THE RELIABILITY AND VALIDITY OF THE ADOLESCENT *NERVIOS* SCALE

by

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Abstract

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Nervios refers to an idiom of distress used by most Latin Americans both in their native countries as well as in the United States. It is identified by the DSM-IV-TR as a "culture bound disorder," or a disorder that is presented by peoples in particular geographic locations and/or cultural groups. *Nervios* comprises symptoms resembling a panic disorder or a mood disorder and psychotic, dissociative, and somatic symptoms are sometimes also included in the list of symptoms. Most of the studies that had examined *nervios* used single-case ethnographic designs. Of the limited studies that have employed statistical techniques, one study conducted a factor analysis on an existing measure, and one study added a question to an existing interview schedule. There has been little attempt to develop an instrument that is reliable and valid to use in investigations of *nervios*, however. Furthermore, although case studies imply that nervios appears to develop during adolescence, it has not been directly investigated systematically in this age group. The goal of this study was to collect reliability and validity evidence on an instrument designed to reflect the literature's description of *nervios*. The Adolescent *Nervios* Scale (ANS) was administered to a group of Latino and non-Latino middle school students. Initial item-to-total score correlations revealed that the Latino participants viewed *nervios* as a unitary construct composed predominantly of

internalizing, dissociative, and somatization symptoms. Although some of the case studies reported that *nervios* consisted of externalizing symptoms, this sample did not endorse externalizing issues as consistently as the other symptoms. Their experience of this set of symptoms was consistent over time, as well. The non-Latino participants, however, viewed this set of items as three distinct sets of symptoms whose presentation and experience were transient. These findings were supported by exploratory factor analyses as well.

Confirmatory factor analyses failed to identify factor structures within the Latino and non-Latino samples that fit the data; that is to say, these factor analyses did not reveal a clear explanation of the variance. There was some evidence to suggest that one of the primary reasons for this lack of fit is that participants' responses were positively skewed.

Finally, as hypothesized, the ANS demonstrated positive moderate to high correlations with measures of depression and anger, while moderate negative correlations were found with a measure of self-concept. ANS scores were also positively related to disciplinary referrals and negatively related to academic achievement. Despite these positive findings, the study's sample was drawn from one particular area of the country, and many of the students in the Latino sample were of Central American descent. Future research should use a more diverse Latino sample and include a clinical sample as well.

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CHAPTER I

Within the literature of psychopathology, the culture-bound syndrome of *nervios* (the term is literally translated as "nerves") has been studied since the mid 1950's. *Nervios* refers to an idiom of distress used by most Latin Americans both in their native countries as well as in the United States (Lopez & Guarnaccia, 2000). Depending upon the source, *nervios* comprises symptoms resembling a panic disorder or a mood disorder (Liebowitz et al., 1994). Sometimes psychotic and dissociative symptoms are noted. Most descriptions include the presence of somatic complaints resembling those experienced by individuals who meet the diagnoses of anxiety or mood disorders. These somatic complaints include headaches, irritability, nervousness, tearfulness, trembling, and sensations of vertigo (Guarnaccia, Rubio-Stipec, & Canino, 1989).

In other parts of the literature, *nervios* is distinguished from *ataques de nervios* (attacks of the nerves) as an indication of the level of severity. It appears that there is a stigma among Latin Americans associated with the term *ataque de nervios* (AN); for that reason, the term *nervios* is used to represent distress and save social standing (Lopez & Guarnaccia, 2000). Others, however, indicate that the two reactions represent qualitatively different responses to different types of stress (Rubel, O'Nell, & Collado-Ardon, 1984). These researchers postulate that AN is the result of an acute stressor, whereas *nervios* is a chronic problem; there is no relationship between the two (Kleinman, 1988).

Case histories of several people who experienced *nervios* and/or *ataques de nervios* indicated that the age of onset is during adolescence, although there have been few studies to date that have employed statistical analyses to research this clinical finding

(Guarnaccia, DeLaCancela, & Carrillo, 1989). Community sample studies conducted in Puerto Rico have not systematically studied children and adolescents - the floor age for these studies was 17 (Guarnaccia, Canino, Rubio-Stipec, & Bravo, 1993). These studies, however, do not adequately address the following questions: Does *nervios* exist as a construct separate from other constructs of pathology? If so, which symptoms make up *nervios* and which do not?

The purpose of my study was to investigate the reliability and validity of a scale designed to assess *nervios* symptomology in a community sample of English-speaking Latino adolescents who resided in the United States. I hypothesized that the construct of *nervios* is made up of a combination of symptoms that are normally associated with mood, anxiety, panic, and dissociative disorders. Therefore, previously validated tests of mood anxiety, panic, and dissociative disorders should correlate moderately with scores on the *nervios* scale. Also, because *nervios* is a Latino disorder, Latino adolescents should respond to items composing a scale to assess its symptoms in a consistent, unitary manner, while non-Latino adolescents may not respond to the scale in a similar fashion.

Second, I hypothesized that adolescents who had more symptoms of *nervios* would tend to have more disciplinary problems in school than adolescents who had fewer *nervios* symptoms. Finally, I hypothesized that adolescents who endorse more *nervios* symptoms would receive lower academic achievement scores that those who endorsed fewer symptoms.

Eastern and Western Nosologies of Disorder

In his cross-cultural analysis of suffering, illness, and pain, Kleinman (1988) indicated that there exists a difference as to how the relationship between the body, mind,

and self is conceptualized. For instance, he said that in the West, the body is viewed as a vessel that houses the mind. The mind is composed of reason, emotion, and thought. Furthermore, Kleinman indicated that the body is a private vessel that co-exists with hundreds of other vessels within space and time.

This neat compartmentalization of mind and body is not reflected in non-Western societies, however. Kleinman (1988) argued that non-Westerners do not espouse a dualistic nature of humanity; rather, emotion, cognition, reason, and the body all are enmeshed into one system. This system is open (Kleinman, 1988) and not private or exclusive. The body-emotion-cognition-reason system is interrelated with many other similar systems forming a social and collective whole.

Based on this theoretical paradigm, many cross-cultural differences emerge. For example, Kleinman and Good (1985) discussed the fact that different cultures develop vocabularies based on the folk conceptualization of mind and body. Markus and Kitayama (1991) analyzed the vocabulary of English and Japanese and found that the English language had more words to describe inner states (e.g., sad, mad, angry), while the Japanese language had more words to describe other-focused emotions (such as empathy and sympathy).

The concept of "privacy" is valued highly in the North American world and is the subject of numerous social and political debates. Questions that have been raised include: How much privacy should one have? How much privacy should one be willing to give up? For what reasons should privacy be surrendered? (Triandis, 1994). However, in many languages, there exists no semantic label for "privacy", nor is this concept translated effectively for example, Kleinman and Good (1985) listed several cultures in

Africa that lack this concept, and I am aware that there is no semantic label for the concept of "privacy" in the Greek language.

Although the Greek language does not focus on vocabulary to express individual and interior states, the Greek language does focus on terms to express individual's relations to groups. For example, there are separate semantic labels for duty and responsibility to various social and family groups. There even is a term for the duty or responsibility to a stranger (φιλοξένια – the responsibility to present as a gracious host to a stranger) in the Greek language. As Triandis (1994) indicated, what is important to a particular culture will influence its language and vocabulary.

Conceptualizations of distress, sickness, and illness are also affected by a group's prevailing view on the relationship of mind and body, as are the semantic labels and behaviors used to express these symptoms (Triandis, 1994). In the West, an illness, sickness, or disorder is a testament to the person's prevailing bodily weakness or weakness of the mind. Other individuals may affect the person's mind or body, but beyond a linear relationship (i.e., person X does Y to person Z), there is little co-relationship. Current Western psychological theories, such as systems analyses, have recently attempted to expand analysis of difficulties and problems to include an appreciation of non-linear relationships between a person and her and his environment; nevertheless, common non-Western folk interpretations of illness remains consistent with Western views on the mind and body.

Non-western views of illness are considerably more complex. A problem of one person is, by default, a problem of the group and of the whole (Kirmayer & Young,

1998). This shared responsibility can, in many instances, relieve the stress that is normally experienced by an individual living in a Western society.

When these problems become intense (e.g., intense anxiety, depression or psychotic symptoms) they can cause serious difficulties if the symptoms challenge the ethos of interrelationship (Kleinman, 1988). Also, the group may feel threatened because of the collective guilt of having a "diseased" member as part of the collective, thus making the group "diseased". This phenomenon is particularly noticeable when the symptoms are behavioral or psychological, as there is no noticeable, easily discernable reason for changes in behavior.

This dissonance forces the group to make considerable attempts to resolve the problem (Kirmayer & Young, 1998). First, medical or folk medicinal approaches are taken. If these approaches do not work, then there is a considerable attempt to name the syndrome in a culturally safe and non-threatening manner. Attaching an acceptable semantic label may serve to help the group deal with upsetting events (Triandis, 1994). This label serves to convey a shared knowledge about the condition. Most importantly, it allows for the statement that the condition exists, that it is a common (yet unwanted) condition, and that the group must take steps to cope with the condition. However, if the symptoms continue in frequency or intensify, the group may seek to ostracize the member, as it is too stressful for the group to cope with these symptoms.

The *Diagnostic and Statistical Manual* Taxonomy

General Features of the Diagnostic and Statistical Manual

The *Diagnostic and Statistical Manual* (*DSM*) taxonomy serves a similar purpose in Western society to the folk labeling of conditions in non-Western societies. The *DSM*

system is designed to diagnose individuals suffering from emotional, social, and behavioral disorders; the most current revision of this taxonomy is the *DSM-IV-TR* (*Diagnostic and Statistical Manual, fourth edition, text revision*; American Psychiatric Association, 2000). The labels posited by the *DSM-IV-TR* serve to convey knowledge about various conditions, their prevalence, their etiology, and their course of treatment or intervention.

However, despite these similarities, the *DSM-IV-TR* represents a mode of thought that is qualitatively different than traditional folk interpretations of psychological illness. For example, the *DSM-IV-TR* is based upon scientific research of everyday people's reports of distress as well as the empirically identified syndromes (American Psychiatric Association, 2000). Furthermore, the *DSM-IV-TR* is not designed to simply "label" a condition – the multiaxial methodology of diagnosis is complex and involves the assessment of the severity, duration, and frequency of various disorders. Various neurological and medical conditions are also factored into the overall assessment of the individual, as are psychosocial and environmental difficulties that are experienced.

The *DSM-IV-TR* has several appendices that list areas that the developers believe require more research. Appendix I is named, "Outline for Cultural Formulation and Glossary of Culture-Bound Syndromes" (American Psychiatric Association, 2000). In the appendix, the authors noted the limitation that the *DSM-IV-TR* may have when applied to individuals from multicultural environments. The authors indicated that when evaluating individuals who are from different cultures, a systematic review of the cultural background, thoughts regarding the meaning of the disorder, and possible alternative expressions of distress are necessary. Later in the appendix, the authors listed several

such alternative expressions of distress. Collectively, these expressions of distress are named culture-bound syndromes (American Psychiatric Association, 2000).

Culture bound syndromes are constructs that exist outside of the diagnostic classification taxonomy of the *DSM-IV-TR* (American Psychiatric Association, 2000). These syndromes are manifestations of distress that are specific to local areas, cultures, or locales. The cultural groups that use these syndromes to describe their distress have a shared system of beliefs regarding the nature of these disorders, their etiology, their course, and possible treatments.

Furthermore, the authors note that although *DSM-IV-TR* diagnoses may differ topographically in different regions of the world due to cultural and social influence, culture bound syndromes do not represent a one-to-one correspondence to *DSM-IV-TR* diagnostic entities as qualities of many disorders are presented (American Psychiatric Association, 2000). For example, the *DSM-IV-TR* discusses the clinical presentation of *zar*, a culture bound syndrome commonly found in people living in the Middle East and Northern Africa (i.e., above the Sahara desert). According to these peoples, *zar* is caused by a possession of a person by a spirit. People with *zar* may experience dissociative episodes where they scream, yell, hit their heads on a wall, sing, or cry. These individuals demonstrate apathy and withdrawal and may spend much time "communicating" with this spirit in an attempt to develop a relationship (American Psychiatric Association, 2000). This syndrome presents with qualities resembling Dissociative Disorder, Panic Disorder, Psychotic Disorder, and some type of Affective Disorder as well.

Several researchers, such as Guarnaccia (1997) and Kleinman and Good (1985), have gone so far as to imply that several disorders such as anorexia nervosa and multiple

personality disorder are culture bound syndromes due to the fact that these constructs have shown limited diagnostic reliability and validity in non-Western countries. These constructs, the authors maintained, are limited to Western countries, thus rendering them "culture-bound".

Are Culture Bound Syndromes Valid Constructs?

There are many critics of the concept of culture bound syndromes. Certain authors have questioned whether culture bound disorders are necessary to explain distress when a variant of a disorder in the *DSM* taxonomy can serve to more adequately explain and describe distress. For instance, Hsia and Barlow (2001) noted that culture bound syndromes are simply manifestations of *DSM* disorders mediated by social and cultural filters.

Mumford (1996) studied *dhat*, a culture bound syndrome found among peoples in India and Southeast Asia. *Dhat* is characterized by the excessive concern with the discharge of semen, weakness, exhaustion, and whitish discoloration of semen. Mumford (1996) used structured *DSM-IIIR* interviews and found that individuals complaining of *dhat* were also eligible for the diagnosis of several types of affective disorders. Mumford, in his discussion, indicated that although these individuals complained of symptoms unique in other parts of the world (i.e., discoloration of urine, discharge of semen), it is not unlikely to see varying frequencies of affective symptoms in individuals suffering from *dhat* depending on the specific locale or cultural group.

In their chapter on cross-cultural psychopathology, Tsai, Butcher, Munoz, and Vitousek (2001) cited research from several anthropological sources that implied that affective disorders tend to vary as a function of cultural and religious traditions. While

North American individuals who meet criteria for an affective disorder often report a loss of libido, guilt, and depressive mood, individuals in Arab countries do not necessarily tend to present these symptoms.

Westermeyer (1987), in his article on cultural factors in clinical assessment, noted that culture bound syndromes are not always "bound" to one particular culture. For instance, he cited case study research that documents the presence of *latah* syndrome (yelling and cursing with obscenities, often with striking) not only in Malays, Indonesians, and Thais (populations where one would expect to find this syndrome) but also among the Ainu in Japan (an indigenous race on the Osaka island), the Bantu (a tribe in Africa), and French Canadians. His argument is similar to Mumford's point: culture bound syndromes are varying manifestations of the *DSM* taxonomy that is assumed to be universal.

However, there are many researchers who believe otherwise. Jilek (1995) cited Emil Kraepelin's early anecdotal research. Krapelin had traveled to Java in 1904 to assess the presence of psychopathological constructs in other populations. He concluded that schizophrenia and depression manifested themselves differently, while some disorders were present in Java that were not present in the United States. His work spurred many individuals to look at cross-cultural differences in psychopathology.

Unfortunately, no controlled research studies followed Krapelin's original ethnographic study. It was not until Guarnaccia et al's (1989) research that there was even an attempt to study varying presentations of disorders in different cultures. Guarnaccia and his colleagues. (1989) examined the Spanish language version of the

Center for Epidemiological Studies – Depression Scale (CES-D). Their goal was to try to identify a culture bound disorder indigenous to the Latino culture (i.e., *nervios*).

Previous research using the CES-D indicated a four-factor solution (i.e., the measure yielded four distinct subdivisions of the "depression" construct). However, Guarnaccia and his colleagues (1989) administered this scale to a large group of Latinos and they identified a three-factor solution. Two factors that were separate (and minimally correlated) in the original factor analysis (Depressed Affect and Somatic Underactivity) combined to form one factor in the Latino sample. The authors of this study suggest that the three-factor solution predicted more variance for the Latino sample; they also hypothesized that the combined factor (i.e., the Depressed Affect and Somatic Underactivity) was conceptually similar to the culture bound syndrome of *nervios*.

At first glance, this varied factor structure can be seen as evidence to support Mumford's argument – namely, that *DSM* diagnostic entities vary as a function of culture or locale. However, one point that is not mentioned by Guarnaccia and his colleagues (1989) is that varying factor structures can potentially produce different predictive validities. That is to say, a four factor CES-D may not necessarily predict certain prognoses, treatment utilities, or developmental courses as well as the three-factor CES-D for Latinos. Once the factor structure of a test is altered, correlations with all outside variables are also altered (Kim & Mueller 1978), as well as its predictive validities, thus implying a different, yet somewhat similar construct.

In general, however, very little research has attempted to determine whether culture bound syndromes are distinct constructs that are different from the diagnostic entities identified in the *DSM-IV-TR*. Westermeyer (1987) and Mumford (1996) both

cited case study research that is descriptive in nature and lacks statistical analyses.. Without any level of statistical analysis, these authors are relegated to using deductive techniques to explore culture bound syndromes. Although authors such as Westermeyer and Mumford indicate that certain cultures or groups of people may not tend to show particular symptoms of depression, or may tend to show different symptoms in addition to depression, they imply that the construct of depression may not be valid for that particular group (Kim & Mueller 1978), or that other another construct (i.e., a culture bound syndrome) may hold more validity for that particular group.

Latinos in the United States and Latino Culture

Salman, Diamond, Jusino, Sanchez-LaCay, and Liebowitz (1997) indicated that the Latino population in the United States numbers slightly over 20 million and approaches 9% of the United States population. The Latino population is also growing rapidly. Between 1960 and 1990, the Latino population of New York City increased over 290% from 600,000 to 1.7 million. Latinos share a common language, but they represent a heterogeneous group in terms of immigration, history, and national origins (AMA Council on Scientific Affairs, 1991). For instance, Puerto Ricans who are United States citizens have different experiences and different stressors than Mexican immigrants, who could conceivably be legal aliens, citizens, or illegal aliens.

Despite potential differences, several generalizations can be made based on cultural analyses (Ramirez, 1989; Inclan & Heron, 1984; Pribilsky, 2001). Latinos tends to form close-knit family groups and tend to have extensive family systems that include several generations as well as a *compadrazgos* (godparents and close friends who serve as co-parents). This expansive family system is noted in groups such as Mexican

Americans (Ramirez, 1989) and Puerto Ricans (Inclan & Heron, 1984) as well as Ecuadorians (Pribilsky, 2001). This family grouping fosters values, such as respect for the family group and loyalty among its children and members, often at the expense of the individual.

Furthermore, generalizations can be made concerning Latinos' views of illness and disease. Latinos tend to view illness as a group phenomenon, a situation to be remedied by group intervention (Guarnaccia & Rogler, 1999). Analyses of clinical intake interviews at mental health clinics reveal that most Latinos will seek help in order to prevent embarrassment to their families, as they fear their mental problems may become an uncontrollable problem (Salman et al., 1997). In these situations, it appears that the person has experienced distress for considerable time and has undergone certain family group interventions in order to relieve this stress. In many of these instances, the group may not have been able to help, and loyalty to the group forces the person to seek alternative forms of help. Ramirez (1989) also noted similar patterns in Mexican American families who referred their children to mental health clinics. Indeed, Salman and her colleagues (1997) suggested that perhaps the reason why so few Latinos seek mental health services is due to the belief that family interventions should be the front line mental health intervention. When they do seek help, they often present with extreme symptoms. Based on these generalizations, the Latino culture can be categorized as a non-Western culture, based on the dichotomy posited by Kleinman (1988).

Latino Expressions of Distress

In his review of anxiety disorders and culture, Guarnaccia (1997) indicated that psychopathology is present in all cultures. What varies, he goes on to say, is how

different cultures prescribe ways to communicate this distress. In many instances, certain cultures manifest clusters of symptoms that do not appear to have any equivalent within the current psychiatric nosology. Persons of the Latino culture tend to express distress in the form of somatic symptoms or behavioral outbursts; discussions of feelings and emotions are often given secondary importance (Angel & Guarnaccia, 1989; Guarnaccia, Angel, & Worobey 1989), although they are mentioned.

In their paper on the cultural variations in the response to distress, Kirmayer and Young (1998) indicated that somatic symptoms often accompany most major psychiatric disorders. Even after successful cognitive-behavioral therapy, somatic symptoms and physiological oversensitivity/undersensitivity continue. For instance, people diagnosed with Generalized Anxiety Disorder who have been treated effectively with cognitive-behavioral therapy continue to show heightened startle responses (Rachman, 1998). Within Western culture, mind and body are seen as separate. Somatic symptoms are usually seen as "rounding out psychological disorders" (p. 28); the central features of psychological disorders usually involve affective difficulties (Kleinman, 1988). Kirmayer and Young (1998) proposed that somatization is not an alternative, nor is it ancillary, to the expression of emotional distress. Bodily concerns should be viewed as equal to affective problems when a person is in distress. Cultural expressions of bodily concerns should be viewed as one part of the overall presentation of distress.

It was based on this argument that Angel and Guarnaccia (1989) decided to investigate the large number of Latinos who presented with medical complaints yet had little or no medical basis for their symptoms. These researchers showed that Latinos' perception of health status was significantly influenced by their affective states. A strong

negative correlation was found to exist between the perception of physical health status and the number of reported affective symptoms.

These findings led researchers to examine some of the instruments commonly used to assess distress and investigate their cross-cultural validity. Guarnaccia and his colleagues (1989) attempted to factor analyze a Spanish language version of the Center for Epidemiological Studies – Depression Scale (CES-D). They administered the CES-D to a sample of Latinos to determine whether different clusters emerged in the presentation of distress. A sample of over 10,000 Latinos in three different areas of the United States was used.

The authors noted that previous investigators found that the CES-D yielded a four-factor structure (Depressed Affect, Somatic Underactivity, Positive Affect, and Interpersonal Relations) when a sample representative of the US population was used. In Guarnaccia et al.'s (1989) study, with only Latino subjects, the CES-D yielded a three-factor structure. Depressed Affect and Somatic Underactivity combined to form one factor, while Positive Affect and Interpersonal Relations retained their integrity within the new analysis. This analysis showed some support for the notion that Latinos as a group express distress in a qualitatively different way than other groups do.

Guarnaccia and his colleagues (1989) hypothesized that this syndrome of depressed affect and somatic underactivity was a culturally meaningful syndrome commonly referred to as *nervios*. Salman and her colleagues (1997) defined *nervios* as a "powerful idiom of distress used by Latinos to express concerns about physical symptoms, emotional states, and changes in both the family and in broader society" (p. 68). The CES-D factor of Depressed Affect and Somatic Underactivity matched many

folk descriptions of the illness of *nervios*, although there are descriptors that are not accounted for by the CES-D items.

Nervios

Nervios is a culture bound syndrome. The *DSM-IV-TR* defines culture bound syndromes as "recurrent, locality-specific patterns of aberrant behavior and troubling experience which may or may not be linked to a particular *DSM-IV-TR* diagnostic category" (American Psychiatric Association, 2000, p. 898). The *DSM-IV-TR* indicates that the symptoms, course, and social response of these culture bound syndromes vary according to culture. *Nervios* is defined by the *DSM-IV-TR* as "a general state of vulnerability to stressful life experiences and to a syndrome brought on by difficult life circumstances" (American Psychiatric Association, 2000, p. 901).

