2009) and the observed limitations of the PHQ-9 (Limon et al., 2015), the LFAS-15 was created directly from Latino farmworker's reports of symptomatology associated with depression. The purpose of the study was to compare the accuracy of the Latino Farmworker Affective Scale (LFAS-15) designed specifically to screen LFWs for depression. The LFAS-15 was compared to the screening accuracy of the Patient Health Questionnaire (PHQ-9), the Centers for Epidemiological Studies Depression scale (CESD-10), and the Brief Symptom Inventory (BSI-18) using the Structured Clinical Interview for Depression (SCID) as the reference standard. The PHQ-9, the CESD-10, and the BSI-18 in their Spanish form have been validated with Latino samples though most such studies have been conducted outside of the US and their quality has been debated (Limon et al., 2015).

Over all, the findings in this study show that the LFAS-15 has good internal consistency, measures primarily one construct (depression), demonstrated convergent validity with the SCID, and has good combined sensitivity and specificity. Therefore, the LFAS-15 appears to be at least as adequate as the PHQ-9 and the BSI-18 to screen LFWs for depression. Beyond the statistical significance of these findings, the LFAS-15 may be of greater clinical significance for clinicians and PCPs to accurately screen LFWs for depression because it is easy to read and comprehend by LFWs.

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Table 1

Measures Statistics

Measure	Cronbach's Alpha	Correlation with SCID	Contribution to Regression model/p value	ROC AUC	Sensitivity/Specificity
PHQ-9	.806	.733, p<.001	t= 3.25, p=.002	.927	98.8% / 66.7% X^2=22.24, *df(1), p*= .000
BSI-18	.925	.730, p<.001	t= 3.29, p= .001	.888	94.1% / 41.7% X^2=26.69, *df(1), p*= .000
LFAS-15	.925	.669, p<.001	t= 1.28, p= .3	.939	98.9%/75% X^2=15.47, *df(1), p*= .000
CESD-10	.491	.454, p<.001	Excluded from further analysis		

Table 2

LFAS-15 Total Item Correlation

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1													
2	.417	1												
3	.248	.485	1											
4	.411	.368	.430	1										
5	.329	.596	.563	.42	1									
6	.216	.387	.320	.37	.450	1								
7	.218	.337	.611	.54	.472	.557	1							
8	.169	.319	.489	.40	.481	.489	.831	1						
9	.354	.456	.515	.62	.530	.480	.841	.752	1					
10	.284	.440	.561	.60	.545	.448	.813	.726	.779	1				
11	.230	.334	.611	.52	.334	.300	.730	.562	.685	.753	1			
12	.376	.528	.578	.62	.466	.401	.453	.324	.421	.614	.614	1		
13	.228	.268	.376	.41	.135	.164	.447	.306	.396	.457	.492	457	1	
14	.166	.468	.612	.44	.588	.432	.712	.714	.627	.690	.698	.589	.358	1
15	.023	.068	.413	-.04	.210	.024	.537	.480	.410	.489	.414	.017	.255	.416

Table 3

Multiple Regression Analysis

	Unstandardized	Coefficients	Standardized Coefficients		
Model	B	Std. Error	B	t	Sig
Constant	-.228	.709	.	-.321	.749
PHQ-9	.577	.178	.361	3.249	.002*
CESD-10	.015	.127	.009	.122	.903
BSI-18	.298	.090	.354	3.298	.001*
LFAS-15	.100	.078	.135	1.286	.202

Table 4

Depression Screening Measures Score Correlations

	PHQ-9	CESD-10	BSI-18	LFAS-15	SCID
PHQ-9	1	.598**	.755**	.746**	.733**
CESD-10	.598**	1	.580**	.530**	.561**
BSI-18	.755**	.580**	1	.739**	.730**
LDAS-15	.746**	.530**	.739**	1	.669**
SCID	.733**	.561**	.730**	.669**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5

Collinearity Diagnosis Analysis

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
Constant	-.161	.448		-.359	.720		
LFAS-15	.101	.077	.136	1.304	.195	.373	2.685
BSI-18	.299	.089	.355	3.360	.001	.360	2.777
PHQ-9	.582	.171	.364	3.401	.001	.352	2.841

Table 6

Johnson's Relative Importance/Weight Analysis

	Structure Coefficients	95% Confidence Interval		Relative Weight	95% Confidence Interval	
		Lower	Upper		Lower	Upper
PHQ-9	.960	.276	.992	29.4	18.6	39.0
BSI-18	.956	.255	.992	29.7	18.0	42.7
LFAS-15	.862	.226	.976	21.2	12.2	36.4

Multiple R= .810, R^2= .656

CHAPTER 6: DISCUSSION

As a Medical Family Therapy (MedFT) researcher working with diverse patients at a community health center, I am concerned about how the biopsychosocial-spiritual health of the patients we serve and how they are impacted by issues pertaining to social-economic status, race, ethnicity, and other social locations. Thus, as a MedFT, I am invested in understanding the context in which people's lives, health, and illness are embedded. The content of this dissertation reflects my effort to understand the historical context of Latino farmworkers (LFWs) and how their mental health is linked to the condition of poverty, the transient nature of their stay in the US, and cultural beliefs about health and illness.

During my interactions with Latino patients at a community health care center, I became concerned that despite my efforts to screen and identify individuals with depression using the Patient Health Questionnaire ([PHQ-9] Kroenke, Spitzer, & Williams, 2001), very often the patient's responses to the PHQ-9 didn't show significant depression symptoms. Nevertheless, when I conducted a more in-depth interview, I often uncovered significant symptoms and even suicidal ideation that had been missed by the PHQ-9. Intrigued by this issue, I conducted a systematic review of the scientific literature pertaining to depression screening instruments, written in Spanish or intended for Latino populations. The results of the systematic review revealed that most of the studies that had been conducted up to 2015, were conducted outside of the US (Limon et al., 2015). Though most of the studies cited in the systematic review were "Spanish" depression screening instruments that had been deemed effective with different Latino populations, establishing the quality of the studies was difficult. This difficulty came from authors not reporting whether their studies were blind or whether their participants (Reuland et al., 2009) were monolingual, bilingual, or their level of English proficiency (Limon et al., 2015).

With the objective of improving the rate of detection for depression in Latino patients (and more specifically in Latino farmworkers), I developed a depression screening instrument titled the "Latino Farmworker Affective Scale" ([LFAS-15] and then tested the effectiveness of the instrument with a sample of Latino farmworkers. Given my concern for the vulnerability of Latino Farm Workers (LFW), and my interest in understanding the construct of depression through the farmworkers' own perspective, I approached the study of the effectiveness of the LFAS-15 through the lens of Critical Multiculturalism Theory (Nylund, 2006).

