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Examining the Spanish Maysi-2 Translation among Mexican Americans

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EXAMINING THE SPANISH MAYSI-2 TRANSLATION AMONG MEXICAN
AMERICANS

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Dedication

To my parents whose sacrifice, love, encouragement, and support has given me the opportunity of a better education and life. To my husband, for your endless support, love, and patience. To my brother and sister for all their support.

EXAMINING THE SPANISH MAYSI-2 TRANSLATION AMONG MEXICAN
AMERICANS

by

YOLANDA DENISE OCHOA, B.A.

THESIS

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Abstract

Due to the increasing Latino population in the U.S., Spanish translations of mental health screening tools are needed to better serve Latinos, particularly those in juvenile justice settings. Screening tools are measures that flag mental health symptoms and indicate if further evaluation is needed. The most widely screening tool used in juvenile justice settings that has been translated into Spanish is the Massachusetts Youth Screening Instrument-Version 2 (MAYSI-2). To date, research has focused only on the English version of the MAYSI-2. The present study examined the equivalence of the Spanish translation of the MAYSI-2 to its English version in 18- to 21-year-old bilingual university students. To further illuminate potential measurement differences, the present study also examined whether variables such as language version and acculturation influence the number of depression and somatic symptoms reported by Latinos. Lastly, it examined if language self-reports are accurate measures at evaluating language dominance to quickly determine what language a screening tool should be administered in a bilingual juvenile offender. The results indicated that among 18- to 21-year-old bilingual university students ($N = 261$), the English and Spanish versions of the MAYSI-2 showed some evidence of equivalence to each other. No differences were found between the number of depression symptoms reported in English or Spanish, but more emotion was found to be elicited in English than in Spanish. In the present sample, no consensus was found in the relationship between somatic symptoms and acculturation as the relationship between the two varied across genders as well as across measures. Results indicated that a language self-report appears to be an accurate measure to evaluate language dominance. The present study will help juvenile justice settings in knowing how to better screen bilingual juvenile offenders for mental health symptoms.

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Chapter 1: Introduction

Every adolescent entering the juvenile justice system should be screened for mental health symptoms in order to identify those who need further mental health assessment, pose a risk to self or others, or need treatment (Grisso, 2005; National Action Alliance for Suicide Prevention, 2013; Wasserman, Jensen, Ko, Cocozza, Trupin, Angold, Cauffman, & Grisso, 2003). This is partly because adolescents in juvenile justice settings have higher rates of mental disorders than adolescents in the community and are at an increased need for mental health services (Fazel, Doll, Langstrom, 2008). A popular screening tool that allows juvenile justice settings to evaluate a variety of mental health symptoms is the Massachusetts Youth Screening Instrument- Version 2 (MAYSI-2; Grisso & Barnum, 2006). The MAYSI-2 is a self-report measure that was developed to detect immediate risk of harm to self or others and mental health symptoms among detained juveniles. Differences have been found on the number of symptoms reported in the MAYSI-2 by adolescents of different ethnicities (Cauffman, 2004; Desai, Falzer, Chapman, & Borum, 2012; Vincent, Grisso, Terry, & Banks, 2008). For example, in comparison to European Americans and African Americans, Latinos report higher number of symptoms on the Depressed-Anxious and Somatic Complaints scales (Cauffman, 2004; Desai et al., 2012; Vincent et al., 2008).

With the Latino population in the U.S. increasing (Ennis, Rios-Vargas, & Albert, 2011), it is important to consider cross-cultural differences and bilingualism when screening for mental health symptoms among the Latino juvenile justice population. Failure to consider this could lead to Latino juvenile offenders not receiving needed mental health treatment (Stewart & Trupin, 2003). Therefore, there is a need for cross-culturally valid measures for use by juvenile

justice agencies. Although a Spanish translation of the MAYSI-2 exists (Grisso & Barnum, 2006), to date research on the MAYSI-2 focuses only on the English version.

Translating a measure into Spanish to serve Latino juvenile offenders may appear as a solution to better assess this group, but a translated measure can complicate assessment. Even though most Latinos are bilingual (Pew Hispanic Center, 2009), this does not necessarily mean individuals are able to communicate equally in both languages. Some bilinguals are more dominant in one language than the other (Pew Hispanic Center, 2004). Part of the assessment process is determining whether to administer a measure in Spanish or in English; this can be done through language self-reports. However, self-reports should be used with caution, as these may not be accurate since individuals can mistake their dominant language (Kohnert, Hernandez, & Bates, 1998). A way to examine whether self-reports are accurate would be to compare them to an objective language dominance measure.

Another factor involving language that complicates assessments in bilingual individuals is that one language may elicit more emotion than the other (Marcos, Alpert, Urcuyo, and Kesselman, 1973; Price & Cuellar, 1981). Administering the MAYSI-2 in the language that elicits less emotion may cause Latino juvenile offenders to underreport symptoms. When Latinos fail to report symptoms, they will not be identified as individuals who are in need of treatment.

Previous literature relevant to the present study will be discussed. First, the population of juvenile justice systems and their prevalence of mental illness will be described. Next, the importance of screening tools in settings such as juvenile justice settings will be discussed, followed by a description and previous findings of the MAYSI-2. Subsequently, problems that arose from previous Spanish translations will be explored. This will be followed by a section on

bilingualism where it will cover topics such as self-reports, the Woodcock -Munoz Language Survey-Revised (Woodcock, Muñoz-Sandoval, Ruef, & Alvarado, 2005) which is an objective language dominance measure, and on how different languages elicit different amounts of emotion.

The present study examined four aims. The first aim was to examine whether the Spanish translation of the MAYSI-2 is equivalent to its English version among 18-to 21-year-old bilingual university students. The second aim was to examine whether the Spanish administration of the MAYSI-2 elicits more emotion than the English version by finding more endorsed symptoms on the Depressed-Anxious scale on the Spanish version. The third aim examined if the Somatic Complaints scale of the MAYSI-2 were highly endorsed on less acculturated participants than highly acculturated participants. The fourth aim was to examine how accurate a language self-report was by comparing it to an objective measure. Administering the appropriate language of the MAYSI-2 to Latino juvenile offenders is crucial to better assess them in juvenile justice settings.

Chapter 2: Literature Review

According to the 2011 Census of Juveniles in Residential Placement, 26% of the juvenile justice population comprised of Latinos, falling right behind European American and African American juvenile offenders with 32% and 42% respectively (Sickmund, Sladky, Kang, & Puzzanchera, 2011)¹. The Latino juvenile justice population is predominant in Southwestern states such as New Mexico (70%), California (60%), Texas (48%), Arizona (46%), and Nevada (38%; Sickmund et al., 2011). These figures suggest that Latino juvenile offenders are disproportionately represented in comparison to the general Latino population of the U.S., which is 16% (Ennis et al., 2011).

Mental Health Symptoms in the General Juvenile Justice Population

Overall, juvenile offenders have a high prevalence of mental health symptoms and disorders compared to the general juvenile justice population (Fazel et al., 2008). Within juvenile correctional facilities, around 60% of male juvenile offenders and more than two thirds of female juvenile offenders have a mental disorder (including mood disorders, anxiety disorders, psychosis and ADHD; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002). Specifically, female juvenile offenders are found to report more internalizing disorders (anxiety and/or mood; Davanzo, Kerwin, Nikore, Esparza, Forness, & Murrelle, 2004; Fazel et al., 2008; Teplin, Welty, Abram, Dulcan, & Washburn, 2012), while male juvenile offenders are found to report more externalizing disorders (conduct disorder, oppositional defiant disorder, and attention deficit hyperactivity disorder; Kring, Johnson, Davison, & Neale, 2013).

With the overrepresentation of ethnic minority groups in juvenile justice settings, ethnic differences in mental disorders exist. For example, higher rates of anxiety disorders are found in

¹ Residential placements include settings such as detention centers, correctional facilities, and diagnostic centers.

Latinos when compared to European Americans and African Americans (32.6% versus 30% and 20.9% respectively; Teplin et al., 2002; Teplin et al. 2012). Higher rates of mood disorders are also found among Latinos in comparison to African Americans and European Americans (21.5% versus 18.6% and 13.8% respectively; Teplin et al., 2002). A study with a similar representation of juvenile offenders from the three ethnic groups (335 Latinos, 461 European Americans, and 254 African Americans) found small differences in mood disorders among the three ethnicities (Hough, Hazen, Soriano, Wood, McCabe, & Yeh, 2002). In this study, Latinos were found to have a slightly higher percentage of reported mood disorders than did European Americans or African Americans (8.5% versus 5.8% and 3.9% respectively; Hough et al., 2002). These studies suggest that Latino juvenile offenders report higher rates of mood disorders than European Americans and African Americans. However, it is unclear whether Latinos actually experience higher rates of depression or if cultural differences in the assessments exist (Westermeyer & Janca, 1997). Cross-cultural comparisons cannot be made if an assessment is predominantly normed on one ethnicity (Cofresi & Gorman, 2004).

Because of the number of juvenile offenders that are placed in juvenile justice settings (Sickmund et al., 2013) as well as the high proportion of mental health issues that exists in this population (Fazel et al., 2008), there is a need to effectively assess mental health in these settings. Despite Latino juvenile offenders reporting more mood disorders, it has been found that prior to intake in juvenile justice settings, Latinos are less likely to receive mental health treatment than are European Americans, African Americans, Native Americans, and Asians (42% versus 81%, 75%, 69%, and 50% respectively; Stewart & Trupin, 2003). A related juvenile justice study by Rawal, Romansky, Jenuwine, and Lyons (2004) found similar results. It was found that 19.4% of Hispanics reported to have ever received treatment in comparison to

36.5% of African Americans and 58.9% of European Americans (Rawal et al., 2004). The disparity between reporting more mood disorders than other ethnicities, but less likely to receive treatment shows the urgency to correctly assess and treat Latino juveniles.

The First Step Towards Diagnosis in Juvenile Justice Settings

One of the first steps when evaluating mental health in juvenile offenders is the administration of a screen. As described by Grisso and Underwood (2004; see also Vincent, 2011) a screening tool is a quick and effective way to first determine whether an individual could have a mental disorder. Screening tools in juvenile justice settings are also used to decide where to place a juvenile offender such as in probation, detention, community reentry, or another suited program (Vincent, 2011). Screening tools are particularly helpful in settings where a large number of people need to be served as they flag individuals who do and do not need further assessment. In sites such as juvenile justice settings, it is imperative to have procedures that will be cost-effective (Vincent, 2011) as it is advised that screening tools should be administered to every juvenile offender entering justice settings (Grisso, 2005; National Action Alliance for Suicide Prevention, 2013; Wasserman et al., 2003).

A popular screen for juvenile justice settings. The most popular screening tool used in juvenile justice settings across the U.S. is the MAYSI-2 (Grisso & Barnum, 2006). It was developed to identify juvenile offenders who need further mental health evaluation, who need immediate suicide risk attention, or who pose a risk to self or others (Grisso, Fusco, Paiva-Salisbury, Perrault, Williams, & Barnum, 2012). The MAYSI-2 flags mental health needs and immediate risk attention through its seven scales: Depressed-Anxious, Angry-Irritable, Alcohol/Drug Use, Somatic Complaints, Suicide Ideation, Traumatic Experiences, and Thought Disturbance (the last of which is only valid and interpretable for males; Grisso & Barnum, 2006).

It takes juvenile offenders 10-15 minutes to complete the self-report consisting of 52 yes-or-no questions. Because it is a self-report, staff in juvenile justice settings can administer the MAYSI-2 without prior clinical training.

To establish the MAYSI-2 norms and psychometric information, a study with 1,320 juvenile offenders from Massachusetts was conducted (Grisso & Barnum, 2006). This sample consisted of 44% European Americans, 23% African Americans, 22% Latinos, and 8% other ethnicities from the ages of 12-17. Promising psychometric properties were found as alphas were in the range of .61-.86 indicating good internal consistency. Test-retest stability was found to be good for girls (ICCs = .66-.85) while for boys it varied among the scales (ICCs = .53-.89) with Somatic Complaints being the least reliable. Results of studies in which the MAYSI-2 was used to compare findings against those of the manual have been favorable with moderate intercorrelations ($r = .23-.67$) and internal consistencies ($\alpha = .58-.88$; Archer, Simonds-Bisbee, Spiegel, Handel, & Elkins, 2010; Archer, Stredny, Mason, & Arnau, 2004; Ford, Chapman, Pearson, Borum, Meltzer, & Wolpaw, 2008).

Even though studies have found promising psychometric properties of the MAYSI-2 as a whole, careful interpretation of the subscales is needed. Scales such as Alcohol/ Drug Use and Suicide Ideation have been found to have better concurrent validity and convergent validity than the Depressed-Anxious and Angry-Irritable scales (Archer et al., 2010; Grisso, Barnum, Fletcher, Cauffman, & Peuschold, 2001; Wasserman, McReynolds, Ko, Kats, Cauffman, Haxton, & Lucas, 2004). Furthermore, the Depressed-Anxious scale and Angry-Irritable scale have not been found to be as strong, especially for male juvenile offenders as these were found to have lower correlations on external variables (Archer et al., 2010). For example, the Angry-Irritable scale was found to be poorly correlated to conduct disorder ($r = .01$ for men and $r = .18$ for

women) and the Depressed-Anxious scale was found to be poorly correlated to attention/concentration ($r = .08$ for men and $r = .14$ for women; Archer et al., 2010).

A significant difference among these scales is in the type of symptoms assessed. For example, scales such as Alcohol/ Drug Use uses questions relating to behaviors, whereas scales such as Depressed-Anxious uses questions about emotion and feelings. For example, one item from the Alcohol/Drug Use scale asks the following: “Have you been drunk or high at school?” An item from the Depressed-Anxious scale asks the following: “Have you felt that you can’t do anything right?” Items about behavior are more objective while items relating to emotion are subjective. Due to the subjectivity that exists in the Depressed-Anxious scale, every juvenile offender can have different interpretations of the items. The different interpretations can lead to the low convergent validity that is found on this scale. The construct the scale was intended to measure may be altered due to the different interpretations. This becomes a greater issue if different cultures interpret the same measure differently.

Ethnic differences in the MAYSI-2. Differences on MAYSI-2 scales appear across ethnicities. When Latino, European American, and African American youth complete the MAYSI-2, results show that Latino juvenile offenders have a higher rate of scoring above cutoff scores than both ethnicities on the Depressed-Anxious scale (42% of Latino juvenile offenders versus 31.7% of European American and 29.8% of African American; Desai et al., 2012). Cauffman (2004) found statistically significant differences on the mean scores obtained on the Depressed-Anxious scale when comparing European Americans, African Americans, and Latinos among male juvenile offenders ($M = 2.26$, $SE = 0.039$; $M = 1.99$, $SE = 0.035$; $M = 2.70$, $SE = 0.071$, respectively). Statistically significant differences were also found among female European Americans, African Americans, and Latina juvenile offenders ($M = 3.29$, $SE = 0.079$;

$M = 3.01, SE = 0.084; M = 3.60, SE = 0.163$ respectively). The pattern shown in the higher number of reported symptoms of depression in the MAYSI-2 across ethnicities is consistent with results found in other assessments (Hough et al., 2002; Teplin et al., 2002; Teplin et al., 2012). This is in line with other research of whether depression is more common in Latinos or whether symptoms are interpreted differently across cultures (Gutierrez, 2002).

Another scale where Latinos score higher than European Americans and African Americans is the Somatic Complaints scale (48.2% versus 41.1% and 28.1% respectively; Desai et al., 2012). The scales of Somatic Complaints and Depressed-Anxious can have high scores as Latinos display depression and anxiety through somatic complaints. For example, some general terms that have been reported by Latinos when experiencing depression have been *nervios* (jitters/ nerves), *debil* (weak), *sofocada* (out of breath), *dolor de cabeza* (headache), and *ataque de nervios* (nervous breakdown; Lewis-Fernandez, Das, Alfonso, Weissman, & Olfson, 2005). These symptoms are similar to the symptoms described in the items of the Somatic Complaints scale of the MAYSI-2. For instance, one item of the Somatic Complaints scale asks if the adolescent has had headaches while another item asks if the adolescent has felt short of breath.