The presentation of *nervios* is subject to some variation. For instance, the *DSM-IV-TR* description of *nervios* states that the disorder could present as a syndrome resembling Adjustment, Anxiety, Depressive, Dissociative, Somatoform, or Psychotic Disorders (American Psychiatric Association, 2000). Of the 638 pages in the *DSM-IV-TR* of descriptions of diagnoses, this group of disorders accounts for 220 pages or about 34% of the book. This represents a very wide range of symptoms.

Most of the research conducted on *nervios* has been in the form of case studies. The scope of these studies has been to identify factors in particular individuals' lives that precipitated the onset of *nervios* and factors that served to maintain *nervios*. These studies also sought to identify what it meant to the individuals to have an illness as well as how these individuals' social standing had been altered due to the development of an illness.

The case study method is an integral part of social science (Edwards, 1996) that has been shown to have tremendous utility within the field of clinical psychology. Specifically, Edwards maintained that a series of case studies could be used to take a vaguely defined construct and narrow its definition via a process of comparing cases against one another. This process can help clinicians who are interested in everyday applications of psychological science. However, it can also serve to drive research with larger sample sizes, as the outcome of a good set of case studies should serve to define constructs more clearly.

However, many of the case studies dealing specifically with the analysis of *nervios* suffer from several difficulties that preclude generalization and clear understanding of the phenomenon of *nervios*. Case study research should, over time, present a more narrow description of a construct, as well as repeatedly confirm a construct over several cases (Edwards, 1996). These case studies (Guarnaccia et al., 1989; Pribilsky, 2001) jointly point to the fact that a construct exists; unfortunately, descriptions of this construct of *nervios* vary so greatly that there is little sensitivity or specificity inherent in the definition. As noted previously, descriptions of *nervios* overlap with approximately 1/3 of all diagnoses in the *DSM-IV-TR*, and these case studies do not help to narrowly discriminate *nervios* from other diagnostic entities.

Furthermore, some argue (Hsia & Barlow, 2001; Mumford, 1996; Westermeyer, 1987) that if the term *nervios* overlaps with so many of the diagnoses of the *DSM-IV-TR*, then perhaps the term is simply a synonym of “illness”. Some authors would claim that this point is irrelevant (Kleinman, 1988); however, it would be useful to understand if

nervios is a syndrome that exists (and subsequently should be treated as an individual disorder) or if it is just an idiom for another disorder or state.

The few experimental studies that have been conducted have shown that descriptions of *nervios* usually involve a vast amount of somatic complaints that often overshadow descriptions of emotional distress. For example, Guarnaccia and his colleagues (1989) identified two major somatic symptoms (poor appetite and difficulties sleeping) when they factor analyzed the CES-D using a Latino sample. These two somatic concerns appeared to contribute to a greater amount of variance than other somatic and emotional complaints. Salman and her colleagues (1997) noted similar findings in preliminary assessments of their research data. In their epidemiological study conducted in Puerto Rico, Guarnaccia and colleagues (1993) also identified episodes of trembling, increased heart rate, sensations of heat rising in the chest or head, and episodes of fainting or feeling faint. Finally, all of these sources indicated that persons suffering from *nervios* have had long histories of chronic health conditions such as backaches or heart problems.

In addition, however, case study results showed that the Latinos interviewed regarding their *nervios* also indicated that they experienced emotional difficulties (Guarnaccia, 1993; Pribilsky, 2001). These reports of affective distress, however, varied considerably from case to case and were usually not as heavily emphasized as were the somatic symptoms. Unfortunately, the series of cases did not point to a core group of symptoms, therefore, it is difficult to develop specific boundaries to determine what constitutes this disorder and what does not.

For instance, men and women reported feelings of failure, sadness, and irritability. Women also indicated that they felt loneliness and experienced many fears (Guarnaccia et al., 1989). Guarnaccia et al.'s (1989) interviews with four women identified two who experienced a fear of violence, anger, and an intense fear of being left alone. One woman mentioned that she tended to experience bouts of extreme rage and anger. Liebowitz and his colleagues (1994) identified the following symptoms: nervousness, episodes of depression, crying, feelings of anger, and experiences of extreme fear. Guarnaccia and his colleagues (1993) also noted feelings of desperation as well. As can be seen, these expressions of somatic and affective distress vary tremendously, although fear, anger, irritability, and nervousness seem to be recurrent symptoms that are described.

One qualitative study conducted by Pribilsky (2001) looked at the expression of *nervios* in his anthropological exploration of children in a town in the Ecuadorian Andes. Many of these children were separated from their fathers due to the lack of work in their town. The children exhibited explosive bouts of anger and refused to carry out day-to-day activities. The author noted one boy who exhibited an anxiety over his schoolwork and tests. He would miss school often and refuse to get out of bed. He complained of muscle aches and pains, heaviness in his chest, and fatigue. Another boy would cry and never want to leave his mother. He experienced rapid heart palpitations as well as an inability to move. Still another boy would become easily agitated and was prone to violence against his peers and teachers – eventually this boy committed suicide.

Pribilsky was predominantly interested in analyzing the function of and the cultural reasons for the presence of *nervios*. He also pointed at anger, anxiety, and

somatic symptoms as recurring symptoms of *nervios*, which matches the descriptions given by adults. It appears, however, that he expanded the boundaries of the definition of *nervios* to include features of Conduct Disorder as well as Oppositional Defiant Disorder (i.e., violence against others as well as refusal to perform chores).

Syndromes Related to *Nervios* in the Latino Culture

Ataques de Nervios

There is a distinction made by some authors between *nervios* and *ataques de nervios* (AN) that warrants mention in this literature review. AN appears to be more narrowly defined than *nervios* and follows a specific course that appears to be unique from many other disorders or culture bound syndromes. However the definition of AN is still very broad and variable and suffers from difficulties similar to those encountered in definitions of *nervios*.

AN can be considered a "culturally shaped expression of emotion which emerges specifically in times of severe stress" (Salman et al., 1997, p. 66). AN usually occurs at funerals, accidents, or family conflicts. Guarnaccia et al. (1993) indicated that an attack could consist of the following: fits of screaming, crying without end, feelings of hysteria, fainting, physically aggressive behavior (such as throwing things at loved ones and hitting them), losing touch with reality, and the inability to move. Liebowitz et al. (1994) also identified thoughts or attempts of suicide as well.

AN is also unique as a phenomenon because it refers to a discrete event that has a specific course. *Nervios*, however, is viewed as a general trait rather than a reaction to a discrete event. AN is usually brought on with the exposure of an extreme stressor that the individual believes he or she cannot control. Shaking, heart palpitations, and other

dissociative sensations soon follow. The individual then begins to act out behaviorally by screaming, yelling, and striking at others. Finally, the person may have a convulsive fit. When he or she is revived, there is usually no recollection of the event. The *DSM-IV-TR* indicates that AN could present as a syndrome resembling Panic Disorder as well as Anxiety, Mood, Dissociative, or Somatoform Disorders (American Psychiatric Association, 2000), although this definition is very broad.

There is very little mention as to whether *nervios* and AN are related. In the text of their chapter, Salman and her colleagues (1997) implied that the two conditions have some similarities, but they did not claim that they are related. However, throughout their interviews, individuals made categorical distinctions between *nervios* and AN. AN is viewed by many Latinos as associated with "craziness" or "insanity", while *nervios* at its worst implies a weaker constitution that is under duress.

Unfortunately, researchers have chosen to study the co-morbidity of *nervios*, AN, and other disorders without even defining specifically what *nervios* is and without specifically establishing the validity of AN. In community samples, 63% of the people who reported themselves to be positive for AN were also positive for other psychiatric disorders such as panic disorder, anxiety disorders, and affective disorders (Guarnaccia et al., 1993). In their study, Guarnaccia et al. (1993) chose to study the presence of AN, using only one item that was added to the Somatization module of the Diagnostic Interview Schedule ("*Have you ever experienced an ataque de nervios?").* An open-ended request to clarify the response was also included. Pre-determined follow-up questions were not used. The findings indicated wildly discrepant courses of AN that were dependent on the co-morbid disorder.

Although this method gave good descriptive data as to what an AN might look like, it did not specifically identify AN as a discrete disorder. Similar issues existed with other research projects, such as with Guarnaccia et al. (1989) and Guarnaccia et al. (1993).

Liebowitz et al. (1994) used an instrument named the *Ataques de Nervios Questionnaire – Revised*, that was developed by Guarnaccia and Canino (the body of the paper states that this instrument is based on unpublished data – there is no mention as to when the instrument was developed) to research the co-morbidity of AN and panic disorders in a clinical population seeking treatment at an anxiety disorders clinic. The team found that 41% of all AN positive individuals also were co-morbid for a Panic Disorder. The co-morbidity with disorders other than Panic Disorder was quite low. The high co-morbidity, however, may be explained partly due to the fact that the sample was drawn from clients at an anxiety disorders clinic.

The *Ataques de Nervios Questionnaire – Revised* has never been subjected to the scrutiny of the scientific community. Specifically, it would be important to note whether this questionnaire is adequately assessing the construct of AN and whether this questionnaire can discriminate between AN and other disorders. Only then could the instrument be used in conjunction with other instruments to investigate comorbidity. Liebowitz et al. (1994) assumed the specificity and sensitivity of the *Ataques de Nervios Questionnaire – Revised* and made assumptions based upon its psychometric soundness, when this soundness was never demonstrated. I attempted to contact these authors to determine whether or not they had done any research with this scale, but they did not respond.

Salman et al. (1998) also looked at the psychiatric co-morbidity of AN using the *Ataques de Nervios Questionnaire – Revised*. The team found that AN presented somewhat differently depending on the co-morbid disorder. Individuals with an incidence of AN and Panic Disorder indicated pains in the chest, dizziness, asphyxia, and fear of dying as well as other amorphous fears during their episodes of AN. Individuals with an incidence of AN and affective disorders experienced higher rates of anger, periods of screaming, physical and verbal aggressiveness, and patterns of breaking objects during their episodes of AN. These studies considered AN to be a different construct than Panic Disorder and Affective Disorder without any discriminant validity evidence to support otherwise.

After this review of the AN literature, there is a question that remains: do the constructs of AN and *nervios* exist independently of other disorders? Hsia and Barlow (2001) raised the possibility that culture bound syndromes are fundamentally identical to traditional disorders, but that their presentations are mediated by culture and society. Similarly, others have argued that the construct of eating disorders is also a culture bound syndrome – one bound by the culture of the Western world (Lopez & Guarnaccia, 2000), and that inherently, all disorders are bound to one particular social or cultural environment. Most researchers choose to take a qualitative approach and examine the function of and the cultural reasons for the presence of *nervios*. More rigorous, quantitative analyses need to be conducted in order to further our understanding of *nervios* and AN.

Susto

Susto literally means “fright”, and is defined by the *DSM-IV-TR* as an illness that occurs due to a frightening event (American Psychiatric Association, 2000). A combination of somatic symptoms (appetite disturbance, sleep disturbance, muscle aches, pains) as well as emotional disturbances (sadness, loss of motivation, and low self-worth) are also noted.

Baer and her colleagues (2003) conducted a study to compare descriptions of *nervios* and *susto* in Guatemala, Mexico, Texas, and Connecticut. One difference between *susto* and *nervios* that participants noted was that *susto* was related to a particular incident while *nervios* was a continuing condition. The participants also noted that a doctor, psychiatrist, or psychologist could treat *nervios* if the family was not able to do so, but *susto* required the intervention of a folk healer or prayer. Rubel, O’Nell, and Collado-Ardon (1984) also noted similar differences between *susto* and *nervios*, as well as some slight symptom difference (e.g., individuals positive for *susto* display paleness). Overall, *susto* appears somewhat similar to *nervios*, but differs in etiology and prescribed treatment.

While there are similarities among *nervios,* AN, and *susto*, AN and *susto* appear to be more acute disorders, while *nervios* appears to be a more chronic condition. All three disorders need more systematic study. For this to occur, these disorders need to be clearly defined and assessed.

The Initial Development of the Adolescent *Nervios* Scale

For research on *nervios* to advance beyond descriptive case studies, there should be a measure of this disorder that includes the symptoms described in the literature. Experts who research and treat Latinos suffering from *nervios* should also inform

construction of this scale. From the perspective of a Western psychologist, *nervios* symptoms seem to tap a broad array of psychopathology. Latinos, however, appear to perceive these disparate symptoms as part of one disorder – *nervios*. A scale to assess *nervios* would, therefore, contain items that, to the Western psychologist, appear to measure several different disorders, but Latinos would respond to the scale's items in a consistent manner.

Livanis and Tryon (2005) developed the Adolescent *Nervios* Scale (ANS). Since the age of onset for nervios is during adolescence (Guarnaccia et al., 1989), the scale was developed for administration to English-speaking adolescents of Latino origin. A comprehensive review of the literature cited above was conducted and an initial 38-item inventory was constructed that reflected the symptoms that were noted in the various articles and case studies.

A letter was then mailed to 42 professionals with expertise in working with Latino populations asking what symptoms make up *nervios* (based on their clinical research and experience). I selected these professionals by perusing online university faculty lists and lists of staff at local mental health clinics. These professionals were either university social science professors who studied Latino populations or clinicians who worked with Latino populations (i.e., clinical psychologists, school psychologists, social workers, and guidance counselors).

Nineteen professionals responded. Based on their feedback, an additional 11 items were added to the initial scale. The revised 49-item scale was then re-sent to the same sample of professionals for further feedback. The feedback from the 11 professionals who responded indicated that several of the items were tapping the same component of

nervios, while other items were simply too complex. These latter items were revised in order to improve readability, and overlapping items were deleted. This second revision yielded a scale of 36 items.

A fourth grade reading level was selected so that the adolescents who would complete the measure would be able to adequately comprehend the items. The 36-item measure was presented to three independent reading specialists and further revisions were made to the items to ensure that the language of the measure was at a fourth grade reading level, based on the professional opinions of the reading specialists. They read the items and identified words and phrases that are not customarily employed in novels and school-based reading materials beyond the fourth grade. The specialists were then asked to reach a consensus in suggesting replacement words and phrases for the words identified as above the fourth grade level. These changes were incorporated into the scale.

Participants respond to each item on a 4-point Likert scale, with the following alternatives: “1” Almost Never, “2” Hardly Ever, “3” Sometimes, “4” Almost Always. Thus, total scores can range from 36 – 144. The 36-item ANS scale is presented in Appendix A.

The researchers then collected pilot reliability data. Twenty-four students (14 girls, 10 boys) of Latino descent from a suburban New York middle school completed the ANS scale. Nine students also assented to return after one week to complete the questionnaire once again for the purposes of computing test-retest reliability. Total scores ranged from a low of 42 to a high of 120. The overall total test score mean was computed to be 68.75, $SD = 20.57$

Cronbach's alpha coefficient was computed in order to determine the internal consistency of the items; this coefficient was calculated to be .94. Test-retest reliability was calculated by computing a Pearson Product Moment correlation of the questionnaire total scores from the first and second administrations. This correlation was .87.

The results indicated that the participants responded consistently across the items within the test, as can be noted by its high internal consistency. This item homogeneity suggested that the measure was assessing a unitary construct. The alpha coefficient of .94 indicates that, within this sample, 94% of the total score variance was due to true score variance. The test-retest reliability coefficient of .87 that was obtained after a week indicates that the construct that is being measured was stable over that period of time in this sample. Overall, these results, when taken together, suggest that the ANS measures a unitary and relatively stable construct.

Summary

Nervios is a culture bound syndrome that has been identified by the *DSM-IV-TR* as a general state of weakness and vulnerability (American Psychiatric Association, 2000). Case study research (Pribilsky, 2001; Guarnaccia et al., 1989) has taken the initial step of identifying some of the symptoms of *nervios*, but from a Western perspective, there does not appear to be a consensus among researchers as to what the core defining features of the disorder are. Pribilsky (2001) identified several cases in which the age of onset was during late childhood/ early adolescence, although there are no studies that have investigated this using statistical methodologies.

In order to conduct controlled research on *nervios*, there should be a measure to assess this disorder. The current literature and experts who work with and research

Latinos suffering from *nervios* should inform such a measure. Based on the literature and input from clinicians and researchers, Livanis and Tryon (2005) developed an Adolescent *Nervios* Scale. Preliminary pilot data from a small sample of Latino adolescents indicated that the scale has high internal consistency and reliability. More reliability information as well as validity data need to be collected on the scale.

Problem Statement

Further investigation of the internal consistency and stability of the ANS is required. Also, there needs to be an investigation of the construct validity and predictive validity of the Adolescent *Nervios* Scale.

Purpose of Study

Although the pilot study yielded promising results, there were several issues which warrant the investigation of this scale with a larger sample. The pilot study had a small sample size. The reliability of the ANS needs to be investigated using a larger sample of Latino youth. Furthermore, in order to assess whether the scale is assessing a culture-bound syndrome, the results of Latino children's responses should be compared to children who are not of Latino origin.

Hypotheses

The pilot study found that the ANS was internally consistent and had high test-retest reliability. The pilot, however, was conducted on a very small sample of adolescents. This study used a larger sample to test the following hypotheses.

HY1: The ANS for English-speaking adolescents of Latino origin will demonstrate high internal consistency.

HY2: The ANS for English-speaking adolescents of Latino origin will demonstrate high test-retest reliability over a one-week time interval.

The literature has indicated that *nervios* is a culture bound disorder that is evidenced primarily in Latino populations. Therefore, the ANS should assess a unitary construct when completed by Latino participants, and as a multi-factorial construct when completed by non-Latino participants.

HY3: A one-factor model will predict more variance than a multiple-factor model when the ANS is completed by Latino participants.

HY4: A multiple-factor model will predict more variance than a one-factor model when the ANS is completed by non-Latino participants.

The literature review indicates that *nervios* is comprised of a composite of symptoms normally associated with anxiety and mood disorders. However, *nervios* represents a construct that is similar to, but not the same as anxiety and mood disorders. Furthermore, *nervios* also contains some elements of panic and dissociative symtpomologies that appear to distinguish it from a comorbid anxiety - mood disorder. Therefore, scores on the ANS should correlate moderately with scores on previously validated instruments measuring symptoms of these disorders. Also, individuals who endorse high levels of anxious and depressive symptoms tend to have lower rates of self-esteem (Beck et al., 2001). Therefore, scores on the Adolescent *Nervios* Scale should correlate highly with scores on previously validated instruments measuring self-esteem.

HY5: There will be a significant moderate positive correlation between Latino participants' scores on the ANS and scores on the RCMAS.

HY6: There will be a significant moderate positive correlation between Latino participants' scores on the ANS and scores on the Beck Youth Inventory Anxiety (BYI-A) Scale.

HY7: There will be a significant moderate positive correlation between Latino participants' scores on the ANS and scores on the RADS-2.

HY8: There will be a significant moderate positive correlation between Latino participants' scores on the ANS and scores on the Beck Youth Inventory Depression (BYI-D) Scale.

HY9: There will be a significant moderate positive correlation between Latino participants' scores on the ANS and scores on the Beck Youth Inventory Anger (BYI-AN) Scale.

HY10: There will be a significant moderate positive correlation between Latino participants' scores on the ANS and scores on the Beck Youth Inventory Disruptive Behavior (BYI-DB) Scale.

HY11: There will be a significant moderate positive correlation between Latino participants' scores on the ANS and scores on the Beck Youth Inventory Self-Concept (BYI-SC) Scale.

The literature has indicated that individuals who evidence symptoms of *nervios* tend to have more difficulties adjusting to their environments (Pribilsky, 2001). Scores on the ANS should show a strong negative relationship with standardized achievement examination results and a strong positive relationships with discipline referrals.

HY12: There will be a significant moderate positive correlation between Latino participants' scores on the ANS and the number of student discipline referrals.

HY13: There will be a significant moderate negative correlation between Latino participants' scores on the ANS and scores on the standardized achievement examination.

HY14: Latino participants' scores on the ANS will contribute more to the predictive variance of the amount of discipline referrals than their scores on the RADS-2, RCMAS, BYI-D, BYI-A, BYI-AN, and BYI-DB combined.

H15: Latino participants' scores on the ANS will contribute more to the predictive variance of the standardized test scores than their scores on the RADS-2, RCMAS, BYI-D, BYI-A, BYI-AN, and BYI-DB combined.

CHAPTER II

Method

Participant Selection

I solicited participation of all students who are enrolled in a suburban New York middle school. The school serves five large towns on the southwestern point of Nassau County and has an enrollment of approximately 1000 students. The ages of the students range from 11 to 15. Many of the students who attend this middle school are of Latino descent (approximately 48% or 480 students, according to a personal communication with principal, Mark Kavarsky). Approximately 43% of the students who attend this school are categorized as White (about 430 students). The remaining 9% (90 students) are categorized as African-American, Asian, or Other. Furthermore, 90% of the students at the school are eligible for free or reduced school lunch, which implies that they are of lower socioeconomic status.

Because I worked at the school used in the study, the Institutional Review Board (IRB) required that a research assistant select and collect data from participants. The assistant identified potential participants by examining their school records. Because the scales used in this study are in English and require at least a fourth-grade reading level, the assistant solicited participation by students who had not received any special services in their academic careers (such as special education, ESL, or bilingual education). He obtained this information from students' school records. None of the potential participants were aware of these exclusion criteria and therefore, students who did not receive consent forms should not have felt stigmatized.

The research assistant identified Latino and non-Latino students from school records. Ethnic background is a category that is listed in all students' permanent files. Ethnic background is self-designated by parents on a form at the time of their children's registration in the school system. Students had the opportunity to correct or confirm this designation when they were administered the demographic information student questionnaire (see Appendix A) at the beginning of testing.

The research assistant sent parental consent forms describing the proposed study to the homes of all students who did not receive special services. Because of the difference in procedures for Latino and non-Latino participants (see Procedure section), parents of these two groups of potential participants were sent different consent forms (see Appendices F and G). The consent forms for Latino participants were written in both Spanish and English; those for non-Latino participants were written in English. The forms were mailed along with a self-addressed, stamped envelope in which to return the signed form providing permission for participation. Student assent forms (see Appendix H) were given to each student after parents had returned the signed parent consent form and after the students had received a verbal explanation of the nature and purpose of the study.

It should be noted that this sample is not randomized. All of the students came from one school, and letters were sent out to all children in the school. Only the children whose parents returned signed consent forms and those children who assented to the study participated.

One of the instruments in this study, the RADS, specifies a clinical cutoff for depression (Reynolds, 2002). Specifically, a score above a T score of 65 indicates a level

of symptom endorsement that is similar to depressive symptom endorsements by adolescents with clinical levels of depression (Reynolds, 2002). The RADS manual warns that a T score above 65 may or may not be indicative of clinical levels of depression and advises that further assessment is necessary.