Critical Multiculturalism Theory

Critical multiculturalism theory (CMT; Nylund, 2006) emerged as a response to the limitations of the multiculturalism movement that emphasized the recognition of differences between racially and ethnically diverse people and accepting those differences without qualifying them as superior or inferior. It theoretically moves beyond recognizing and accepting differences and promotes an active stance in identifying and questioning the power relations where social inequality arises. Other multiculturalism theorists such as Hall (1994) have suggested that we need to engage oppressed populations and seek out their own perspectives on issues that are oppressive to them based on their histories, life experiences, languages, cultures, and values, so that we can improve our understanding of how cultural differences are socially constructed. Thus, in congruence with CMT principles I propose that translating depression-screening instruments developed through research conducted with members of the dominant culture; results in distorted views about LFWs mental health. Moreover, maintaining distorted discourses may interfere with the development of new, effective tools to address the mental health needs of LFWs. Thus critical multiculturalism theory provided the framework to understanding depression through the history and lived experience of LFWs, providing a better-

informed perspective to develop and study the effectiveness of a depression screening measure that can potentially be more accurate in detecting depression symptoms in the LFW population than those initially established with and for majority populations.

The findings from the evaluation of the LFAS-15 (see Chapter 5) revealed that the LFAS-15 has good internal consistency and good criterion reliability, as well as good sensitivity and specificity. The LFAS-15 provides another screening alternative for clinicians and researchers who are interested in detecting depression in LFWs. In order to best assist interested clinicians and researchers, the remainder of this chapter serves as a call to action for additional research and clinical investigation related to the administration of the LFAS-15.

Farmworkers in the US

Farmworkers have been an essential component of the US economy since this country was founded (Massey, Durand, & Malone, 2002). The complex and often conflicting economic forces impacting the US agricultural industry have produced a myriad of immigration policies (Vivian, 2005) that have given rise to farm work conditions that negatively influence farmworkers' mental health (Hiott et al., 2010). Among those policies are the Bracero program passed by the US congress in the 1940's and the Immigration Control and Reform Act (ICRA) that became law in 1986 (Vivian, 2005). These policies provided the legal framework for US farmers to hire foreign non-immigrant workers on a temporary basis, required that employers provide housing for their employees, regulated the procedures to award work contracts, regulated how farmworkers were allowed to move from one employer to another, and also provided term limits for farmworkers' stay in the US (Vivian, 2005). Farmworkers became vulnerable to depression when they were contracted to come to work in the US without their families, when their employer provided housing is isolated from the larger community rendering them socially

isolated, and when they worked upwards of 70 hours per week with little time to rest or stay meaningfully connected to their social networks (Hiott et al., 2010). Even though policies and programs have been added over the years to better protect migrant farmworkers, the outcome remains that farmworkers continue to experience negative work conditions, some of which may wane on the mental health of farmworkers.

Farmworkers and Mental Health

Latino farmworkers (LFWs) are not only at a higher risk for developing depression (Grzywacz et al., 2010), they are also unlikely to seek mental health services (Lewis-Fernandez et al., 2005) due to a variety of cultural, social, and structural challenges (Georges et al., 2013). Olfson et al. (2000) reported that low SES Latinos in the US (who include farmworkers) are twice as likely to experience mental health disorders (23.2%) as compared to non-Hispanic Whites (11.8%), and research findings indicate that Latino immigrants experience persistent and more severe depressive symptoms throughout their lives than non-Hispanic Whites and African Americans (Liang et al., 2011). Furthermore, empirical evidence has shown that Latino migrant farmworkers are at higher risk for depression than Latinos who do not migrate for work (Bhugra, 2004). Latino immigrants not only are more vulnerable to experience depression, their depressive symptoms are often undetected for factors related the how they seek help, Latino culture manifestation of depression, and primary care providers' training in mental health issues (Georges et al., 2013).

Depression, Culture, and Screening for Depression

Latino farmworkers tend to get their mental health needs met in a primary care setting (Georges et al., 2013) yet it has been reported that primary care providers may lack sufficient training to assess and treat depression (Vega, Rodriguez, & Ang, 2010). Research findings have

shown that primary care providers (PCPs) effectively detected depression in only 20% of primary care patients who had been diagnosed with the disorder in a sample of Mexican immigrants (Schmaling and Hernandez, 2005). Some of the reasons cited in the literature for the under-detection of depression have included cultural manifestations of depression in Latinos ([i.e, somatic symptoms, nervious, susto, bad temper, etc.] Lewis-Fernandez et al., 2005) that are different from how depression is manifested in non-Hispanic Whites ([lack of interest in doing things, sad or depressed mood] American Psychiatric Association, 2013), PCPs limited time with each patient that result from working in busy fast-paced medical practices (Mitchell & Coyne, 2007); and language differences that may lead to poor patient-provider communication (Interian et al., 2011). Effective treatment of depression requires that sufferers of the disorder be accurately identified. To improve the detection of depression in LFWs the Latino Farmworker Affective Scale (LFAS-15) was developed.

Development of the LFAS-15

The Latino Farmworker Affective Scale (LFAS-15) was initially developed in 2014 with the objective to improve the detection of depression symptoms in monolingual Spanish-speaking Latino immigrants. The LFAS-15 was constructed with the exact words and short phrases used by Latino farmworkers to describe cognitive, affective, and behavioral experiences that correspond to depressive symptoms as presented in the DSM 5 (APA, 2014). The fifteen items presented in the LFAS were selected from a pool of over 50 words and phrases collected from LFWs' descriptions of symptoms associated with depression after consideration for redundancy, most commonly used, and slight variations of the verbal expressions of the same concepts.

Constructs

The LFAS-15 was constructed to reflect specific symptoms shown in the literature to be related to the manifestation of depression in Latino farmworkers. The first five items reflect somatic symptoms (not feeling hungry, sleep disturbances, body aches, chest pressure, and lack of energy) to reflect the large body of research that shows that Latino immigrants present somatic symptoms to their primary care providers when they experience depression (Lewis-Fernandez et al., 2005). The next five items consist of positive symptoms that reflect increased behavioral, cognitive, and emotional experience (e.g. bad temper, anxious, desperate), and the next four items represent negative symptoms that reflect deficits of emotions, cognitions, or behaviors (e.g. feeling empty, lack of motivation, sadness). The last item asks specifically about suicidal ideation. The research literature on depression and Latinos has shown that Latinos may decline to endorse the most common symptoms linked with depression (e.g. sadness, feeling empty, and suicidal ideation) because of the stigma associated with "being weak" (Vega, Rodriguez, & Ang, 2010). Thus, negative symptoms and suicidal ideation are presented last to minimize response bias due to stigma. Thus, if stigma about suicidal ideation or negative symptoms activates a respondent's bias, this would happen at the end of the assessment and it wouldn't affect their responses to first two sets of items

Psychometric Properties

The LFAS was field tested with a sample of 99 Latino farmworkers seen as patients through a rural federally qualified community healthcare center (CHC) that serves primarily uninsured, low SES individuals. Participants were recruited from two primary care clinics and several farm camps in Eastern North Carolina. Participants completed the LFAS-15 independently, but had the option of requesting assistance from a research assistant if they were

confused at any point during test administration. Several participants requested clarification on what the first item was asking about on the LFAS-15.