While the scales of Somatic Complaints and Depressed-Anxious have been found to be highly endorsed by Latinos, opposing results have been found. Stewart and Trupin (2003) found that Latinos were less likely to report high levels of any symptom. A limitation that was mentioned in this study was that administration of the MAYSI-2 was only done in English, which may lead to unreliable results. Administering the MAYSI-2 in English only leaves Spanish monolingual and bilingual Latino juvenile offenders at disadvantage of being able to accurately identify symptoms.

Accuracy of Translated Psychological Measures

Spanish is spoken widely in the U.S.; the 2010 U.S. Census reports that Spanish is used at home by 36 million people, and this rate is increasing (Ryan, 2013). Among bilingual Latinos older than 18, 46% of them report to speak both English and Spanish fluently, 40% speak primarily Spanish, and 14% speak primarily English (Pew Hispanic Center, 2004). Among younger Latinos across the U.S. ages 16 to 25, 36% of them report to be English dominant speakers, 41% are bilingual, and 23% are Spanish dominant speakers (Pew Hispanic Center, 2004). Dominant bilingual speakers are those that are able to speak both languages, but are more fluent in one of the two languages, in this case Spanish.

Because many Latinos speak Spanish as their primary language, there is a need for Spanish translation of psychological tools to be developed. The awareness for the need of Spanish translations has been noticed and several studies have been done which compare English and Spanish versions of several assessments and screening tools. To date, no previous research of the Spanish MAYSI-2 exists, but insight on how effective translated tools are can be gained from other measures.

Studies have found that English instruments do translate well to their Spanish version as good correlations and internal consistencies have been found. Two studies were similar in their methods as they counterbalanced the two language versions and administered them to university students (Perczeck, Carver, Price, & Pozo-Kaderman, 2000; Wiebe & Penley, 2005). The study by Perczeck et al. (2000) evaluated instruments such as the Life Orientation Test Revised, the Behavioral Inhibition/Behavioral Activation Scales, Profile of Mood States, and the Center for Epidemiological Studies- Depression scale. These translations were strongly correlated to their English versions with correlations ranging from .72 to .88 (Perczeck et al., 2000). In contrast to administering the instruments the same day as Perczeck et al. (2000) did, Wiebe and Penley

(2005) administered the English and Spanish versions of the Beck Depression Inventory - II (BDI-II) one week apart from each other. A strong reliability was found in the Spanish version ($\alpha = .91$) which was similar to the one found in the English version ($\alpha = .89$). Two other studies in which language dominance measures were not used and only the Spanish version was administered were in studies evaluating the Child Depression Inventory (CDI; Davanzo et al., 2004) and the Depression Anxiety Stress Scale-21 (DASS-21; Daza, Novy, Stanley, & Averill, 2002). The CDI was found to have internal consistency reliabilities ranging from .25-.69, which were lower to the ones found in the English CDI ranging from .59-.68 (Davanzo et al., 2004). The DASS-21 was found to have strong alphas, with its subscales ranging from .86-.93, while the total scale had an alpha of .96 (Daza et al., 2002). All the instruments just described were back translated by the researchers except for the BDI-II. Back translation is a process when a person translates an English measure to Spanish. Then another person who is not familiar with the measure translates the measure back to English. That English version is then compared to the original version to see if they are similar. These studies of translations lacked the use of a language dominance self-report or an objective measure to evaluate language dominance. Thus, even though good psychometric properties were found it cannot be assumed that scores obtained on these measures are accurate.

Although these studies produced promising results, one language can be found to have more symptoms reported than the other language. For example, the study by Perczeck et al. (2000) found that more signs of depression were reported in the Spanish version ($M = 7.19$, $SD = 3.03$) than in the English version ($M = 6.78$, $SD = 2.97$). Before the BDI was translated into the Spanish version that exists today, Azocar, Arean, Miranda, and Muñoz, (2001) back translated their own Spanish version of the BDI. In this version of the BDI, it was found that Latinos

endorsed more feelings of feeling punished when the BDI was completed in Spanish than when completed in English. These findings relate to how two languages elicit different range in emotion in bilingual individuals, which will be discussed later.

Problems encountered in Spanish translations. Translating a measure is complicated because differences among individuals from a given culture exist. Differences in the number of symptoms reported among Mexican Americans have been found. Findings show that the level of acculturation in Mexican Americans relates to the number of somatization they report. Angel and Guarnaccia (1989) related the language the participants wanted to be interviewed in with acculturation. For example, if participants preferred to be interviewed in English they were grouped in the high acculturation group while those that preferred to be interviewed in Spanish were grouped in the low acculturation group. What was found was that those who were highly acculturated reported to be mostly in “*good health*” (35%), while only 4% reported to be in “*poor health*.” Low acculturated participants were found to mostly report to have “*fair health*” (46.7%) and least reported to be in “*excellent*” or “*very good health*” with 6% of the participants reporting this on both. Because the term Latino covers a range of nationalities, it should not be assumed that people from different nationalities share commonalities (Cauce & Jacobson, 1980).

Although nationalities share the same language, differences within the language exist (Curtis & Schmidt, 1992; Ellis & Mead, 2000). If a Spanish version of a measure is created, it should be kept in mind that words, phrases, or idioms across the same language are not going to be understood by all Latinos. When an instrument is translated its content has to be understood by everyone who speaks Spanish or different regional versions of a language should be created (Heffer, Barry, & Garland, 2009).

A translation of a word in English can have a variety of ways that it can be translated to Spanish. Although a literal translation seems appropriate, the literal translation will not convey the intended meaning as its English version (Butcher, Nezami, & Exner, 1998). A literal translation of a word or phrase can also entail that the language be too formal or sophisticated (Cauce & Jacobson, 1980; Curtis & Schmidt, 1992). If the translation of a word is too formal, not everyone will understand it (Curtis & Schmidt, 1992). Translations should be kept at a basic language level in order for everyone to understand the items (Curtis & Schmidt, 1992). Literal translations and those developed in a sophisticated language, yield assessments that are not clear in their translation and can observe other constructs than the ones initially intended (Heffer et al., 2009). Psychological measures and translated measures for juvenile offenders should be kept at a basic language level. This is particularly important as it has been previously reported that reading skills in juvenile offenders is one standard deviation below their expected reading level age (Snowling, Adams, Bowyer-Crane, & Tobin, 2000).

Another problem that can arise in translations is that different cultures can have more ways to describe a psychological state (Westermeyer & Janca, 1997). An example given by Gutierrez (2002) of this in the Latino culture is how individuals report anxiety. Anxiety can be reported as having “*nervios*” or being depressed among Latinos. An individual will be misdiagnosed as being depressed when the individual should be diagnosed with an anxiety disorder. This becomes an issue if psychological tools are developed based on how the dominant culture experiences symptoms. To remediate this issue when developing a translation, the translated version should include the psychological state that best translates and best describes the way the targeted culture experiences it as. Not adapting measures to multiple ethnicities can

bring problems in the scoring and interpretation of them. For example, Latinos will not have anxiety treated due to misdiagnosis.

Different language, different emotions. With bilingual individuals, determining whether a psychological measure has been well translated is not enough, as other language variables come into play. One of these variables is the emotionality that each language can elicit in a person who is bilingual. This becomes especially important in mental health screening tools as these evaluate an individual's affect. A hypothetical example is that of a bilingual who understands an assessment better in Spanish than in English. It is possible that if given both language administrations their scores will differ because of the different emotions activated by each language. The Whorf hypothesis describes the notion that language shapes an individual's perceptions and thoughts (Guttfreund, 1990). An individual's thought process may be different depending on the language that is activating a thought. Each language has access to different recollections of an individual's life, in this case different languages have access to different emotions experienced by the person (Cofresi & Gorman, 2004).

This notion of language shaping thoughts and emotions has been studied by observing differences in reported mental health symptoms in Spanish versus English, and findings have been contradictory. Marcos, Alpert, Urcuyo, and Kesselman (1973), found that individuals reported more mental disorder symptoms in English, although Spanish was their native language. They hypothesized that they could have obtained these findings because individuals may lack English skills, as this was their second language, therefore appearing less communicative.

Other studies have produced results that indicate that Spanish elicits more emotion than English does. Price and Cuellar (1981), which was a replication of Marcos et al. (1973), contradicted these results and found that when individuals were evaluated in their native

language, Spanish, bilinguals reported more symptoms in this language. Gutfreund (1990) also found higher rates of reported symptoms when individuals were assessed in Spanish regardless of their native language. Another study by Perczeck et al. (2000), which observed translation differences, aligns with these findings. These results of Spanish eliciting more emotion might influence the findings on translation differences. The results might yield findings that say that the English and Spanish versions are not similar because the Spanish version will have higher scores. This does not mean that the Spanish version was not well translated. The Spanish version could have been correctly translated, but differences in the results might be due to the emotion that the Spanish version elicits.

Bilingualism Issues

Importance of language dominance evaluation. Deciding which language to assess a bilingual individual in is complex. A study that examined a measure translation listed that one of their missing procedures was to assess the bilingual participants' dominant language (Daza et al., 2002). A guideline that was given when administering a measure to bilingual individuals was to use a language dominance assessment as part of the procedures (Acevedo-Polakovich, Reynaga-Abiko, Garriott, Derefinko, Wimsatt, Gudonis, & Brown, 2007). This is needed because although bilingual individuals understand two languages, they may not fully understand one of these two languages as well as the other. For example, if an English screening tool is given to a bilingual individual who understands Spanish better than English, it will contribute to an invalid diagnosis. The individual could overreport or underreport symptoms, in which underreporting will lead to the Spanish speaker not receiving the needed treatment.

Individuals can vary in their language dominance depending on the context of the language (Cauce & Jacobson, 1980; Grosjean, 1998; Kohnert et al., 1998). Therefore, language

dominance assessment should correspond to the language domain that will be used for the assessment (Acevedo-Polakovich et al., 2007). For instance, when a self-report is used, reading dominance should be assessed while for an interview, speaking dominance should be assessed.

A quick way that researchers can find out which language a person is most dominant in is through self-reports. As self-reports are easier to administer than an objective measure, relying on self-reports will allow a faster way to assess language dominance. Research suggests that self-ratings on language dominance are accurate when compared to objective measures (Gollan, Weissberger, Runnqvist, Montoya, & Cera, 2012; Kohnert et al., 1998). While it is known that self-reports are usually accurate, Gollan et al. (2012) advised to use an objective measure to accompany the self-report. One reason why it is advised to be used in conjunction to an objective measure is that individuals believe that their native language is their dominant language, but findings from Kohnert et al. (1998) suggest that this may not be the case.

Assessing language dominance in reading comprehension. A measure that can be used to supplement a language dominance self-report is a standardized test such as the Woodcock -Munoz Language Survey-Revised Normative Update (WMLS-R). The WMLS-R is a battery of tests in both English and Spanish that assess a person's dominant language. It includes seven subtests: Picture Vocabulary, Verbal Analogies, Letter-Word Identification, Dictation, Understanding Directions, Story Recall, and Passage Comprehension. Each of these subtests can be combined with other subtests or can be used alone to determine a language cluster such as Reading, in which the subtests of Letter-Word Identification and Passage Comprehension can be administered. Testing reading ability can be efficient when administering a self-report screen that requires reading comprehension.

The WMLS-R appears to be effective in objectively identifying an individual's dominant language. A study in which the full battery of the WMLS-R was given to Latinos in San Antonio found that it significantly correlated to the language self-report ($r = .76$; Gasquoine, Croyle, Cavazos-Gonzalez, & Sandoval, 2007). The Passage Comprehension subtest from the WMLS-R is effective as it is used in school settings to assess the reading proficiency of school-aged children (Cheung & Slavin, 2005; Cuellar, de la Colina, Episcopo, Hollier & Leavell, 2009; Proctor, August, Carlo, Barr, 2010; Vaughn, Linan-Thompson, & Hickman, 2003).

To better serve Latino juvenile offenders in juvenile justice settings, it is important to select the appropriate language in which to present screening tools. However, administering lengthy language dominance assessments in juvenile justice settings is not feasible. Because a number of juvenile offenders are administered the MAYSI-2 at intake services, it is fundamental for assessment of language dominance to be quick and effective. Determining that a self-report yields the same language dominance as an assessment, will help intake services be of better service to Latino juveniles. They will know which language to administer the MAYSI-2 to a Latino juvenile offender by relying on the juvenile's language self-report.

Summary

There is a need to better serve Latino juvenile offenders because they are overrepresented in the justice system, and are found to report higher rates of mood disorders compared to other ethnic groups. Part of proper assessment with Latino juvenile offenders is by making sure they receive a correctly translated MAYSI-2 to determine if they require mental health treatment. In order to make sure they receive the correct version of the MAYSI-2, it needs to be determined which language an individual is most dominant in. To measure language dominance, a self-report can be used in combination with an objective measure such as the WMLS-R to determine

the self-report's accuracy in determining language dominance. Different languages elicit different emotions, therefore evaluating which language elicits more emotion is crucial to correctly interpret MAYSI-2 scores. One key notion that is central to analyzing the MAYSI-2 is that less acculturated Latinos report mood disorders as somatic complaints.

Study Aims

The first and primary study aim was to assess if the Spanish translation of the MAYSI-2 is equivalent to the English version in 18- to 21-year-old bilingual university students. If the versions are equivalent, bilingual participants will score the same on both language versions. If discrepancies are found, this may indicate inadequate construct validity from the Spanish MAYSI-2. This may direct future research into revising the Spanish translation of the MAYSI-2.

The second and third study aim were to examine whether Mexican American participants respond differently to the MAYSI-2 based on cultural constructs such as language and acculturation. The second study aim was to examine if the language that the MAYSI-2 is completed in has an effect on the scores obtained on the MAYSI-2. If in the Spanish version of the MAYSI-2 higher scores are found for the Depressed-Anxious scale, then this indicates that Spanish elicits more emotion than English does. The third study aim was to examine if acculturation can have an effect on the number of somatic complaints participants report. If Mexican American participants who are less acculturated score higher than highly acculturated Mexican Americans in the Somatic Complaints scale, this will show how acculturation can influence the way a juvenile offender experiences mental health.

The fourth study aim was to examine whether a language dominance self-report can be used to determine which language a MAYSI-2 should be administered in among bilingual Latino

juveniles. If the self-report matches the WMLS-R (Passage Comprehension subtest), then intake services at juvenile justice settings can rely on self-report measures to assess reading language dominance. This will be a useful and quick step in the screening process when administering the MAYSI-2 to bilingual juveniles.

Chapter 3: Method

The study aims were examined through paper and pencil questionnaires administered to Mexican American university undergraduate students. Although it would have been ideal to use juvenile offenders for this study, it was not feasible to recruit the number of juvenile offenders needed to address the study aims. Administration of the Spanish and English versions of the MAYSI-2 was used to examine the equivalence of the two language versions. The additional aims examined differences in the amount of depression and emotion elicited by English and Spanish measures, if a relationship between acculturation and somatic symptoms exists, and if participants accurately self-reported their language proficiency.

Participants

Participants were undergraduate students at the University of Texas at El Paso (UTEP). Because the MAYSI-2 contains different scales for men and women, groups of both genders were recruited in order to analyze the data separately. The target sample size was based on computing sample size for RMSEA (Preacher & Coffman, 2006), which suggested 60 men and 68 women. Because the degrees of freedom was high for both groups, a minimum of 120 male and 136 female bilingual Mexican American participants had to be recruited. In total, 160 female participants and 145 male participants were recruited. After data cleaning, which will be described later, the final dataset included 141 female and 120 male participants. The age of the participants ranged from 18-21 to resemble the ages of the validation study of the MAYSI-2, which were 12-17 (Grisso & Barnum, 2006)². On average, the female participants' age was 18.85 ($SD = .77$) and the male participants' age was 19.28 ($SD = .96$). The majority of the participants reported to have been born in the United States (87.9% of women and 82.5% of

² During data collection, data from five 17-year-old participants were collected without parental consent. Data from these five participants were removed from the data set.

men) while the remaining participants reported to have been born in Mexico (12.1% of women and 17.5% of men). Also, the majority of the participants reported that they learned Spanish first (86.5% of women and 89.2% of men) while the remaining participants reported to have learned English first (13.5% of women and 10.8% of men). When participants were asked which was their overall stronger language, English or Spanish, majority of the participants reported that English was their stronger language (61.7% of women and 56.4% of men) and the rest of the participants reported that Spanish was their overall stronger language (38.3% of women and 43.6% of men).