If any student scored above a *T* score of 65 on the RADS, a letter was sent to the student's parents/guardians indicating the possible interpretation of this score, suggesting that the student receive further evaluation, and providing possible referral agencies, as well as the examiner's telephone number for further consultation. See Appendices I and J for the English and Spanish versions of this letter

Assessments

Demographic information. Students completed a student questionnaire (see Appendix A). In addition to asking students' ages, genders, and grade placement in school, the questionnaire solicited students' socioeconomic status using the Hollingshead Four Factor Index of Social Status (Hollingshead, 1975) and asked for the country of origin of both the students' parent as well as whether or not students' grandparents were born in the United States. Information regarding students' eligibility for reduced lunch will be recorded from students' school files.

The Adolescent Nervios Scale. The ANS (see Appendix B) developed by Livanis and Tryon (2005) is the instrument on which reliability and validity data were obtained in the current study. The ANS is a 36 item self-report measure designed to measure *nervios*. Raw scores can range from a low of 36 to a high of 144.

The scale was developed through perusal of the literature as well input from clinicians and researchers with expertise concerning *nervios* and was piloted on a small

group of middle school Latino students in a suburban New York school district. The internal consistency alpha that was calculated was .94. After a week, a smaller group of students took the test again, and the test-retest reliability was calculated to be .86.

Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1987). The RCMAS is a 37-item inventory that is designed to measure the level and degree of anxiety in adolescents and children (Reynolds & Richmond, 1985). Children respond to each of the items with either a "yes" or a "no". The items tap physiological anxiety, worry and oversensitivity, and social concerns. The RCMAS yields a Total *T* score as well as five sub-scores and a Lie score. In this study, only the Total *T* scores were used.

Internal consistency reliability evidence indicates coefficients ranging from .79 to .85, with a median α of .82. Test-retest reliability evidence indicates a stability estimate of .98 over three weeks and .68 over nine months. Validity evidence to support the interpretation of the Total Score indicates a high correlation (.85) between the RCMAS and the State-Trait Anxiety Inventory for Children scale (Reynolds & Richmond, 1985). Factor analyses were also conducted to validate the interpretative abilities of the scale scores.

Reynold's Adolescent Depression Scale – 2nd edition (RADS-2; Reynolds, 2002). The RADS-2 is a 30-item inventory that is designed to measure depressive symptomology in adolescents (Reynolds, 2002). The items tap such symptoms as dysphoric mood, negative affect, negative self-evaluation, and somatic complaints. The RADS-2 yields a Depression Total Scale Score. Each item is rated on a four-point Likert

scale. The RADS-2 yields a Total *T* score as well as four sub-scale scores. Only the Total *T* score was used in this study.

Internal consistency reliability evidence indicates coefficients ranging from .91 to .94, with a total α of .92. Split-half reliability evidence yielded a coefficient of .91 (Reynolds, 2002). Test-retest reliability evidence yielded moderate coefficients (.79 after three months; .63 after one year). These moderate coefficients are not surprising, due to the fact that moods are altered depending on situation specific factors.

Validity evidence was collected using a variety of methods. Criterion related validity evidence using the Hamilton Rating Scale revealed a coefficient of .83. Construct validity evidence found coefficients of .68 to .75 with other measures of depression and -.56 to -.75 with measures of self-esteem (Reynolds, 2002).

Beck Youth Inventories of Emotional and Social Impairment (BYI; Beck, Beck, & Jolly, 2001). The BYI is actually a set of five self-report measures that are used to measure a child's experience of anxiety, depression, anger, disruptive behavior, and self-concept. Each inventory yields a separate *T* score.

Internal consistency evidence for all inventories was calculated and the coefficients ranged from .89 to .91 for the 11 – 14 year age range. Test-retest reliability evidence yielded coefficients that ranged from .79 to .89 for the 11 – 14 year age range (Beck et al., 2001).

The Beck Youth Inventory Scale for Depression (BYI-D) contains many of the characteristic symptoms of depressive syndromes and disorders. The inventory measures children's negative thoughts about themselves, the world, and the future. The manual lists internal consistency alphas that ranged between .90 and .92. Seven-day test-retest

reliabilities ranged from a low of .76 to a high of .89. The BYI-D demonstrated a .72 correlation with the Children's Depression Inventory (Beck et al., 2001) supporting the notion that the BYI-D measures depression.

The Beck Youth Inventory for Anxiety (BYI-A) assesses childhood anxiety symptoms. In general, the inventory was designed to assess anxious cognitions and emotions as well as social anxiety symptoms, concerns about physical and psychological integrity, and specific fears. The manual lists internal consistency alphas that ranged between .89 and .91. Seven-day test-retest reliabilities ranged from a low of .64 to a high of .88. The BYI-A and the RCMAS demonstrated a .70 correlation, indicating that the BYI-A is measuring anxiety (Beck et al., 2001).

The Beck Youth Inventory of Disruptive Behavior (BYI-DB) assesses most of the symptoms associated with Conduct Disorder and Oppositional Defiant Disorder. In general, the items reflect aggression towards people and animals, theft and lying, as well as serious violations of rules and laws. The manual lists internal consistency alphas ranging between .87 and .90. Seven-day test-retest reliabilities ranged from .79 to .89. This inventory was correlated with the Conduct Problems scale of the Conners-Wells' Adolescent Self-report Scale: Short Form, and a coefficient of .73 was found, indicating that the BYI-DB measures disruptive behavior (Beck et al, 2001).

The Beck Youth Inventory of Anger (BYI-AN) assesses the “energy, motivation and victimization worldview of children and adolescents who present with disruptive behavioral problems" (Beck et al., 2001, p. 20). The manual lists internal consistency alphas ranging between .87 and .92. Seven-day test-retest reliabilities ranged from .74 to .84. The manual does not list any other standardized instruments with which the BYI-A

was correlated to determine convergent validity. Beck et al. (2001) implied in the manual that the constructs of anger and disruptive behavior are intricately related, although the manual does not specifically state a reason why concurrent validity for this inventory was not calculated. In his review of the BYI, Stephenson (2001) indicated that the constructs of depression and anger on this inventory may not be differentiated adequately due to the high degree of correlation between the BYI-DB and the BYI-AN.

The Beck Youth Inventory Self-Concept (BYI-SC) assesses the child's global sense of self-esteem. Internal consistency alphas ranged from .89 to .91. Seven-day test-retest reliability coefficients ranged between .63 and .88. Although, concurrent validity was demonstrated with correlations between this inventory and Piers-Harris Children's Self-concept Scale (r = .61), discriminant validity was also demonstrated with negative correlations between the BYI-SC and the Children's Depression Inventory, RCMAS, and the Conner-Well's Adolescent Self-Report Scale: Short Form (Beck et al., 2001).

Each inventory from the BYI was correlated with one every other BYI inventory. Moderate to high correlations were found to exist between the anger, depression, anxiety, and disruptive behavior inventories (Beck et al., 2001).

School functioning. End-of-year standardized achievement test scores were collected on all Latino students participating in the study as measures of school functioning. This school uses the Test of New York State Standards (TONYSS) that is administered each year to assess reading performance.

Adjustment to the school environment. The number of discipline referrals was collected on all Latino students in order to assess each child's adjustment to the school setting.

Procedure

The research assistant mailed consent forms to parents/guardians of all eligible students in the middle school. Once signed consent forms were returned to the assistant, passes were administered to students during their homeroom period requesting that they report to the Guidance Conference Room during a period in which they were not scheduled to have an academic class. This was not an uncommon practice in this particular school, as students frequently were called to the Guidance Office to complete forms by the Guidance Counselor, supplement information for their permanent file, or to discuss things that may have occurred previously during the day or week. Only 15 students were asked to come to the Guidance Office at any one particular time.

Procedures varied for the Latino and non-Latino samples. The research assistant greeted the Latino students and provided them with a copy of the assent form. The assent form described the study and asked for their participation. Students signed the assent form, and the instruments (i.e., Student Questionnaire, ANS, RADS-2, RCMAS, and BYI) were provided to them for completion. Approximately one week later, the same students returned to the Guidance Office to complete only the ANS.

The research assistant greeted the non-Latino students and provided them with a copy of the assent form. The assent form described the study and asked for their participation. Students signed the assent form, and the ANS was provided for them to complete. Approximately one week later, the same students returned to the Guidance Office and completed only the ANS.

After the test data collection process was completed, the investigator collected Latino students' student discipline referrals, standardized TONYSS scores, and free lunch eligibility information from the Guidance Counselor's permanent file.

As compensation, participating students were provided with a pizza party during their respective lunch periods after the data collection was completed. In addition, the participants were allowed to bring their friends to the pizza party, regardless of their participation in the study.

Description of the Sample

Latino participants. Data were collected on 307 Latino participants – 52.4% of the sample was male (161) and 47.6% of the sample was female (146). Latino participants ranged in age from 11 through 14 years, with a mean age of 12.47 years. The majority of the Latino sample (93.8%) was born in the United States. Table 1 displays the Latino participants' countries of origin. The majority of the Latino population was born within the United States.

Table 1

Participants' Country of Origin

Country	Number	Percentage of Sample
United States	288	93.8%
Chile	7	2.3%
Puerto Rico	4	1.4%
Guatemala	3	1.0%
Columbia	2	0.6%
Bolivia	1	0.3%
Dominican Republic	1	0.3%
Mexico	1	0.3%

Fully 66.8% of the sample (n = 205) noted that their parents were married, while 33.2% of the sample (n = 102) indicated that their parents were separated, divorced, or had never married. Most (62.2%; n = 191) of the Latino participants indicated that they live with both of their parents, and 34.2% (n = 105) noted that they live with only their mother. Eleven students (3.6%) indicated that they live with their father.

While most Latino participants were born in the United States, their parents were generally foreign born. Tables 2 and 3 give the country of origin for Latino mothers and fathers, respectively. In general, the students came from several countries in Latin America (e.g., El Salvador, Guatemala, Puerto Rico, Mexico); however, 16.6% of

mothers (n = 51) and 19.6% of fathers (n = 60) were reported to be born in the United States. Furthermore, 12.4% of the sample noted that their grandparents were born in the United States (n = 38).

Table 2

Latino Participants' Mothers' Country of Origin

Country	Number	Percentage of Sample
El Salvador	75	24.4%
Guatemala	55	17.9%
United States	51	16.6%
Puerto Rico	26	8.4%
Honduras	20	6.5%
Mexico	18	5.9%
Nicaragua	17	5.5%
Chile	14	4.6%
Dominican Republic	14	4.6%
Columbia	9	3.0%
Bolivia	5	1.6%
Peru	3	1.0%

Table 3

Latino Participants' Fathers' Country of Origin

Country	Number	Percentage of Sample
El Salvador	104	33.9%
United States	60	19.6%
Guatemala	55	18.9%
Mexico	22	7.2%
Puerto Rico	18	5.9%
Dominican Republic	13	4.2%
Chile	12	3.9%
Columbia	8	2.6%
Nicaragua	6	2.0%
Bolivia	5	1.6%
Honduras	2	0.7%
Peru	1	0.3%
Spain	1	0.3%

The participants noted their parents' occupations. These are listed for mothers and fathers in Tables 4 and 5 respectively.

Table 4

Latino Participants' Mothers' Occupation

Occupation	Number	Percentage of Sample
Housekeeper	158	51.5%
Housewife	43	14.0%
Teacher	16	5.2%
Retail worker	16	5.2%
Insurance Broker	11	3.6%
Secretary	11	3.6%
Clerk	11	3.6%
Attorney	9	2.9%
MTA worker	6	2.0%
Airport worker	4	1.3%
Teacher aide	6	2.0%
Custodian	2	0.7%
No Response/ Don't Know	12	3.9%

Table 5

Latino Participants' Fathers' Occupation

Occupation	Number	Percentage of Sample
Mechanic	48	15.6%
Construction Worker	28	9.1%
Electrician	17	5.6%
Landscape Worker	17	8.8%
Supermarket Worker	14	4.6%
Truck Driver	13	4.2%
Custodian	12	3.9%
Building Superintendent	11	3.6%
Retail Store Manager	11	3.6%
Car Salesman	10	3.3%
Unemployed	10	3.3%
Chef/cook	9	2.9%
Teacher	9	2.9%
Delicatessen Worker	8	2.7%
Retail Worker	8	2.7%
Business Owner	8	2.7%
Airport Worker	7	2.3%

Table 5 (continued)

Latino Participants' Fathers' Occupation

Occupation	Number	Percentage of Sample
Pharmacist	6	2.0%
Exterminator	4	1.3%
Teacher aide	3	1.0%
Carpenter	2	0.7%
Student	2	0.7%
Taxi driver	2	0.7%
Beach club worker	1	0.3%
Garden Store Worker	1	0.3%
Plumber	1	0.3%
Marble worker	1	0.3%
Don't know/ no response	26	8.5%

The participants also noted their parents' educational levels. These are listed in Tables 6 and 7 respectively.

Table 6

Latino Participants' Mothers' Highest Educational Level Completed

Educational Level	Number	Percentage of Sample
Less than 7th grade	57	19.7%
Up until 9th grade	53	18.3%
Some high school	31	10.7%
High school graduate	35	12.1%
Some college	40	13.8%
College graduate	61	21.0%
Graduate Degree	13	4.5%

Table 7

Latino Participants' Fathers' Highest Educational Level Completed

Educational Level	Number	Percentage of Sample
Less than 7th grade	64	22.0%
Up until 9th grade	12	4.1%
Some high school	81	27.8%
High school graduate	61	21.0%
Some college	40	13.7%
College graduate	31	10.7%

Table 7 (continued)

Latino Participants' Fathers' Highest Educational Level Completed (Continued)

Educational Level	Number	Percentage of Sample
Graduate Degree	2	0.7%

Non-Latino participants. Through a very unfortunate oversight, the participants in the non-Latino sample did not complete the same student survey as the participants in the Latino sample. Therefore, much of the descriptive information on these students was culled from a review of school records that sometimes yielded incomplete information. Non-Latino data were collected on 277 participants who ranged in age from 11 through 14 with a mean age of 12.14; 43 (n = 119) percent of this sample was male and 57 percent (n = 158) was female. Forty seven percent of the sample (n = 132) was identified from school records as White, 40.3% of the sample (n = 112) was identified as African American, and 12.0% were identified as Asian (12.0%).

Most (65.1%; n = 166) of the non-Latino participants lived with their mothers only, while 32.2% (n = 82) lived with both their mother and father. Two percent of the non-Latino participants (n = 5) were foster children, and 0.8% (n = 2) lived with their fathers or with their grandparents.

School records indicated that the majority of the participants in the non-Latino sample were born in the United States (94.6%; n = 262). Of the total non-Latino sample, 1.8% (n = 5) were born in Israel; the rest of the participants were born in Canada (0.4%; n = 1), Croatia (0.4%; n = 1), Hungary (0.4%; n = 1), Italy (0.4%; n = 1), Romania (0.4%; n = 1), Russia (0.4%; n = 1), Saudi Arabia (0.4%; n = 1), and Taiwan (0.4%; n = 1).

Parent data, though incomplete, indicate that 94.9% (n = 263) of fathers and 95.3% (n = 263) of mothers were born in the United States. Parents' other countries of origin of parents included Israel (1.8%; n = 5, for both mothers and fathers), India (0.7%; n = 2, for both mothers and fathers), with Canada, Croatia, Italy, Romania, Russia, Saudi Arabia, Hungary, and Taiwan each being listed by one mother and father. School records did not include the country of origin for 58 of the mothers in the sample (21.0%) and 64 of the fathers (23.1) for the non-Latino participants.

School records did not reveal the parental occupations of 93.5% (n =259) of the sample of parents of non-Latino participants, nor did they specify the educational levels of parents from this sample. However, as was noted above, school lunch records indicate that approximately 90% of the school receives free or reduced lunch, which implies that the majority of the students in the school comprise a lower socio-economic bracket.

Social indices of the samples. I computed the socioeconomic status of each Latino and non-Latino participant using Hollingshead's (1975) four-factor index of social participation. It should be noted that complete data for the Non-Latino sample was only available for 135 of the 277 children in the sample (i.e., 49%), so the results below should be examined with caution. The Latino sample obtained a mean of 25.96 with a standard deviation of 12.08. The Non-Latino sample obtained a mean of 27.26 with a standard deviation of 8.96. Both of these scores are considered to be within the "Skilled Craftsmen, Clerical and Sales Workers" category delineated by Hollingshead (1975). Despite the placement of the two scores in a similar category, the means of the groups differed significantly (t (338) = .715, p = .002. However this score should be interpreted

with caution due to the fact that information regarding parents' educational and occupational statuses for most of the non-Latino group was not available.

Design and Data Analysis

This correlational study was designed to collect reliability and validity information on the ANS. Coefficient alphas were calculated for ANS scores from time 1 and time 2, and a Pearson Product Moment Correlation was calculated between scores from the first and second testing with the ANS. Means and standard deviations were calculated for scores on all instruments.

For the Latino sample, Pearson Product Moment Correlations were conducted between scores on the ANS and scores on the RCMAS, RADS-2, and BYI scales for the purpose of assessing construct validity. Scores on the ANS were correlated with the number of disciplinary referrals and TONYSS scores for the purpose of assessing criterion validity. Because the form of the TONYSS differs for each grade, each TONYSS score was converted to a z score, and scores on the ANS were correlated with these z scores.

For the Latino sample, two forward stepwise multiple regression analyses were conducted in which the RCMAS, RAD-2, BYI and the ANS were entered individually, and the criterion variables were alternately TONYSS scores and number of discipline referrals. The ANS was the last predictive variable to be entered in these analyses.

The structure of the ANS was investigated using confirmatory factor analysis using data from both the Latino and non-Latino samples. A one-factor model was investigated initially, because it was hypothesized to be the best solution for the Latino sample data. Next, a two-factor model was investigated, because it was hypothesized to

be the best solution for the non-Latino sample data. Alternative models were explored to determine which model best explained the overall variance for each sample.

All analyses were carried out using SPSS 11.5. The exploratory factor analyses was performed using SPSS11.5 Data Reduction-factor program.

CHAPTER III

Results

This chapter presents internal consistency and test-retest reliability data for the 36-item ANS, as well as the item-to total score correlations for the Latino sample. The chapter explains how I used these results from Latino participants to refine the ANS, shortening it to 31 items. Next, this chapter presents descriptive statistics for the 31-item ANS scale, item-total correlational differences between Latino and non-Latino samples, reliability data, and exploratory factor analyses and scree plots for both the Latino and non-Latino samples. Then the chapter presents confirmatory factor analyses for one-, two-, three- and four-factor solutions for ANS data provided by Latino and non-Latino participants. Following this, the chapter presents the results of post-hoc confirmatory factor analyses for one-, two-, three-, and four-factor solutions for Latino participants' ANS data according to gender, generational status, and country of origin. Subsequently, the chapter reports on the use of testlets to optimize the normality of the ANS data for the Latino sample and the confirmatory factor analyses using these data. Then I dichotomized item responses and calculated confirmatory factor analyses.

Next, the chapter presents results of the assessment of the concurrent validity of the Latino participants' ANS scores by correlating them with Latino participants' scores on other inventories that assess related constructs. Criterion-related validity is assessed by correlating ANS scores with standardized test scores and disciplinary violations. The chapter also presents results of analyses examining the ability of the Latino participants' scores on the ANS to contribute more to the predictive variance of these two scores (i.e.,

standardized test scores and number of disciplinary violations) than their scores on the assessment inventories of related constructs combined.

Scale Refinement Using Data from Latino Participants

Because I am developing the ANS for administration to English-speaking Latino teens, I used their data to refine the scale. The 307 Latino participants obtained a mean score of 62.34 on the 36-item ANS (*SD* = 17.60). The participants' total scores ranged from a low of 38 to a high of 121 out of a possible score of 144. The resulting alpha coefficient from this initial ANS administration was .93. The 1-week test-retest reliability was .85 (*n* = 289). Item-to-total correlations ranged from -.004 to .74 with 31 of the 36 items (86%) correlating .35 or higher with the total ANS score. Table 8 presents the item-to-total score correlations. Items that correlated most highly with the total score assessed physical concerns (e.g., *I have a lot of pain in my chest*, .67; *I get chills*, .68), symptoms addressing confusion or uncommon concerns (e.g., *It is hard to know what is real and what is not*, .69; *My chest and head get hot for no reason*, .70), and symptoms representing internalizing emotional issues (e.g., *I feel like I am a failure*, .74; *I feel sad*).

Table 8

Item to Total Score Correlations of the ANS for the Latino Sample

Item	Item-to-Total Score Correlation
1. Body shakes	.57
2. Heart beats too fast	.63
3. Fainting	-.00

Table 8 (continued)

Item to Total Score Correlations of the ANS for the Latino Sample

Item	Item-to-Total Score Correlation
4. Difficulties moving body	.43
5. Sweating	.24
6. Problems breathing	.48
7. Pain in chest	.66
8. Dizzy	.63
9. Chills	.68
10. Chest/head gets hot	.70
11. Tingling	.65
12. Feel like I am being choked	.40
13. Things aren't real	.62
14. Look self from far away	.61
15. Start a fight	.32
16. Feel like a failure	.74
17. Others disappointed	.51
18. Fear of anger	.50
19. Fear of violence	.41
20. Fear of being alone	.54
21. Fear of losing control	.61

Table 8 (continued)

Item to Total Score Correlations of the ANS for the Latino Sample

Item	Item-to-Total Score Correlation
22. Fear of going crazy	.64
23. Fear of death	.43
24. Fear of doing bad in school	.64
25. Hit/throw things	.41
26. Hit others	.42
27. Curse	.23
28. Not know what is real	.69
29. Don't recall things I did	.61
30. Sad	.68
31. Problems eating	.66
32. Afraid for no reason	.58
33. Problems sleeping	.46
34. Disobey at home	.37
35. Disobey at school	.30
36. Cry	.43

An examination of Table 8 reveals that most of the items were highly correlated with the total score. However, five items obtained correlations that were below .32. Three of these items assessed externalizing symptoms, such as *"I feel like I will start a fight*

with someone", "*I disobey adults in my school*" and "*I curse*". Two other items assessed physical symptoms (e.g., "*I sweat a lot*", "*I faint or pass out*"). During the initial development of other personality measures, some authors have dropped items that obtained item-total score correlations that were below .30 or .35 (Reynolds & Richmond, 1985; Reynolds, 2002; Beck, Beck, & Jolly, 2001). Therefore, I made the decision based on previous practice to delete these five items that correlated below .32 with the total. Altogether items 3, 5, 15, 27, and 35 were deleted, leaving a scale of 31 items.

The items that remained appear to more closely resemble the descriptions of *nervios* that are presented in the literature (Pribilisky, 2001; Guarnaccia & Rogler, 1999; Guarnaccia, 1997; Guarnaccia, Angel, & Worobey, 1989) and the items with which the panel of experts tended to show higher rates of concordance. Specifically, the remaining 31 items all appear to tap physical symptoms, internalizing emotional issues, and uncommon concerns (i.e., dissociative features).