Internal Consistency. A factor analysis was conducted and strongly supported a one-factor model with one factor showing an eigen value of 7.589 accounting for 50.595% of the variance. To test for the internal consistency of the LFAS-15, a reliability analysis of the scale was performed and returned a Cronbach's alpha of .925 (n=15) providing further evidence that the scale effectively measures the construct of depression. The item-total statistics (Table 1) revealed that the Cronbach's alpha could be slightly improved to .929 if the first item on the scale (lack of appetite) was deleted. The correlation matrix (Table 2) showed correlations of more than .3 for most of the items except for items 1 and 15 showing that except for items 1 and 15, all items are significantly correlated which indicates that all items do measure the same construct.

Convergent Validity. A correlation analysis resulted in a correlation of r=.669, p<.001 with the Structured Clinical Interview for Depression ([SCID]; First et al., 1995) demonstrating good convergent validity between the LFAS-15 and the SCID.

Sensitivity and Specificity. The LFAS-15 was compared to the Patient Health Questionnaire ([PHQ-9] Kroenke, Spitzer, & Williams, 2001), and the Brief Symptom Inventory ([BSI] Derogatis & Spencer, 1982). The PHQ-9 is a nine-item instrument that requires individuals to report the frequency with which they experience depression symptoms (0=not at all, 1= rarely, 2= most days, and 3=every day) within the two weeks prior to completing it with a total possible score of 27. The BSI-18 screens for anxiety, depression and somatic symptoms and it assesses the level of distress on a Likert scale that ranges from 0 (not at all) to 4 (extremely) with a total score of 72. All three instruments were selected for comparison because all three

have been translated into Spanish and there is a body of research that has reported on their effectiveness in detecting depression symptoms in the Latino population.

The sensitivity and specificity scores of the LFAS-15 were compared to those of the PHQ-9 and the BSI-18 to provide a reference point. Using a cutoff point of ≥20, the LFAS-15 showed a sensitivity of .98.9% and specificity of .75%, X^2=18.697, *df(1), p=.000*. A Receiver Operating Characteristic Curve analysis resulted in an Area Under the Curve (AUC) of .939, SE=.024, *p*=.001 which indicated good combined sensitivity and specificity.

Implications

The development of the LFAS-15 offers clinicians and researchers another alternative for screening primary care patients for depression. The following implications are offered for clinicians, researchers, and policy makers to increase their awareness of issues related to screening LFWs for depression.

Implications for Clinicians. The study findings pertaining to the LFAS-15, indicated that the measure performs well in detecting depression symptoms in LFWs. It should not be assumed, however, that the measure is adequate in detecting depression in all Latino sub-groups. Further evaluation is necessary to establish the measure's psychometric properties with Latinos other than farmworkers.

The LFAS-15 (Appendix C) was constructed with the exact words and short phrases used by the Latino farmworkers to describe their experience of depressive symptoms. The items selected for the measure reflect significant cultural norms and values pertaining to emotional and physical health, as well as, regional use of the Spanish language. It is not recommended that the measure be translated into any other language. Regional use of language, idiomatic expressions, and cultural norms and values, cannot be extrapolated by simply translating the measure.

Implications for Researchers. Research in the evaluation of depression screening instruments in the Spanish language is limited (Reuland et al., 2009) and the reliability of what is available has been questioned because of the lack of a valid reference standard (Grzywacz et al., 2010). The research findings from this study and outcomes pertaining to the effectiveness of the LFAS-15 indicated that the using the SCID (First et al., 1995) as a reference standard was problematic. In order to advance the research in the assessment and treatment of depression, it will be necessary to develop a reliable reference standard that naturally flows from the manifestation of depression in LFWs, rather than from adaptations made to depression measures created for other populations. The brevity of research in the evaluation of the effectiveness of depression screening measures in LFWs is a major concern, considering that LFWs also experience high rates of depression (Hovey & Magaña, 2002). Further research is necessary to improve both, depression screening measures and our understanding of how depression is manifested in LFWs.

Implications for Policy Makers. Primary care practices (PCCs) invested in reducing minority health disparities, stand to improve their ability to accurately identify and effectively treat depressed LFWs if they enact policies to: (a) routinely screen for depression and encourage PCPs to further their training in the assessment and treatment of depression and other mood disorders, (b) develop an effective set of procedures for referrals for specialized mental health services, and (c) reach adequate staffing levels of medical professionals and support staff who are bilingual and/or culturally competent.

Latino farmworkers prefer to meet their mental health needs in primary care settings (Georges et al., 2013), therefore, PCCs that operate in rural areas where LFWs are served, can significantly improve the detection of depressive symptoms if they hire well trained mental

health providers who routinely screen all of their patients for depression. Furthermore, because LFWs present depressive symptoms in ways that are congruent with their cultural values and beliefs, PCCs should require that PCPs further their training in using culturally sensitive depression screening instruments. Primary care providers should also be encouraged and incentivized to pursue training in the cultural manifestation of depression in LFWs as well as how these individuals respond to pharmacologic and psychotherapeutic treatment.

Whereas PCCs are usually the first point of contact of LFWs seeking help for depression, there will be times when these individuals will require more intense and specialized mental health care. Primary care practices need to have a well defined, effective and efficient set of procedures to refer LFWs to specialized mental health care or invest in an in-house integrated behavioral health care model.

If the PCC chooses to refer out for mental health care, then procedures should be crafted that include a complete and up to date reference list of all specialty services available within their catchment area with the names of key contact persons that can facilitate the referral process to ensure continuity of treatment. Referral procedures should also include detail guidelines for follow up with patients and referral agencies to ensure that no cases will fall through the cracks of a complex health care system. These procedures should also include whenever possible, ensuring that patients will have transportation (i.e., involving outreach services) and that the agencies or professionals can provide services during times when patients are available (i.e., evening or weekend hours).

If the PCC chooses to adopt an integrated behavioral health care model, then the site should invest in mental or behavioral health clinicians who have been trained to manage a variety of mental health concerns for diverse populations. Training manuals must be constructed,

adopted, implemented, and evaluated in order to sure research informed and best practices are delivered to all populations, and particularly to those who face the greatest health disparities.

Finally, PCCs and specialized mental health agencies can significantly improve their ability to meet the mental health needs of LFWs if they enact policies that will direct them to hire clinical and support staff who are bilingual-bicultural, who are culturally competent, or to allocate resources to train their existing staff to deliver culturally competent health care. Most LFWs live and work in rural areas where it may be difficult to find culturally diverse professionals. PCCs who serve LFWs may need to expand their recruiting efforts to urban centers where these professionals are easier to find. Recruiting from urban centers may be costly, but the long term cost associated with untreated depression would typically out weight the cost of recruitment.