Procedures

Participants were recruited from the undergraduate psychology pool through UTEP's Sona System, where they were able to sign up for both parts of the study. Two different sessions were required to complete the instruments as some of the instruments had to be completed in English and Spanish with the languages being counterbalanced. The second session occurred one week after the first session. All study materials were completed in person with a researcher. Because study materials were not linked to participants' names, all data remained confidential and private via code numbers generated by the participants. The code numbers were used to link the study materials of the two study sessions. The code numbers were developed based on the following information in that specific order: first letter of the mother's name, first letter of the father's name, first letter of participant's middle name ("x" if no middle initial), number representing birth month, number of older siblings, and the last two numbers of student's UTEP ID number (Kearney, Hopkins, Mauss, & Weisheit, 1984). There was no repeated code number generated by two or more participants. Due to the sensitivity of some of the study materials that ask about mental health symptoms, during the informed consent process, participants were

informed about the free counseling services offered by the University Counseling Center at UTEP. Participants received course credit for participating in the study.

In the first session, after obtaining informed consent from the participants, the participants first answered a brief demographic questionnaire followed by a language dominance self-report. The demographic questionnaire is shown in Appendix A. The participants answered questions on paper and pencil about their Spanish and English reading ability. The language dominance self-report subjectively determined the participant's dominant language in the context of reading. This was followed by an administration of the Passage Comprehension subtest of the WMLS-R in English and Spanish. The WMLS-R objectively determines the participant's dominant language. Both languages of the WMLS-R were administered by the researcher during the first session. Participants then completed one version of the MAYSI-2 (English or Spanish). Language versions of the MAYSI-2 were counterbalanced and completed one week apart. Next, the PANAS and the PHQ-15, which are paper and pencil measures, were completed in one of the language versions by the participants to evaluate emotion and somatic symptoms, respectively. Languages of the PANAS and the PHQ-15 were counterbalanced and completed one week apart. Lastly, an additional paper and pencil measure, the ARSMA-II was completed which provided an acculturation level for the participant. The first session lasted less than an hour.

In the second session, participants were asked if they had received counseling services since the first session. This was done in order to determine that the effects found between the two sessions was not due to treatment. Only one participant from the female sample said yes to this question. During the second session, participants completed the second language version of the MAYSI-2, the PANAS, and the PHQ-15. For the second session, all instruments took less than 30 minutes to complete.

Measures

Language dominance self-report. Participants completed a language questionnaire that assessed their Spanish and English reading comprehension. The language dominance self-report can be found on Appendix B. One of the items evaluates reading on a 7-point Likert scale, “*a strong advantage for English*” to “*a strong advantage for Spanish*.” Another item evaluates their English and Spanish reading separately on a 10-point Likert scale ranging from “*not literate*” to “*very literate*.”

Woodcock-Munoz Language Survey-Revised: Passage Comprehension subtest. The Passage Comprehension subtest of the WMLS-R is a standardized language assessment designed to measure reading and how well an individual understands reading in English and Spanish (Woodcock et al., 2005). It is composed of 33 items ranging in complexity. First, individuals are shown a series of illustrations which they have to match the illustration to the corresponding drawing, following that they have to match the phrase with the correct illustration, then the individual reads a passage in which they have a series of fill in the blanks. Internal consistency reliabilities by age were obtained for the Passage Comprehension subtests which were found to be good among 12-17-years-olds ($r_{11} = .78-.83$) as well among 18-20-year-olds ($r_{11} = .82-.84$). In the present sample, the English version had a Cronbach’s alpha of .60 for women and men, while the Spanish version had an alpha of .75 for women and .79 for men

MAYSI-2. The MAYSI-2, developed by Grisso and Barnum (2006), is a popular screening tool designed to flag mental health symptoms and indicate if further evaluation is needed in juvenile justice settings. This tool was created to screen juvenile offenders from the ages of 12-17, but only requires a 5th grade reading level. Completion time is around 15 minutes and scoring takes about 3 minutes. It contains 52 yes-no questions which make up the seven

different scales: Alcohol/ Drug use, Angry-Irritable, Depressed-Anxious, Somatic Complaints, Suicide Ideation, Thought Disturbance (used only for males), and Traumatic Experiences. Most of the scales have a good range of internal consistency ($\alpha = .61-.86$), although Traumatic Experiences scale is lower ($\alpha = .51$). Psychometric properties of the Spanish MAYSI-2 were not located through a review of scholarly databases or on the MAYSI-2 website. Internal consistency for the English and Spanish version of the MAYSI-2 scales for the present sample is on Table 4 for the female participants and on Table 8 for the male participants. All questions are based on a certain time frame, which is “in the past few months.” An example of an item found in the MAYSI-2 is, “Have nervous or worried feelings kept you from doing things you want to do?” Rather than having one overall score, each scale of the MAYSI-2 yields its own score. Each of the scales, except for Traumatic Experiences, is scored based on two cut-off points which are Caution and Warning. The scale of Traumatic Experience does not have established cut-off points, therefore is only used to provide information about traumatic events. Caution range indicates those juvenile offenders who could possibly score clinically significant if further evaluated with an assessment. A juvenile offender scoring in the Caution cut-off on a scale indicates that the juvenile offender may be experiencing some problems pertaining to that scale. The Warning range indicates juvenile offenders that have scored on the top ten percent among juvenile offenders in justice settings. These juvenile offenders are those that are in need of immediate attention as they present those with the most mental health need. The MAYSI-2 is not included in the appendix because it is copyrighted.

Positive and Negative Affect Schedule (PANAS). The PANAS was developed to evaluate negative and positive affect (Watson, Clark, & Tellegen, 1988). It consists of 10 positive (PA) and 10 negative valence (NA) words. Affective words such as “proud, strong,

distressed, and irritable” are rated on a 5-point Likert scale ranging from “1 = *very slightly or not at all* to 5 = *extremely*.” Different time instructions are allowed to be used depending on the time frame that needs to be evaluated as the PANAS allows to use instructions related to “moment, today, past few days, week, past few weeks, year, and general.” To be consistent and close to the time frame which the MAYSI-2 uses, the time frame of “past few weeks” was used for this study. Scoring of the PANAS is done through adding the scores received on each of the 10 negative valence words to obtain a total score which can range from 10-50, in which the higher the score, the higher the negative affect. The same scoring procedure is done with the positive valence words. Cronbach’s alphas across time frames ranges from .84-.90, in which “past few weeks” has an alpha of .87 for both negative and positive valence words. In the present sample, the positive scale had a Cronbach’s alpha of .86 for women and men, while the negative scale had an alpha of .86 for women and .81 for men. The PANAS can be found in Appendix C.

A Spanish version of the PANAS was also created, the Spanish PANAS (Joiner, Sandin, Chorot, Lostao, & Marquina, 1997). An item from PA and an item from NA were found to not load on PA or NA which were dropped when calculating internal consistency ($\alpha = .78$). With “*hostil*” (hostile) dropped from NA and “*orgullosa/a*” (proud) dropped from PA, alphas were calculated to be .75 and .78, respectively. In the present sample, the positive scale had a Cronbach’s alpha of .81 for women and .85 for men, while the negative scale had an alpha of .88 for women and .82 for men. The Spanish PANAS can be found in Appendix D.

Patient Health Questionnaire (PHQ-15). The PHQ-15 is a 15-item self-report that was developed to assess severity of somatic symptoms which also allows to assess for somatization (Kroenke, Spitzer, & Williams, 2002). The PHQ-15 includes somatic items ranked on a 3-point scale ranging from “*not bothered at all (0)*” to “*bothered a lot (2)*.” All the items of the PHQ-

15 are based on the time criterion of “the past 4 weeks.” Some of the items included in the PHQ-15 ask about the following symptoms: shortness of breath, chest pain, and headaches. The score of the PHQ-15 is in a range from 0-30, with higher scores representing higher levels of somatization. With a Cronbach’s alpha of .80, the PHQ-15 shows good internal reliability.

A Spanish version of the PHQ-15 was developed by Montalban, Vives, and Garcia-Garcia (2010). It was found to have adequate validity as well as adequate internal consistency. The internal consistency of the Spanish translation of the PHQ-15 was found to have a Cronbach alpha of .78 (Montalban et al., 2010). In the present sample, the English version had a Cronbach’s alpha of .79 for women and .75 for men, while the Spanish version had an alpha of .77 for women and .70 for men. The English and Spanish PHQ-15 measures can be found in Appendix E and F, respectively.

The Acculturation Rating Scale for Mexican Americans (ARSMA-II). The ARSMA-II is an instrument in both English and Spanish that was created to evaluate acculturation in Mexican Americans (Cuellar, Arnold, & Maldonado, 1995). The ARSMA-II can be found in Appendix G. A characteristic of ARSMA-II is that it can identify individuals who are highly bicultural. The Anglo Orientation Subscale (AOS), which consists of 13 items, evaluates acculturation to the American culture. To obtain the AOS score, the scores on the 13 items are averaged. The Mexican Orientation Subscale (MOS), which consists of 17 items, evaluates Mexican orientation. To obtain the MOS score, the 17 items are summed and averaged. To obtain an acculturation score the mean of MOS is subtracted from the mean of AOS. Items in the AOS are scored on a 5-point Likert scale from “*not at all*” to “*extremely often or almost always*.” An example of an item found AOS and MOS respectively are as follows: “I like to identify myself as an American,” “I like to identify myself as Mexican American.” Good

reliability has been found in the ARSMA-II with an alpha of .83 for AOS and .88 for MOS. In the present sample, AOS had a Cronbach's alpha of .74 for women and .84 for men, while MOS had an alpha of .84 for women and .87 for men.

Chapter 4: Results

As described earlier, the four aims in this study were to examine: (1) the equivalence between the Spanish translation of the MAYSI-2 to its English version, (2) differences in depression and emotion elicited by English and Spanish measures, (3) the relationship between acculturation and somatic symptoms, (4) if participants are able to accurately self-report their language proficiency. The analyses used to address these aims, as well as additional exploratory analyses, are described below.

The data were examined using SPSS-22 and Mplus5. These statistical software packages were used to carry out tests such as confirmatory factor analyses (CFA), analysis of variance (ANOVA), *t*-tests, and Pearson product-moment correlations. Separate analyses were conducted for female and male participants as some of the measures used in the study are scored differently for each gender.

Preparation of Data

Before the main analyses were conducted, preliminary analyses were conducted to check for missing data. First, data were eliminated from participants who did not complete the back portion of the MAYSI-2 as this would mean that data would be missing for 28 items. One man and one woman were eliminated for this reason. Next, data were eliminated from participants who did not meet eligibility requirements such being bilingual or being between the ages of 18-21. Bilingual proficiency was determined based on the Relative Proficiency Index (RPI) which is indicative of the percent of success rate that an individual has relative to what others similar in his age group would perform with 90% proficiency (Woodcock et al., 2005). Participants who had an RPI less than a five on the English or Spanish WMLS-R Passage Comprehension test were eliminated as this indicated that they were not at least slightly proficient in both languages.

Here, 11 women and 12 men were eliminated after this step. Next, data in which two or fewer items were missing from the scales were handled using multiple imputation. Five scales were imputed for the female sample analysis and four scales were imputed for the male sample analysis because one item was missing from each of these scales.

Aim One: English and Spanish MAYSI-2 Equivalence

To address the first aim, which was to assess if the Spanish version of the MAYSI-2 is equivalent to the English version, a CFA as suggested by Ægisdóttir, Gerstein, and Çinarbaş (2008) was conducted using Mplus5 to examine construct equivalence. The CFA was computed on tetrachoric correlations as the MAYSI-2 consists of binary items. Tetrachoric correlations allow binary items to reflect underlying continuous variables. Mean and variance-adjusted weighted least-squares estimator (WLSMV) was used to conduct the CFA of the two languages of the MAYSI-2 as data were treated as categorical due to the MAYSI-2 having binary items. Model fit of the English and Spanish versions were assessed by examining chi-square (χ^2), the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the Tucker–Lewis Index (TLI), and the weighted root mean square residual (WRMR). The cutoff of the fit indices used in this present study are based on recommendations by Yu (2002) for binary items, though he cautioned about over-rejection when using these cutoff points with a sample of less than 250.

Two separate CFAs were conducted, one for the female participants and one for male participants. The CFAs were done separately because the number of MAYSI-2 scales used for each gender are different. When the CFAs were conducted, several warning messages were obtained in the output. These warning messages, according to Muthen (2012), suggest that a tetrachoric correlation of one is estimated for several item pairs. Although these warning

messages are not necessarily problematic, Muthen (2012) advised that when this happens, the two correlated items should be made into one item or be removed from the data. Because this study sought to examine the equivalency of the two language versions according to the scales derived by Grisso and Barnum (2006), no items were merged or removed.

Female participants. Based on the goodness-of-fit indices shown in Table 1, the English version of the MAYSI-2 had slightly better fit indices than the Spanish version with the female participants. Although the English version of the MAYSI-2 was closer to reaching the cutoff values of χ^2 , CFI, RMSEA, TLI, and WRMR than the Spanish version, neither the English version nor the Spanish version showed a good model fit based on the cutoff values suggested by Yu (2002). These fit indices may suggest that the English version of the MAYSI-2 is slightly better than the Spanish version at correctly measuring symptoms intended by the six MAYSI-2 scales in female university students. These results did not support the hypotheses of the first aim as it was hypothesized that both versions of the MAYSI-2 would have adequate fit.

Table 1

Goodness-of-Fit Indices for Female Participants Based on the MAYSI-2 Scales Derived by Grisso and Barnum (2006) for English and Spanish Versions.

Fit Index	English	Spanish	Values needed ^a
χ^2	75.97	86.00	$p \geq .05$
CFI	.94	.90	$\geq .96$
RMSEA	.06	.08	$\leq .05$
TLI	.94	.90	$\geq .95$
WRMR	1.04	1.15	≤ 1.0

Note. χ^2 = chi square goodness of fit statistic; CFI = Comparative Fit Index; RMSEA = Root Mean Square of Approximation; TLI = Tucker-Lewis Index; WRMR = Weighted Root Mean Square Residual.

^a Model fit indices demonstrating a good model fit according to Yu (2002).

Because the fit indices that indicated that the MAYSI-2 scales were not a good fit of the data could have been due to the limited sample size, a principal components analysis (PCA) was

conducted to examine the factor structure of the MAYSI-2 within the present sample. A PCA and varimax rotation with Kaiser normalization was performed on each language of the MAYSI-2 just as Grisso and Barnum (2006) performed to derive the MAYSI-2 scales. Tables 2 and 3 show the loadings of the six factors derived for the female participants for the English and Spanish versions of the MAYSI-2, respectively. For the most part, items from the English and Spanish versions of the MAYSI-2 scales of Alcohol/ Drug Use, Depressed-Anxious, Somatic Complaints, Suicide Ideation, and Traumatic Experiences all load on to their respective factors, although few of these scale items load onto different factors as well. Items of the Alcohol/ Drug Use and Suicide Ideation factor all loaded only onto their corresponding factor in the English version of the MAYSI-2, and for the Spanish version of the MAYSI-2 the same was true for the Alcohol Drug Use, Somatic Complaints, and Traumatic Experiences factor. Some of the items of the Angry-Irritable scale were observed to be loading on the Depressed-Anxious factor more than on its corresponding factor for both of the language versions. Although the Angry-Irritable items appeared to load more onto the Depressed-Anxious factor, both languages showed this same pattern in their factor loadings, thus showing some evidence of equivalence between the two languages.

Table 2

English MAYSI-2 Factor Loadings for Female Participants.