Revised Scale Characteristics

This section provides descriptive statistics for the Latino and non-Latino sample responses to the revised 31-item ANS.

Latino sample. The 307 Latino participants obtained a mean score of 53.17 on the revised 31-item ANS (*SD* = 16.60). Students' total scores ranged from a low of 31 to a high of 106 out of a possible score of 124. The alpha coefficient from the first administration of the 31-item ANS was .94 for this sample, providing confirmation for Hypothesis 1 that the items would have a high internal consistency for Latino participants. The 1-week test-retest reliability was .89, providing confirmation for Hypothesis 2 that the scale would have good test-retest reliability for Latino participants;

the alpha coefficient from the 31-item ANS re-test was .90 for this sample (*n*= 289). Item-to-total correlations ranged from .35 to .72, with all of the items correlating .35 or higher with the total ANS score. See Table 9 for the item-to-total score correlations for both the Latino and the non-Latino samples.

Items that correlated most highly with the total score assessed a cross section of various complaints such as physical concerns (e.g., *My heart beats too fast*, .65; *I have difficulties eating*, .70), symptoms addressing confusion or uncommon concerns (e.g., *My chest or head get hot for no reason,* .70; *It is hard to know what is real and what is not*, .68), and symptoms representing internalizing emotional issues (*I feel like I am a failure*, .72; *I feel sad*, .71). In general, items that assessed externalizing behavioral problems tended to receive the lowest item-to-total score correlations (e.g., *I disobey people at home*, .39; *I hit or throw things*, .35; *I hit others on purpose at home or in school*, .38).

Non-Latino sample. The 277 non-Latino participants obtained a mean score of 43.32 on the ANS (*SD* = 8.74). When compared to the Latino mean score, the non-Latino participants' mean score was significantly lower on an independent samples *t*-test (t (582) = -9.43, $p < .01$).

Non-Latino students' total scores ranged from a low of 32 to a high of 74 out of a possible high score of 124. The alpha coefficient from the first administration of the 31-item ANS was .83. The 1-week test-retest reliability was .23; the alpha coefficient from the 31-item retest was .78 (*n* = 194). Although the test-retest coefficient is quite low, the internal consistencies of both administrations are higher and similar, which implies that the symptoms are transient in this sample. Item-to-total correlations ranged from -.03 to .71, with just 14 of the 31 items correlating .35 or higher with the total ANS score (45%).

Table 9 presents the item-to-total score correlations. Items that correlated most highly with the total score appeared to primarily assess internalizing emotional issues (*I am afraid of going crazy*, .71; *I feel sad*, .63), while items that correlated the lowest with the total score appeared to assess symptoms addressing confusion or uncommon concerns (*I feel tingling in parts of my body,* -.02; *I have difficulties moving my body*, .09; *I feel like I am looking at myself from far away*, -.03).

Analysis of differences between the two groups. A Fisher's *Z*-transformation was also conducted to determine the differences between the Latino and the Non-Latino item-to-total score correlations (Glass & Hopkins, 1996). Overall, 24 out of the 31 items showed significant differences ($p = .05$) between the two groups. Table 9 presents the results of these tests. The 7 non-significant items primarily assessed somatic complaints (*My heart beats too fast; I have difficulties eating*), as well as various internalizing symptoms such as feelings of sadness and some fears, implying that these symptoms may be commonly accepted ways to express distress in both groups.

The Latino sample obtained higher item-to-total score correlations on all items tapping confusion or uncommon concerns, and on most items tapping somatic complaints (six out of eight items, or 75%). On the majority of items that tapped internalizing symptoms, however, the Latino sample obtained either equivalent item-to-total score correlations (5 out of 11 items or 46%) or significantly lower item-to-total score correlations (4 out of 11 items or 36%) than the non-Latino sample. On only 2 items tapping internalizing items did the Latino sample obtain higher item-to-total score correlations (*I feel like I am a failure* and *I cry*) than the non-Latino sample.

Summary. In general, the item-to-total score correlations suggest that the Latino sample participants appear to view these items as a much more cohesive set of symptoms that are experienced concurrently than do non-Latino participants. For Latino participants, all of the items revealed at least moderate relationships with the total score. These items correspond to the symptoms reported in the literature that describe *nervios*, such as reported somatic complaints, complaints of confusion or other uncommon concerns, and internalizing symptoms (Pribilisky, 2001; Guarnaccia & Rogler, 1999; Guarnaccia, 1997; Guarnaccia, Angel, & Worobey, 1989).

The item-to-total score correlations generated from the non-Latino sample, however, suggest that the non-Latino sample members did not view these items as a cohesive set of symptoms that are necessarily experienced concurrently. More than half of the items revealed minimal to no relationships with the total score, with some items correlating negatively with the total score. Items tapping symptoms similar to other syndromes normally experienced in Western cultures (i.e., internalizing disorders such as depression and anxiety) correlated highly with the total score. However, other items that tapped complaints of confusion, uncommon concerns, or somatic complaints tended to show minimal or no relationship with the total score.

Analyses of the differences of correlations indicate that the Latino sample tends to share some common methods of expressing distress with the Non-Latino sample (such as some fears and somatic symptoms). However, the Latino sample appears to endorse much less internalizing pathology than the Non-Latino sample consistently. This Latino sample appears to endorse more somatic symptoms as well as symptoms of confusion

and other uncommon concerns when distressed.

Table 9

Item-to-Total Score Correlations of the 31-Item ANS for the Latino and Non-Latino Samples

Item	Item-to-Total Score Correlations	
	Latino	non-Latino
1. Body shakes	.61	.35*
2. Heart beats too fast	.65	.69
4. Difficulties moving body	.42	.09*
6. Problems breathing	.64	.40*
7. Pain in chest	.66	.19*
8. Dizzy	.62	.07*
9. Chills	.65	.40*
10. Chest/head gets hot	.70	.06*
11. Tingling	.66	-.02*
12. Like I am being choked	.42	.06*
13. Things aren't real	.61	.47*
14. Look self from far away	.59	-.03*
16. Like a failure	.72	.08*
17. Others disappointed	.53	.53

Table 9 (continued)

Item-to-Total Score Correlations of the 31-Item ANS for the Latino and Non-Latino Samples

Item	Item-to-Total Score Correlations	
	Latino	non-Latino
18. Fear of anger	.52	.67*
19. Fear of violence	.44	.69*
20. Fear of being alone	.55	.10*
21. Fear of losing control	.57	.61
22. Fear of going crazy	.64	.71
23. Fear of death	.50	.62*
24. Fear of doing bad in school	.66	.61
25. Hit/throw things	.35	-.03*
26. Hit others	.38	.19*
28. Not know what is real	.68	.28*
29. Don't recall things I did	.65	.27*
30. Sad	.71	.63
31. Problems eating	.70	.61
32. Afraid for no reason	.59	.69*
33. Problems sleeping	.48	.14*
34. Disobey at home	.39	.08*
36. Cry	.43	.16*

Note. "*" denotes significance at the $p < .01$ level.

Construct Validity

As a preliminary assessment of the construct validity of the revised ANS, I conducted exploratory factor analyses to examine the factor structure for both the Latino and the non-Latino samples using scores from the initial scale administration.

An exploratory factor analysis for the Latino group with the revised 31-item scale was conducted using SPSS 13.0 utilizing the Unweighted Least Squares Method (due to the ordinal nature of the data). Initially, I conducted a Bartlett Test of Sphericity; the results indicate that the data do not produce an identity matrix and are approximately normal ($\chi^2 = 8517.29$; $df = 465$; $p < .001$), implying that the data are acceptable for a factor analysis (i.e., they are uncorrelated). Table 10 presents the variance table for this analysis and Figure 1 provides the scree plot.

An exploratory factor analysis was also conducted for the non-Latino group with the revised 31-item scale using SPSS 13.0 utilizing the Unweighted Least Squares Method (due to the ordinal nature of the data). Initially, Initially, I conducted a Bartlett Test of Sphericity; the results indicate that the data do not produce an identity matrix and are approximately normal ($\chi^2 = 11089.16$; $df = 465$; $p < .001$), implying that the data are acceptable for a factor analysis (i.e., the data are uncorrelated). Table 10 also presents the variance table for this analysis, and Figure 2 provides the scree plot.

Table 10

Results of Exploratory Factor Analyses with Latino and Non-Latino Samples

	Latino Initial Eigenvalues			Non-Latino Initial Eigenvalues		
Factor	Total	Percentage of Variance	Cumulative Variance	Total	Percentage of Variance	Cumulative Variance
1	11.56	37.3	37.28	7.73	24.93	24.93
2	2.97	9.59	46.86	5.29	17.05	41.98
3	2.32	7.47	54.34	3.93	12.69	54.67
4	1.95	6.29	60.62	2.79	8.98	63.64
5	1.56	5.04	65.66	2.19	7.07	70.7
6	1.38	4.44	70.11	1.54	4.97	75.67
7	1.16	3.73	73.84	1.2	3.88	79.56
8	1.13	3.66	77.49	-	-	-

Figure 1

Scree Plot for Exploratory Factor Analysis With the Latino Sample

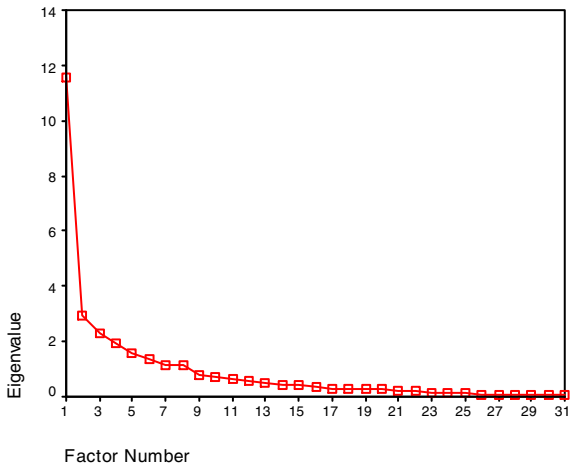
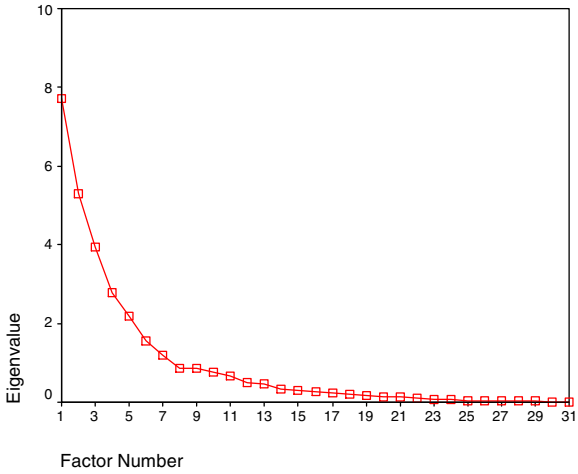


Figure 2

Scree Plot for Exploratory Factor Analysis With the Non-Latino Sample



Inspection of the eigenvalues as well as their scree plots reveals different structures for the two samples. Specifically, the Latino sample data are characterized by one large first factor that accounts for 37.28% of the variance and several other factors that add successively smaller amounts of variance to the solution. The non-Latino sample data, however, are characterized by three relatively large factors that account collectively for 54.67% of the variance and several other smaller factors. This difference is represented visually in the scree plots; whereas the Latino scree plot is quite steep, the slope of the non-Latino scree plot is much more gradual. This indicates that, compared to students in the non-Latino sample, the Latino students responded to the items in a more unitary fashion.

I also conducted rotations in order to simplify and clarify the data via an OBLIMIN rotation. I explored rotations on 2 factor, 3 factor, and 4 factor solutions with the Latino sample. These rotations did not simplify the data or clarify the structure. The results from these OBLIMIN rotations are reported in Appendix I.

Furthermore, it should be noted that I explored a further reduction of the number of items. I derived a 24-item scale by dropping items from the original 36-item scale whose item-to-total score correlations were below .45. Despite this attempt to make the scale even more succinct, the resulting exploratory factor analyses did not reveal factor structures that explained much more variance than the 31-item scale, for both the Latino and non-Latino samples. Thus, I decided to retain the 31-item scale for further analyses. Appendix J gives the results of the exploratory factor analyses of the 24-item scale.

Confirmatory Factor Analyses

Using LISREL 8.72, I conducted confirmatory factor analyses to test the hypothesis (Hypothesis 3) that a one-factor solution is best for the Latino sample; while a multiple factor solution is best for the non-Latino sample.

Proposed factor structures. For both samples, I proposed four different factor structures to assess which structure was best supported by the data. Each factor structure included an increasing number of factors, beginning with the investigation of one factor and ending with the investigation of four factors. Tables 11, 12, and 13 summarize the proposed two, three, and four factor solutions (as well as the items included in each factor).

The two-factor solution was derived from the division of the items into Internalizing and Externalizing symptoms, a dichotomy that is prevalent in many omnibus measures such as the Achenbach System of Empirically Based Assessment (Achenbach & Rescorla, 2001). Many of the items that tapped somatic sensations or uncommon experiences were grouped with the Internalizing subscale due to their co-presentation with internalizing clusters of symptoms. Table 11 provides the proposed two-factor solution.

The three-factor solution was derived from the division of the items into Internalizing, Externalizing, and Alternate/Bodily sensations. The third subscale was comprised of items that were either somatic sensations or uncommon experiences (e.g., "looking at self from far away"). The attempt in this instance was to explore if the internalizing and externalizing scale would become stronger predictors of variance once items that were not traditionally representative of either externalizing or internalizing

symptoms were removed to a third factor. Table 12 provides the proposed three-factor solution.

The four-factor solution was derived from the division of the items into Internalizing, Externalizing, Somatization, and Dissociative Items, a division of items that closely approximates the categories delineated in the *DSM-IV-TR* (2000). Table 13 presents the proposed four-factor solution.

Table 11

Proposed Two-Factor Grouping Investigated for Confirmatory Factor Analyses

Internalizing Items			Externalizing Items
1. Body shakes	17. Others disappointed	36. Cry	25. Hit/throw things
2. Heart beats too fast	18. Fear of anger		26. Hit others
4. Difficulties moving body	19. Fear of violence		34. Disobey at home
6. Problems breathing	20. Fear of being alone		
7. Pain in chest	21. Fear of losing control		
8. Dizzy	22. Fear of going crazy		
9. Chills	23. Fear of death		
10. Chest/head gets hot	24. Fear of doing bad in school		
11. Tingling	29. Don't recall things I did		
12. Like I am being choked	30. Sad		
13. Things aren't real	31. Problems eating		
14. Look self from far away	32. Afraid for no reason		
16. Like a failure	33. Problems sleeping		

Table 12

Proposed Three-Factor Grouping Investigated for Confirmatory Factor Analyses

Internalizing Items	Externalizing Items	Alternate/ Bodily Sensations Items	
16. Like a failure	25. Hit/throw things	1. Body shakes	28. Not know real
17. Others disappointed	26. Hit others	2. Heart beats too fast	29. No recall things
18. Fear of anger	34. Disobey at home	4. Difficulties moving body	31. Problems eating
19. Fear of violence		6. Problems breathing	33. Problems sleeping
20. Fear of being alone		7. Pain in chest	
21. Fear of losing control		8. Dizzy	
22. Fear of going crazy		9. Chills	
23. Fear of death		10. Chest/head gets hot	
24. Fear of doing bad in school		11. Tingling	
30. Sad		12. Like I am being choked	
32. Afraid for no reason		13. Things aren't real	
36. Cry		14. Look self from far away	

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Table 13

Proposed Four-Factor Grouping Investigated for Confirmatory Factor Analyses

Internalizing Items	Externalizing Items	Somatization Items	Dissociative Items
16. Like a failure	25. Hit/throw things	1. Body shakes	9. Chills
17. Others disappointed	26. Hit others	2. Heart beats too fast	10. Chest gets hot
18. Fear of anger	34. Disobey at home	4. Difficulties moving body	11. Tingling
19. Fear of violence		6. Problems breathing	12. Choke feeling
20. Fear of being alone		7. Pain in chest	13. Things aren't real
21. Fear of losing control		8. Dizzy	14. See self far away
22. Fear of going crazy		31. Problems eating	28. Not know real
23. Fear of death I did		33. Problems sleeping	29. Don't recall things
24. Fear of doing bad in school			
30. Sad			
32. Afraid for no reason			
36. Cry			

Latino sample results. Table 14 displays the results from all four confirmatory analyses conducted with the Latino sample. Overall, none of the factor structures were adequately supported by the data. However, the two-, three- and four- factor structure did not appear to contribute much in proposing a more parsimonious solution with much less error than the one-factor solution.

Table 14

Results of the Confirmatory Factor Analyses with ANS Data From Latino Participants

Index	One factor	Two factors	Three factors	Four factors
Chi Square	5627.66	5621.88	5272.10	5268.81
Degrees of Freedom (*df*)	434	433	431	428
Adjusted Goodness of Fit Index (AGF)	0.38	0.38	0.39	0.39
Root Mean Square Error of Approximation (RMSEA)	0.20	0.20	0.19	0.20
Comparative Fit Index (CFI)	0.74	0.75	0.76	0.74
Expected Cross-Validation Index (ECVI)	18.80	18.78	17.65	17.95
Expected Cross-Validation Index (ECVI) 90% Confidence Interval	18.02 – 19.60	18.00 – 19.59	16.19 – 18.43	17.16 – 18.76

Despite the fact that the one-factor solution yielded a chi square of 5527.66 that was significant at the $p < .01$ level ($df = 405$), the other indices must be used to place the

chi-square value into perspective (Raykov & Marcoulides, 2000). For example, the Adjusted Goodness of Fit Index Index (AGFI) of .38 and the Root Mean Square Error of Approximation (RMSEA) of .20 imply that the one-factor model is not able to adequately explain a good deal of variance and covariance within the data. However, the Comparative Fit Index (CFI) of .74 suggests that this model is explaining considerably more variance than the model of independence or null model (Byrne, 1998).

I conducted a chi-square test in order to determine the difference between the one-factor and the two-factor solutions. The result of this test, χ^2 (1, N = 307) = 5.78, $p <$ .05, indicated that a two-factor solution is a better fit than a one-factor solution. Further chi-square analyses showed that the three-factor model was a better fit than a two-factor model, χ^2 (2, N = 307) = 49.78, $p <$ .05, but a three-factor model was no better than a four factor model χ^2 (3, N = 307) = 3.29, $p >$ .05. These results imply that the three-factor model explains more variance that a one- or two-factor model and is equivalent to a four-factor model. The suggestion in this case would be to accept the three-factor model

However, the current literature on confirmatory factor analyses rejects the notion of considering the results of a chi-square analysis as the sole criterion for decision-making processes involved in the acceptance or rejection of related models (Raykov & Marcoulides, 2000; Byrne 1998). Joreseskog and Sorbom (1993) discuss this issue at length in their text devoted to programming languages available for *LISREL* and structural equation modeling. In order for a confirmatory factor analysis to generate robust and replicable results, a large sample size is needed. However, large sample sizes reveal an inherent flaw in the χ^2 statistic: the larger the sample size, the greater the likelihood of obtaining a significant result when in fact there is no such significance (i.e.,

a Type I error). The conundrum is only magnified by the fact that a small sample size will magnify the likelihood of a Type II error when using the χ^2 statistic.

Byrne and Shavelson (1986), as well as Driscoll, Campbell, and Muncer (2005), have also written about these difficulties while analyzing their respective data. Both sets of researchers discussed that it is important to use a matrix of statistics to determine if one model is better than another rather than rely on the significance of the χ^2 analysis. Their reasons are similar to Joreseskog and Sorbom's (1993) rationale: namely that the χ^2 statistic is way too dependent upon the sample size to even be used within the decision making matrix.

Raykov and Marcoulides (2000) and Byrne (1998) both discuss the use of the Expected Cross-Validation Index (ECVI) as a better statistic to compare models. The ECVI is a statistic that measures the discrepancy between the fitted covariance matrix of a sample to the expected covariance matrix that would be obtained in another sample of a similar size. In essence, the ECVI statistic is conducting the same comparison as the χ^2 statistic while controlling for sample size. A lower ECVI would represent a model that does not differ much from an expected value; a larger ECVI would represent a model that differed greatly. Thus, the comparison of ECVI statistics can allow for a reasonable comparison of models without the influence of sample size. The ECVI for each model is reported in the Table 14 along with its confidence intervals so that significant differences can be identified.

The confidence intervals reported in Table 14 all overlap with one another implying that there are no significant differences among the models, when sample size is controlled for. Therefore, I chose to keep the one-factor model as it is the most

parsimonious explanation of the variance among the Latino sample, although as noted by the previous fit statistics, none of the models succeeded in adequately fitting the data.

Non-Latino sample results. Table 15 presents results of the confirmatory factor analyses of ANS data from the non-Latino sample. In general, these data showed considerably more variance between the expected and the observed values, which resulted in greater chi-square values for all solutions, compared to the expected and observed and chi-square values obtained for the Latino sample. Several other trends emerged from these results with non-Latino participants. Each subsequent solution decreased the chi-square value, implying that the addition of factors explained more variance. This conclusion is supported by examination of the decreasing RMSEA, increasing CFI, and increasing AGFI over preceding solutions proposed. Furthermore, an inspection of the Expected Cross Validation Indices (ECVI) demonstrates that each subsequent solution brings the model somewhat closer to the full saturation model (Byrne, 1998).

I conducted chi-square tests to determine the difference between factor solutions. Results of these tests indicated that a two-factor solution was significantly better than a one-factor solution, $\chi^2(1, N = 277) = 754.40$, $p < .001$; a three-factor solution was better than a two-factor solution, $\chi^2(2, N = 277) = 83.08$, $p < .001$; and a four-factor solution was better than a three-factor solution, $\chi^2(2, N = 277) = 159.93$, $p < .001$. Therefore, it appears that, of the solutions tested, a four-factor solution is better suited to explain the variance in the non-Latino sample than a one-, two-, or three-factor solution; however, the four-factor solution is far from ideal. Thus, the data show that more variance is

explained by the addition of more factors to the solution for the non-Latino sample, providing support for Hypothesis 4.

An analysis of the ECVI indices reveals some interesting findings. The ECVI of 18.80 obtained from the one-factor model utilizing the Latino sample was much lower than the ECVI obtained from the one-factor model utilizing the non-Latino sample (33.81). This difference suggests that the one-factor model is explaining more variance in the Latino sample than for the non-Latino sample.

Furthermore, an analysis of the models generated from the non-Latino sample reveals that the two-factor model (29.99) is significantly better than the one-factor model (33.81). The two-factor model and the three-factor model did not show any significant differences. Therefore, I kept the two-factor model as the most parsimonious model and compared that to the four-factor model (27.21), which showed significant differences. The model that appeared to explain the most variance in the non-Latino sample was the four-factor model, although, as the previous fit statistics mentioned, no model succeeded in fitting the data perfectly.