Implications for Medical Family Therapists. Medical Family Therapists (MedFTs) are behavioral health professionals and researchers who are trained in systems theory (Bertalanffy, 1968) to promote the physical and mental health of individuals and families through the biopsychosocial-spiritual model (Engel, 1977, 1980; Wright, Watson, & Bell, 1996) with the overarching goal of helping people strengthen their agency in their own health care and their communion with their support systems (McDaniel et al., 1992). Because of MedFTs' training to work both systemically and holistically through the biopsychosocial-spiritual model, they are uniquely positioned to advance the way individuals who suffer from depression are screened and treated (Zak-Hunter et al., 2014). MedFTs' ability to work effectively in integrated care settings can also be instrumental in educating other health professionals and policy makers to address the mental health needs for culturally diverse populations (Lewis, Myhra, & Wlaker, 2014). The development of the LFAS-15 provides Medical Family Therapists working in primary care

settings with another alternative for the detection of depression in LFWs. Though the evidence in support of its effectiveness is limited, the simplicity of the language and structure, combined with the fact that the measure is a direct reflection of the LFWs lexicon may prove to be an added value for clinicians, researchers, and policy makers interested in advancing the accurate detection and treatment of depression in LFWs. Medical Family Therapists need to be aware of farmworkers' vulnerability to losing their employment due to any real or perceived health concerns and be prepared for how this impacts LFWs' responses to assessment questions that allude to feeling tired, losing their will, and/or feeling like doing anything takes too much effort. Their responses may reflect their desire to portray a willingness and ability to perform the hard work expected of them, rather than their actual affective state.

Summary

Research on depression in Latino farmworkers has shown that farm work conditions can negatively influence farmworkers' mental health (Hiott et al., 2010), that LFWs are at a higher risk for developing depression (Grzywacz et al., 2010), and that they generally do not seek mental health services (Lewis-Fernandez et al., 2005) due to a variety of cultural, social, and structural challenges (Georges et al., 2013). Crain et al found that farmworkers in the US experience depression at a rate of up to 52% Yet, it has been reported that primary care providers may lack sufficient training to assess and treat depression (Vega, Rodriguez, & Ang, 2010) for reasons that included understanding the cultural manifestations of depression in Latinos (Lewis-Fernandez et al., 2005). The systematic review conducted by Reuland et al. (2009), and another conducted by Limon et al. (2015; see chapter 3), revealed that that research in the evaluation of depression screening instruments in the Spanish language was limited in the US and reliability of the limited empirical evidence available was questionable. The LFAS-15 was developed as an

effort to improve the detection of depression in LFWs and the findings from the evaluation of the instrument show that the LFAS-15 is an adequate measure of depression for use with LFWs. The LFAS-15 measure as well as the implications described in this chapter, will assist clinicians, researchers, educators, and policy in better understanding issues related to the accurate detection of depression in LFWs and how the LFAS-15 can be used, with continued refinement, to improve in the detection of depressive symptoms in this population.

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Table 1

LFAS-15 Internal Consistency Analysis

Item	Scale Mean if item deleted	Cronbach's Alpha if item deleted	Item	Scale Mean if item deleted	Cronbach's Alpha if item deleted
1	4.41	.929	9	4.40	.914
2	4.35	.923	10	4.41	.913
3	4.35	.918	11	4.41	.917
4	4.63	.921	12	4.53	.919
5	4.34	.920	13	4.58	.925
6	4.56	.923	14	4.26	.916
7	4.57	.914	15	4.72	.926
8	4.45	.913			

Table 2

LFAS-15 Item Correlation Coefficient

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1													
2	.417	1												
3	.248	.485	1											
4	.411	.368	.430	1										
5	.329	.596	.563	.429	1									
6	.216	.387	.320	.374	.450	1								
7	.218	.337	.611	.542	.472	.557	1							
8	.169	.319	.489	.407	.481	.489	.831	1						
9	.354	.456	.515	.620	.530	.480	.841	.752	1					
10	.284	.440	.561	.602	.545	.448	.813	.726	.779	1				
11	.230	.334	.611	.520	.334	.300	.730	.562	.685	.753	1			
12	.376	.528	.578	.621	.466	.401	.453	.324	.421	.614	.614	1		
13	.228	.268	.376	.411	.135	.164	.447	.306	.396	.457	.492	457	1	
14	.166	.468	.612	.447	.588	.432	.712	.714	.627	.690	.698	.589	.358	1
15	.023	.068	.413	-.044	.210	.024	.537	.480	.410	.489	.414	.017	.255	.416

APPENDIX A: IRB APPROVAL

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** · **www.ecu.edu/irb**

Notification of Initial Approval: Expedited

From: Social/Behavioral IRB

To: Francisco Limon

CC:
Angela Lamson

Date: 6/16/2015

Re: UMCIRB 15-000270
Screening Latino Farmworkers for Depression in Primary Care Settings

I am pleased to inform you that your Expedited Application was approved. Approval of the study and any consent form(s) is for the period of 6/16/2015 to 6/15/2016. The research study is eligible for review under expedited category # 5, 6, 7. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Name	Description

BSI-18	Surveys and Questionnaires
CESD-10	Surveys and Questionnaires
Demographic Data Form	Surveys and Questionnaires
Demographic Data Form	Data Collection Sheet
Eligibility Criteria	Surveys and Questionnaires
Eligibility Questionnaire	Data Collection Sheet
HIPAA Authorization form English Version	HIPAA Authorization
HIPAA Authorization form Spanish Version	HIPAA Authorization
Informed Consent	Consent Forms
Informed Consent Spanish Version	Translated Consent Document
LFAS-15	Surveys and Questionnaires
PHQ-9	Surveys and Questionnaires
Screening for Depression in Latino Farmworkers: Method	Study Protocol or Grant Application
Structure Clinical Interview for Depression	Interview/Focus Group Scripts/Questions

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

APPENDIX B: PERMISSION TO USE DEPRESSION SCREENING INSTRUMENTS

Name of Instrument

The Brief Symptom Inventory (BSI-18)

Dear Mr. Limon,

Permission to use a Pearson assessment is inherent in the qualified purchase of the test materials in sufficient quantity to meet your research goals. In any event, Pearson has no objection to you using the Brief Symptom Inventory 18 (BSI® 18) and **you may take this email response as formal permission from Pearson to use the test in its as-published formats in your student research**.

The BSI 18 is a sensitive clinical assessment that requires a high degree (B Level) to purchase, administer, score and interpret. It also represents Pearson copyright and trade secret material. As such, Pearson **does not permit photocopying or other reproduction of our test materials by any means and for any purpose when they are readily available in our catalog. Consequently, you may not simply reproduce the BSI 18 test forms**.

That said, If the program to which you refer is willing to let you use the additional forms they already have, and as long as absolutely no reproduction will take place, the above state formal Pearson permission will apply.

Finally, because of test security concerns, permission is not granted for appending tests to theses, dissertations, or reports of any kind. You may not include any actual assessment test items, discussion of any actual test items or inclusion of the actual assessment product in the body or appendix of your dissertation or thesis. You are only permitted to describe the test, its function and how it is administered and discuss the fact that you used the Test, your analysis, summary statistics, and the results.

Regards,

William H. Schryver

Senior Legal Licensing Specialist

Please respond only to pas.licensing@pearson.com

Center for Epidemiologic Studies Depression Scale (CES-D)

Name of Instrument

Center for Epidemiologic Studies Depression Scale (CES-D)

Original Citation (Pub Med ID and link)

Radloff, L.S. (1977). The CES-D Scale: A self report depression scale for research in the general population. Applied Psychological Measurement, 1(3): 385-401. Link to Full text

Contact Information

Lenore S. Radloff,

Room 10C-09,

Parklawn Building,

5600 Fishers Lane,

Rockville, Maryland 20853

Website

http://cesd-r.com/

Price & Availability

The CESD-R is in the public domain so it is free to use in your research and can be found on the CESD website.