Item	AD	AI	DA	SC	SI	TE
10	.59	.10	.06	.17	.14	.16
19	.35	.13	.19	-.13	-.10	-.09
23	.71	-.06	-.07	.09	-.09	.10
24	.53	.07	.08	-.07	-.19	-.16
33	.72	-.02	-.04	.07	.25	.06
37	.40	.05	-.01	-.01	.22	.10
40	.57	-.05	.22	.08	.16	.05
45	.74	-.09	-.05	.07	.07	.09
2	.05	.17	<u>.62*</u>	.11	-.03	.07

6	-.02	.09	<u>.64*</u>	.05	.00	.05
7	.17	.43	.25	.11	.03	-.20
8	.15	.40	.09	.35	.07	.01
13	-.03	.00	<u>.73*</u>	.02	.08	.23
35	.04	.34	<u>.58*</u>	-.12	.23	.00
39	.02	-.15	<u>.63*</u>	.21	.11	.08
42	-.03	.32	<u>.38*</u>	-.05	-.14	.21
44	.35	.15	<u>.42*</u>	.11	.02	-.25
3	-.03	.04	.39	.40	.29	.03
14	-.13	.02	.03	.04	.22	<u>.25*</u>
17	.07	-.10	.34	.10	<u>.56*</u>	.19
21	-.16	.16	.40	.27	.21	.04
34	.04	-.02	.54	.25	.20	.02
35	.04	.34	.58	-.12	.23	.00
41	.06	-.13	.17	<u>.39*</u>	.20	.28
47	.12	.26	.25	-.14	.32	-.08
51	.20	-.06	.18	.20	-.01	<u>.65*</u>
27	.19	-.01	.03	.70	.06	-.07
28	.18	.16	.22	.73	-.10	.07
29	.03	.15	.07	.61	.14	.21
30	-.05	-.02	.08	.72	.01	-.02
31	-.09	.27	.04	.44	-.10	.18
43	-.02	-.03	.17	.34	.08	<u>.35*</u>
11	.07	.05	.08	.11	.85	-.10
16	.13	.07	.16	.08	.82	.04
18	.13	.26	.11	-.01	.66	.14
22	.05	.25	.06	.00	.73	.05
47	.12	.26	.25	-.14	.32	-.08
48	.09	.05	.00	.11	-.01	.71
49	-.03	.11	.14	.09	.04	.56
50	.14	.07	-.02	-.09	.07	.70
51	.20	-.06	.18	.20	-.01	.65
52	-.18	<u>.34*</u>	-.02	.00	.06	.16

Note. Boldface loadings signal loadings similar to Grisso and Barnum (2006) while underlined loadings with an asterisk are items that are loading to a different scale. AD = Alcohol/ Drug Use; AI = Angry-Irritable; DA = Depressed-Anxious; SC = Somatic Complaints; SI = Suicide Ideation; TE = Traumatic Experiences.

Table 3

Spanish MAYSI-2 Factor Loadings for Female Participants.

Item	AD	AI	DA	SC	SI	TE
10	.49	-.06	.13	.34	-.04	-.02

19	.55	.11	.02	-.03	-.03	-.20
23	.64	-.07	-.02	.04	.02	.00
24	.50	.02	.10	.01	.16	-.28
33	.82	.01	.00	.04	.10	.08
37	.33	.03	-.22	-.03	-.04	.34
40	.66	.10	-.03	-.15	.04	.22
45	.72	-.06	.06	.16	.04	.02
2	.18	.24	<u>.61*</u>	.02	.13	-.09
6	.15	.24	<u>.55*</u>	-.04	-.15	-.13
7	.09	.46	.17	.02	.17	-.11
8	.01	.20	.04	.10	.26	.39
13	.00	.21	<u>.74*</u>	.11	-.04	.08
35	.12	.34	<u>.63*</u>	.01	-.01	-.06
39	-.05	.05	<u>.75*</u>	.06	.12	-.05
42	-.04	.39	<u>.38*</u>	.04	.03	-.02
44	.35	.40	-.01	.10	.21	-.02
3	-.09	-.09	.31	.30	.13	.29
14	.15	.15	.11	.29	.13	<u>.28*</u>
17	.08	.04	.46	.18	.42	.16
21	-.14	.11	.28	.06	.06	.22
34	-.04	.07	.46	.11	.13	.12
35	.12	.34	.63	.01	-.01	-.06
41	.00	.05	.36	.04	.02	.33
47	.14	.40	.21	.12	.37	-.02
51	.09	.27	.23	.12	.08	<u>.65*</u>
27	-.03	.10	.08	.62	.02	-.08
28	.14	.13	.05	.59	-.08	.00
29	-.02	.03	.06	.45	.17	.26
30	-.24	-.03	.11	.60	.11	-.25
31	.09	.05	.04	.52	-.01	.11
43	.12	.02	.21	.30	.07	.09
11	.02	.06	.13	-.05	.84	.08
16	.11	.09	.22	.03	.82	.04
18	.06	.29	.07	.12	.82	.03
22	.02	.25	.04	.11	.81	.08
47	.14	<u>.40*</u>	.21	.12	.37	-.02
48	-.13	.00	.14	.07	.22	.64
49	-.11	-.09	.15	-.03	-.14	.36
50	.03	.02	-.01	-.01	-.02	.52
51	.09	.27	.23	.12	.08	.65
52	-.13	.28	.07	-.21	.10	.29

Note. Boldface loadings signal loadings similar to Grisso and Barnum (2006) while underlined loadings with an asterisk are items that are loading to a different scale. AD = Alcohol/ Drug

Use; AI = Angry-Irritable; DA = Depressed-Anxious; SC = Somatic Complaints; SI = Suicide Ideation; TE = Traumatic Experiences.

To further examine the equivalence between the English and Spanish versions of the MAYSI-2, the internal consistency as measured by Cronbach's alpha was examined to determine if items within each MAYSI-2 scale measured the same construct within the present sample. Also, correlations were conducted between the English and Spanish scales of the MAYSI-2 to determine how related the scores were between the two language versions. These results are shown in Table 4. Appendix H also shows the intercorrelations of the English version (Table 13) and Spanish version (Table 14) of the MAYSI-2 scales. Each of the scales in the English version were significantly and strongly related to its respective Spanish scale version. The English and Spanish versions of the scales all had large effect sizes ranging from .59-.87 for all scales. Alphas were similar in magnitude to their respective language version and indicated good internal consistency for all the scales in both languages. The biggest difference between alphas was found in the Somatic Complaints scale, in which it was found that the Spanish version of this scale had the lowest internal consistency from all the scales in each of the languages. The large effect sizes as shown through high correlations between the English and respective Spanish scales as well as the similarity of the alphas between each language demonstrated that the English and Spanish versions of the MAYSI-2 show some evidence of equivalence.

Table 4

Descriptive Statistics, Internal Consistency, and Correlations of the MAYSI-2 Scales for Female Participants.

MAYSI-2 Scales and Language	<i>M</i>	<i>SD</i>	<i>α</i>	<i>r</i>
AD				.83*
English	0.77	1.39	.77	
Spanish	0.68	1.31	.74	

AI				.72*
English	3.26	2.34	.75	
Spanish	2.82	2.32	.75	
DA				.71*
English	2.43	1.97	.67	
Spanish	2.58	2.05	.68	
SC				.59*
English	3.94	2.25	.74	
Spanish	4.30	1.86	.57	
SI				.87*
English	0.53	1.15	.81	
Spanish	0.49	1.17	.85	
TE				.76*
English	1.17	1.27	.63	
Spanish	0.82	1.15	.64	

Note. AD = Alcohol/ Drug Use; AI = Angry-Irritable; DA = Depressed-Anxious; SC = Somatic Complaints; SI = Suicide Ideation; TE = Traumatic Experiences.

* $p < .01$.

Male participants. For the male participants, the goodness-of-fit indices of the English and Spanish versions of the MAYSI-2, shown in Table 5, showed that the two language versions may be similar as fit indices were close to the values of the opposite language. However, none of the fit indices reached the suggested cutoff values suggested by Yu (2002) which suggest that neither the English version nor the Spanish version showed a good model fit based on the cutoff values suggested by Yu (2002). The hypothesis of this aim was not supported for the male participants.

Table 5

Goodness-of-Fit Indices for Male Participants Based on the MAYSI-2 Scales Derived by Grisso and Barnum (2006) for English and Spanish Versions.

Fit Index	English	Spanish	Values needed ^a
χ^2	36.58	41.56	$p \geq .05$
CFI	.87	.85	$\geq .96$
RMSEA	.11	.13	$\leq .05$
TLI	.87	.86	$\geq .95$

WRMR 1.14 1.19 ≤ 1.0

Note. χ^2 = chi square goodness of fit statistic; CFI = Comparative Fit Index; RMSEA = Root Mean Square of Approximation; TLI = Tucker-Lewis Index; WRMR = Weighted Root Mean Square Residual.

^a Model fit indices demonstrating a good model fit according to Yu (2002).

For the male participants, the factor structure derived by PCA of the English and Spanish versions of the MAYSI-2 had items whose loadings would load more onto a different factor than to their corresponding factor. The Somatic Complaints and Suicidal Ideation scale were the only scales whose items loaded only onto their corresponding factor in both language versions.

Although a scale could be distinguished for the Alcohol Drug Use, Angry Irritable, and Depressed-Anxious scale, several items from these scales loaded more onto different factors.

For the English version of the MAYSI-2, there were two undefined factors as no distinguishable pattern was made by the factor loadings of the items. The items of the Traumatic Experiences and Thought Disturbance scales were items that did not have a distinguishable factor. For the Spanish version of the MAYSI-2, only one scale was undefined. Items of the Thought Disturbance scale did not have a distinguishable factor as no pattern could be seen from these items. Table 6 and 7 show the factor loadings of the English and Spanish versions of the MAYSI-2, respectively.

Table 6

English MAYSI-2 Factor Loadings for Male Participants.

Items	AD	AI	DA	SC	SI	<i>Undefined</i>	<i>Undefined</i>
10	.65	-.04	-.05	.26	-.09	-.13	-.03
19	.63	.26	.01	-.26	.01	.07	.07
23	.66	.01	.03	.18	.22	-.11	.18
24	.58	.43	-.08	-.04	-.20	-.06	-.01
33	.40	.11	.10	.10	.07	.14	<u>.50*</u>
37	-.03	-.13	.15	.02	-.03	.02	<u>.67*</u>
40	.23	-.12	-.12	.02	.03	.25	<u>.61*</u>
45	.79	-.06	.03	.03	-.02	.01	.22

2	.11	.68	.23	-.05	.04	.12	-.06
6	.05	.63	.21	-.03	.08	.20	-.06
7	-.06	.26	.23	<u>.30*</u>	.04	-.01	-.05
8	-.05	.19	.12	<u>.53*</u>	-.20	-.16	.10
13	-.08	.54	.30	.19	.28	-.11	.04
35	-.10	.62	.11	.07	.32	.01	.05
39	-.03	.33	<u>.40*</u>	.29	.23	.05	.05
42	.04	.60	-.09	.18	-.08	.27	.03
44	.07	.44	.06	.01	.43	-.03	.06
3	.10	<u>.38*</u>	.20	.21	.21	.07	.20
14	-.14	.18	.04	.13	.02	<u>.63*</u>	.11
17	.14	-.03	.52	-.02	.28	.25	-.01
21	.03	-.04	.19	<u>.37*</u>	.28	.16	.34
34	-.12	.09	.40	-.16	.27	.11	.12
35	-.10	<u>.62*</u>	.11	.07	.32	.01	.05
41	.13	-.16	.19	-.18	.29	<u>.39*</u>	-.05
47	.01	-.03	-.04	.01	<u>.51*</u>	-.04	-.14
51	-.18	.15	-.17	<u>.34*</u>	.20	.34	.23
27	.13	.14	-.15	.67	.06	.08	-.14
28	.07	-.05	.06	.56	.01	.13	-.28
29	.12	-.01	.15	.55	.17	.30	.02
30	.17	.20	-.13	.37	.17	.22	-.08
31	-.01	.20	.15	.48	.02	.11	.07
43	-.04	.12	.10	.51	.14	.36	-.09
11	-.01	.13	.26	.10	.70	.18	.10
16	-.13	.19	.24	.13	.42	.34	.08
18	.05	.18	-.04	.05	.72	.00	.08
22	.03	.09	.14	.05	.73	.03	.08
47	.01	-.03	-.04	.01	.51	-.04	-.14
46	-.07	.25	<u>.52*</u>	.02	-.13	-.10	.26
48	.09	-.01	-.05	<u>.49*</u>	.04	-.16	.34
49	-.18	.15	-.17	.34	.20	<u>.34*</u>	.23
51	-.13	.16	-.03	.23	<u>.26*</u>	-.07	.12
52	-.02	.07	-.02	.21	.09	<u>.42*</u>	.14
9	.01	.14	.06	-.06	-.05	<u>.60*</u>	-.02
20	-.16	.13	<u>.45*</u>	.07	-.13	.00	.31
25	.01	-.12	.27	<u>.40*</u>	-.06	.42	.10
26	.14	.22	-.04	-.08	.06	-.03	<u>.68*</u>
32	<u>.65*</u>	-.04	-.05	.26	-.09	-.13	-.03

Note. Boldface loadings signal loadings similar to Grisso and Barnum (2006) while underlined loadings with an asterisk are items that are loading to a different scale.

AD = Alcohol/ Drug Use; AI = Angry-Irritable; DA = Depressed-Anxious; SC = Somatic Complaints; SI = Suicide Ideation.

Table 7

Spanish MAYSI-2 Factor Loadings for Male Participants.

Items	AD	AI	DA	SC	SI	TE	<i>Undefined</i>
10	.09	<u>.26*</u>	.03	.11	-.01	.17	-.61
19	.39	<u>.48*</u>	-.16	-.11	.03	-.03	-.07
23	.20	-.13	-.02	-.02	-.06	<u>.22*</u>	-.61
24	-.04	-.11	<u>.14*</u>	-.01	-.02	.11	-.50
33	.69	.06	-.03	-.04	.03	.28	.00
37	.36	-.06	.17	.06	-.11	-.13	-.17
40	.48	.07	-.02	.04	-.04	-.11	-.14
45	.47	.23	.08	.18	-.03	-.03	-.52
2	.11	.59	.30	.06	.13	.10	-.03
6	.04	.68	.04	.10	.04	.06	.04
7	-.10	.48	<u>.51*</u>	.02	.11	.11	-.19
8	-.12	.31	.06	.28	.12	<u>.36*</u>	.01
13	.14	.44	.40	.11	.18	.18	-.01
35	-.01	.43	.37	.03	<u>.45*</u>	.15	.10
39	-.21	.27	<u>.46*</u>	.03	.09	.33	.09
42	-.09	.64	.05	.18	.11	.07	.02
44	.01	.28	.26	-.11	.19	.09	.17
3	-.17	.13	.27	<u>.52*</u>	-.03	.20	.20
14	-.13	.03	.56	.15	.28	.10	-.04
17	.23	-.09	.24	.07	.36	<u>.37*</u>	.15
21	-.12	.12	-.09	<u>.34*</u>	.36	.49	-.09
34	.25	.13	.22	.01	.08	.13	<u>.47*</u>
35	-.01	.43	.37	.03	<u>.45*</u>	.15	.10
41	.16	.30	.18	-.03	-.01	.18	<u>.42*</u>
47	.01	.07	.19	.04	<u>.51*</u>	.05	.00
51	-.12	.08	.36	.23	.25	.35	.07
27	.21	.17	-.18	.58	.04	.14	.02
28	.01	.10	.11	.73	.01	-.10	-.16
29	.07	-.18	.21	.50	.22	.30	-.29
30	.10	.11	-.24	.57	.02	-.15	.09
31	.05	.05	.25	.39	.05	-.05	-.21
43	.27	-.13	.24	.29	.16	.24	.10
11	-.04	.06	-.01	.05	.78	.02	.02
16	.06	.10	.23	.07	.79	.15	.03
18	.10	.17	.09	-.03	.89	-.05	.03
22	.17	.07	-.02	.00	.89	-.05	.04
47	.01	.07	.19	.04	.51	.05	.00
46	.46	.12	<u>.57*</u>	.10	.14	.18	.22

48	.09	.26	-.07	.21	-.09	.48	-.18
49	-.12	.08	<u>.36*</u>	.23	.25	.35	.07
51	.00	.07	.01	-.18	.02	.55	-.15
52	<u>.42*</u>	.07	-.02	.09	-.02	.21	.14
9	.11	.02	<u>.60*</u>	-.04	-.12	-.01	.03
20	<u>.47*</u>	.13	.17	.04	.27	-.08	.21
25	.11	.11	<u>.54*</u>	.31	.18	-.08	.02
26	<u>.61*</u>	-.01	-.06	.09	.17	.04	.10
32	.09	<u>.26*</u>	.03	.11	-.01	.17	-.61

Note. Boldface loadings signal loadings similar to Grisso and Barnum (2006) while underlined loadings with an asterisk are items that are loading to a different scale. AD = Alcohol/ Drug Use; AI = Angry-Irritable; DA = Depressed-Anxious; SC = Somatic Complaints; SI = Suicide Ideation; TE = Traumatic Experiences.