Table 15

Results of the Confirmatory Factor Analyses with ANS Data From Non-Latino Participants

Index	One factor	Two factors	Three factors	Four factors
Chi Square	9378.82	8624.42	8541.34	8381.41
Degrees of Freedom	434	433	431	428

Table 15 (continued)

Results of the Confirmatory Factor Analyses with ANS Data From Non-Latino Participants

Index	One factor	Two factors	Three factors	Four factors
Adjusted Goodness of Fit Index(AGF)	0.22	0.25	0.25	0.28
Root Mean Square Error of Approximation (RMSEA)	0.27	0.25	0.25	0.25
Comparative Fit Index (CFI)	0.27	0.33	0.33	0.35
Expected Cross-Validation Index (ECVI)	33.81	29.99	28.99	27.21
Expected Cross-Validation Index (ECVI) 90% confidence interval	32.69 – 34.95	28.94 – 31.07	27.96 – *30.05*	26.21 – 28.23

Post-hoc Confirmatory Factor Analyses – Latino Sample

To further understand the nature of the data from the Latino sample, I looked at various subdivisions (i.e., gender, generational status, and country of origin) within the

Latino sample that may have influenced the way that Latino participants responded to the ANS items. Because responses to the items were positively skewed, I developed testlets to minimize the range of skewness and ran factor analyses on these. Also, to address this skewness, I converted the items into dichotomous variables and factor analyzed these.

Gender. Although the *nervios* literature does not indicate a gender difference in symptom presentation, gender differences are sometimes found in the prevalence of symptoms shown for other disorders (APA, 1992). I separated data from the Latino sample into male and female subsections and conducted confirmatory factor analyses on male and female data separately to test the plausibility of differing factor structures associated with gender. Tables 16 and 17 display the results of these analyses for the male and female samples.

Table 16

Results of Post-hoc Confirmatory Factor Analyses of ANS Items From the Male Latino Sample

Index	One Factor	Two Factors	Three Factors	Four Factors
Chi Square	4715.47	4468.47	4286.72	4220.90
Degrees of Freedom (*df*)	434	433	431	428
Adjusted Goodness of Fit (AGF)	0.30	0.30	0.32	0.32
Root Mean Square Error of Approximation (RMSEA)	0.23	0.23	0.21	0.22
Comparative Fit Index (CFI)	0.68	0.68	0.69	0.66
Expected Cross-Validation Index (ECVI)	25.51	25.46	23.21	23.18
Expected Cross-Validation Index (ECVI) 90% Confidence interval	24.28 – 26.78	24.33 – 26.84	22.04 – 24.42	22.02 – 24.39

Note: n=162.

Table 17

Results of Post-hoc Female Latino Confirmatory Factor Analyses

Index	One Factor	Two Factors	Three Factors	Four Factors
Chi Square	3780.43	3680.96	3658.27	3500.85
Degrees of Freedom (*df*)	434	433	431	428
Adjusted Goodness of Fit (AGF)	0.30	0.30	0.30	0.33
Root Mean Square Error of Approximation (RMSEA)	0.23	0.22	0.23	0.21
Comparative Fit Index (CFI)	0.62	0.61	0.61	0.59
Expected Cross-Validation Index (ECVI)	25.56	25.31	24.24	24.07
Expected Cross-Validation Index (ECVI) 90% confidence interval	24.26 – 24.01	24.01 – 26.66	23.92 – 26.38	22.88 – 25.92

Note: n=145.

Overall, both groups of analyses (i.e., male and female samples) show lower chi-square ratios than in the total Latino sample; however, this is probably due to the fact that there are fewer cases in each of the groups than in the total Latino sample that then reduces the total variance between the expected model and the observed cases (Byrne, 1998). When the solutions presented in Tables 16 and 17 are compared to the one-factor Latino confirmatory solution (displayed in Table 14), the solutions generated from the gender-derived subgroup solutions do not appear to demonstrate an improvement in explanatory power when compared to a one-factor Latino model. The AGFIs as well as the RMSEAs presented in Tables 16 and 17 show than the two-, three-, and four-factor solutions based on data from the Latino male and Latino female samples explain less variance and covariance that the one-factor, total Latino group solution. The CFIs presented here indicate that although these models are accounting for more variance that a null differences model, they are not accounting for as much variance as the one-factor solution.

For the male sample, a chi-square test showed that the two-factor solution was significantly better than the one-factor solution, $\chi^2(1, N = 162) = 247, p < .05$; a three factor solution was significantly better than a two-factor solution, $\chi^2(2, N = 162) = 181.75, p < .05$; and a four-factor solution was better than a three-factor solution, $\chi^2(3, N = 162) = 65.82, p < .05$. An examination of the ECVI statistics along with their 90% confidence intervals, however, reveals that all of the ranges overlap with one another, thus implying that when sample size is considered, there are no real significant differences among the models. Therefore, I chose to keep the one-factor model as it is the most parsimonious explanation of the variance among the Latino male sample, although

as noted by the previous fit statistics, none of the models succeeded in adequately fitting the data.

Similar results were found in the female sample. A two-factor solution was also superior to a one-factor solution, χ^2 (1, N = 145) = 99.47, $p < .05$; a three-factor solution was superior to a two factor solution, χ^2 (2, N = 145) = 22.69, $p < .05$; and a four-factor solution was superior to a three-factor solution was superior, χ^2 (1, N = 145) = 157.42, $p < .05$. An examination of the ECVI statistics along with their 90% confidence intervals, however, reveals that all of the ranges overlap with one another, thus implying that when sample size is considered, there are no real differences among the models. Therefore, I chose to keep the one-factor model as it is the most parsimonious explanation of the variance among the Latino female sample, although as noted by the previous fit statistics, none of the models succeeded in adequately fitting the data.

Overall, it does not appear that male or female Latinos responded in a different manner from one another on the ANS. Thus, the one-factor solution fit the data as well for both samples as well as it did for the entire Latino sample, indicating similar endorsement of *nervios* symptoms by male and female Latinos.

Generational status. It is also possible that *nervios* symptoms endorsed by Latino students whose families have been in the United States for a longer time form clusters that are more similar to those found with non-Latino data. I separated the Latino sample into two groups: participants who were first generation and those who were second-generation United States citizens. A small group of children were born outside of the United States (n = 19), so these cases were not included in these analyses due to low sample size. First generational status was defined by birth in the United States and having

one or more parents' birth outside of the United States. Second generational status was defined by United States birth with both parents' birth in the United States. Tables 18 and 19 summarize the results.

Table 18

Results of Post-hoc Confirmatory Factor Analysis Using ANS Data From First-Generation Latino Participants

Index	One Factor	Two Factors	Three Factors	Four Factors
Chi Square	4722.01	4634.35	4544.92	4540.11
Degrees of Freedom (*df*)	434	433	431	428
Adjusted Goodness of Fit Index (AGF)	0.28	0.29	0.28	0.30
Root Mean Square Error of Approximation (RMSEA)	0.23	0.22	0.22	0.22
Comparative Fit Index (CFI)	0.66	0.65	0.66	0.67
Expected Cross-Validation Index (ECVI)	25.39	25.34	24.85	23.23

Table 18 (continued)

Results of Post-hoc Confirmatory Factor Analysis Using ANS Data From First-Generation Latino Participants

Index	One Factor	Two Factors	Three Factors	Four Factors
Expected Cross-Validation Index (ECVI) 90% Interval	24.18 – 26.64	23.87 – 26.55	23.60 – 26.14	22.08 – 24.58

Note: n = 153.

Table 19

Results of Post-hoc Confirmatory Factor Analysis Using ANS Data From Second-Generation Latino Participants

Index	One Factor	Two Factors	Three Factors	Four Factors
Chi-square	4468.04	4235.55	4229.24	4221.54
Degrees of Freedom (*df*)	434	433	431	428
Adjusted Goodness of Fit Index (AGF)	0.27	0.27	0.28	0.29

Table 19 (continued)

Results of Post-hoc Confirmatory Factor Analysis Using ANS Data From Second-Generation Latino Participants

Index	One Factor	Two Factors	Three Factors	Four Factors
Root Mean Square Error of Approximation (RMSEA)	0.22	0.23	*0.22*	0.21
Comparative Fit Index (CFI)	0.62	0.62	0.61	0.63
Expected Cross-Validation Index (ECVI)	25.20	25.18	24.62	23.01
Expected Cross-Validation Index (ECVI) 90% interval	23.82 – 26.73	23.60 – 26.25	23.37 – 25.88	21.73 – 24.25

Note: $n = 133$.

As was noted in the previous set of post-hoc analyses, this set of analyses (i.e., those displayed in Tables 18 and 19) show lower chi-square ratios; however, these reductions are probably due to the fact that there are fewer cases in each of the groups,

which then reduces the total variance between the expected model and the observed cases (Byrne, 1998). When the two-, three-, and four-factor solutions generated from generational status sub-groupings are compared to the one-factor Latino confirmatory solution (as displayed in Table 14), they do not appear to demonstrate an improvement in explanatory power. The AGFI as well as the RMSEA values presented in Tables 18 and 19 show that the two-, three-, and four-factor solutions explain less variance and covariance than the one-factor solution for both generational sub-groups. The CFI values presented here indicate that, although the two-, three-, and four-factor models are accounting for considerably more variance that a null differences model, they do not account for as much variance as the one-factor solution.

For the first generation sample, a chi-square test showed that the two-factor solution was significantly better than the one-factor solution, $\chi^2(1, N = 153) = 87.66$, $p < .05$ and a three factor solution was significantly better than a two-factor solution, $\chi^2(2, N = 153) = 89.42$, $p < .05$. There was no significant difference, however between a three and a four factor solution, $\chi^2(3, N = 153) = 4.81$, $p > .05$, which implies that the three-factor model was superior to all other models in explaining the variance within the first generation Latino sample. However, an examination of the ECVI statistics along with their 90% confidence intervals reveals that the three-factor model was no better than any of the other models in explaining the variance. All of the ranges overlap with one another, thus implying that when sample size is considered, there are no real significant differences among the models. Therefore, I chose to keep the one-factor model as it is the most parsimonious explanation of the variance in the first generation Latino sample,

although as noted by the previous fit statistics, none of the models succeeded in adequately fitting the data.

Similar results were found for the second-generation sample. A two-factor solution was also superior to a one-factor solution, χ^2 (1, N = 133) = 232.49, $p < .05$, and a three-factor solution was superior to a two factor solution, χ^2 (2, N = 133) = 6.31, $p <$ .05. There was no significant difference, however between a three and a four factor solution, $\chi^2(3, n = 133) = 7.70$, $p > .05$, which implies that the three-factor model was superior to all other models in explaining the variance within the first generation Latino sample. However, an examination of the ECVI statistics along with their 90% confidence intervals reveals that the three-factor model was no better than any of the other models in explaining the variance. All of the ranges overlap with one another, thus implying that when sample size is considered, there are no real differences among the models. Therefore, I chose to keep the one-factor model as it is the most parsimonious explanation of the variance in the second generation Latino sample, although as noted by the previous fit statistics, none of the models succeeded in adequately fitting the data.

Overall, it does not appear that first- or second-generation Latinos responded in a different manner from one another on the ANS. Thus, the one-factor solution fit the data for both samples as well as it did for the entire Latino sample, indicating similar endorsement of *nervios* symptoms by first and second generation Latinos. Solutions for first and second generation Latinos were not similar to that of non-Latino participants.

Country of origin. Finally, I divided the Latino sample into subsamples of Latinos from Caribbean and from non-Caribbean countries of origin. This analysis was conducted as some of the members of the panel of experts had indicated on their feedback forms

that, based on their clinical experience, *nervios* was a condition more commonly expressed by Latino individuals and adolescents whose descent was from the Caribbean.

I re-coded all Latino cases based on country of origin. Caribbean country of origin was coded if the participant was born in a Caribbean country or if at least one of the parents' countries of origin was listed as a country in the Caribbean. Tables 20 and 21 present the results of these analyses for the Caribbean and non-Caribbean sub-samples respectively.

Table 20

Results of Post-hoc Confirmatory Factor Analysis With ANS Data From Latino Participants of Caribbean Origin

Index	One Factor	Two Factors	Three Factors	Four Factors
Chi Square	3901.63	3788.98	3701.24	3699.24
Degrees of Freedom (*df*)	434	433	431	428
Adjusted Goodness of Fit Index (AGFI)	0.28	0.28	0.28	0.29
Root Mean Square Error of Approximation (RMSEA)	0.23	0.23	0.23	0.22
Comparative Fit Index (CFI)	0.50	0.49	0.53	0.49

Table 20 (continued)

Results of Post-hoc Confirmatory Factor Analysis With ANS Data From Latino Participants of Caribbean Origin

Index	One Factor	Two Factors	Three Factors	Four Factors
Expected Cross Validation Index (ECVI)	27.49	27.01	26.71	25.83
Expected Cross-Validation Index (ECVI) 90% confidence interval	26.10 - 28.93	25.64 - 28.44	25.34 - 28.13	24.49 - 27.22

Note: $n = 106$.

Table 21

Post-hoc Confirmatory Factor Analysis With ANS Data From Latino Participants of Non-

Caribbean Origin

Index	One Factor	Two Factors	Three Factors	Four Factors
Chi-square	5311.04	5056.41	4903.21	4821.92
Degrees of Freedom (*df*)	434	433	431	428
Adjusted Goodness of Fit Index (AGFI)	0.30	0.29	0.29	0.29
Root Mean Square Error of Approximation (RMSEA)	0.24	0.24	0.24	0.22
Comparative Fit Index (CFI)	0.47	0.47	0.48	0.50
Expected Cross Validation Index (ECVI)	27.41	26.82	26.74	25.14
Expected Cross-Validation Index (ECVI) 90% Interval	25.87 - 28.68	25.28 - 28.18	25.32 - 28.08	24.31 - 27.11

Note: n = 201.

As was noted in the previous sets of post-hoc analyses, this set of analyses (i.e., those displayed in Tables 20 and 21) show lower chi-square ratios; however, these reductions are probably due to the fact that there are fewer cases in each of the groups that then reduces the total variance between the expected model and the observed cases (Byrne, 1998). When the two-, three-, and four-factor solutions generated from country of origin status sub-groupings are compared to the one-factor Latino confirmatory solution (as displayed in Table 14), they do not appear to demonstrate an improvement in explanatory power. The AGFI as well as the RMSEA values presented in Tables 20 and 21 show that the two-, three-, and four-factor solutions explain less variance and covariance than the one-factor solution for both generational sub-groups. The CFI values presented here indicate that, although the two-, three-, and four-factor models are accounting for considerably more variance that a null differences model, they do not account for as much variance as the one-factor solution.

For the Caribbean sample, a chi-square test showed that the two-factor solution was significantly better than the one-factor solution, $\chi^2(1, N = 106) = 112.65$, $p < .05$ and a three factor solution was significantly better than a two-factor solution, $\chi^2(2, N = 106) = 87.74$, $p < .05$. There was no significant difference, however between a three and a four factor solution, $\chi^2(3, N = 106) = 2$, $p > .05$, which implies that the three-factor model was superior to all other models in explaining the variance within the first generation Latino sample. However, an examination of the ECVI statistics along with their 90% confidence intervals reveals that the three-factor model was no better than any of the other models in explaining the variance. All of the ranges overlap with one another, thus implying that when sample size is considered, there are no real significant differences among the

models. Therefore, I chose to keep the one-factor model as it is the most parsimonious explanation of the variance among the Caribbean Latino sample, although as noted by the previous fit statistics, none of the models succeeded in adequately fitting the data.

Similar results were found for the non-Caribbean sample. A two-factor solution was also superior to a one-factor solution, χ^2 (1, N = 201) = 254.63, $p < .05$; a three-factor solution was superior to a two factor solution, χ^2 (2, N = 201) = 87.74, $p < .05$; and a four-factor solution was superior to a three factor solution, χ^2 (2, N = 201) = 81.84, $p < .05$. However, an examination of the ECVI statistics along with their 90% confidence intervals reveals that no model was superior in explaining the variance of this sample. All of the ranges overlap with one another, thus implying that when sample size is considered, there are no real differences among the models. Therefore, I chose to keep the one-factor model as it is the most parsimonious explanation of the variance among the non-Caribbean Latino sample, although as noted by the previous fit statistics, none of the models succeeded in adequately fitting the data.

Overall, it does not appear that Caribbean or non-Caribbean Latinos responded in a different manner from one another on the ANS. Thus, the one-factor solution fit the data as well for both samples as it did for the entire Latino sample, indicating similar endorsement of *nervios* symptoms by Caribbean or non-Caribbean Latinos.

Testlet creation and analysis. Since participants were from a school rather than a clinic population, one would expect that they would tend to indicate lesser degrees of *nervios* symptoms, and thus, the resulting distribution of scores may have been positively skewed. This could affect factor analytic results. Therefore, I further explored reanalyzing the data generated from the ANS data by taking the participants' original

responses and recombining them to form testlets as described by Thompson and Melancon (1996) as well as Kim, Atkinson, and Young (1999). As described by Thompson and Melancon (1996), a testlet is a small group of items (within a large group of items on a measure) related to a particular construct that are either created together or created post-hoc. I created these testlets in order to help optimize the normality of the ANS items results (Kim et al., 1999) by combining items to create testlets with skewness statistics of zero or close to zero (thus bringing the distribution of the created testlets closer to normal).

Table 22 lists the skewness statistics of each item of the ANS for the Latino sample. Fully, 30 of the 31 items were positively skewed and the range of the skews showed a wide range of -.20 to 2.89. Four sets of testlets were created and evaluated. One set of testlets was based on a one-factor solution; each other set corresponds to the item-factor groupings outlined in Tables 11 through 13. Items on each proposed factor were combined into dyads in the attempt to obtain skewness statistics that were as close to 0 as possible (due to the odd number of items on the ANS, one item in each instance was converted into a testlet). The skewness of the developed testlets is summarized in Tables 22 through 26.

Table 22

Skewness Statistics of ANS Items for Latino Sample

Item	Skewness	Item	Skewness
body shakes	0.41	like things aren't real	2.06
heart beats too fast	0.60	look self far away	2.07
difficulties moving body	1.21	like a failure	0.48
problems breathing	1.24	others disappointed in me	0.52
pain in chest	1.55	fear of anger	1.15
Dizzy	2.99	fear of violence	0.79
Chills	0.13	fear of being alone	0.69
chest/head get hot for no reason	1.04	fear losing control	0.49
body tingling	0.83	fear going crazy	1.11
like I'm being choked	1.98	fear death	0.37
		fear do bad	-0.20

Table 22 (continued)

Skewness Statistics of ANS Items for Latino Sample

Item	Skewness
hit or throw things	0.45
hit others	2.89
not know what is real	2.00
don't remember things	0.94
Sad	0.68
eating problems	2.24
feel afraid no reason	1.55
sleep problems	1.18
disobey at home	0.28
cry	0.51

Table 23

Skewness of Testlets Developed from a One-Factor Solution

Testlet Name	*Skewness*
General testlet 1	0.63
General testlet 2	1.12
General testlet 3	0.95
General testlet 4	0.57
General testlet 5	0.92
General testlet 6	1.23
General testlet 7	0.65
General testlet 8	0.68
General testlet 9	1.22
General testlet 10	0.82
General testlet 11	0.53
General testlet12	0.80
General testlet 13	0.88
General testlet 14	0.91
General testlet 15	0.79
General testlet 16*	0.94

Note: "*" indicates that the testlet was created with only one item.

Table 24

Skewness of Testlets Developed from a Two-Factor Solution

Testlet Name	*Skewness*
Externalizing 1	1.30
Externalizing 2*	0.45
Internalizing 1	0.63
Internalizing 2	0.51
Internalizing 3	0.92
Internalizing 4	1.23
Internalizing 5	1.10
Internalizing 6	0.74
Internalizing 7	1.19
Internalizing 8	1.06
Internalizing 9	0.80
Internalizing 10	0.67

Table 24 (continued)

Skewness of Testlets Developed from a Two-Factor Solution

Testlet Name	Skewness
Internalizing 11	0.89
Internalizing 12	1.01
Internalizing 13	0.92
Internalizing 14	0.77

Note: "*" indicates that the testlet was created with only one item.

Table 25

Skewness of Testlets Developed from a Three-Factor Solution

Testlet Name	*Skewness*
Externalizing 1	1.30
Externalizing 2*	0.45
Alternate 1	0.79
Alternate 2	1.01

Table 25 (continued)

Skewness of Testlets Developed from a Three-Factor Solution

Testlet Name	*Skewness*
Alternate 3	1.40
Alternate 4	1.22
Alternate 5	1.03
Alternate 6	1.13
Alternate 7	1.43
Alternate 8	0.82
Internalizing 1	0.41
Internalizing 2	0.37
Internalizing 3	0.82
Internalizing 4	0.57
Internalizing 5	0.33
Internalizing 6	0.61

Note: "*" indicates that the testlet was created with only one item.

Table 26

Skewness of Testlets Developed from a Four-Factor Solution

Testlet Name	Skewness
Dissociative 1	1.01
Dissociative 2	1.22
Dissociative 3	1.03
Dissociative 4	1.13
Externalizing 1	1.30
Externalizing 2*	0.45
Internalizing 1	0.41
Internalizing 2	0.37
Internalizing 3	0.82
Internalizing 4	0.57
Internalizing 5	0.33

Table 26 (continued)

Skewness of Testlets Developed from a Four-Factor Solution

Testlet Name	*Skewness*
Internalizing 6	0.61
Somatization 1	1.01
Somatization 2	1.51
Somatization 3	1.43
Somatization 4	0.82

Note: "*" indicates that the testlet was created with only one item.

It appears that the testlet development succeeded in minimizing the range of skewness of the sample, as can be seen by inspecting Tables 22 through 26. Next, I ran exploratory factor analyses on each set of testlets. It should be noted that each set of testlets was treated as a separate measure, explored independent of all other testlets, and was allowed to iterate indefinitely until a solution was generated which accounted for a maximum amount of variance. The results of these testlets are summarized below in Table 27, and the scree plots are provided in Figures 3 through 6.