Name of Instrument

Patient Health Questionnaire (PHQ-9)

Note about credits The copyright for the PHQ-9 was formerly held with Pfizer, who provided the educational grant for Drs Spitzer, Williams and Kroenke who originally designed it. This is no longer the case and no permission is required to reproduce, translate, display or distribute the PHQ-9.

Retrieved from: http://m.patient.media/pdf/2582.pdf

APPENDIX C: LATINO FARMWORKER AFFECTIVE SCALE

Case Identification Number: _____

Latino Farmworker Affective Scale

Instrucciones:

Por favor marque con una "X" la major respuesta para cada una de las palabras o frases que usted haya sentido. Escoja el numero que major represente la severidad de lo que siente.

	No me siento asi	**Un poco**	**Mas o Menos**	**Mucho**	**Demasiado**
Sin hambre	0	1	2	3	4
Sin sueño	0	1	2	3	4
Todo me duele	0	1	2	3	4
Con el pecho apretado	0	1	2	3	4
Desganado	0	1	2	3	4
Nada me complace	0	1	2	3	4
No me importa nada	0	1	2	3	4
Desanimado	0	1	2	3	4
Con mal genio	0	1	2	3	4
Desesperado	0	1	2	3	4
Nervioso	0	1	2	3	4
Con ansias	0	1	2	3	4
Con susto	0	1	2	3	4
Triste	0	1	2	3	4
Con ganas de morirme	0	1	2	3	4
Total Column		+		+	+

Total Score _____

APPENDIX D: CENTER FOR EPIDEMIOLOGICAL STUDIES DEPRESSION SCALE-10

Instructions: Please answer the following questions by placing a □ in the appropriate box. For each of the following statements, please check the box that best describes how often you felt or behaved this way during the past week.

	Rarely or None of the time	Some or a little of the time	Occasionally or a moderate amount of the time	Most or all of the time
I was bothered by things that usually don't bother me				
I had trouble keeping my mind on what I was doing				
I felt depressed				
I felt that everything I did was an effort				
I felt hopeful about the future				
I felt fearful				
My sleep was restless				
I was happy				
I felt lonely				
I could not get going				

APPENDIX D: CENTER FOR EPIDEMIOLOGICAL STUDIES DEPRESSION SCALE-10 (SPANISH)

Instrucciones: Por favor complete las preguntas que siguen colocando un □ en la casilla apropiada.

1. En cada una de las frases que siguen, marque la casilla que mejor indique la frecuencia con que usted se sintió o comporto de esta manera durante la ultima semana.

	Raramente o nunca	Algo o un poquito	Ocasionalmente o moderadamente	Siempre o todo el tiempo
Me molestaron cosas que normalmente no me molestan				
Tuve dificultad para mantener mi mente en lo que estaba haciendo				
Me sentí deprimido				
Tuve la impresión de que todo lo que hice necesitaba esfuerzo				
Me sentí esperanzado acerca del futuro				
Me sentí miedoso				
Mi sueño fue intranquilo				
Yo estuve feliz				
Me sentí solitario				
No pude ponerme en marcha				

APPENDIX E: PATIENT HEALTH QUESTIONNAIRE-9

Over the last 2 weeks, how often have you been bothered by any of the following problems? *(Please circle your answer)*	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things.....……	0	1	2	3
2. Feeling down, depressed, or hopeless.……..……	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much.....……	0	1	2	3
4. Feeling tired or having little energy.....……..……	0	1	2	3
5. Poor appetite or overeating.....……..…	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television.……	0	1	2	3
8. 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
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

APPENDIX E: PATIENT HEALTH QUESTIONNAIRE-9 (SPANISH)

Nombre: _____ Fecha: _____

¿Ha padecido alguno de los trastornos siguientes en las últimas 2 semanas?

(Por favor póngale un circulo a la respueta correcta)

	No	Varios días	Más de la mitad de los días	Prácticamente todos los días
1. He tenido poco interés o gusto por hacer las cosas	0	1	2	3
2. Me he sentido triste, deprimido o desesperanzado	0	1	2	3
3. He tenido dificultad para conciliar el sueño o dormir, o duermo demasiado	0	1	2	3
4. Me he sentido cansado o desganado	0	1	2	3
5. No tengo apetito o como demasiado	0	1	2	3
6. Me he sentido mal, como que soy un fracaso o que he defraudado a mi familia o a mí mismo	0	1	2	3
7. He tenido dificultad para concentrarme en cosas como leer el periódico o mirar la televisión	0	1	2	3
8. Me muevo o hablo con tanta lentitud que otros lo han notado o por el contrario, estoy tan inquieto y agitado que he estado más activo de lo normal	0	1	2	3
9. Se le han occurrido pensamientos de que seria mejor estar muerto/a o de que haría daño de alguna manera	0	1	2	3

9. Si padeció alguno de los trastornos, ¿en qué grado le dificultaron su trabajo, a atención del hogar o su convivencia con otros?

Nada _____
Algo _____
Mucho _____
Demasiado _____

APPENDIX F: STRUCTURED CLINICAL INTERVIEW FOR MAJOR DEPRESSION

IN THIS SECTION, MAJOR DEPRESSIVE, MANIC, HYPOMANIC EPISODES, DYSTHYMIC DISORDER, MOOD DISORDER DUE TO A GENERAL MEDICAL CONDITION, SUBSTANCE- INDUCED MOOD DISORDER AND EPISODE SPECIFIERS ARE EVALUATED. MAJOR DEPRESSIVE DISORDER AND BIPOLAR DISORDERS ARE DIAGNOSED IN MODULE D. CURRENT MAJOR DEPRESSIVE EPISODE

Five (or more) of the following symptoms have been present during the same two-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood, or (2) loss of interest or pleasure.

?= Insufficient Information 1= Absent or false 2=Subthreshold 3= Threshold or True

En el último mes. . . . . ¿ha habido una época en la cual se ha sentido deprimido(a) o decaído(a) la mayor parte del día, casi todos los días (¿Como se sintió?)	(1) depressed mood most of the day, nearly every day, as indicated either by subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful). Note: in children or adolescents, can be irritable mood.	? 1 2 3
IF YES: ¿Cuánto duró? (¿Le duró dos semanas?)		
. . . ¿ha perdido el interés o el placer en las cosas que usualmente disfrutaba?	(2) markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated either by subjective account or observation made by others).	? 1 2 3
IF YES: ¿Le pasó esto casi todos los días? ¿Cuánto tiempo duró? (¿Le duró dos semanas?)		

FOR THE FOLLOWING QUESTIONS, FOCUS ON THE WORST TWO WEEKS IN THE PAST MONTH (OR ELSE THE PAST TWO WEEKS IF EQUALLY DEPRESSED FOR ENTIRE MONTH)
Durante este (TWO WEEK PERIOD) . . .