As with the female data, to further examine the equivalence between the two language versions of the MAYSI-2, the relationship of the scales between the two languages and Cronbach's alpha for all the scales at each language was examined. These results are shown in Table 8. Appendix H also shows the intercorrelations of the English version (Table 13) and Spanish version (Table 14) of the MAYSI-2 scales. The MAYSI-2 scales between the two language versions were strongly related as all had large effect sizes. The internal consistency for each of the MAYSI-2 scales all showed to be similar in magnitude between the two language versions, adding to the close relationship between the two languages. However, the internal consistency for the English Depressed-Anxious scale was low, as were the internal consistencies for the Thought Disturbance and Traumatic Experiences scale for both languages. Low alphas by the Thought Disturbance and Traumatic Experiences scale have also been reported among a juvenile offender sample (Ford et al., 2008). Despite this, the large correlations seen across the scales between the two language versions as well as the similar internal consistencies of the scales, demonstrates that the English and Spanish versions of the MAYSI-2 show some evidence of equivalence.

Table 8

Descriptive Statistics, Internal Consistency, and Correlations of the MAYSI-2 Scales for Male Participants.

MAYSI-2 Scales and Language	<i>M</i>	<i>SD</i>	<i>α</i>	<i>r</i>
AD				.80*
English	0.86	1.43	.73	
Spanish	0.76	1.22	.63	
AI				.69*
English	2.34	2.22	.75	
Spanish	2.10	2.26	.79	
DA				.66*
English	1.77	1.63	.59	
Spanish	1.75	1.78	.67	
SC				.54*
English	3.03	2.16	.71	
Spanish	3.34	1.93	.61	
SI				.86*
English	0.33	0.88	.76	
Spanish	0.36	1.03	.86	
TE				.57*
English	1.24	1.17	.47	
Spanish	0.98	1.13	.51	
TD				.55*
English	0.58	0.84	.38	
Spanish	0.53	0.84	.46	

Note. AD = Alcohol/ Drug Use; AI = Angry-Irritable; DA = Depressed-Anxious; SC = Somatic Complaints; SI = Suicide Ideation; TE = Traumatic Experiences; TD = Thought Disturbance.

* $p < .01$.

Aim Two: Difference in Symptoms and Emotion for Two Languages

The second aim was to examine if language affects how Mexican Americans might score on the MAYSI-2 as well as the PANAS. Specifically, the second aim examined whether Spanish elicits more symptoms of depression (measured by the MAYSI-2 Depressed-Anxious scale) as compared to the English version. Also, this aim was to examine if Spanish elicits more emotion (measured by the PANAS) than English. This aim was examined with a repeated measures ANOVA. The independent variable consisted of the language the MAYSI-2 was completed in,

English and Spanish, while the dependent variable was the score obtained on the Depressed-Anxious scale of the MAYSI-2. For the PANAS, the independent variable was also language, while the dependent variable consisted of the scores obtained by the participants. Because the PANAS can give three different scores –a total score, a positive score and a negative affect score –separate analysis were conducted for each. Table 9 and 10 show the mean differences in the scores of the MAYSI-2 Depressed-Anxious scale and PANAS between the two languages as well as between the two times for females and males, respectively.

Table 9

Means for Time 1 & Time 2, English & Spanish, for Female Participants.

Measures	Time		Language	
	Time 1 Mean (SD)	Time 2 Mean (SD)	English Mean (SD)	Spanish Mean (SD)
DA	2.73 (1.95)	2.27 (2.05)	2.43 (1.97)	2.58 (2.05)
PANAS total	52.43 (9.18)	51.08 (8.84)	53.73 (9.11)	49.78 (8.52)
PANAS positive	31.42 (6.62)	30.60 (6.77)	32.36 (6.95)	29.66 (6.17)
PANAS negative	21.01 (7.35)	20.49 (7.76)	21.38 (7.36)	20.12 (7.71)

Note. DA: Depressed-Anxious; SC: Somatic Complaints Scale; PHQ-15: Patient Health Questionnaire-15; PANAS: Positive Affect and Negative Affect Scale.

Table 10

Means for Time 1 & Time 2, English & Spanish for Male Participants.

Measures	Time		Language	
	Time 1 Mean (SD)	Time 2 Mean (SD)	English Mean (SD)	Spanish Mean (SD)
DA	1.92 (1.73)	1.60 (1.67)	1.77 (1.63)	1.75 (1.78)
PANAS total	54.24 (8.35)	52.22 (8.50)	55.03 (8.60)	51.53 (7.97)
PANAS positive	34.60 (6.54)	34.22 (6.84)	35.15 (6.81)	33.67 (6.50)
PANAS negative	19.64 (6.27)	18.07 (5.73)	19.88 (6.26)	17.86 (5.70)

Note. DA: Depressed-Anxious; SC: Somatic Complaints Scale; PHQ-15: Patient Health Questionnaire-15; PANAS: Positive Affect and Negative Affect Scale.

Female participants. For the female participants, no significant differences were found in the number of symptoms reported in the English version of the MAYSI-2 as compared to the Spanish version of the MAYSI-2, $F(1, 139) = 1.46, p = .228, \eta_p^2 = .01$. Female participants

scored similarly on the English and Spanish versions of the MAYSI-2 Depressed-Anxious scale indicating that neither language appeared to have an effect on the amount of depression symptoms it elicited. As no differences were found between the languages, these results did not support the hypothesis of the second aim as it was predicted that Spanish would yield a higher number of symptoms. Although no significant differences were found for language, a significant interaction was observed, $F(1, 139) = 14.12, p < .05, \eta_p^2 = .09$. The results of the interaction indicate that the effect of time was stronger for Spanish than it was for English as shown by the estimated marginal means in Figure 1.

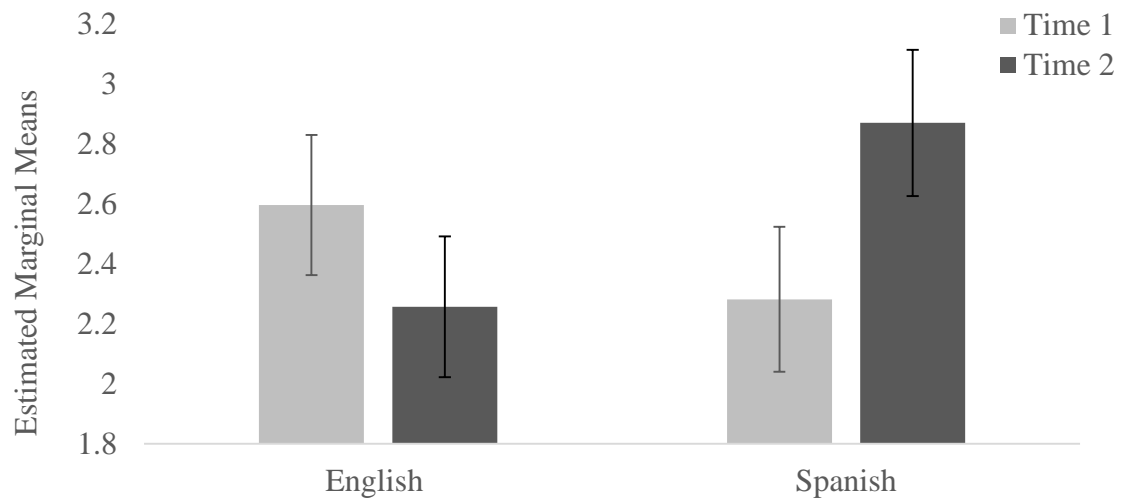


Figure 1. MAYSI-2 Depressed-Anxious scale estimated marginal means for English and Spanish at Time 1 and Time 2 for female participants.

Although no significant differences were found in the number of depression symptoms reported by the female participants between the English and Spanish versions of the MAYSI-2, significant differences were found in the amount of emotion elicited by the English and Spanish versions of the PANAS. Significant differences were found for the total score, $F(1, 139) = 39.12, p < .05, \eta_p^2 = .22$, the positive score, $F(1, 139) = 40.07, p < .05, \eta_p^2 = .22$, as well as for the negative score, $F(1, 139) = 10.02, p < .05, \eta_p^2 = .07$. Participants rated their emotion as stronger

in the English version as compared to the Spanish version for the total score, positive score, and negative score (means and standard deviations are shown in Table 9). These results show that when it comes to emotion, being assessed in English elicits a higher intensity of positive and negative emotion. These results did not support the hypothesis that Spanish would elicit a higher range of emotion than English. No significant interactions were found between language and time for the PANAS positive score, $F(1, 139) = 3.86, p = .052, \eta_p^2 = .03$; or the negative score $F(1, 139) = 1.78, p = .184, \eta_p^2 = .01$; but there was a significant interaction for the total score $F(1, 139) = 14.12, p < .05, \eta_p^2 = .09$. This interaction shown on Figure 2 indicates that the effects of time were stronger for English than Spanish.

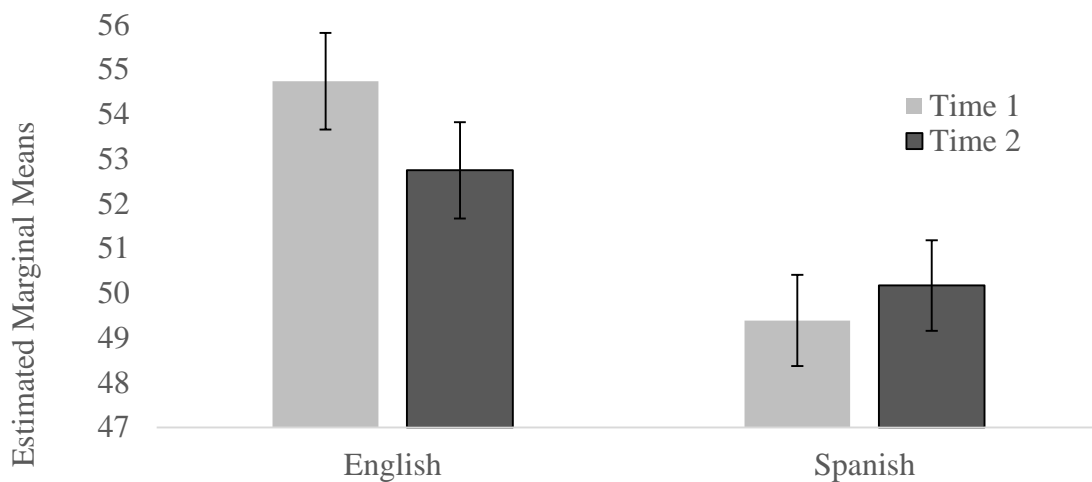


Figure 2. PANAS and Spanish PANAS total score estimated marginal means for Time 1 and Time 2 for female participants.

Male participants. Just as with the female participants, no significant differences were found in the number of symptoms reported in the English version of the MAYSI-2 as compared to the Spanish version of the MAYSI-2 in the male participants, $F(1, 118) = .04, p = .843, \eta_p^2 = .00$. Male participants endorsed about the same number of symptoms on the English and Spanish versions of the MAYSI-2 Depressed-Anxious scale which indicates that neither language had an

effect on the amount of depression symptoms it elicits. These results do not support the hypothesis of the second aim. Figure 3 shows the interaction that was found between language and time, $F(1, 118) = 6.24, p < .05, \eta_p^2 = .05$. This interaction indicates that the effect of time was stronger for English than it as in Spanish.

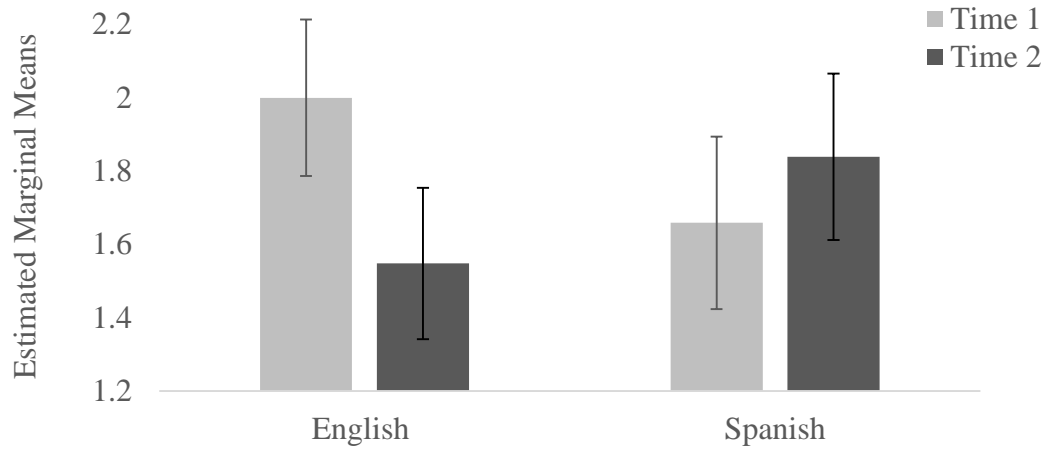


Figure 3. MAYSI-2 Depressed-Anxious scale estimated marginal means for English and Spanish at Time 1 and Time 2 for male participants.

Similar to the female participants, male participants also showed significant differences when they took the English version of the PANAS as compared to the Spanish version of the PANAS. Significant differences were found for the total score, $F(1, 118) = 33.63, p < .05, \eta_p^2 = .22$, the positive score, $F(1, 118) = 12.10, p < .05, \eta_p^2 = .09$, as well as for the negative score, $F(1, 118) = 21.67, p < .05, \eta_p^2 = .16$. Male participants rated their emotion as stronger in the English version than in the Spanish version for the total score, positive score, and negative score (means and standard deviations are shown in Table 10). Similarly to female participants, male participants show that English elicits a higher intensity of emotion as compared to Spanish. The hypothesis that said that Spanish elicits more emotion than English was not supported with the male sample either. An interaction was found between language and time for the PANAS total

score, $F(1, 118) = 6.24, p < .05, \eta_p^2 = .05$; as well as the PANAS negative score, $F(1, 118) = 12.34, p < .05, \eta_p^2 = .10$; but not for the PANAS positive score, $F(1, 118) = .62, p = .431, \eta_p^2 = .01$. The interaction for the PANAS total score indicated that the effect of time was stronger for English than for Spanish (shown on Figure 4), while the PANAS negative score indicated that the effect of time was stronger for Spanish than for English (shown on Figure 5).

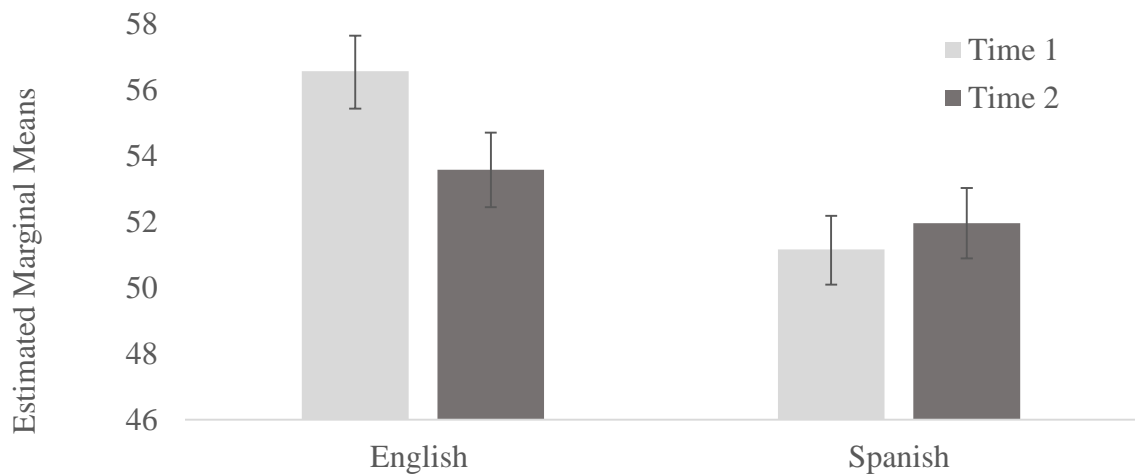


Figure 4. PANAS total score estimated marginal means for English and Spanish at Time 1 and Time 2 for male participants.