Table 27

Total Variance Explained by Various Sets of Testlets

Number of Factors	Testlet Set			
	One Factor Testlets	Two Factor Testlets	Three Factor Testlets	Four Factor Testlets
1	53.23	50.89	53.84	53.46
2	61.40	61.98	62.62	62.26
3	74.61	69.11	70.51	70.19
4	79.54	75.74	75.98	75.66

Figure 3

Scree Plot for Testlet Set Developed from One Factor

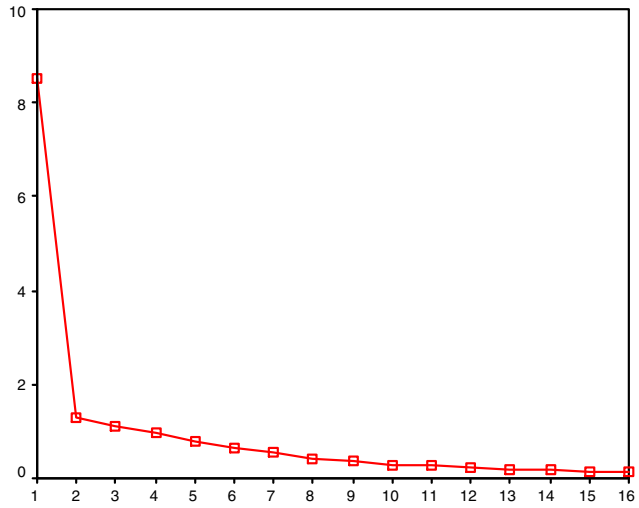


Figure 4

Scree Plot for Testlet Set Developed from Two Factors

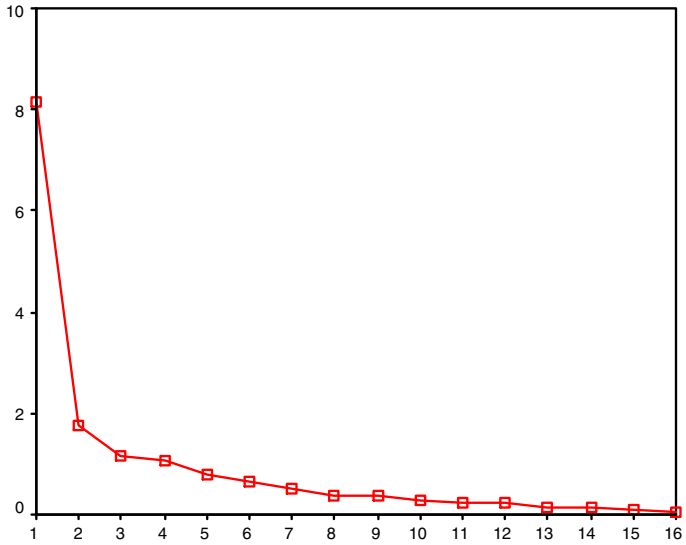


Figure 5

Scree Plot for Testlet Set Developed from Three Factors

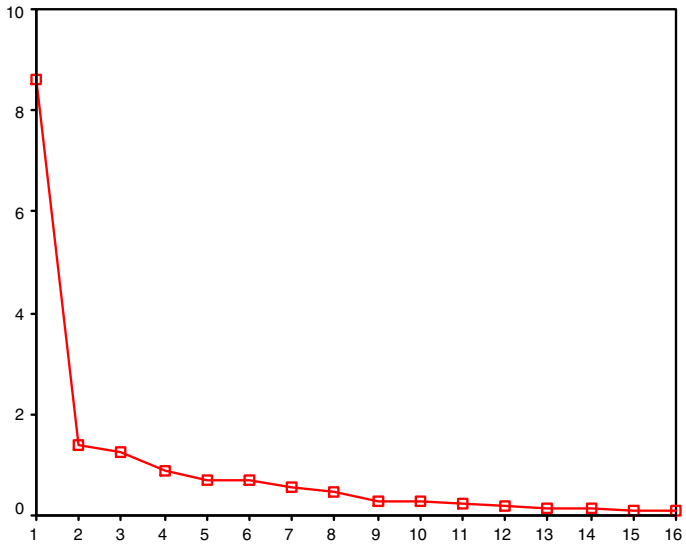
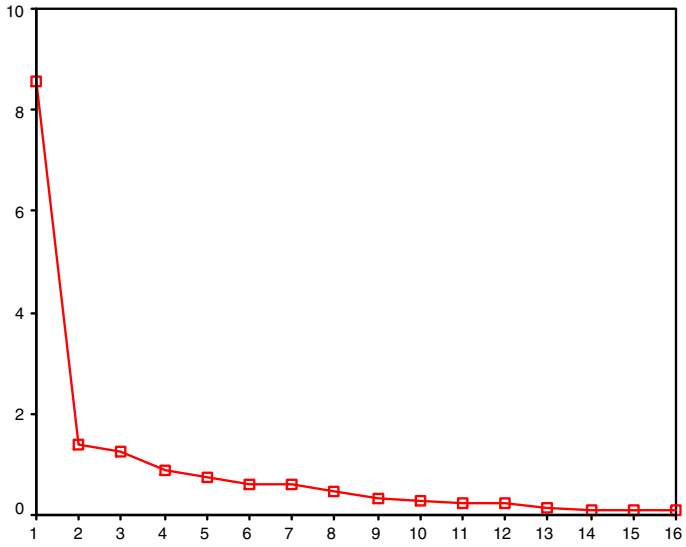


Figure 6

Scree Plot for Testlet Set Developed from Four Factors



The scree plots as well as the variances described in Table 27 indicate that the testlets developed by examining a one-factor solution seemed to be the most parsimonious solution. Therefore, I ran confirmatory analyses using testlets developed out of the one-factor solution. The results are displayed in Table 28 below.

Table 28

Results of Testlet Confirmatory Analyses

Index	One Factor Testlets	Two Factor Testlets	Three Factor Testlets	Four Factor Testlets
Chi Square	1215.50	1109.46	992.66	974.91
Degrees of Freedom *(df)*	104	103	101	98
Adjusted Goodness of Fit Index (AGFI)	0.58	0.58	0.61	0.59
Root Mean Square Error of Approximation (RMSEA)	0.18	0.18	0.17	0.18
Comparative Fit Index (CFI)	0.88	0.88	0.88	0.87
Expected Cross Validation Index (ECVI)	4.01	3.84	3.47	3.59
Expected Cross-Validation Index (ECVI) 90% interval	3.66 - 4.38	3.19 - 4.12	3.15 - 3.82	3.27 - 3.94

Note: $n = 106$.

Despite the fact that the confirmatory one-factor solution yielded a chi square of 1215.50 that was significant at the $p < .01$ level ($df = 104$), the other indices must be used to place the chi-square value into perspective (Raykov & Marcoulides, 2000). For example, the Adjusted Goodness of Fit Index Index (AGFI) of .58 and the Root Mean Square Error of Approximation (RMSEA) of .18 imply that the one-factor model is not able to adequately explain a good deal of variance and covariance within the data. The Comparative Fit Index (CFI) of .88 suggests that this model is explaining considerably more variance than the model of independence or null model (Byrne, 1998). These indices, however, represent improvements over the confirmatory analyses conducted with individual items. This result implies that the skewness of the individual items was impacting upon the factor solution. Nevertheless, this testlet strategy was not effective in identifying an appropriate solution to the data.

I also conducted chi-square analyses of the differences among the fit solutions. The solution developed by the two-factor testlets was superior to that developed by the one-factor testlets, χ^2 (1, $N = 307$) = 106.14, $p < .05$; a solution based on the three-factor testlets was superior to that developed from two-factor testlets, χ^2 (2, $N = 307$) = 116.80, $p < .05$; and the solution developed from the four-factor testlets was superior to the solution developed from the three-factor testlets, χ^2 (2, $N = 307$) = 17.15, $p < .05$. However, an examination of the ECVI statistics along with their 90% confidence intervals reveals that no model was superior in explaining the variance of this sample. All of the ranges overlap with one another, thus implying that when sample size is considered, there are no real differences among the models. Therefore, I chose to keep the model developed from the one-factor testlets as it is the most parsimonious

explanation of the variance among the Latino sample, although as noted by the previous fit statistics, none of the models succeeded in adequately fitting the data.

Overall, the testlet development and analysis indicates that qualities of the sample responses (specifically participants' tendency to endorse "1" or "2", rather than a "3" or "4", for many of the items) affected the factor structure, complicating inferences regarding the construct validity of the ANS.

Item dichotomization and analysis. I attempted yet another strategy in order to fit the data into an appropriate solution, based on the characteristics that were observed in the previous set of analyses. As was previously noted, an analysis of the skewness statistics available in Table 22 revealed that responses to the majority (30 out of 31) of the items were positively skewed. A further inspection of the item response frequencies indicates that the majority of the Latino sample endorsed "1" on the four-point Likert scale. The item response frequencies for the Latino sample are presented in Table 29 below. In order to deal with the skewness of the data, I converted the items into dichotomous variables. For each item, an endorsement of "1" was re-coded as "0" and an endorsement of "2", "3", or "4" was re-coded as "1".

Table 29

Frequency of Item Endorsement

Item	Frequency			
	1	2	3	4
1	135	74	89	9
2	130	107	62	8
4	202	70	35	0
6	190	65	42	10
7	208	58	32	9
8	182	69	36	20
9	107	68	111	21
10	181	50	43	33
11	141	91	47	28
12	242	52	13	0
13	235	41	23	8
14	239	33	25	10
16	160	37	99	11
17	154	52	90	11
18	204	56	47	0

Table 29 (continued)

Frequency of Item Endorsement

Item	Frequency			
19	176	39	74	18
20	160	64	74	9
21	152	58	90	7
22	197	34	56	20
23	127	57	55	68
24	61	72	83	91
25	154	45	98	10
26	257	31	9	10
28	235	38	26	8
29	159	81	50	17
30	153	61	71	22
31	232	54	13	8
32	205	69	27	6
33	204	30	55	18
34	126	102	79	0
36	144	66	85	12

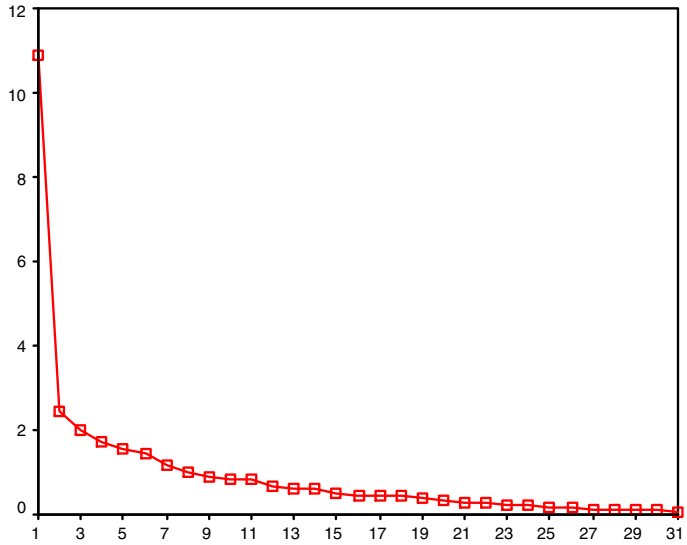
Table 30

Results of Exploratory Factor Analyses using Dichotomous Variables with the Latino Sample

Factor	Eignevalues	Percentage Of Variance	Cumulative Variance
1	10.90	35.15	35.15
2	2.44	7.87	43.01
3	2.00	6.44	49.46
4	1.72	5.53	54.99
5	1.57	5.05	60.04
6	1.46	4.72	64.76
7	1.16	3.74	68.50
8	1.02	3.30	71.80

Figure 7

Scree Plot for Dichotomous Variables with the Latino Sample



A comparison of Tables 10 and 30 (as well as Figures 1 and 7) reveals that the dichotomization of the items yielded a similar scree plot and percentage of explained variance as the original 4-point Likert scale. However, the results from the confirmatory factor analyses (displayed in Table 31) indicate better fit indices for the dichotomous items than for the original 4-point scale.

Table 31

Results of the Confirmatory Factor Analyses for Dichotomous Variables with the Latino Sample

Index	One Factor	Two Factors	Three Factors	Four Factors
Chi Square	3567.49	3555.76	3386.56	3344.38
Degrees of Freedom (*df*)	434	433	431	428
Adjusted Goodness of Fit Index (AGFI)	0.51	0.51	0.52	0.52
Root Mean Square Error of Approximation (RMSEA)	0.15	0.15	0.15	0.15
Comparative Fit Index (CFI)	0.81	0.81	0.81	0.81
Expected Cross Validation Index (ECVI)	12.06	12.03	11.49	11.37
Expected Cross-Validation Index (ECVI) 90% Interval	11.45 - 12.70	11.42 - 12.67	10.90 - 12.11	10.78 - 11.99

Note: $n = 307$

Chi-square analyses indicate that a two-factor solution was superior to a one-factor solution, χ^2 (1, N = 307) = 11.73, $p < .05$; a three-factor solution was superior to a two factor solution, χ^2 (2, N = 307) = 189.20, $p < .05$; and a four-factor solution was superior to a three factor solution, χ^2 (2, N = 307) = 42.18, $p < .05$. However, an examination of the ECVI statistics along with their 90% confidence intervals reveals that no model was superior in explaining the variance of this sample. All of the ranges overlap with one another, thus implying that when sample size is considered, there are no real differences among the models. Therefore, I chose to keep the one-factor model as it is the most parsimonious explanation of the variance among the Latino sample (using the dichotomous variables that I created), although as noted by the previous fit statistics, none of the models succeeded in adequately fitting the data.

Summary. All of the post-hoc confirmatory analyses conducted above indicated that a one-factor model is the most parsimonious explanation of the variance in the Latino sample for the 31-item ANS. The results of these analyses lend support to the construct of *nervios*.

Concurrent Validity

To investigate the concurrent validity of the one-factor ANS, I asked Latino participants to complete several instruments that assessed constructs (i.e., depression, anxiety, self-esteem, anger, and disruptive behavior) similar to those included in the construct of *nervios*. Additionally, I also collected information on the Latino sample's number of discipline referrals as well as their scores on the Test on New York State Standards (TONYSS) English exam.

The TONYSS is a standardized measure that was administered to all the students of every grade in January 2005, and is intended to measure English reading comprehension skills. The TONYSS scores were reported by New York State as percentile scores. These percentiles represented the participants' standing compared to other children of the same grade. Therefore, in order to transform all the scores into a similar metric, I converted these percentiles into *z* scores. Table 32 presents descriptive statistics for the measures used to assess concurrent validity.

Table 32

Descriptive Statistics of Latino Students' scores on Personality Measures and Achievement Tests

as Well as Their Number of Disciplinary Referrals

	ANS	RCMAS	RADS2	BSCI-Y	BAI-Y	BDI-Y	BANI-Y	BDBI-Y	TONYSS *z*- score	Number of Discipline Referrals
Mean	53.17	52.24	51.29	42.59	42.56	50.03	45.8	47.46	-0.71	3.44
Standard deviation	16.6	12.41	11.11	10.8	12.15	12.63	8.65	8.54	1.83	3.02
Minimum	31	26	32	23	21	35	32	30	-3.2	0
Maximum	106	85	72	68	68	70	69	93	2.73	12

Note. ANS = Adolescent Nervios Scale; RCMAS = Revised Child Manifest Anxiety Scale; RADS = Reynold's Adolescent Depression Scale – 2nd edition; BSCI-Y = Beck Self Concept Inventory for Youth; BAI-Y = Beck Anxiety Inventory for Youth; BDI-Y =

Beck Youth Inventory for Youth; BANI-Y = Beck Anger Inventory for Youth; BDBI-Y = Beck Disruptive Behavior Inventory for Youth.

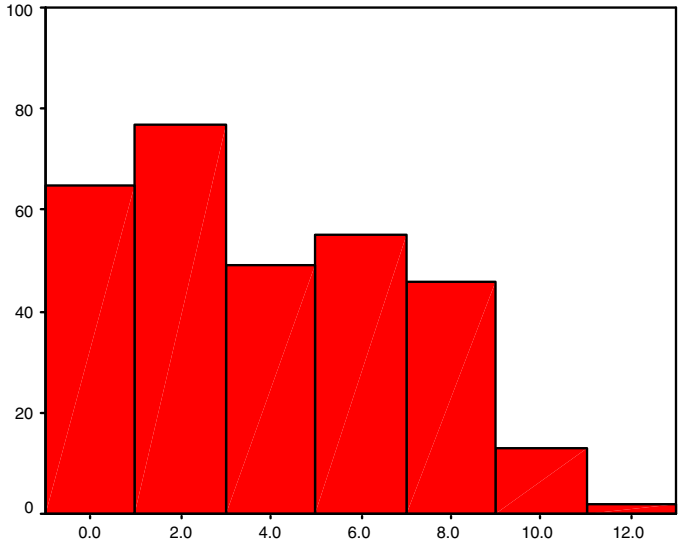
In general, the descriptive statistics of the personality measures (i.e., RCMAS, RADS2, BSCI-Y, BDI-Y, BAI-Y, BANI-Y, BDBI-Y) for this sample closely approximate the descriptive statistics presented in the test manuals (Reynolds & Richmond, 1985; Reynolds, 2002; Beck, Beck & Jolly, 2001). The manuals indicate that the normative data have been scaled on a *T*-distribution; each scale has a mean of 50 and a standard deviation of 10; that is to say, that the means and the standard deviations provided by the current Latino sample correspond to the means and the standard deviations of those obtained by the normative sample.

The Latino sample's TONYSS scores appear to be somewhat below what would be expected. Specifically, their *z* score mean is –0.71, which is below the expected mean of a normal z distribution of 0. Furthermore, the TONYSS standard deviation of 1.83 is above the expected standard deviation of the *z* distribution of 1.

The number of discipline referrals ranged from 0 to 12. The mean number of discipline referrals for the sample was 3.44, with a standard deviation of 3.02. The majority of the sample (n = 117) received one or fewer referrals. Figure 8 gives the frequencies of the discipline referrals.

Figure 8

Frequency of Discipline Referrals of Latino Students



To test Hypotheses 5 through 13, I correlated Latino participants' ANS scores with their scores on these other inventories, tests, and disciplinary referrals. Table 33 gives these correlations.

Table 33

Correlations Between Latino ANS Scores and Scores on Concurrent Measures

	ANS	RCMAS	RADS	BSCIY	BAIY	BDIY	BANIY	BDBIY	TONYSS *z*	Discipline Referrals
ANS	**									
RCMAS	0.66*	**								
RADS	0.69*	0.53*	**							
BSCIY	-0.42*	-0.29	-0.29*	**						
BAIY	0.18*	0.35*	-0.18*	-0.22*	**					
BDIY	0.71*	0.47*	0.66*	-0.60*	0.06*	**				
BANIY	0.69*	0.57*	0.38*	-0.54*	0.41*	0.72*	**			
BDBIY	0.30*	0.20*	0.08	-0.54*	0.39*	0.32*	0.69*	**		
TONYSS *z*	-0.83*	-0.56*	-0.63*	0.37*	-0.17*	-0.62*	-0.59*	-0.25*	**	
Discipline Referrals	0.82*	0.62*	0.51*	-0.27*	0.20*	0.42*	0.57*	0.35*	-0.78*	**

Note. "*" denotes significance at the <.01 level.

ANS = Adolescent Nervios Scale; RCMAS = Revised Child Manifest Anxiety Scale; RADS = Reynold's Adolescent Depression Scale – 2nd edition; BSCI-Y = Beck Self Concept Inventory for Youth; BAI-Y = Beck Anxiety Inventory for Youth; BDI-Y = Beck Youth Inventory for Youth; BANI-Y = Beck Anger Inventory for Youth; BDBI-Y = Beck Disruptive Behavior Inventory for Youth.

The ANS correlated modestly to highly with measures of self-reported depressive symptomology such as the RADS (.69, Hypothesis 7) and the BDI-Y (.71, Hypothesis 8). The ANS also correlated modestly to highly with a measure of self-reported anger (BANI-Y) (.69, Hypothesis 9). When correlated with a measure of self-reported self-concept (i.e., the BSCI-Y), the ANS showed a negative modest to low relationship (-.42, Hypothesis 11). These results confirm the hypotheses indicated in parentheses. A low correlation was obtained when the ANS was compared to a measure of self-reported disruptive behavior (i.e., the BDBI-Y) (.30, Hypothesis 10). This result did not confirm Hypothesis 10. All results were significant at the $p < .01$ level.

Results were mixed when the ANS was compared with measures of anxious symptomology, however. The ANS showed a modest to high correlation with the RCMAS (.66, Hypothesis 3), but a low, albeit significant, correlation with the BAI-Y (.18, Hypothesis 4). Despite the mixed results, the correlations among the ANS and the two anxiety measures were significant at the $p < .01$ level.

It should be noted that the BAI-Y measure of anxiety did not correlate well with the other measures of anxiety (i.e., the BAIY showed a low correlation (.35) with the RCMAS). The BAI-Y also did not correlate well with measures of depressive symptomology (-.18 with the RAD2 and .06 with the BDIY). This is puzzling as the

manuals for the RCMAS (Reynolds & Richmond, 1985) and the BAIY (Beck, Beck, & Jolley, 2001) discuss previous literature and findings indicating that the constructs of depression and anxiety should have at least moderate relationships with each other. Although the manual for the BAIY did report that the number of Latinos that were used for the sample was proportionate to US population statistics, there is no mention of any inter-group analyses to assess the impact of ethnic group on the scores. It is possible that the BAIY is not accurately measuring anxiety within this sample, and may not be a good measure of anxiety for this sample.

Overall, the ANS shared a good deal of variance with several of the concurrent measures. For instance, it shared moderate amounts of variance with the RCMAS (0.44), the RADS (0.48), the BDIY (0.50), and the BANIY (0.48). These findings were within expectations since I had originally hypothesized that *nervios* is similar to the constructs of anxiety and depression, and the presentation of *nervios* contained elements of anger.

The ANS showed a small amount of covariance with the BSCIY (0.18), the BAIY (0.03), and the BDBIY (0.09). The small shared variance among the ANS and these measures indicates that the measures do not show much covariation, and that they are minimally related to one another. Indeed, the BSCIY, the BAIY and the BDBIY do not share much variance with any of the other measures. Of the nine possible effect sizes reported for the BSCIY, eight (89%) were found to be small in magnitude. Similarly, all of the effect sizes for the BAIY were found to be small (100%), and six of the nine effect sizes for the BDBIY were small (67%). Therefore, it appears that these three measures do not share much covariance with the ANS or any of the other measures administered. As noted previously, the manuals for the BSCIY, the BAIY, and the BDBIY did not report

any inter-group analyses within their sample, and it is possible that these measures are not tapping the constructs that they are purporting to measure in this Latino sample and in the wider Latino population as well.

Large relationships were found when the effect sizes were calculated among the ANS and the TONYSS score (.69) as well as discipline referrals (.67). Indeed these relationships were much larger than any of the relationships that these two outcome measures shared with any of the personality inventories.

Criterion-Related Validity

Next the hypotheses that the ANS would contribute to the predictive variance of the amount of discipline referrals (Hypothesis 14) and standardized test scores (i.e., TONYSS; Hypothesis 15) over and above that predicted by the RADS-2, RCMAS, BYI-D, BYI-A, BYI-AN, and BYI-DB were tested. I ran two separate step-wise regression analyses, one for each of the outcome criteria (i.e., number of discipline referrals and TONYSS). On the first step for each of these analyses, I entered the scores generated from the RADS-2, RCMAS, BYI-D, BYI-A, BYI-AN, and BYI-DB. On the second step, I entered the adjusted ANS score. In both cases, the ANS contributed significantly to the prediction of the variance of the outcome criterion, above and beyond the other predictor variables, as noted by the significant improvement in the amount of variance that is explained by Model 2 in each of the analyses below. Tables 35 and 36 below summarize the results.