.. ¿cómo estaba de apetito? (¿Cómo se comparaba con su apetito normal?) (¿Tenía que obligarse a comer?) (¿Comía [más/menos] de lo acostumbrado?) (¿Le pasaba esto casi todos los días?) (¿Aumentó o	(3) significant weight loss when not dieting, or weight gain (e.g., a change of more than 5% of body weight in a month) or decrease or increase in appetite nearly every day. Note: in children, consider failure to make expected weight gains.	? 1 2 3

bajó de peso?) (¿Cuántas libras?) (¿Estaba usted tratando de rebajar?)	Check if: ____ weight loss or decreased appetite ____ weight gain or increased appetite	
. . ¿cómo estaba durmiendo? (¿Tenía dificultades en quedarse dormido(a), se despertaba frecuentemente, tenía dificultades en permanecer dormido(a), se despertaba demasiado temprano, o dormía demasiado? ¿Cuántas horas dormía por noche? ¿Era más o menos de lo que duerme normalmente? ¿Le pasaba esto casi todas las noches?	(4) insomnia or hypersomnia nearly every day Check if: ____ insomnia ____ hypersomnia	? 1 2 3
. . ¿estaba usted tan agitado(a) o inquieto(a) que no podía dejar de moverse? (¿Era tan grave que se llegaron a dar cuenta otras personas?) ¿Qué fue lo que notaron? (¿Le pasaba esto casi todos los días?	(5) psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down) NOTE: CONSIDER BEHAVIOR DURING THE INTERVIEW	? 1 2 3
IF NO: ¿Le pasaba lo contrario—hablaba o se movía mas lentamente de lo acostumbrado para usted? (¿Era tan grave que llegaron a darse cuenta otras personas?)¿Qué fue lo que notaron? (¿Le pasaba esto casi todos los días?	Check if: ____ psychomotor agitation ____ psychomotor retardation ? 1 2 3 A9 A10 A11	
. . ¿cómo estaba su nivel de energía? (¿Cansado(a) todo el tiempo? ¿Casi todos los días?)	(6) fatigue or loss of energy nearly every day	? 1 2 3
Durante este tiempo. . .		
. . ¿qué opinaba usted acerca de sí mismo(a)? (¿Como si no valiese nada?) (¿Casi todos los días?)	(7) feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self- reproach or guilt about being sick)	? 1 2 3
IF NO: ¿Se sintió culpable de cosas que hizo o de cosas que no hizo? (¿Casi todos los días?)	NOTE: CODE “1” OR “2” IF ONLY LOW SELF-ESTEEM Check if: ____ worthlessness ____ inappropriate guilt	? 1 2 3

. . ¿se le hizo difícil pensar o concentrarse? (¿Qué tipo de cosas se le hizo difícil debido a esto? (¿Casi todos los días?)	(8) diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others)	? 1 2 3
IF NO: ¿Se le hizo difícil tomar decisiones acerca de asuntos de la vida diaria? (¿Casi todos los días?)	(8) diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others) Check if: ____ diminished ability to think ____ indecisiveness	? 1 2 3
. . ¿se pusieron las cosas tan malas que pensaba con frecuencia en la muerte o en que preferiría estar muerto(a)? ¿Pensó en hacerse daño?	(9) recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide	? 1 2 3
IF YES: ¿Hizo algo para hacerse daño?	NOTE: CODE "1" FOR SELF- MUTILATION W/O SUICIDAL INTENT Check if: ___ thoughts of own death ___ suicidal ideation ___ specific plan ___ suicide attempt	
	AT LEAST FIVE OF THE ABOVE SXS [A (1-9)] ARE CODED "3" AND AT LEAST ONE OF THESE IS ITEM (1) OR (2)	Go to past Major Depression
IF UNCLEAR: Debido a su (EPISODIO DE DEPRESION/OWN WORDS) ¿se le ha hecho difícil hacer su trabajo, encargarse de las cosas de la casa, o llevarse bien con otras personas?	C. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning	? 1 2 3
Justo antes de que esto comenzara, ¿tenía usted alguna enfermedad física?	D. The symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, medication) or to a general medical condition	? 1 2 3
IF YES: ¿Qué le dijo el médico?		
Justo antes de que esto comenzara, ¿tomaba medicamentos?	IF THERE IS ANY INDICATION THAT THE DEPRESSION MAY BE SECONDARY (I.E., A DIRECT PHYSIOLOGICAL CONSEQUENCE OF A GMC OR SUBSTANCE, GO TO	

	*GMC/ SUBSTANCE,*A. 43, AND RETURN HERE TO MAKE A RATINGOF "1" OR "3."	
	Etiological general medical conditions include: degenerative neurological illnesses (e.g., Parkinson's disease), cerebrovascular disease (e.g., stroke), metabolic conditions (e.g., Vitamin B-12 deficiency), endocrine conditions (e.g., hyper- and hypothyroidism, hyper- and hypoadrenocorticism); viral or other infections (e.g., hepatitis, mononucleosis, HIV), and certain cancers (e.g.,carcinoma of the pancreas). Etiological substances include:alcohol, amphetamines, cocaine,hallucinogens, inhalants, opioids, phencyclidine, sedatives, hypnotics, anxiolytics. Medications include antihypertensives, oral contraceptives, corticosteroids, anabolic steroids, anticancer agents, analgesics, anticholinergics, cardiac medications.	
IF YES: ¿Cambió la cantidad o la dosis que tomaba?		
Justo antes de que esto comenzara, ¿estaba usted bebiendo o usando drogas?		
(¿Comenzó esto poco después de la muerte de un ser querido?)	E. Not better accounted for by bereavement, i.e., after the loss of a loved one, the symptoms persist for longer than 2 months or are characterized by marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms, or psychomotor retardation.	1=Simple Bereavement 2=Not Simple Bereavement

MAJOR DEPRESSIVE EPISODE
CRITERIA A, C, D AND E
ARE CODED "3"

¿Cuántas veces distintas en su vida ha estado (deprimido(a)/ OWN WORDS) casi todos los días por un mínimo de dos semanas y a la vez ha tenido varios de los síntomas que me ha dicho, como (SXS OF WORST EPISODE)?	Total number of Major Depressive Episodes, including current (CODE 99 IF TOO NUMEROUS OR INDISTINCT TO COUNT)	___ ___

APPENDIX G: DATA EXTRACTION FORM

Appendix G: Data Extraction Form 1

Study ID	First Author	Year	Country	Language of Administration	Date of Reviewing	Reviewers Initials	Any missed References (yes, no, do separate list)
Where sample was recruited	Clinical Type: community, depressed, women	Outcomes: (verify depression is included, yes, no)	Study designs: Case study Cross-section Cohort RCT Other	Inclusion criteria	Exclusion Criteria	Cut-off(s) reported	Was cut-off compared to minor, major, depression or unstated? Indicate for both cut-offs
Recruitment procedures: consecutive/random/ add hock	Type of Depression	All tests used	Quality grade (see table provided)	Name of interview used	Structured/semi-structured	Interviewer's qualification	Interviewer trained to use interview?
Reference for interview	No. of participants available (original population)	% of those below cut-off	% of those above cut-off	% of sample not completing instrument	How was the instrument administered?	Delay b/w instrument interview?	Sensitivity
Specificity	LR + ve (1-sens)/spec	Diagnostic OR (LR+ve/LR-ve	PPV	NPV	Data to be requested from authors		

*Study Design
Case-control: The comparison of individuals with a certain illness to similar healthy individuals. Matched by age, sex or other factors in order t define risk factors for the illness.
Cross –sectional: The observation of a defined population at a single point in time or time interval. Exposure and outcomes are determined simultaneously.
Cohort:
RCT: A true prospective experiment in which investigators randomly assign an eligible sample of patients to one or more groups and a control group and follow patient's outcomes.