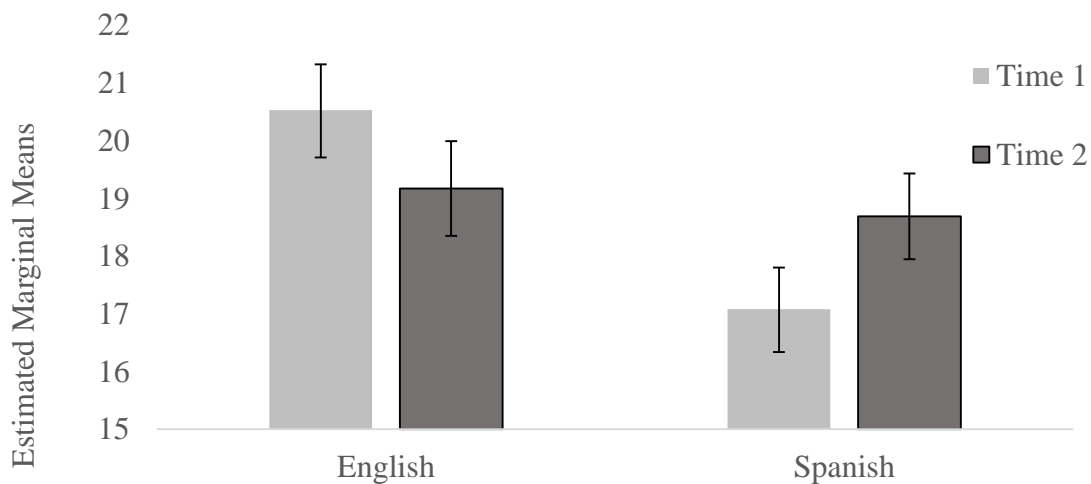


Figure 5. PANAS negative score estimated marginal means for English and Spanish at Time 1 and Time 2 for male participants.

Aim Three: Relationship between Acculturation and Somatic Symptoms

The third aim was to examine if acculturation level affected the number of somatic symptoms participants reported. A Pearson product-moment correlation was used to evaluate if differences in acculturation as measured by the ARSMA-II exist among Mexican and Mexican Americans based on their somatization scores obtained on the PHQ-15 and the Somatic Complaints scale of the MAYSI-2. Separate correlations were conducted for the English and Spanish versions of the Somatic Complaints scale of the MAYSI-2 as well as for the PHQ-15.

Female participants. The results showed that the Acculturation Score obtained by the ARSMA-II was significantly positively correlated to the scores of the Somatic Complaints scale of the MAYSI-2 for English and Spanish (respectively; $r = .28, p < .01$; $r = .24, p < .01$). This indicates that the more acculturated a female participant reported to be, as defined by the Acculturation Score developed by the ARSMA-II in where the score of the Anglo Orientation Scale is subtracted from the score of the Mexican Orientation Scale, the more somatic complaint symptoms she reported. The results obtained by the MAYSI-2 Somatic Complaints scale did not support the hypothesis that less acculturated women would report more somatic symptoms. The relationship between acculturation and the PHQ-15 did not support this hypothesis either as there was no relationship between the two. Acculturation was not found to be correlated with either the English version of the PHQ-15 or the Spanish version of the PHQ-15 (respectively; $r = .16, p = .058$; $r = .11, p = .186$).

Male participants. For the male participants the hypothesis was not supported either as there was no relationship between acculturation and somatic symptoms. No significant association was found between the ARSMA-II and the scores obtained on the English nor the Spanish version of the MAYSI-2 Somatic Complaints scale (respectively: $r = .10, p = .281$; $r = -$

.03, $p = .761$). Also, no significant association was found between the ARSMA-II and the English nor the Spanish version of the PHQ-15 scores (respectively; $r = -.04$, $p = .679$; $r = -.02$, $p = .793$).

Aim Four: Determining Language Dominance

The fourth aim examined whether language dominance can be assessed solely with the use of a language dominance self-report. This aim was addressed with a Pearson product-moment correlation. The participants' English and Spanish language self-report rating of their literacy skills was compared to the RPI score given by the WMLS-R Passage Comprehension subtest of the respective language.

Female participants. For the female participants the English and Spanish rating of their literacy skills was significantly related to the RPI score obtained on the respective language of the WMLS-R Passage Comprehension subtest (respectively $r = .48$, $p < .01$; $r = .45$, $p < .01$). The better the female participants rated their English and Spanish literacy skills, the better they performed on the respective language of the WMLS-R Passage Comprehension subtest. This is indicative that female participants are able to accurately self-report their English and Spanish literacy skills. These findings support the hypothesis that a language self-report would be an accurate measure at assessing language dominance for literacy.

Male participants. Similar to the female participants, male participants were also found to accurately self-report their English and Spanish literacy skills, which supports the hypothesis that language self-reports are accurate measures to assess language dominance. The male participants' rating of their literacy skills in English and Spanish was significantly related to the RPI score obtained on the respective language of the WMLS-R Passage Comprehension subtest (respectively; $r = .44$, $p < .01$; $r = .56$, $p < .01$).

Differences between Time 1 and Time 2

Previous research that examined the equivalence between the English and Spanish versions of the BDI-II, that administered the two language versions one week apart, did not find significant differences between languages, but found a decrease in symptoms from the first administration to the second administration (Wiebe & Penley, 2005). To determine if a similar effect was observed in the present study, additional analysis were conducted to determine if there were any differences in the scores obtained on the MAYSI-2, PANAS, and PHQ-15 by the participants during Time 1 and Time 2 regardless of the language the measures were completed in. To determine if Time 1 and Time 2 scores differed from each other, paired *t*-tests were used. Time differences were analyzed for the Depressed-Anxious and Somatic Complaints scale of the MAYSI-2, the PHQ-15, the total score of the PANAS, the positive score of the PANAS, and the negative score of the PANAS.

Female participants. Significant differences between Time 1 and Time 2 were observed between the Depressed-Anxious and Somatic Complaints scale of the MAYSI-2 as well as the PHQ-15. Female participants reported fewer symptoms of depression and somatic symptoms during Time 2 as oppose to during Time 1. No significant differences were observed for the total score of the PANAS, the positive score of the PANAS, and the negative score of the PANAS. Female participants appeared to have the same emotion during Time 1 and Time 2. These results can be seen in Table 11.

Table 11

Mean Differences Between Time 1 and Time 2 for Female Participants.

Measures	Time 1	Time 2	<i>t</i> -test	Effect Size (<i>d</i>)	Sig
	Mean (SD)	Mean (SD)			
DA	2.73 (1.95)	2.27 (2.05)	3.74	.32	.000
SC	4.40 (1.93)	3.84 (2.18)	3.58	.30	.000

PHQ-15	8.84 (4.39)	7.90 (4.68)	3.02	.25	.000
PANAS total	52.43 (9.18)	51.08 (8.84)	1.90	.16	.059
PANAS positive	31.42 (6.62)	30.60 (6.77)	1.70	.14	.092
PANAS negative	21.01 (7.35)	20.49 (7.76)	1.27	.11	.206

Note. DA: Depressed-Anxious; SC: Somatic Complaints Scale; PHQ-15: Patient Health Questionnaire-15; PANAS: Positive Affect and Negative Affect Scale.

Male participants. Significant differences between Time 1 and Time 2 were also observed for the male participants on most of the scales. For all of the scales except for the PANAS positive score, male participants scored significantly lower during Time 2 as opposed to Time 1. Male participants reported fewer depression, somatic symptoms, and negative emotion during Time 2 than during Time 1. It appears that for male participants, their positive emotion remains constant after one week. These results can be seen in Table 12.

Table 12

Mean Differences Between Time 1 and Time 2 for Male Participants.

Measures	Time 1	Time 2	<i>t</i> -test	Effect Size (<i>d</i>)	Sig
	Mean (SD)	Mean (SD)			
DA	1.92 (1.73)	1.60 (1.67)	2.52	.23	.013
SC	3.52 (1.97)	2.86 (2.06)	3.88	.35	.000
PHQ-15	6.08 (3.69)	4.94 (3.47)	5.54	.51	.000
PANAS total	54.24 (8.35)	52.22 (8.50)	2.92	.27	.004
PANAS positive	34.60 (6.54)	34.22 (6.84)	0.87	.08	.388
PANAS negative	19.64 (6.27)	18.07 (5.73)	3.43	.31	.001

Note. DA: Depressed-Anxious; SC: Somatic Complaints Scale; PHQ-15: Patient Health Questionnaire-15; PANAS: Positive Affect and Negative Affect Scale.

Chapter 5: Discussion

The most popular mental health self-report screen in juvenile justice settings is the Massachusetts Youth Screening Instrument (MAYSI-2; Grisso & Barnum, 2006). The MAYSI-2 quickly identifies whether juvenile offenders need further evaluation, need immediate suicide risk attention, or pose a risk to themselves or others (Grisso et al., 2012). The MAYSI-2 flags these needs through its seven scales: Depressed-Anxious, Angry-Irritable, Alcohol/ Drug Use, Somatic Complaints, Suicide Ideation, Traumatic Experiences, and Thought Disturbance (the last is only interpretable for males; Grisso & Barnum, 2006). As no published research exists on the Spanish version of the MAYSI-2, this was the first study to examine its equivalence to the English version of the MAYSI-2 through exploratory analyses. It is important to examine the equivalence between the two language versions of the MAYSI-2 to correctly determine whether a juvenile offender taking the Spanish version of the MAYSI-2 requires further assessment or emergency intervention. Previous research has found that Spanish translations of mental health measures are similar to their English versions (Perczeck et al., 2000; Wiebe & Penley, 2005), although Spanish measures may elicit more symptoms of depression (Perczeck et al. 2000).

The present study examined four aims: (1) the equivalence between the Spanish translation of the MAYSI-2 to its English version, (2) differences in depression and emotion elicited by English and Spanish measures, (3) the relationship between acculturation and somatic symptoms, (4) if participants accurately self-report their language proficiency. The current study found that among 18- to 21-year-old university students, the English and Spanish versions of the MAYSI-2 show some evidence of equivalence. First, when measuring symptoms of depression, no differences were found between the English and Spanish versions. On the other hand, English appeared to elicit a higher intensity of emotion than Spanish. Second, no consensus was found between the relationship between number of somatic symptoms and acculturation. Third,

a language self-report of literacy skills of English and Spanish was found to be a fast and useful tool at examining language proficiency between the two languages. Lastly, exploratory analyses revealed that participants reported more symptoms at Time 1 than Time 2 in some of the measures. These findings will be discussed in further detail next, as well as the limitations and implications of the present study.

English and Spanish MAYSI-2 Equivalence

Based on the results obtained by Wiebe and Penley (2005) as well as by Perczeck et al. (2000) when comparing the English and Spanish versions of mental health measures, the English and Spanish versions of the MAYSI-2 were predicted to be structurally similar through participants scoring similar on both language versions. For women and men, the fit indices indicated that the scales from the English and Spanish versions of the MAYSI-2 were not a good fit for the data, especially for the Spanish version. The fit indices of the English version were slightly better than the Spanish version for men and women. Because there was not much difference in magnitude between the fit indices of the two language versions as well as to how the PCA of both languages of the MAYSI-2 followed the same pattern, this may indicate that both language versions are examining the same construct. However, the fit indices did not meet the criteria set by Yu (2002) for binary data.

Nonetheless, the MAYSI-2 was developed for a different sample than the one collected in this present study. The difference in the sample used versus the sample the MAYSI-2 is intended to be used with may be the cause of the poor model fit. This present study used a sample that closely resembled the age of juveniles as it has been previously found that a factor structure derived from a college undergraduate sample resembled the factor structure derived by adolescents in a trauma questionnaire (Paivo & Cramer, 2004). The present study consisted of

university students between the ages of 18-21, but the MAYSI-2 is intended to be used with juvenile offenders between the ages of 12-17 (Grisso & Barnum, 2006). Juvenile offenders may present mental health symptoms differently than young adults. For example, according to The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; American Psychiatric Association, 2013), adolescents present symptom of depression differently than adults. Instead of an adolescent presenting depression by being in a depressed mood, adolescents present depression by being in an irritable mood. Also, juvenile offenders endorse more symptoms of the MAYSI-2 as juvenile offenders have a high prevalence of mental health symptoms (Fazel et al., 2008). Because the MAYSI-2 is intended to be used with juvenile offenders, the lack of model fit may have been the result of the differences between the way juvenile offenders report mental health symptoms as well as the high prevalence of mental health symptoms they present.

Another possible cause of the resulting fit indices is the sample size used in this study may have been too small. Although combined data of 261 female and male participants were collected, separate analysis had to be performed due to the difference in the MAYSI-2 scales for the two genders. Yu (2002) suggested that the cut off criteria for χ^2 , RMSEA, CFI, TLI, and WRMR are best suited for samples greater than 250 as he mentions that small samples affect fit indices. Furthermore, Acook (2009) suggests that a minimum sample size of 200 should be collected when analyzing categorical data. Perhaps if larger samples were collected for both genders, the model fit could have improved.

Although the fit indices showed that the English and Spanish versions of the MAYSI-2 were not a good fit of the data, results obtained from the factor loadings, alphas and correlations showed some evidence of equivalence between the English and Spanish versions of the MAYSI-2. The alphas obtained in this present study resembled the range of what was found by Grisso

and Barnum (2006) while developing the English version of the MAYSI-2 (.61-.86) indicating good internal consistency in both languages. The exceptions to this were in the Spanish version of the Somatic Complaints scale within the female sample, the English version of Depressed-Anxious scale within the male sample, as well as in the Traumatic Experiences and the Thought Disturbance scale for both languages within the male sample. Despite this, the alphas for each scale closely resembled the alphas obtained on their respective language. Both language versions of each scale showed that the languages were significantly related to each other, demonstrating that the two language versions of the MAYSI-2 are similar.

Furthermore, the results of the factor structure derived from the PCA were similar to the factors derived in the MAYSI-2 manual with the exception of a few differences (Grisso, 2006). These differences were similar to what Ford et al. (2008) found among a juvenile offender sample. Ford et al. (2008) found that the Traumatic Experiences and Thought Disturbance scales had low internal consistencies as well as that the Depressed-Anxious had no derived factor. These three scales were also problematic in the male sample of the present study as these scales had low internal consistencies.

Although there were a few differences in the factor structure derived by the PCA from what the manual suggests, the factor loadings of the English and Spanish versions of the MAYSI-2 showed similar patterns throughout the scales in both language versions. With the female participants, items from the Angry-Irritable scale loaded on the Depressed-Anxious scale, but this pattern was observed for both language versions. In the male participants, neither language derived a factor for the Thought Disturbance scale. The Traumatic Experiences scale did not have a derived factor for the English version, but for the Spanish version this same scale had items loading onto a different scale. The similarities in the patterns observed among the

factor structures of the English and Spanish versions of the MAYSI-2 may indicate some evidence of equivalence between the two language versions.

Even though the English and Spanish versions of the MAYSI-2 did not have a good model fit, the two language versions may be similar to each other based on the similar factor structure given by the PCA of each language version of the MAYSI-2. The sample size as well as the difference of the sample gathered versus the sample this study intended to target could have resulted in the lack of model fit on both language versions. Also, even though most of the fit indices did not reach the cut off values, the English and Spanish fit indices values were close in magnitude. This might mean that for both languages the scales developed by Grisso and Barnum (2006) are measuring the same construct. Moreover, the correlations between the two language versions were significantly related and the magnitude of the internal consistencies between the two languages resembled one another. It appears that the English and Spanish versions of the Spanish version of the MAYSI-2 could be similar to each other based on the similarities in model fit indices, factor loading patterns, alphas, and correlations between the two. Altogether, this shows some evidence of equivalence between the two language versions.

Difference in Symptoms and Emotion for Two Languages

No differences were found between the number of depression symptoms participants reported in English or Spanish, but differences in the intensity of emotion participants reported in English was higher than in Spanish. The hypothesis of the second aim was based on the results obtained by Perczeck et al. (2000), who found more symptoms of depression as well as emotion in the Spanish version than in the English version of Profile of Mood States, which assesses depression as well as different moods such as happiness and anger. This hypothesis was not supported in the present study, as there were no significant differences in the number of

depression symptoms participants reported between English and Spanish. The hypothesis was not supported either for the intensity of emotion participants reported in Spanish, as it appears that more emotion is elicited in English.