Table 35

Step-wise Regression Analyses of Predictor Measures for Number of Discipline Referrals

Model Number	*R*	R^2	*R* Squared Change	*F* Change
1	0.72	0.53	0.53	47.14*
2	0.85	0.73	0.20	222.67*

Note: "*" denotes significance at the $p < .01$ level.

Model 1 = RADS-2, RCMAS, BYI-D, BYI-A, BYI-AN, and BYI-DB; Model 2 = RADS-2, RCMAS, BYI-D, BYI-A, BYI-AN, BYI-DB, and ANS

Table 36

Step-wise Regression Analyses of Predictor Measures for TONYSS Scores

Model Number	*R*	R^2	*R* Squared Change	*F* Change
1	0.75	0.56	0.56	54.91*
2	0.83	0.69	0.13	123.50*

Note: "*" denotes significance at the $p < .01$ level.

Model 1 = RADS-2, RCMAS, BYI-D, BYI-A, BYI-AN, and BYI-DB; Model 2 = RADS-2, RCMAS, BYI-D, BYI-A, BYI-AN, BYI-DB, and ANS

Summary of Hypotheses

This section reviews the hypotheses in this study and briefly presents data support for each statement. Of the 15 hypotheses, 13 were supported by the data.

HY1: The ANS for English-speaking adolescents of Latino origin will demonstrate high internal consistency. The data confirmed this hypothesis (α = .93).

HY2: The ANS for English-speaking adolescents of Latino origin will demonstrate high test-retest reliability over a one-week time interval. The data confirmed this hypothesis (r = .85).

HY3: A one-factor model will predict more variance than a multiple-factor model when the ANS is completed by Latino participants. This hypothesis was confirmed by the data, although a one-factor solution did not fit the data perfectly. It appears that the reason for this was related to the skew of the data; attempts to correct for this skew by developing testlets or by dichotomizing the data seemed to improve the fit, however, none of these techniques succeeded in totally fitting the data perfectly to a one-factor solution.

HY4: A multiple-factor model will predict more variance than a one-factor model when the ANS is completed by non-Latino participants. This hypothesis was confirmed by the data. The data appeared to show that more variance is explained by the addition of more factors to the solution, although none of the multiple-factor solutions explored fit the data perfectly.

HY5: There will be a significant moderate positive correlation among Latino participants' scores on the ANS and scores on the RCMAS: The data confirmed this hypothesis (r = .66).

HY6: There will be a significant moderate positive correlation among Latino participants' scores on the ANS and scores on the Beck Youth Inventory Anxiety (BYI-A) Scale: The data did not confirm this hypothesis (r = .18). Although the relationship was significant, it was quite small.

HY7: There will be a significant moderate positive correlation among Latino participants' scores on the ANS and scores on the RADS-2: The data confirmed this hypothesis (r = .69).

HY8: There will be a significant moderate positive correlation among Latino participants' scores on the ANS and scores on the Beck Youth Inventory Depression (BYI-D) Scale: The data confirmed this hypothesis (r = .71).

HY9: There will be a significant moderate positive correlation among Latino participants' scores on the ANS and scores on the Beck Youth Inventory Anger (BYI-AN) Scale: The data confirmed this hypothesis (r = .69).

HY10: There will be a significant moderate positive correlation among Latino participants' scores on the ANS and scores on the Beck Youth Inventory Disruptive Behavior (BYI-DB) Scale: The data did not confirm this hypothesis (r = .30).

HY11: There will be a significant moderate positive correlation among Latino participants' scores on the ANS and scores on the Beck Youth Inventory Self-Concept (BYI-SC) Scale: The data confirmed this hypothesis (r = -.42).

HY12: There will be a significant moderate positive correlation among Latino participants' scores on the ANS and the number of student discipline referrals. The data confirmed this hypothesis (r = .80).

HY13: There will be a significant moderate negative correlation among Latino participants' scores on the ANS and scores on the standardized achievement examination. The data support this hypothesis (r = -.82).

HY14: Latino participants' scores on the ANS will contribute more to the predictive variance of the amount of discipline referrals than their scores on the RADS-2, RCMAS, BYI-D, BYI-A, BYI-AN, and BYI-DB combined. The data support this hypothesis.

H15: Latino participants' scores on the ANS will contribute more to the predictive variance of the standardized test scores than their scores on the RADS-2, RCMAS, BYI-D, BYI-A, BYI-AN, and BYI-DB combined. The data support this hypothesis.

CHAPTER IV

Discussion

According to the DSM-IV, *nervios* is a culture bound syndrome that is prevalent within the Latino culture in the United States and Latin America. While this syndrome has been investigated extensively using case study methods, in order to conduct controlled research on *nervios*, there should be a measure to assess its symptoms. This dissertation concerned the development of an instrument, the Adolescent Nervios Scale (ANS), for use with English-speaking Latino adolescents that was constructed in a pilot study (Livanis & Tryon, 2005) with items gleaned from the *nervios* literature and suggested by researchers and clinicians with expertise in *nervios*. This project demonstrates many findings, and opens new avenues for further exploration. In this section, I will discuss the results and then discuss the limitation of the study. Finally, I will discuss future areas for research.

Reliability of the ANS

In the literature, *nervios* symptoms tap a broad array of psychopathology including internalizing and externalizing symptoms as well as somatic and dissociative symptoms. Thus, the original 36-item ANS assessed all of these symptoms. Results of item-to-total score correlations from the administration of this questionnaire to Latino adolescents indicated that the Latinos in this sample tended to view *nervios* as a syndrome made up of predominantly internalizing, somatic, and dissociative symptoms. The majority of the five items that were dropped after the preliminary item-to-total score analyses tapped externalizing issues such as desires to fight and insubordination to adults. After these items were dropped, further item-to-total score correlations showed that the

remaining items tapping externalizing symptoms had lower correlations with the total score than did the other symptoms.

The first two hypotheses of this dissertation dealt specifically with the replication of the pilot study (i.e., the demonstration of internal and test-retest reliabilities). The data from this sample replicated the results of the pilot study; namely that the ANS is internally consistent and reliable over time when administered to Latino adolescents.

I compared the reliabilities of the ANS when it was administered to a non-Latino sample to those obtained with the Latino sample. In general, the non-Latino sample tended to score lower on the ANS, suggesting that many of the items were not endorsed by members of this sample. While the internal consistency for the non-Latino sample was high (but not as high as that produced by the Latino sample), the test-retest reliability was low, suggesting that symptoms are transient and fleeting in this group (as contrasted to the Latino sample where the symptoms are consistent over time).

Comparisons of the two groups' reliabilities showed that the Latino sample responded to the ANS items as representative of a unitary construct, while the non-Latino sample endorsed the items as representing several constructs. While the Latino sample equally endorsed somatic, internalizing, and dissociative symptoms, the non-Latino sample predominantly endorsed internalizing symptoms more consistently. Although it appears that the Latino and non-Latino samples share some common means to express their pathology, the Latino sample members endorsed a wider variety of symptoms than the non-Latinos.

Construct Validity

The next set of hypotheses dealt with the ANS's differential construct validities for the Latino and non-Latino samples. Initial exploratory factor analyses indicated that one large factor explained more of the variance for the Latino sample, while three large factors explained the bulk of the variance for the non-Latino sample. This finding is similar to the findings that the reliability analyses demonstrated – namely that the Latino sample viewed the items as representing one large construct while the non-Latino sample viewed the items as a mixture of many different constructs.

Confirmatory factor analyses, however, failed to demonstrate factor structures that showed a good fit to the data, for both samples, however, some differences were found among the two groups that should be discussed. Although none of the four proposed factor structures fit the data from any of the samples perfectly, certain structures seemed better suited than others for each sample. The best (albeit imperfect) structure which fit the Latino data was one which contained only one large factor, while the best (although imperfect) structure which fit the non-Latino data was one which contained four factors (representing internalizing, externalizing, dissociative, and somatic symptoms, respectively). While this finding is not conclusive, it lends some support to the findings generated previously – the Latino group considered these items in a qualitatively different manner than the non-Latinos. In fact, item responses indicate that the non-Latino sample responded to the items as would be expected based on Western nosology; that is to say, they viewed these items as representative of four distinct areas of psychopathology.

I also examined ANS responses of various sub-groups within the Latino sample (i.e., gender, generational status, and as country of origin) and found that none of these

sub-groupings responses explain the variance any better did than a one-factor model for the whole Latino sample. Thus, Latino participants' gender, country or origin, and generational status did not appear to influence their perception of *nervios* as a single unitary construct.

A possible reason why the Latino data did not yield a good fit for a one-factor solution may be that the Latino data were skewed. Since participants came from a school and not a clinic, many of their responses were positively skewed (i.e., many of the participants endorsed 0 or 1 on the items). I attempted two strategies to deal with this issue: testlets creation and dichotomization. Confirmatory factor analyses indicated that using these types of strategies served to explain more variance than the initial one-factor confirmatory analyses, although the data still did not fit perfectly. This suggests that the tendency of the participants to respond in a particular way affected the results of the confirmatory factor analyses.

Concurrent, Discriminative, and Criterion-Based Validity

The Latino ANS responses were compared to their responses to measures of psychopathology, grades on standardized assessments and discipline referrals. Overall, the ANS correlated in predicted directions with measures of related constructs. For example, moderate to high positive correlations were found with measures of depression and anger, while moderate negative correlations were found with a measure of self-concept.

The unpredicted low correlation among the ANS and a self-reported measure of disruptive behavior may be due to several factors. I dropped some items from the ANS that dealt with externalizing behavior because they did not correlate highly with ANS

total. These lower correlations suggest that perhaps the construct of *nervios* is minimally related to externalizing, disruptive behaviors. Another possible reason for the lower than predicted correlation among the ANS total score and the other measure of disruptive behavior may be that the participants were unable to appropriately self-assess their own degree of disruptive or externalizing behavior. I suggest this because the ANS scores were able to adequately predict school discipline referrals, even though there was a low relationship among self-reported externalizing behaviors and school referrals.

Although I administered two measures of anxiety to the Latino sample, only one of the measures, the Revised Children's Manifest Anxiety Scale, correlated moderately to highly with the ANS. The other measure, the Beck Youth Anxiety Inventory, not only demonstrated low correlations with the ANS, but also showed little relationship with almost all of the other measures, even the other measure of anxiety! This unexpected low correlation may be due to the properties of that particular measure, and may imply that the normative group was not similar to the sample that I used.

I used the data from these measures to predict scores on standardized assessments in reading as well as discipline referrals. Overall, the ANS contributed significantly to the prediction of both constructs above what was predicted by the other personality measures. The ANS correlated the highest with measures of standardized reading assessments. *Nervios* may be a construct which may impact many areas of life beyond socio-emotional functioning.

Summary

This dissertation's results provide support for the Latino culture-bound construct of *nervios* and its assessment in English-speaking Latino adolescents using the ANS.

Results show that from a non-Latino perspective, *nervios* symptoms seem to tap a broad array of psychopathology. Latinos, however, appear to perceive these disparate symptoms as part of one disorder – *nervios*. For Latino participants, the ANS showed good internal consistency and stability as well as concurrent, discriminative, and criterion-based validity.

Limitations

Overall, the findings confirm the most of the hypotheses of the study. However, there are many limitations that need to be considered when viewing the results of the study and corrected by future studies. For example, the sizes of the samples limit the study's generalizability. Another limitation of this study is the fact that all of the participants came from one school in a suburb of New York City; that is to say that the sample was not randomly selected. Therefore, the results may just represent the impressions and perceptions of a small subset of Latino adolescents.

Furthermore, the Latino participants were not equally distributed according to country of origin. The data show that most of the participants were either originally from or were descendants of Central American countries. It is quite possible that *nervios* may not be a universal Latino phenomenon, but may be localized to a particular area of Latino America. Thus, future studies should sample Latinos from several countries of origin.

Due to an unfortunate oversight, minimal demographic information was collected on the non-Latino sample. These students were not given a demographic survey to complete. Although participants' school folders were examined to collect as much demographic information as possible, nevertheless, background information on this sample is incomplete and does not allow for examination factors that may have

contributed to the findings, such as differential responding according to race, ethnic group, and socioeconomic status in the non-Latino group. Future studies should collect extensive background information on participants.

Finally, the Latino data (and non-Latino data as well) were not able to be fit to any of the factor models propose by the author. One reasons for this appeared to be the skewness of the data; indeed attempts to correct for the skew via the use of testlets appeared to improve the fit. It appears that this skewness may be due to the fact that the ANS was administered to adolescents in a school who tended to not endorse many difficulties and issues highly. Future attempts should be made to administer the ANS to more heterogeneous Latino groups, including samples of clinic-referred adolescents. Once the ANS has built up a significant body of research, the relationship between *nervios* and academic achievement should be examined for closely. Another area to explore might be whether individuals who score high on the ANS may respond differently to various cognitive-behavioral treatments.

Appendix A – Demographic Information Questionnaire

Student Questionnaire

Age:_____ **Gender:_____** **Grade:_____**

Ethnicity: _____

Were you born in the U.S? ___yes ____no

If no, what country were you born in? _____

In what country was your father born? _____

What is your father's occupation? _____

Highest level of school completed by your father

__less than 7th grade
__ junior high school (9th grade)
__some high school (10th or 11th grade)
__high school graduate
__some college or specialized training
__college or university graduate
__graduate degree

In what country was your mother born? _____

What is your mother's occupation? _____

Highest level of school completed by your mother

__less than 7th grade
__ junior high school (9th grade)
__some high school (10th or 11th grade)
__high school graduate
__some college or specialized training
__college or university graduate
__graduate degree

Where any of your grandparents born in the US? **___yes** **___no**

My parents are: __married __divorced/separated

I live with: __mother and father __mother __father
__foster parents

Appendix B – The Adolescent *Nervios* Scale

Please circle the number for each item that shows how you have felt or acted in the last 6 months.

	Almost Never	***Hardly Ever***	***Sometimes***	***Almost always***
1. Parts of my body shake.	**1**	**2**	**3**	**4**
2. My heart beats too quickly.	**1**	**2**	**3**	**4**
3. I faint or pass out.	**1**	**2**	**3**	**4**
4. I sometimes have difficulties moving parts of my body.	**1**	**2**	**3**	**4**
5. I sweat a lot.	**1**	**2**	**3**	**4**
6. I have problems breathing.	**1**	**2**	**3**	**4**
7. I have a lot of pain in my chest.	**1**	**2**	**3**	**4**
8. I get dizzy.	**1**	**2**	**3**	**4**
9. I get chills.	**1**	**2**	**3**	**4**
10. My chest or head get hot for no reason.	**1**	**2**	**3**	**4**
11. I feel tingling in parts of my body.	**1**	**2**	**3**	**4**
12. I feel like someone is choking me.	**1**	**2**	**3**	**4**
13. I feel like things around me aren't real.	**1**	**2**	**3**	**4**
14. I feel like I am looking at myself from far away or above the ground.	**1**	**2**	**3**	**4**
15. I feel like I will start a fight with someone.	**1**	**2**	**3**	**4**
16. I feel like I am a failure.	**1**	**2**	**3**	**4**
17. Other people are disappointed in me.	**1**	**2**	**3**	**4**
18. I am afraid of anger.	**1**	**2**	**3**	**4**
19. I am afraid of violence.	**1**	**2**	**3**	**4**
20. I am afraid of being alone.	**1**	**2**	**3**	**4**

	Almost Never	***Hardly Ever***	***Sometimes***	***Almost always***
21. I am afraid of losing control of myself.	**1**	**2**	**3**	**4**
22. I am afraid of going crazy.	**1**	**2**	**3**	**4**
23. I am afraid of dying.	**1**	**2**	**3**	**4**
24. I am afraid of doing badly in school.	**1**	**2**	**3**	**4**
25. I hit or throw things.	**1**	**2**	**3**	**4**
26. I hit other people on purpose at home or in school.	**1**	**2**	**3**	**4**
27. I curse.	**1**	**2**	**3**	**4**
28. It is hard to know what is real and what is not.	**1**	**2**	**3**	**4**
29. I don't remember many things that I have done.	**1**	**2**	**3**	**4**
30. I feel sad.	**1**	**2**	**3**	**4**
31. I have difficulties eating.	**1**	**2**	**3**	**4**
32. I feel afraid for no reason.	**1**	**2**	**3**	**4**
33. I have difficulties sleeping.	**1**	**2**	**3**	**4**
34. I disobey people at home.	**1**	**2**	**3**	**4**
35. I disobey the adults in my school.	**1**	**2**	**3**	**4**
36. I cry.	**1**	**2**	**3**	**4**

Appendix C - Parental Consent forms (English – to Latino parents)

Dear Parent:

My name is Alex Mouzakitis and I am working with Andrew Livanis, who is a graduate student in the Ph.D. program in Educational Psychology at the Graduate Center of the City University of New York. In order to complete the requirements for his degree, he is conducting a research project in which he would like your child to participate.

The purpose of this study is to investigate groups of behaviors and emotions that are commonly exhibited by middle school students when stressed. To gather the information needed, I will administer a test that he developed which taps different emotions and behaviors that children of this age group experience (for example, fear, anger, and sadness), as well as other tests that also measure these experiences. This will take place during a non-academic subject class period. Administration of the tests takes approximately 35 minutes. After about a week, I will ask that your child return to re-take these tests.

The results of this study may assist psychologists in understanding students' emotional functioning. This information may enable professionals to work more effectively with adolescent students in the schools.

Participation in the study is completely voluntary; you or your child will be allowed to stop your child's participation at any time. There are no foreseeable risks involved in the study. All information provided by the participant will be kept strictly confidential, and will not become part of the student's school records. However, an exception will be made if a child has a significantly high score on the depression tests; in such a case, due to ethical and legal guidelines, I will contact you immediately and will give you the names of some professionals and agencies in the area. This information, however, will still not be shared with anyone within the school.

All students' names will be removed from the questionnaires after the information has been collected. Any personal information will be used for analysis of the study only. After the study is completed, results can be obtained from the researcher at the following number: (718) 564-0237.

After your child has participated in this study and the collection of information is complete, I will provide your child and all other children who participated with a pizza party during their lunch period.

If you have any questions about this research, you can call me at 718-278-8774 or you can contact Andrew Livanis at 718-564-0237 and at perachori@aol.com. You can also contact his advisor, Dr. Georgiana Tryon at (212) 817 –8293 or email her at gtryon@gc.cuny.edu. If you have questions about your child's rights as a participant in this study, you can contact Kay Powell, IRB Administrator, The Graduate Center/City University of New York, (212) 817-7523 and kpowell@gc.cuny.edu.

Sincerely,

Alex Mouzakitis

CONSENT FORM

My name is Alex Mouzakitis and I am working with Andrew Livanis, a student in the Educational Psychology Ph.D. Program at the Graduate Center of the City University of New York (CUNY) and Principal Investigator of a research project. I would like permission to have your child complete several questionnaires about his or her experiences.

The research will take place in the Lawrence Middle School. Your child will be provided with a pass to the Guidance Office during a non-academic class (like Music or Art). Then he/ she will be asked to sign a form to participate. Although it is not a legal consent (permission), if he or she does not want to participate, then s/he will be free to leave. If your child becomes upset at any point, he or she can leave. If both you and s/he agree to this study, then, your child will be presented with questionnaires measuring behaviors and emotions that are expressed by students of this age.

This whole process should take approximately 35 minutes. About a week later, s/he will be asked to complete one of the tests once again. This will happen during one of the periods in which your child is not in an academic class. All information gathered will be kept strictly confidential and will be stored in a locked file cabinet, to which only Andrew Livanis, his advisor, and I will have access. This locked file will be kept at the researcher's home. Nobody at the school will have access to any of the information. At any time your child can refuse to answer any questions or stop completing the questionnaire.

There is no known risk to this study. I do not anticipate that the children will become upset while competing this form, but if they do, they can stop completing the form, and can speak to their guidance counselor, school social worker or school psychologist privately, and can refuse to complete the questionnaire without any consequence. If your child obtains a high score on the scales measuring depression, then I will contact you and provide you with some agencies and professionals that can help your child.

The benefit of your child's participation is that we will be able to collect more information that can be used to help children who are experiencing difficulties in their lives. At the end of this study, all the students who participated will be provided with a pizza party during their lunch periods.

I may publish results of the study, but names of people or identifying characteristics will not be used in any of the publications. If you would like a copy of the study, please provide me with your address and I will send you a copy in the future.

If you have any questions about this research, you can call me at 718-278-8774 or you can contact Andrew Livanis at 718-564-0237 and at perachori@aol.com. You can also contact his advisor, Dr. Georgiana Tryon at (212) 817 –8293 or email her at gtryon@gc.cuny.edu. If you have questions about your child's rights as a participant in this study, you can contact Kay Powell, IRB Administrator, The Graduate Center/City University of New York, (212) 817-7523 and kpowell@gc.cuny.edu.

If you agree to have your child participate in this study, please sign below. Please return this form with the self-addressed stamped envelope.

_____
Student's Name

_____ _____ _____ _____
Parent's signature Date Investigator's signature Date

Appendix D – Parental Consent forms (Spanish)

Estimado padre:

Me llamo Alex Mouzakitis y yo trabajo con Andrew Livanis, que es un estudiante de postgrado que realiza el doctorado en Educational Psychology (Psicología Educacional) en el Centro de Postgrados de la City University of New York. Con el fin de cumplir los requisitos para obtener el título, el esta realizando un estudio de investigación en el que le gustaría que participara su hijo/a.

El propósito de este proyecto es el estudio de los comportamientos y emociones que muestran los ninos del middle school cuando están estresados. Para reunir la información necesaria, elaboraré un estudio demográfico y diseñaré unos cuestionarios para medir los emociones y comportamientos que ninos de este edad muestran (por ejemple, miedo, enojo y tristeza). La realización de los cuestionarios dura aproximadamente 35 minutos y tendrá lugar durante las horas de clases secundarias. Transcurrida una semana, su hijo tendrá que volver a tomar una de las pruebas. También necesitaré ver los resultados de la prueba TONYSS de su hijo/a, además de sus informes de conducta.

Los resultados de este estudio podrían servir de ayuda a los psicólogos para comprender el comportamiento emocional de todos los estudiantes. Gracias a esta información, los profesionales podrán trabajar de manera más eficaz con los estudiantes adolescentes en las escuelas.

La participación en el estudio es completamente voluntaria y tanto usted como su hijo/a podrán decidir dejar de participar en cualquier momento. No existen riesgos previsibles relacionados con este estudio. Toda la información facilitada por el participante será estrictamente confidencial y no formará parte del expediente académico del estudiante. Sin embargo, existe una excepción en el caso de que su hijo/a obtenga unos resultados considerablemente elevados en la escala de depresión. Si esto ocurre, debido a pautas éticas y legales, me pondré inmediatamente en contacto con usted y le facilitaré los nombres de algunos profesionales y centros especializados en la zona. Esta información, no obstante, tampoco se divulgará dentro de la escuela.

Una vez recogidos todos los datos, los nombres de los estudiantes desaparecerán de los cuestionarios. Cualquier información personal sólo se utilizará para el análisis de la investigación. Tras la finalización del estudio, podrá obtener los resultados de la investigación, que le facilitará el encargado de la misma en el siguiente número de teléfono: (718) 564-0237.