****Interview**
Structured: The interview has been specifically designed to diagnose depression in a given individual (it may also define other psychiatric conditions). There are specific questions and all relevant questions are asked of all interviews – the focus is quantitative
Semi-structured: The interview has been designed to elicit a number of different subjects or themes. Although there are set questions, the interviewer may choose to enquire further about areas of interest – the focus is qualitative, For this study, only structured interviews are eligible for inclusion.

Grade	Test Accuracy
A	High quality studies with a blind comparison of test to reference standard in an appropriate population spectrum
B	Any one or two of the following • Narrow population spectrum • Differential use of reference standard • Reference standard not blind • Case control study
C	Any three or more of the above
D	Expert opinion

APPENDIX H: INFORMED CONSENT TO PARTICIPATE IN RESEARCH

East Carolina

University

Information to consider before taking part in research that has no more than minimal risk.

Title of Research Study: Screening for Depression in Latino Farmworkers in Primary Care Settings: A Culturally Sensitive Depression Screening Instrument is Proposed
Principal Investigator: Francisco J. Limon
Institution/Department or Division: Child Development and Family Studies
Address: 108 Rivers Bldg. NC 27858, USA c/o Angela Lamson, PhD
Telephone #: (252) 737-1404

Researchers at East Carolina University (ECU) ***s***tudy problems in society, health problems, environmental problems, behavior problems and the human condition. Our goal is to try to find ways to improve the lives of you and others. To do this, we need the help of volunteers who are willing to take part in research.

Why is this research being done?
The purpose of this research study is to learn more about the well-being of Latino farmworkers in North Carolina. Participation is voluntary.

Why am I being invited to take part in this research?
You have been invited to participate in this research project because you are Latino, a farmworker, we believe that you may help us learn about the well-being of farmworkers, and you are an adult over 18 years of age who can consent or refuse to participate.
Are there reasons I should not take part in this research?
Your participation is voluntary. There is no one specific reason for which you should not participate.

What other choices do I have if I do not take part in this research?

You can choose not to participate, or you can stop your participation at any time during the study.

Where is the research going to take place and how long will it last?

The research procedures will be conducted at Bernstein Medical Center in Greenville NC., at K.B. Reynolds Medical Center in Snow Hill, NC., at Walstonburg Medical Center in Walstonburg NC, and at Pamlico Medical Center in Pamlico, NC.

What will I be asked to do?

You are being asked to do the following:

1. You will be asked to sign the informed consent form if you agree to participate in the study.
2. You will complete a total of 4 screening instruments designed to measure your well-being.
3. You will participate in one interview that will last approximately 45 minutes.
4. The entire process may take approximately 1.5 hours.

What possible harms or discomforts might I experience if I take part in the research?

It has been determined that the risks associated with this research are no more than what you would experience in everyday life.

What are the possible benefits I may experience from taking part in this research?
This research may help us learn more about how to effectively detect symptoms associated with depression in Latino farmworkers. There may be no direct personal benefit from your participation but the information gained by doing this research may help others in the future.

Will I be paid for taking part in this research?

We will not pay you for the time you volunteer while being in this study. However, you will be able to enter into a drawing for one of 10 gift cards with the value of $25 dollars.

What will it cost me to take part in this research?

It will not cost you any money to be part of the research.

Who will know that I took part in this research and learn personal information about me?
All of your personal identifiable information will remain anonymous. Only the primary investigator, the research assistant associated with this study, and the faculty advisor will have access to your data. Your personal information will not be disclosed at any time.

How will you keep the information you collect about me secure? How long will you keep it?

The data collected will not require your identifiable information. Your name will be replaced with a case number. The audio recordings will only be used by the research team for the purpose of verifying the conclusions of the interviewers regarding your state of psychological well-being and then the recordings will be erased.

What if I decide I do not want to continue in this research?
If you decide you no longer want to participate in this study after it has already started, you may stop at any time. You will not be penalized or criticized for stopping.

Who should I contact if I have questions?
The people conducting this study will be available to answer any questions concerning this research, now or in the future. You may contact the Principal Investigator Francisco J. Limon at ***252 737-1404*** (days, between ***8 am and 6 pm***).

If you have questions about your rights as someone taking part in research, you may call the Office for Human Research Integrity (OHRI) at phone number 252-744-2914 (days, 8:00 am-5:00 pm). If you would like to report a complaint or concern about this research study, you may call the Director of the OHRI, at 252-744-1971.

Is there anything else I should know?

Your participation in this study is greatly appreciated.

I have decided I want to take part in this research. What should I do now?

The person obtaining informed consent will ask you to read the following and if you agree, you should sign this form:

- I have read (or had read to me) all of the above information.
- I have had an opportunity to ask questions about things in this research I did not understand and have received satisfactory answers.
- I know that I can stop taking part in this study at any time.
- By signing this informed consent form, I am not giving up any of my rights.
- I have been given a copy of this consent document, and it is mine to keep.

_____ _____

Participant's Name (PRINT) **Signature** **Date**

Person Obtaining Informed Consent: I have conducted the initial informed consent process. I have orally reviewed the contents of the consent document with the person who has signed above, and answered all of the person's questions about the research.

_____

Person Obtaining Consent (PRINT) **Signature** **Date**

APPENDIX H: INFORMED CONSENT TO PARTICIPATE IN RESEARCH (SPANISH)

East Carolina

University

Consentimiento Informado para Participar en la Investigación
Información a tener en cuenta antes de tomar parte en la investigación que no tiene más que un riesgo mínimo.

Título del Estudio de Investigación: Screening for Depression in Latino Farmworkers in Primary Care Settings: A Culturally Sensitive Depression Screening Instrument is Proposed

Investigador Principal: Francisco J. Limón M.S.
Institución / Departamento o División: Departamento de Desarrollo Infantil y Relaciones Familiares
Dirección: 108 Rivers Bldg. NC 27858, USA c/o Angela Lamson, PhD
Teléfono: 252 737-1415

Los investigadores de la Universidad East Carolina (ECU) estudian problemas en la sociedad, problemas de salud, problemas ambientales, y problemas de conducta humana. Nuestra meta es encontrar formas de mejor las vidas de usted y los demás. Para este fin, necesitamos voluntarios que estén dispuestos a participar en nuestras investigaciones.