While it was hypothesized that this study would reflect the results obtained by Perczeck et al. (2000), the present study more closely resembled the results obtained by Wiebe and Penley (2005). Wiebe and Penley (2005) did not find any differences in the number of depression symptoms between the two language versions of the Beck Depression Inventory-II, just as this study found with the Depressed-Anxious scale of the MAYSI-2. Although the sample of Perczeck et al. (2000) as well as the sample of Wiebe and Penley (2005) was composed by Latinos, the area where each of these studies took place consists of different Latino cultures. The sample by Perczeck et al. (2000) was from Miami in where the Latino culture is dominated by Puerto Ricans and Cubans, while the Latino sample of Wiebe and Penley (2005) took place in El Paso, which is dominated by Mexican Americans (Brown & Lopez, 2013). The present study could have obtained the same results as those in Wiebe and Penley (2005) because the sample for both studies were recruited from the same university. The vast similarities in characteristics between the sample in this study and the one used in Wiebe and Penely (2005) could be a contributing factor in how no differences were found in the number of depression symptoms the samples reported in the two languages. It may be that symptoms of depression are interpreted the same for both languages in the El Paso region as it is very close to the border of Mexico, which as a result Spanish is widely spoken in the city (Ryan, 2013). Residents of El Paso might know English and Spanish at about the same level, thus participants made no distinction in the way they interpreted depression symptoms in either language.

Another possible cause of why no differences were found between the two languages for symptoms of depression in the MAYSI-2 could be because the Spanish version of the MAYSI-2 is well adapted to be used across different Latino cultures. Heffer et al. (2009) advised that a translated instrument should be understood by everyone who speaks Spanish or different regional versions of the same language should be created. It may be the case that the Spanish version of the MAYSI-2 was well adapted to be used for different Latino cultures, while the measures used in Perczeck et al. (2000) may not have been well adapted for Puerto Ricans and Cubans. As no differences were found in the number of symptoms reported for the two language versions of the Depressed-Anxious scale of the MAYSI-2, this may relate to the similarities of the model fit, alphas, and correlations for the different MAYSI-2 scales. Perhaps no differences were found due to equivalence of the two language versions of the MAYSI-2.

Whereas no differences were found in the number of depression symptoms participants reported between English and Spanish, differences were found in the intensity of emotion participants reported between the two languages. It appeared that the English version of the PANAS tended to produce more emotion than the Spanish version of the PANAS. The English and Spanish versions of the MAYSI-2 did not produce differences in the amount of depression symptoms individuals reported, but the PANAS did generate differences in the intensity of emotion produced by each language. It was hypothesized that the Spanish version of the PANAS would generate more emotion, but in this study the English version of the PANAS generated more emotion. When inspecting the content of the two language versions of the PANAS several assumptions were made on why the English version had higher scores. One of these was that while the English version of the PANAS only contains one word describing each of the 20 items ("*strong*"), five items of the Spanish version of the PANAS contained two words

describing one item (“*fuerte*,” “*enérgico*”). The addition of a second word describing the same item for the Spanish version of the PANAS could have led participants to rate those items as lower than the English version of the PANAS. Participants could have thought that they had to have felt both of the descriptions, but if one of those descriptions was not felt by the participant, then the Spanish item could have been rated as lower.

Other reasons of why the English version of the PANAS could have had higher scores than the Spanish version of the PANAS is because some of the items of the Spanish version appeared to have been a literal translation of the English version. Also, some of the Spanish translated items did not resemble the same meaning as the English items. For example, a Spanish item that did not resemble the intended meaning the English item had was “*miedoso*” which was the translated item for “*jittery*.” Jittery means to feel nervous or jumpy, but “*miedoso*” means to be scared of something or someone. Butcher et al. (1998) and Heffer et al. (2009) mention that a literal translation from English to Spanish might change the intended meaning. Not only can a literal translation change the intended meaning, but some words may also have multiple meanings, which may result in not measuring the specific construct that needs to be measured. For example, in the English version of the PANAS participants had to rate the positive emotion of “*proud*,” while in the Spanish version they had to rate the word “*orgulloso*.” The word “*orgulloso*” in Spanish has two meanings, one of them has a positive connotation and the other a negative connotation linked to it. The positive connotation is to feel proud of yourself or someone else, but the negative connotation is to be prideful. Participants may have rated this particular item as lower in the Spanish version because they could have thought the scale was asking how prideful they were instead of how proud they felt of themselves. Joiner et al. (1997) found that individuals who were administered the Spanish version of the PANAS do think of

“orgullosa” as the negative connotation when rating this item as it was found that the item minimally loaded to the positive scale of the Spanish version of the PANAS. An additional item not having the intended meaning in Spanish as it does in English is the translated item of *“ashamed”* to *“avergonzado.”* Although *“avergonzado”* is a correct translation of *“ashamed,”* *“avergonzado”* has two different meanings – one is to feel ashamed and the other is to feel embarrassed or shy.

The differences in scores between the two language versions of the PANAS could have been a result of the way the measure was translated, and not due to the idea that different languages elicit different emotions in bilingual individuals. There are no present studies that examine the equivalence of the Spanish version of the PANAS developed by Joiner et al. (1997) to the English version. However, based on the issues observed in the factor structure due to the items of *“orgullosa”* and *“hostil.”* perhaps a better Spanish version of the PANAS should be developed. Measures should be translated in a way that does not allow participants to interpret Spanish items differently due to a word having different meanings or adding extra words in the translated language as it occurred with the Spanish version of the PANAS. This will allow all of the items in the measures to be interpreted as they were intended to. Once measures are adequately translated it will allow to better assess if different languages elicit different intensities of emotion. The MAYSI-2 could have been a better translated measure than the PANAS which resulted in no differences in the number of depression symptoms participants reported as compared to the PANAS.

Relationship between Acculturation and Somatic Symptoms

The hypotheses about the relationship between acculturation and somatic symptoms was based on the findings by Angel and Guarnaccia (1989), specifically that individuals with lower

acculturation or those who were more oriented towards Mexican culture would endorse more somatic complaint symptoms than those who were highly acculturated towards Anglo culture. This present study did not find the same results; instead it was found that there was no relationship between acculturation and somatic symptoms. Based on the symptoms reported by both genders in the PHQ-15 for either language, there was no relationship between acculturation and the number of somatic symptoms the two genders reported. The same was found in the male sample with the MAYSI-2 Somatic Complaints scale in both languages, as there was no relationship between acculturation and somatic symptoms. The same was not found in the female sample when reporting somatic symptoms in the MAYSI-2 Somatic Complaints scale in both language versions. For female participants, it was found that the higher their Acculturation Score was, the more somatic symptoms they would report in both languages of the MAYSI-2 Somatic Complaints scale.

Whereas the sample by Angel and Guarnaccia (1989) consisted of participants who were between the ages of 20-74, the present study recruited participants who were between the ages of 18-21. The difference in the age range used in the study may have been a factor in the results obtained. A study by Kaplan and Marks (1990) found results similar to the results obtained in the present study while examining the relationship between acculturation and psychological distress among Mexican Americans. The study by Kaplan and Marks (1990) was divided into different age groups, young (20-30), middle aged (31-50), and older adults (51-74). In older adults, it was found that the less acculturated they reported to be, the more distressed they were; but the opposite occurred for younger adults, in where the more acculturated they reported to be, the more psychological distress they reported. This resembles what happened with the female participants in the present study as they reported more somatic symptoms in the Somatic

Complaints scale of the MAYSI-2. The trend of a negative relationship between acculturation and somatic symptoms may be seen in older Latinos, but not so much in younger Latinos.

Kaplan and Marks (1990) suggested that this happens because younger Latinos assimilate whereas older people integrate into the culture. When individuals integrate into another culture it allows them to retain their ethnic culture, but when an individual assimilates as it occurs with young Latinos, they abandon their ethnic culture. When a young Latino abandons their ethnic culture, they become alienated and isolated from their ethnic group, which in turn may cause distress (Kaplan & Marks, 1990).

The relationship between acculturation and the Somatic Complaints MAYSI-2 scale may not have been observed in the male participants because women tend to score higher on this particular scale of the MAYSI-2 than men (Archer, 2010; Grisso & Barnum, 2006; Nordness, Grummert, Banks, Schindler, Moss, Gallagher, Epstein, 2002). The lower amount of symptoms male participants report on this scale decreased the likelihood of any significant relationship being observed.

Another reason why the results as Angel and Guarnaccia (1989) were not found in this study may be because the sample used in this study may be balanced in how they culturally identify. That is, the sample did not identify more with the American culture nor more with Mexican culture, but they identified as bicultural. Based on the ARSMA-II acculturation levels derived by Cuellar et al. (1995), the present sample identified as balanced bicultural. An individual who is balanced bicultural adopts aspects such as behavior, language, and values from both cultures (Schwartz & Unger, 2010). Also, when comparing the Acculturation Scores of the present study to other studies examining the ARSMA-II, the scores of the present sample did not vary as much as scores in the other studies (Cuellar et al., 1995; Lessenger, 1997). Due to this

sample identifying as bicultural and their scores not having as much variation, a relationship between acculturation and somatic symptoms was not found.

The PHQ-15 probably did not produce any significant relationship as the Somatic Complaints MAYSI-2 scale did for women because both of these measures assess symptoms differently. While for the MAYSI-2 participants may answer “yes” to an item regardless of the intensity to which they felt it as it is a “yes/no” questionnaire, the PHQ-15 considers two different levels of intensity. Participants may either answer as “*bothered a little*” which will add one point or “*bothered a lot*” which will add two points to the total score. Participants could have probably answered as “*bothered a little*” instead of “*bothered a lot*”, which in turn probably decreased the probabilities of a significant relationship being observed for the PHQ-15.

The relationship between acculturation and the number of somatic symptoms a Latino individual presents may be impacted by the age of that individual (Kaplan & Marks, 1990). Another factor that may attenuate the relationship between acculturation and somatic symptoms is the gender of the Latino individual as women report more somatic symptoms. A third factor that might contribute whether or not there is a relationship between acculturation and somatic symptoms is whether the measure is a Likert-scale or a binary measure. Due to these factors, a Latino juvenile offender who takes the MAYSI-2 will probably not endorse as many somatic symptoms due to his age as well as that the MAYSI-2 is a binary measure. This implies that a juvenile offender will not report depression as somatic symptoms, but will likely report it as depression.

Determining Language Dominance

Participants’ language proficiency self-report in English and Spanish was related to their performance on a language proficiency standardized measure, which indicates that participants

are able to correctly determine their level of proficiency in each of the two languages. The language dominance self-report of literacy skills was strongly related to the participants' RPI score of the WMLS-R Passage Comprehension Test. This supported the hypothesis based on the results by Gasquoin et al. (2007) in which it was hypothesized that the self-report would be related to the score obtained on the WMLS-R. Specifically, participants were able to accurately report their literacy skills in English and Spanish. It is important to assess language proficiency for literacy skills in a bilingual individual who is completing a mental health self-report because mental health self-reports require that an individual be able to read and comprehend what they are reading to correctly answer the items. Knowing which language a bilingual individual comprehends best, will give certainty that the individual will accurately be able to complete the mental health self-report. This finding contributes to the usefulness of relying solely on language proficiency self-reports in fast-paced settings such as juvenile justice settings to determine juveniles' language proficiency.

Differences between Time 1 and Time 2

Because past research has found that individuals report different amount of symptoms in mental health measures as a result of repeated testing (Longwell & Truax, 2005; Sharpe & Gilbert, 1998, Wiebe & Penley, 2005), this present study sought to explore if this effect would also occur in its sample. Differences between Time 1 and Time 2 were observed in this study for several of the measures, but not for others. For the Depressed-Anxious and Somatic Complaints MAYSI-2 scales as well as the PHQ-15, female and male participants demonstrated a significant decrease in symptoms from Time 1 to Time 2. Wiebe and Penley (2005) also found this same trend in their results as well as other studies looking at the effects of repeated testing among mental health measures (Longwell & Truax, 2005; Sharpe & Gilbert, 1998). The regression to

the mean phenomenon might be a reason as to why there was a significant decrease in scores from Time 1 to Time 2 (Barnett, van der Pols, & Dobson, 2004). There are several other hypothesis about why individuals' scores may decrease on the second administration as it is not yet known an exact reason for this effect (Longwell & Truax, 2005). The first hypothesis is the social desirability hypothesis in which individuals report less symptoms on the second administration to appear more favorable. The second hypothesis is the exposure hypothesis which may happen when individuals rate their second administration lower than the first due to the exposure of the first administration. The third hypothesis which is the test anxiety hypothesis may occur because individuals are not sure of what is going to be happening in the testing sessions which may create anxiety. During the second administration they already know what they will be doing, thus their anxiety is decreased.

For the PANAS, differences in the change in time were observed between the female and male participants. For women, all of the three PANAS scores did not change significantly from Time 1 to Time 2, while for men this was only true for the positive scale of the PANAS. Results from studies in where the PANAS was used to evaluate if repeated testing would have an effect on the scores, Longwell and Truax (2005) as well as by Sharpe & Gilbert (1998) did not find significant differences between the two times for any of the scales of the PANAS. Sharpe and Gilbert (1998) mention that when a measure is evaluating a state there might be no change between the two times. To assess this, Sharpe and Gilbert (1998) looked for time differences between states of anxiety and traits of anxiety and only found a significant decrease from Time 1 to Time 2 for anxiety as a trait. For men, the PANAS total and negative scales did have a significant difference between the two times. This difference may be attributed to the test

anxiety hypothesis as there was a decrease from Time 1 to Time 2 for the negative scale which may also have also resulted in the change for the total score.

In the present study it appears that for women and men, a positive mood is stable across one week as the positive scale of the PANAS did not change significantly between the two times. When it comes to mental health symptoms such as depression and somatic symptoms, for both genders there is a decrease in symptoms which can possibly be attributed to the test anxiety hypothesis as participants do not know exactly what they will be doing during the testing session. The same appears to occur with men when evaluating their negative emotion, but not for women. For women, it appears that neither their negative or positive mood are altered by the test anxiety hypotheses.

Limitations

The first limitation of the current study was that the sample consisted of 18- to 21-year-old bilingual university students. Although 18- to 21-year-old participants were recruited to closely resemble the sample used in the validation study of the MAYSI-2 (Grisso & Barnum, 2006), these findings may not generalize to 12- to 17-year-old juvenile offenders which was the sample used in the validation study. Also, the MAYSI-2 was designed to be administered in juvenile justice settings, not at a university as this study did. Education is a major difference of the participants in this study compared to juvenile offenders. Juvenile offenders between the ages of 12-17 are either in middle school or high school, whereas the sample used in this present study are at a university level. The number of symptoms reported by the participants used in this study may be less than what would have been reported if juveniles would have been used. This is especially true as only one female participant reported to be receiving mental health counseling.

Another limitation of the current study is that it only included participants who were of Mexican descent. This will mean that the results obtained in this sample will not generalize to different Latino cultures. This might be especially true because the sample used was unique as it was from El Paso which is a city that it is very close to the Mexican border. Because the sample had to consist of young university students, the results obtained in this study will not generalize to other age groups.

Future Directions

As no published research exists on the Spanish version of the MAYSI-2, this study will direct future research of the Spanish version of the MAYSI-2. The present study was the first step into examining the equivalence of the English and Spanish MAYSI2 as this was an exploratory analysis of the equivalence of the two language versions. In order to better determine the equivalency of the Spanish version of the MAYSI-2 to the English version, future research will be needed to examine this within a juvenile offender sample. Larger samples of each gender should be recruited to better assess a CFA for each of the language versions of the MAYSI-2. Furthermore, this study examined the construct equivalence of the two language versions of the MAYSI-2 with a CFA. According to Ægisdóttir and colleagues (2008) it is the lowest level of equivalence to examine, therefore future research of the Spanish version of the MAYSI-2 should examine the equivalence to the English version through the use of more sophisticated analysis in order to also examine higher levels of equivalence (Ægisdóttir et al., 2008). Through the use of sophisticated analysis such as Item Response Theory and with an adequate sample size of juvenile offenders, future research may examine in further depth the equivalence of the English and Spanish version of the MAYSI-2 (Ægisdóttir et al., 2008).