Cuando los estudiantes hayan concluido su participación en este estudio y la recopilación de datos haya finalizado, todos los participantes serán invitados a comer pizza durante la hora del almuerzo.

Si desea hablar conmigo sobre este estudio, llámeme al número (718) 278-8774 o puede hablar con Andrew Livanis al número (718) 564-0237 o envíele un mensaje de correo electrónico a perachori@aol.com. Además, también puede comunicarse con la supervisora del estudio, Georgiana Tryon en (212) 817-8293, si así lo desea o enviarla un mensaje a gtryon@gc.cuny.edu. Si desea comunicarse con la directora del departamento de la universidad encargado de supervisar este estudio, IRB, Kay Powell, puede hacerlo a (212) 817-7525 o kpowell@cuny.gc.edu.

Sinceramente,

Alex Mouzakitis

FORMA DE CONSIMIENTO

My name is Alex Mouzakitis and I am working with Andrew Livanis, a student in the Educational Psychology Ph.D. Program at the Graduate Center of the City University of New York (CUNY), and Principal Investigator of a research project. I would like permission to have your child complete several questionnaire about his or her experiences.

Me llamo Alex Mouzakitis y yo trabajo con Andrew Livanis que esta haciendo un doctorado en Psicología educacional, que es un programa que depende del Centro de Graduados de la Universidad de Nueva York (CUNY). El es el principal investigador de un proyecto. Me gustaría contar con su autorización para que su hijo completara un cuestionario sobre sus experiencias.

El estudio tendrá lugar en la escuela Lawrence Middle School. Su hijo/a recibirá un permiso para acudir a la Guidance Office durante una clase secundaria (como Música o Dibujo) y se le pedirá que firme un formulario de participación. No es una autorización legal (permiso) y si no desea participar podrá marcharse. Si su hijo/a se siente incómodo en cualquier momento, podrá marcharse. Si tanto usted como su hijo/a aceptan participar en este estudio, su hijo/a tendrá que completar varios cuestionarios para valorar comportamientos y emociones que muestran ninos de este edad.

Todo el proceso tiene una duración aproximada de 35 minutos. Aproximadamente una semana después, su hijo/a tendrá que tomar de nuevo una de las pruebas. El estudio se realizará durante horas de clases secundarias. Toda la información recopilada será estrictamente confidencial y se guardará en un armario bajo llave, al que, a parte de mí, sólo tendrán acceso mi asesor y mi ayudante en la investigación. Esta información se guardará en la casa del investigador y nadie en la escuela podrá tener acceso a la misma. En cualquier momento, tanto usted como su hijo/a podrán negarse a responder cualquier pregunta o interrumpir el cuestionario sin recibir penalización alguna por ello.

No existen riesgos conocidos por la participación en este estudio. No es probable que el participante se sienta incómodo durante la realización de este estudio, pero si esto ocurre, podrá cesar su participación y hablar en privado con el orientador, con el trabajador social de la escuela o con el psicólogo y decidir dejar de completar el cuestionario sin que ello tenga consecuencia alguna. Si su hijo/a obtiene una valoración elevada en la escala de depresión, me pondré en contacto con usted y le facilitaré información sobre algunos centros y profesionales que podrían servirle de ayuda.

Gracias a su participación en este proyecto podremos recopilar datos sobre la manifestación de pensmientos y comportamientos en niños. Esta información podrá utilizarse posteriormente para ayudar a otros niños que experimenten problemas o dificultades en sus vidas. Al finalizar este estudio, todos los estudiantes participantes serán invitados a comer pizza durante la hora del almuerzo.

Existe la posibilidad de que se publiquen los resultados de este estudio, pero los nombres de los participantes y cualquier característica que permita identificarlos no se revelarán. Si deseara obtener una copia de este estudio, no olvide suministrarme su dirección postal para que pueda enviársela.

Si desea hablar conmigo sobre este estudio, llámeme al número (718) 278-8774 o puede hablar con Andrew Livanis al número (718) 564-0237 o envíele un mensaje de correo electrónico a perachori@aol.com. Además, también puede comunicarse con la supervisora del estudio, Georgiana Tryon en (212) 817-8293, si así lo desea o enviarla un mensaje a gtryon@gc.cuny.edu. Si desea comunicarse con la directora del departamento de la

universidad encargado de supervisar este estudio, IRB, Kay Powell, puede hacerlo a (212) 817-7525 o kpowell@cuny.gc.edu.

Si acepta que su hijo participe en este estudio, por favor, firme al pie de esta autorización. Envíe esta autorización en el sobre con respuesta postal paga que le hemos suministrado.

_____
Nombre de estudiante

_____	_____	_____	_____
Firma del padre	Date	Firma del investigador	Date

Appendix E – Student Assent Form

Dear student:

My name is Alex Mouzakitis and I am working with Andrew Livanis, who is a student in the Educational Psychology Ph.D. Program at the Graduate Center of the City University of New York (CUNY). I would like you to take part in a study that will help those of us who work with middle school students understand how teenagers like you think, feel, and behave. If you choose to be part of the study, you will be given a few questionnaires to complete that ask you about your feelings, thoughts, and behavior. Later on, in about a week, you will be asked to come back and complete one of those forms so that I can see whether these feelings, thoughts, and behaviors continue over time or if they are a "one-shot deal."

Your parents have already been notified about your participation in this study, and they have given their permission for you to do this. However, I would also like you to give your permission to participate as well. You can choose not to participate, and no bad things will happen because of your refusal. If any of the questions make you uncomfortable, you can always decide that you don't want to continue and then you can leave.

When I have finished collecting all of the information, I will have a pizza party for you and will let you invite your friends as well.

None of the answers that you will give will be shared with anyone who works in the school. However, there are some patterns that some very depressed students show on these forms. If you show these patterns, then I will let your parents know, not to get you into any trouble, but help your parents help you.

If you do choose to participate, please sign the form below.

Thank you very much for your time and consideration.

Sincerely,

Alex Mouzakitis

I agree to participate in this study. The information that I put on paper will be kept confidential from everyone except the researcher, his assistant and his supervisor. Nobody in the school will be able to see this information – it will be kept in a locked file cabinet outside of school (in the researcher's home). I also am free to go, if I find that the questions make me uncomfortable in any way.

_____

Student signature

Appendix F – Parental warning form (English)

Dear Parents:

Earlier in the school year, you signed a consent form giving your son/daughter permission to participate in a research study that I was conducting. In the consent form, I emphasized the fact that all information would be kept confidential. However, due to ethical and legal guidelines, I said that I would inform you in the event that your son/daughter was found to have a significantly high score on the depression test.

The results show that your child scored above the clinical cutoff score for depression. I would like to point out that your child was administered a general test and that his/her responses to these questionnaires reflected his/her mood fluctuations. A high score does not necessarily indicate a problem. However, I recommend that you consider some follow up and further assessment.

I have enclosed a list of qualified referral agencies that you can contact. If you would like to speak with me, I can be reached at the following number: (718) 564-0237.

Sincerely,

Andrew Livanis

Appendix G – Parental warning form (Spanish)

Estimados padres

Con anterioridad, durante este curso escolar, usted firmó una autorización para que su hijo/a participara en un estudio de investigación que yo llevé a cabo. En dicho documento de autorización, subrayé el hecho de que toda la información se trataría como confidencial. Sin embargo, especifiqué que, debido a pautas éticas y legales, le informaría en el caso de que su hijo/a obtuviera unos resultados considerablemente elevados en la escala de depresión.

El estudio indica que los resultados de su hijo/a se encuentran por encima de la barrera clínica establecida para la depresión. Me gustaría señalar que su hijo/a realizó un cuestionario general y que sus respuestas reflejaron cambios en su estado de ánimo. Un resultado elevado no denota necesariamente la existencia de un problema. Sin embargo, le recomiendo que considere la posibilidad de consultar esta situación con un especialista.

He incluido una lista de centros especializados con los que puede ponerse en contacto. Si desea hablar conmigo, llámeme al siguiente número: (718) 564-0237.

Sinceramente,

Andrew Livanis

Appendix H – Parental Consent Forms (English to non-Latino Parents)

Dear Parent:

My name is Alex Mouzakitis and I am working with Andrew Livanis, who is a graduate student in the Ph.D. program in Educational Psychology at the Graduate Center of the City University of New York. In order to complete the requirements for his degree, he is conducting a research project in which he would like your child to participate.

The purpose of this study is to investigate groups of behaviors and emotions that are commonly exhibited by middle school students when stressed. To gather the information needed, I will administer a test that he developed which taps different emotions and behaviors that children of this age group experience (for example, fear, anger, and sadness). This will take place during a non-academic subject class period. Administration of the tests takes approximately 35 minutes. After about a week, I will ask that your child return to re-take this test.

The results of this study may assist psychologists in understanding students' emotional functioning. This information may enable professionals to work more effectively with adolescent students in the schools.

Participation in the study is completely voluntary; you or your child will be allowed to stop your child's participation at any time. There are no foreseeable risks involved in the study. All information provided by the participant will be kept strictly confidential, and will not become part of the student's school records. However, an exception will be made if a child has a significantly high score on the depression tests; in such a case, due to ethical and legal guidelines, I will contact you immediately and will give you the names of some professionals and agencies in the area. This information, however, will still not be shared with anyone within the school.

All students' names will be removed from the questionnaires after the information has been collected. Any personal information will be used for analysis of the study only. After the study is completed, results can be obtained from the researcher at the following number: (718) 564-0237.

After your child has participated in this study and the collection of information is complete, I will provide your child and all other children who participated with a pizza party during their lunch period.

If you have any questions about this research, you can call me at 718-278-8774 or you can contact Andrew Livanis at 718-564-0237 and at perachori@aol.com. You can also contact his advisor, Dr. Georgiana Tryon at (212) 817 –8293 or email her at gtryon@gc.cuny.edu. If you have questions about your child's rights as a participant in this study, you can contact Kay Powell, IRB Administrator, The Graduate Center/City University of New York, (212) 817-7523 and kpowell@gc.cuny.edu.

Sincerely,

Alex Mouzakitis

CONSENT FORM

My name is Alex Mouzakitis and I am working with Andrew Livanis, a student in the Educational Psychology Ph.D. Program at the Graduate Center of the City University of New York (CUNY) and Principal Investigator of a research project. I would like permission to have your child complete several questionnaires about his or her experiences.

The research will take place in the Lawrence Middle School. Your child will be provided with a pass to the Guidance Office during a non-academic class (like Music or Art). Then he/ she will be asked to sign a form to participate. Although it is not a legal consent (permission), if he or she does not want to participate, then s/he will be free to leave. If your child becomes upset at any point, he or she can leave. If both you and s/he agree to this study, then, your child will be presented with questionnaires measuring behaviors and emotions that are expressed by students of this age.

This whole process should take approximately 35 minutes. About a week later, s/he will be asked to complete one of the tests once again. This will happen during one of the periods in which your child is not in an academic class. All information gathered will be kept strictly confidential and will be stored in a locked file cabinet, to which only Andrew Livanis, his advisor, and I will have access. This locked file will be kept at the researcher's home. Nobody at the school will have access to any of the information. At any time your child can refuse to answer any questions or stop completing the questionnaire.

There is no known risk to this study. I do not anticipate that the children will become upset while competing this form, but if they do, they can stop completing the form, and can speak to their guidance counselor, school social worker or school psychologist privately, and can refuse to complete the questionnaire without any consequence. If your child obtains a high score on the scales measuring depression, then I will contact you and provide you with some agencies and professionals that can help your child.

The benefit of your child's participation is that we will be able to collect more information that can be used to help children who are experiencing difficulties in their lives. At the end of this study, all the students who participated will be provided with a pizza party during their lunch periods.

I may publish results of the study, but names of people or identifying characteristics will not be used in any of the publications. If you would like a copy of the study, please provide me with your address and I will send you a copy in the future.

If you have any questions about this research, you can call me at 718-278-8774 or you can contact Andrew Livanis at 718-564-0237 and at perachori@aol.com. You can also contact his advisor, Dr. Georgiana Tryon at (212) 817 –8293 or email her at gtryon@gc.cuny.edu. If you have questions about your child's rights as a participant in this study, you can contact Kay Powell, IRB Administrator, The Graduate Center/City University of New York, (212) 817-7523 and kpowell@gc.cuny.edu.

If you agree to have your child participate in this study, please sign below. Please return this form with the self-addressed stamped envelope.

_____

Student's Name

_____ _____ _____ _____

Parent's signature Date Investigator's signature Date

Appendix I: Results of the OBLIMIN Rotations

Table 37

OBLIMIN Rotation on a Two-Factor Solution

Item	*Factor 1*	*Factor 2*
Tingling	0.763	-0.009
Fear of doing badly in school	0.751	0.017
Fear of being alone	0.716	0.097
Sad	0.715	-0.091
Chills	0.694	-0.034
Fear of death	0.694	0.165
Heart beats too fast	0.675	-0.079
fear of violence	0.671	0.167
fear no reason	0.652	-0.025
body shakes	0.633	-0.070
don't recall things I did	0.576	-0.179

Table 37 (continued)

OBLIMIN Rotation on a Two-Factor Solution

Item	*Factor 1*	*Factor 2*
fear of anger	0.475	-0.117
chest/head get too hot	0.447	-0.370
like a failure	0.446	-0.398
fear of losing control	0.377	-0.282
Cry	0.369	-0.127
hit/throw things	0.304	-0.091
difficulties moving body	0.254	-0.252
look self from far away	-0.141	-0.914
things aren't real	-0.121	-0.901
not know what is real	-0.015	-0.873
pain in chest	0.048	-0.791
problems breathing	-0.056	-0.647

Table 37 (continued)

OBLIMIN Rotation on a Two-Factor Solution

Item	*Factor 1*	*Factor 2*
like I am being choked	-0.054	-0.587
Dizzy	0.217	-0.538
fear of going crazy	0.243	-0.529
eating problems	0.322	-0.527
hit others	-0.017	-0.504
sleep problems	0.161	-0.406
others disappointed in me	0.226	-0.399
disobey at home	0.141	-0.308

Table 38

OBLIMIN Rotation on a Three-Factor Solution

Item	*Factor 1*	*Factor 2*	*Factor 3*
fear of death	0.757	0.236	-0.413
Tingling	0.747	-0.029	-0.029
fear of doing badly in school	0.743	0.002	0.010
Sad	0.707	-0.104	-0.032
fear of being alone	0.693	0.051	0.279
Chills	0.674	-0.070	0.144
heart beats too fast	0.665	-0.095	-0.020
fear of violence	0.653	0.122	0.336
body shakes	0.650	-0.050	-0.254
fear no reason	0.635	-0.048	0.016
don't recall things I did	0.601	-0.151	-0.285
Chest/head get too hot	0.464	-0.353	-0.225

Table 38 (continued)

OBLIMIN Rotation on a Three-Factor Solution

Item	*Factor 1*	*Factor 2*	*Factor 3*
like a failure	0.456	-0.394	-0.056
fear of losing control	0.377	-0.289	0.017
cry	0.358	-0.143	0.024
look self from far away	-0.115	-0.895	-0.045
things aren't real	-0.096	-0.884	-0.029
not know what is real	0.000	-0.873	0.058
pain in chest	0.069	-0.776	-0.055
problems breathing	-0.030	-0.623	-0.092
hit others	-0.047	-0.566	0.334
eating problems	0.319	-0.547	0.116
like I am being choked	-0.018	-0.543	-0.439
fear of going crazy	0.250	-0.537	0.090

Table 38 (continued)

OBLIMIN Rotation on a Three-Factor Solution

Item	*Factor 1*	*Factor 2*	*Factor 3*
dizzy	0.246	-0.506	-0.293
sleep problems	0.149	-0.441	0.230
others disappointed in me	0.251	-0.372	-0.208
disobey at home	0.139	-0.323	0.125
difficulties moving body	0.309	-0.188	-0.575
fear of anger	0.458	-0.176	0.465
hit/throw things	0.274	-0.150	0.379

Table 39

OBLIMIN Rotation on a Four-Factor Solution

Item	*Factor 1*	*Factor 2*	*Factor 3*	*Factor 4*
fear no reason	0.748	0.027	0.074	0.037
body shakes	0.742	-0.004	-0.187	-0.076
Tingling	0.697	0.001	-0.073	0.170
Chills	0.647	-0.021	0.096	0.220
chest/head get too hot	0.636	-0.296	-0.101	-0.148
heart beats too fast	0.625	-0.065	-0.052	0.155
Cry	0.610	-0.052	0.183	-0.135
Sad	0.598	-0.088	-0.125	0.219
don't recall things I did	0.501	-0.160	-0.341	0.079
fear of losing control	0.324	-0.273	-0.030	0.148
not know what is real	0.013	-0.848	0.054	0.093
look self from far away	0.178	-0.825	0.164	-0.238

Table 39 (continued)

OBLIMIN Rotation on a Four-Factor Solution

Item	*Factor 1*	*Factor 2*	*Factor 3*	*Factor 4*
things aren't real	0.141	-0.819	0.137	-0.171
pain in chest	0.151	-0.741	0.001	-0.021
problems breathing	-0.117	-0.649	-0.151	0.080
like I am being choked	-0.062	-0.586	-0.442	-0.123
fear of going crazy	0.009	-0.573	-0.089	0.355
eating problems	0.235	-0.530	0.037	0.234
hit others	0.107	-0.498	0.419	0.052
dizzy	0.398	-0.467	-0.171	-0.187
like a failure	0.186	-0.434	-0.259	0.341
others disappointed in me	0.016	-0.431	-0.377	0.193
sleep problems	0.118	-0.412	0.174	0.197
disobey at home	-0.075	-0.356	-0.041	0.306

Table 39 (continued)

OBLIMIN Rotation on a Four-Factor Solution

Item	*Factor 1*	*Factor 2*	*Factor 3*	*Factor 4*
fear of death	0.397	0.174	-0.700	0.272
difficulties moving body	0.387	-0.190	-0.465	-0.260
hit/throw things	0.358	-0.081	0.409	0.164
fear of anger	-0.039	-0.232	0.107	0.811
fear of violence	0.256	0.090	0.020	0.637
fear of doing badly in school	0.375	-0.039	-0.279	0.485
fear of being alone	0.444	0.048	0.072	0.471

Appendix J – Results of Factor Analyses for the 24-item Scale

Table 40

Items Included in the 24-item Scale

Item
1.Body shakes
2. Heart beats too fast
6. Problems breathing
7. Pain in chest
8. Dizzy
9. Chills
10. Chest/head gets too hot
11. Tingling
13. Things aren't real
14. Look at self from far away
16. Like a failure
17. Others disappointed
18. Fear of anger
20. Fear of being alone

Table 40 (continued)

Items Included in the 24-item Scale

Item
21. Fear of losing control
22. Fear of going crazy
23. Fear of death
24. Fear of doing bad in school
28. Not know what is real
29. Don’t recall things I did
30. Sad
31. Problems eating
32. Afraid for no reason
33. Problems sleeping

Table 41

Exploratory Factor Analyses with Latino and Non-Latino Samples for the 24-Item Scale

	Latino Initial Eigenvalues			Non-Latino Initial Eigenvalues		
Factor	Total	Percentage of Variance	Cumulative Variance	Total	Percentage of Variance	Cumulative Variance
1	10.16	42.34	42.34	6.82	28.42	28.42
2	2.58	10.78	53.08	4.32	18.00	46.41
3	1.62	6.73	59.81	2.69	11.20	57.61
4	1.49	6.20	66.01	2.16	8.98	66.60
5	1.18	4.92	70.92	1.59	6.61	73.21
6	1.07	4.44	75.37	1.20	4.99	78.20
7	--	--	--	1.02	4.27	82.46

Figure 9

Scree Plot for Exploratory Factor Analysis with the 24-Item Scale with the Latino Sample

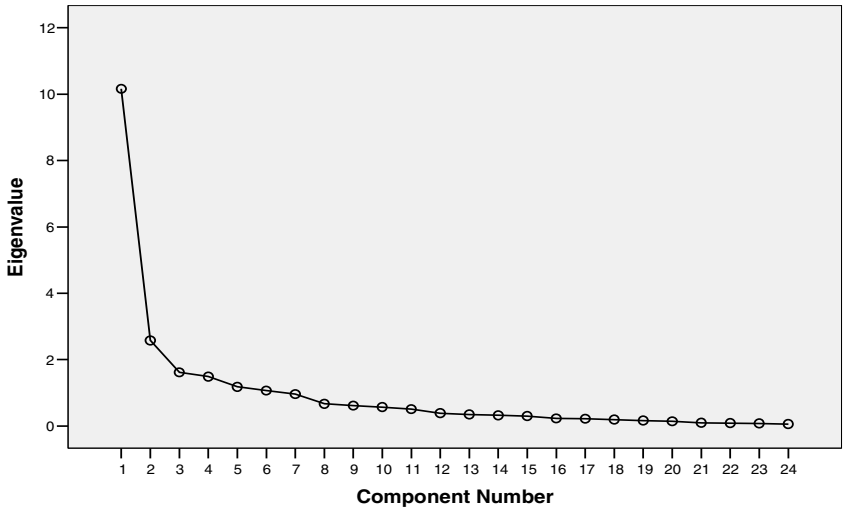
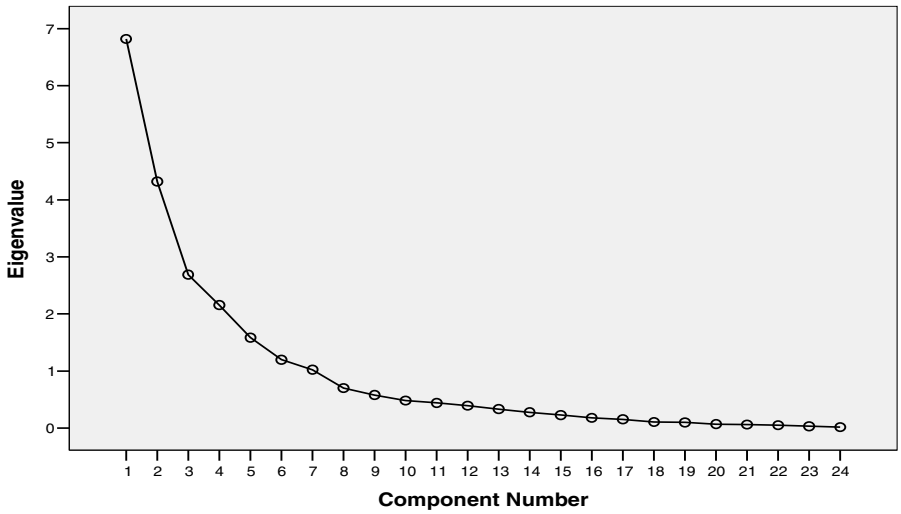


Figure 10

Scree Plot for Exploratory Factor Analysis with the 24-item Scale with the Non- Latino Sample



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