Por qué se realiza esta investigación?
El propósito de esta investigación es aprender acerca del bienestar de los trabajadores agrícolas en el estado de Carolina del Norte. Su participación es totalmente voluntaria.

¿Por qué me invitaron a participar en esta investigación?
Se le invita a participar en esta investigación, porque usted es un trabajador agrícola, es mayor de 18 años y tiene la capacidad de libremente aceptar o rechazar esta oferta de participación, por que usted es Latino y porque creemos que usted podría ayudarnos a aprender mas sobre el bienestar de personas como usted.

¿Hay razones por las que no debe participar en esta investigación?
La participación en este estudio es voluntaria. No hay ninguna razón específica por la cual usted no debe participar en este estudio.

¿Qué otras opciones tengo si no participo en esta investigación?
Usted puede optar por no participar o dejar de participar en cualquier momento.

¿En dónde tomara lugar la investigación y cuánto tiempo durará?
Los procedimientos de investigación se llevarán a cabo en el Centro Medico Bernstein en Greenville, NC., en el Centro Medico K. B. Reynolds en Snow Hill, NC., en el centro medico de Walstonburg en Walstonburg NC., y en el Centro Medico de Pamlico en Pamlico, NC.

¿Lo que se me pedirá que haga?
Se le pide que haga lo siguiente :

1. Estar de acuerdo en participar en este estudio mediante la firma del formulario de consentimiento.
2. Completar un total de 4 questionarios.
3. Participar en una entrevista con uno de los investigadores que durara aproximadamente 45 minutos.
4. Todo el proceso tardara aproximadamente 1.5 horas.

¿Qué daños o molestias posibles podría experimentar si tomo parte en la investigación?
Se ha determinado que los riesgos asociados con esta investigación no son más que lo que iba a experimentar en la vida cotidiana.

¿Cuáles son los posibles beneficios que pueden surgir de la participación en esta investigación?
No sabemos si usted tendrá algún beneficio personal por participar en este estudio. Esta investigación podría ayudarnos a aprender mas acerca de cómo detectar síntomas de depresión mas efectivamente en los trabajadores agrícolas Latinos. Es posible que no haya ningún beneficio personal por su participación, pero la información obtenida al hacer esta investigación puede ayudar a otros en el futuro.

¿Me pagarán por participar en esta investigación?
Nosotros no pagaremos por el tiempo que usted nos dé voluntariamente al participar en este estudio. Sin embargo usted podrá entrar a la rifa de una de 10 tarjetas de regalo por el valor de $25 dólares.

¿Cuánto costará mí participar en esta investigación?
No le cuesta nada de dinero participar en la investigación.

¿Quién va a saber que he participado en esta investigación y se enterara de mi información personal?
Todos los datos recogidos serán anónimos. Sólo el investigador y asistente de investigación asociados a este estudio tendrán acceso a sus datos. Ninguna de su información personal será revelada en ningún momento.

¿Cómo va a mantener la información que recopile sobre mi confidencial? ¿Cuánto tiempo será guardada?

La información recogida no le pedirá información de identificación. Su nombre será reemplazado por un numero de caso. Las grabaciones de audio de la entrevista sólo serán utilizados por el equipo de investigación para corroborar las conclusiones de cada investigador acerca de su estado psicológico y entonces serán borrados.

¿Qué pasa si decido que no quiero seguir en esta investigación?
Si usted decide que ya no quiere participar en esta investigación después de que ya se haya iniciado, puede parar en cualquier momento. Usted no será penalizado o criticado por su decisión. Usted no perderá ningún beneficio que normalmente debe recibir.

¿A quién debo contactar si tengo preguntas?
Las personas que realizan este estudio estarán disponibles para responder a cualquier pregunta relacionada con esta investigación, ahora o en el futuro. Puede comunicarse con el investigador principal, Francisco J. Limon, al 252 737-1415 durante horas de oficina. Si usted tiene preguntas sobre sus derechos como participante de la investigación, usted puede llamar a la Oficina de Integridad de Investigación y Cumplimiento al número de teléfono 252-744-2914 (días, de 8:00 am- 5: 00 pm). Si usted desea reportar una queja o inquietud sobre este estudio de investigación, usted puede llamar a la Directora de la Oficina de Integridad de la Investigación y Cumplimiento, al 252-744-1971.

¿Hay algo más que debería saber?
Su participación en este estudio es muy valorada y apreciada.

He decidido que quiero participar en esta investigación. ¿Qué debo hacer ahora?
La persona que obtenga el consentimiento informado le pedirá que lea lo siguiente y si está de acuerdo, usted debe firmar este formulario:

- He leído (o se me ha leído) la totalidad de la información anterior.
- He tenido la oportunidad de hacer preguntas acerca de las cosas en esta investigación que no entendía y he recibido respuestas satisfactorias.
- Sé que puedo dejar de participar en este estudio en cualquier momento.
- Al firmar este formulario de consentimiento informado, yo no renuncio a ninguno de mis derechos.
- Se me ha dado una copia de este documento de consentimiento, y es el mío para mantener.

_____ _____

Nombre del participante Firma Fecha

Person Obtaining Informed Consent: I have conducted the initial informed consent process. I have orally reviewed the contents of the consent document with the person who has signed above, and answered all of the person's questions about the research.

_____

Person Obtaining Consent (PRINT) **Signature** **Date**

APPENDIX I: ELIGIBILITY QUESTIONNAIRE

1a) Are you an immigrant? (Circle the correct answer)

Yes No

1b) If yes, what country are you from?

_____

2) Which is your first language? (Circle the correct answer)

Spanish Tarasco Mixteco Quiche

3) Have you received or are you receiving medical care or psychotherapy for feelings of sadness? (Circle the correct answer)

Yes No

4) Are you currently receiving medical or behavioral treatment for any mental health condition? (circle the correct answer)

Yes No

If yes, what condition? _____

5) What is your occupation?

_____

APPENDIX J: DEMOGRAPHIC DATA FORM

Name: _____ Date: _____

Participant ID # _____ Age: _____ Gender: M F

Type of Employment:

□ Guest/seasonal Worker How many years visiting the US for work? _____

□ Guest/Migrant worker How many years as a migrant worker? _____

□ Full time US resident How many years living in the US? _____

Living Arrangement:

□ Housing provided by employer on the farm

□ Living with co-workers or friends

□ Living with relatives

□ Living with immediate family

Where do your closest relatives (parents, sibling, spouse, children etc.) live?

_____

APPENDIX J: DEMOGRAPHIC DATA FORM (SPANISH)

Nombre: _____ Fecha: _____

Num. de Identificación: _____ Edad: _____ Sexo: M F

Clasificación de Empleo:

□Trabajador Contratado/Temporal

Cuantos años visitando los EU para trabajar? _____

□Trabajador contratado/migrante

Cuantos años ha sido trabajador migrante? _____

□Trabajador permanente en los EU

Cuantos años viviendo en los EU? _____

Clasificación de Vivienda:

□Vivienda proveída por el empleador en la granja

□Viviendo con compañeros de trabajo o amigos

□Viviendo con parientes/familiares

□Viviendo con la familia inmediata