To better aid in determining whether one language elicits more mental health symptoms or more emotion, the way a translation is worded should be revised. The way a measure is translated could be the determining factor as to why the two languages are different as it happened with the PANAS. The translated language version may be measuring something different than the original language version is measuring. This is especially true because the translated version could have multiple meanings based on one word as it occurred with the PANAS.

Future research is also needed to know if mental health symptoms is related in different ways to acculturation among different Latino age groups. Specific reasons as to why the relationship between acculturation and mental health symptoms is different among different age groups should be examined. Finally, future research should focus on more specific reasons as to why the second administration of a mental health measure has less reported symptoms than the first administration, especially if no treatment has been implemented.

Implications

The use of reliable mental health screens in juvenile justice settings is important as there is a high prevalence of mental health disorders among this population (Fazel et al., 2008). It is important to have reliable mental health screens that are effective and quick to administer as every adolescent who enters a juvenile justice system should be screened for mental health symptoms (Grisso, 2005). The most popular mental health screen used in juvenile justice settings is the MAYSI-2, however no research exists on its Spanish translation. It is important to have a reliable Spanish translations of the MAYSI-2 as Latinos are overrepresented in the justice system (Sickmund et al., 2011). Although among other mental health measures it has been found that Spanish translations are equivalent to its English version, studies warn about how one

language may elicit more mental health symptoms as well as emotion than the other language (Perczeck et al., 2000; Price & Cuellar, 1981). It is important to consider whether one language actually triggers more mental health symptoms and emotion than another language or whether this effect is due to the way a mental health measure was translated.

The findings of this study will provide staff in juvenile justice settings on how to better screen bilingual Mexican and Mexican Americans. It is not only necessary to have a Spanish translation of the MAYSI-2 available for juveniles, but it is also necessary to know which language a bilingual juvenile offender should have the MAYSI-2 administered in. For example, language self-reports of literacy will allow staff to identify within a few minutes which language version of the MAYSI-2 to administer. This procedure will help determine which language version the bilingual juvenile offender better understands to make sure that the juvenile offender will accurately complete the MAYSI-2. Also, knowing that the two language versions of the MAYSI-2 had similar results across the different analysis, staff at juvenile justice centers can know that administering either language version will produce similar results. For example, staff in juvenile justice settings can feel safe in knowing that similar results will be provided by both language versions as there was no difference in symptoms between the Depressed-Anxious scale of the MAYSI-2 between the Spanish and English version. Juvenile justice settings should also beware about repeated administration of the MAYSI-2 as this may cause a decrease in symptoms. Altogether, this will result in providing better referrals and assessments to bilingual juveniles, thus offering suitable treatments to them.

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Appendix A

Demographics and Background Questionnaire

Gender: Female / Male

Age: _____

Where were you born? Mexico United States Other: _____

What's your classification? Freshman Sophomore Junior Senior

Instructions. The following questions are about your family of origin, which is the family that you grew up with and may still live with.

1) What are the occupations of your parents?

(Specify these even if your parents are now retired, out of work, or deceased.)

Father's occupation _____

Mother's occupation _____

2) Number of siblings (brothers and sisters) *including yourself* _____

Where are you in the order of birth (i.e. oldest, youngest, third, etc.)? _____

3) Current living situation

___ At home with biological family

___ In the home of other relatives

___ In apartment or house with friends

___ In the apartment or house with your own family (significant other and/or children)

___ In apartment or house alone

___ Other: _____

Appendix B

Language Self-Report

Instructions: On this questionnaire, you will be asked several questions about your language background, your usage of languages, and your proficiency in each language. Some of the questions may seem similar but please read each one carefully to make sure that you answer what is being asked. Please ask the experimenter if any question is unclear to you.

1. Do you consider yourself to be bilingual in English and Spanish? ☐ Yes ☐ No
2. What language do you consider your stronger language overall? ☐ English ☐ Spanish
3. What language did you begin to learn first as a child? ☐ English ☐ Spanish
☐ Other _____
- 3a. At what age did you begin to learn English? _____
- 3b. At what age did you begin to learn Spanish? _____
- 3c. Do you sometimes mix English and Spanish? ☐ Yes ☐ No
If yes, at what age did you begin to mix them? _____
4. Where do you live now? ☐ El Paso ☐ Ciudad Juárez ☐ Other _____
- 4a. How long have you lived in Mexico or another Spanish-speaking country? _____ years
- 4b. How long have you lived in the U.S.? _____ years
How long have you lived in El Paso or another bilingual city? _____ years
How long have you lived in a primarily English-speaking city? _____ years
- 4c. What years of education were in English? (circle all years that apply.)
Grades: K 1 2 3 4 5 6 7 8 9 10 11 12
- 4d. What years of education were in bilingual? (circle all years that apply.)
Grades: K 1 2 3 4 5 6 7 8 9 10 11 12
- 4e. What years of education were in Spanish? (circle all years that apply.)
Grades: K 1 2 3 4 5 6 7 8 9 10 11 12

Relative Ratings A

Instructions: Please rate your relative proficiency in English and Spanish for each language skill indicated below. Only circle one number. As indicated below, ratings of 1, 2, and 3 indicate that you are more skilled in English than Spanish, ratings of 5, 6, and 7 indicate that you are more skilled in Spanish, and a rating of 4 indicated equal proficiency in the two languages.

	More Proficient in English			Equal Proficiency	More Proficient in Spanish		
	A strong advantage for English	A moderate advantage for English	A slight advantage for English	Equal skill in both languages	A slight advantage for Spanish	A moderate advantage for Spanish	A strong advantage for Spanish
Reading	1	2	3	4	5	6	7

Absolute Ratings Scale A

Please circle the number that best indicates your proficiency level on the following **English** language skill:

English reading

Not Literate										Very Literate
1	2	3	4	5	6	7	8	9	10	

Please circle the number that best indicates your proficiency level on the following **Spanish** language skill:

Spanish reading

Not Literate										Very Literate
1	2	3	4	5	6	7	8	9	10	

Relative Ratings B

Instructions: Please rate your relative proficiency in English and Spanish on the scales provided. Circle your response.

Reading Comprehension

- | | | |
|------------|---|---|
| More | { | (a) I read only English. |
| Proficient | | (b) I read English, but I do not read Spanish fluently. |
| In English | | (c) I read both languages fluently, but I read English much better. |
| | | (d) I read both languages fluently, but I read English a little better. |
| | | (e) I read English and Spanish with equal fluency. |
| More | { | (f) I read both languages fluently, but I read Spanish a little better. |
| Proficient | | (g) I read both languages fluently, but I read Spanish much better. |
| In Spanish | | (h) I read Spanish, but I do not read English fluently. |
| | | (i) I read only Spanish. |

Frequency of Usage

1. Over the past month, what percentage of your **reading** has been in

English?	_____
Spanish?	_____
Mixture?	_____

Appendix C

PANAS Questionnaire

This scale consists of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word. **Indicate to what extent you have felt like this in DURING THE PAST FEW WEEKS**

1	2	3	4	5
Very Slightly or Not at All	A Little	Moderately	Quite a Bit	Extremely

<p>_____ 1. Interested</p> <p>_____ 2. Distressed</p> <p>_____ 3. Excited</p> <p>_____ 4. Upset</p> <p>_____ 5. Strong</p> <p>_____ 6. Guilty</p> <p>_____ 7. Scared</p> <p>_____ 8. Hostile</p> <p>_____ 9. Enthusiastic</p> <p>_____ 10. Proud</p>	<p>_____ 11. Irritable</p> <p>_____ 12. Alert</p> <p>_____ 13. Ashamed</p> <p>_____ 14. Inspired</p> <p>_____ 15. Nervous</p> <p>_____ 16. Determined</p> <p>_____ 17. Attentive</p> <p>_____ 18. Jittery</p> <p>_____ 19. Active</p> <p>_____ 20. Afraid</p>
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Scoring Instructions:

Positive Affect Score: Add the scores on items 1, 3, 5, 9, 10, 12, 14, 16, 17, and 19. Scores can range from 10 – 50, with higher scores representing higher levels of positive affect. Mean Scores: Momentary < 29.7 (*SD* < 7.9); Weekly < 33.3 (*SD* < 7.2)

Negative Affect Score: Add the scores on items 2, 4, 6, 7, 8, 11, 13, 15, 18, and 20. Scores can range from 10 – 50, with lower scores representing lower levels of negative affect. Mean Score: Momentary < 14.8 (*SD* < 5.4); Weekly < 17.4 (*SD* < 6.2)

Appendix D

SPANAS Questionnaire

Esta escala consiste de una serie de palabras que describen diferentes sentimientos y emociones. Lee cada elemento y luego anota el número de la escala de abajo al lado de cada palabra. **Indica en qué medida te has sentido así DURANTE LAS ULTIMAS SEMANAS**

1	2	3	4	5
Muy poco o nada	Algo	Moderadamente	Bastante	Extremadamente

_____	1.	Interesado(a)	_____	11.	Irritable
_____	2.	Tenso(a); malestar	_____	12.	Alerta/despiert(a)
_____	3.	Estimulado(a)	_____	13.	Avergonzado(a)
_____	4.	Disgustado(a); molesto(a)	_____	14.	Inspirado(a)
_____	5.	Fuerte/ enérgico(a)	_____	15.	Nervioso(a)
_____	6.	Culpable	_____	16.	Decidido(a)
_____	7.	Asustado(a)	_____	17.	Atento(a)
_____	8.	Hostil	_____	18.	Miedoso(a)
_____	9.	Entusiasmado(a)	_____	19.	Activo(a)
_____	10.	Orgullosa(a)	_____	20.	Temeroso(a); Atemorizado(a)

Appendix E

English Patient Health Questionnaire-15

During the past 4 weeks, how much have you been bothered by any of the following problems?

	Not bothered at all (0)	Bothered a little (1)	Bothered a lot (2)
a. Stomach pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Back pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Pain in your arms, legs, or joints (knees, hips, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Menstrual cramps or other problems with your periods <i>WOMEN ONLY</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Headaches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Chest pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Dizziness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Fainting spells	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Feeling your heart pound or race	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Shortness of breath	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Pain or problems during sexual intercourse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Constipation, loose bowels, or diarrhea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Nausea, gas, or indigestion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Feeling tired or having low energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. Trouble sleeping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(For office coding: Total Score T_____ = _____ + _____)

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Appendix F

Spanish Patient Health Questionnaire-15

Durante las últimas 4 semanas, ¿cuánta molestia ha tenido por cualquiera de los siguientes problemas?

	Sin molestia (0)	Un poco de molestia (1)	Mucha molestia (2)
a. Dolor de estómago	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Dolor de espalda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Dolor en sus brazos, piernas o coyunturas (rodillas, caderas, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Calambres menstruales u otros problemas con sus períodos <i>PARA MUJERES SOLAMENTE</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Dolores de cabeza	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Dolores en el pecho	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Mareos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Episodios de desmayos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Ha sentido su corazón palpar o acelerarse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Corto(a) de respiración	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Dolor o problemas durante la penetración sexual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Estreñimiento, intestino suelto o diarrea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m. Náusea, gas o indigestión	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. Se ha sentido cansado(a) o con poca energía	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. Ha tenido dificultad para dormir	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(For office coding: Total Score T_____ = _____ + _____)

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Appendix G

English Acculturation Rating Scale for Mexican-Americans-II

SCALE 1

Circle a number between 1 – 5 next to each item that best applies.

		1	2	3	4	5
		Not at all	Very little or not very often	Moderately	Much or Very often	Extremely Often or Almost Always
1.	I speak Spanish	1	2	3	4	5
2.	I speak English	1	2	3	4	5
3.	I enjoy speaking Spanish	1	2	3	4	5
4.	I associate with Anglos	1	2	3	4	5
5.	I associate with Mexicans and/or Mexican Americans	1	2	3	4	5
6.	I enjoy listening to Spanish language music	1	2	3	4	5
7.	I enjoy listening to English language music	1	2	3	4	5
8.	I enjoy Spanish language TV	1	2	3	4	5
9.	I enjoy English language TV	1	2	3	4	5
10.	I enjoy English language movies	1	2	3	4	5
11.	I enjoy Spanish language movies	1	2	3	4	5
12.	I enjoy reading (e.g. books in Spanish)	1	2	3	4	5
13.	I enjoy reading (e.g. books in English)	1	2	3	4	5
14.	I write (e.g. letters in Spanish)	1	2	3	4	5
15.	I write (e.g. letters in English)	1	2	3	4	5

16.	My thinking is done in the English language	1	2	3	4	5
		Not at all	Very little or not very often	Moderately	Much or Very often	Extremely Of-ten or Al-most Always
17.	My thinking is done in the Spanish language	1	2	3	4	5
18.	My contact with Mexico has been	1	2	3	4	5
19.	My contact with the USA has been	1	2	3	4	5
20.	My father identifies or identified himself as 'Mexicano'	1	2	3	4	5
21.	My mother identifies or identified herself as 'Mexicana'	1	2	3	4	5
22.	My friends, while I was growing up, were of Mexican origin	1	2	3	4	5
23.	My friends, while I was growing up, were of Anglo origin	1	2	3	4	5
24.	My family cooks Mexican foods	1	2	3	4	5
25.	My friends now are of Anglo origin	1	2	3	4	5
26.	My friends now are of Mexican origin	1	2	3	4	5
27.	I like to identify myself as an Anglo American	1	2	3	4	5
28.	I like to identify myself as a Mexican American	1	2	3	4	5
29.	I like to identify myself as a Mexican	1	2	3	4	5
30	I like to identify myself as an American	1	2	3	4	5

Appendix H

MAYSI-2 Intercorrelations Tables

Table 13

English MAYSI-2 Scales Intercorrelations.

Scale	AD	AI	DA	SC	SI	TE	TD
AD		.19*	.19*	.17*	.22**	.18*	
AI	.12		.60**	.33**	.32**	.22**	
DA	.16	.53**		.41**	.49**	.43**	
SC	.15	.38**	.38**		.15	.27**	
SI	.08	.41**	.54**	.28**		.10	
TE	.16	.32**	.45*	.32**	.20*		
TD	.22*	.26**	.40**	.33**	.23*	.20*	

Note. AD = Alcohol/ Drug Use; AI = Angry-Irritable; DA = Depressed-Anxious; SC = Somatic Complaints; SI = Suicide Ideation; TE = Traumatic Experiences; TD = Thought Disturbance.

* $p < .05$.

** $p < .01$.

Women are above the diagonal, while men are below the diagonal.

Table 14

Spanish MAYSI-2 Scales Intercorrelations.

Scale	AD	AI	DA	SC	SI	TE	TD
AD		.162	.117	.130	.150	.000	
AI	.107		.663*	.274**	.376**	.217**	
DA	-.017	.619**		.380**	.456**	.504**	
SC	.227*	.261**	.349**		.209*	.121	
SI	.043	.365**	.503**	.177		.239**	
TE	.223*	.437**	.570**	.297**	.146		
TD	.251**	.415**	.459**	.307**	.381**	.263*	

Note. AD = Alcohol/ Drug Use; AI = Angry-Irritable; DA = Depressed-Anxious; SC = Somatic Complaints; SI = Suicide Ideation; TE = Traumatic Experiences; TD = Thought Disturbance.

* $p < .05$.

** $p < .01$.

Women are above the diagonal, while men are below the diagonal.

Vita

Yolanda Denise Ochoa was born in Cd. Juarez, Chihuahua, Mexico. She earned her Bachelor of Arts Degree in Psychology from the University of Texas at El Paso (UTEP) in 2012. That same year she was accepted into the Clinical Psychology Master's Program at UTEP in where she primarily worked under the supervision of Dr. Jennifer Eno Loudon. She has been the recipient of several scholarships including the M.S. & Meek Lane Doss Endowed Scholarship, John and Dixie Trollinger Scholarship, and Fabens 1966 Scholarship. Most recently, she was among one of the recipients who were awarded the Dodson Research Grant.

While pursuing her master's degree, Mrs. Ochoa worked for the Psychology Department at UTEP as a Teaching Assistant. In 2013, she worked as an intern at the Juvenile Probation Department where she administered mental health assessments to juveniles. Mrs. Ochoa also worked as an intern in 2014 at Family Services of El Paso where she provided clients with therapy. She received her Master's Degree in Psychology in 2016.

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This thesis was typed by Yolanda D. Ochoa.