

DISSERTATION

SOCIOCULTURAL INFLUENCES IN NEUROPSYCHOLOGICAL TESTING
WITH LATINOS OF MEXICAN ORIGIN

Submitted by

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Psychology

In partial fulfillment of the requirements

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Colorado State University

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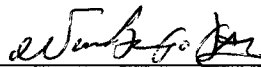
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ABSTRACT OF DISSERTATION
SOCIOCULTURAL INFLUENCES IN NEUROPSYCHOLOGICAL TESTING
WITH LATINOS OF MEXICAN ORIGIN

This study utilized a multi-method design, employing both nomothetic and ideographic approaches, to examine the influences of sociocultural variables on neuropsychological test performances of 80 healthy, bilingual, community-dwelling, male and female adults, ages of 20 - 74, recruited from Denver and Northern Colorado. In the quantitative portion, participants were randomly assigned to complete a brief battery of neuropsychological tests (representing attention, visuoconstruction, cognitive flexibility, verbal fluency, and verbal memory) in either their English- or Spanish-language format. In the qualitative portion, a subset of six participants conducted narrative interviews regarding their phenomenological experiences of completing the study measures with the examiner. Results of hierarchical linear regression analyses indicated that after controlling for sociodemographic factors, such as age, education, and gender, significant portions of criterion variance for many outcome indices were explained by the language of test administration and/or orthogonal acculturation status. Some models accounted for up to 60 percent of the criterion variance. Where orthogonal acculturation status was a significant predictor, more optimal test performances were (in nearly all cases) predicted by greater degrees of Anglo cultural orientation, in the absence of significant prediction

by Mexican cultural orientation. Many significant themes of phenomenological experience emerged in qualitative analyses. Directions of future research and implications for the ethics and practice of cross-cultural neuropsychology with this population are discussed.

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DEDICATION

To Amy, for all the patience, love and support through the years completing this project,
in graduate school, and beyond. I love you always and all ways.

To my parents, Tom and Patty, and Cathy and Don, for all your love, time, support and
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The population of the United States is becoming increasingly ethnoculturally diverse. In 1995, the majority (non-Hispanic White) population was 193.6 million, and ethnic and racial minority persons comprised the remaining 69.3 million U.S. residents, or 26.4 percent of the total population (U.S. Department of Commerce, 2000). As of July 1, 2001, the ethnocultural and racial minority population had increased to 90 million people, or 31.1 percent of the total U.S. population (U.S. Census Bureau, 2003; Table US-EST2001-ASRO-04). This trend is predicted to continue and even accelerate. In fact, almost 90 percent of the total growth in U.S. population through the year 2050 is predicted to be accounted for by persons of ethnic or racial minority identification (U.S. Department of Commerce, 2000). Projections suggest that the minority population will surpass the non-Hispanic White population after 2050 (ibid, 2000).

People of Hispanic origin (of any race) will increase from 27 million in 1995 to 97 million in 2050 (ibid, 2000). In fact, Census projections indicate that 53% of the total increase in U.S. population from 1995 to 2050 will be from the Hispanic population (ibid, 2000). Clearly, the days when health care providers, including psychologists, can comfortably continue to provide services to predominantly non-Hispanic White patients (from perspectives based in scientific research that is conducted by and with dominant culture persons) are rapidly coming to an end. The time will come, and to be sure, in many geographical regions already has come, when a substantial portion (or even a majority) of clients and patients in medical and mental health offices are of diverse

ethnocultural origins. How well health care providers will serve such patients remains an open question.

Psychology and diversity: issues and imperatives

The profession of psychology has been criticized for the paucity of behavioral research addressing issues of race and culture relevant to diverse populations and for the insufficient numbers of psychologists who can provide linguistically and culturally competent services to such persons (Iijima Hall, 1997). Given the growth rates of non-majority, diverse populations in the U.S., attention to ethnocultural diversity is as much an economic issue for the profession as an ethical or moral one (ibid, 1997). An applied psychological science without an empirical knowledge base that addresses behavior in diverse groups, including minority populations, may not effectively intervene in such communities, and thus, may not be useful to patients and their referring health care providers. To date, however, the majority of published studies have examined the needs of the majority population, and the findings have been simply generalized to non-majority populations (ibid, 1997). Dr. Iijima Hall (1997) stated that, “Psychology is at a critical junction in its life cycle; it can adapt to the changing demographics of the United States or risk obsolescence (p. 650).”

The impetus for the present study has its roots in this context of increasing ethnocultural diversity in the U.S., coupled with psychology’s struggles to appropriately address such issues and remain a viable profession in the service of diverse groups. Specifically, this study addresses issues related to ethnocultural diversity in clinical neuropsychology, one of the major applied specialty areas of psychology. The first portion of this introductory chapter will provide evidence of the importance of addressing

such issues in clinical neuropsychology, along with practical, scientific and ethical implications of these issues.

Diversity in psychology: The case of clinical neuropsychology

The last three decades of the twentieth century witnessed a dramatic increase in research and clinical applications in the formally recognized psychological specialty of clinical neuropsychology (Artiola i Fortuny & Mullaney, 1997). Clinical neuropsychologists, according to the Houston Conference on Specialty Education and Training in Clinical Neuropsychology (Hannay et al., 1998), are professional psychologists trained in the science of brain-behavior relationships. Their specialty includes “the application of assessment and intervention principles based on the scientific study of human behavior across the lifespan as it relates to normal and abnormal functioning of the central nervous system (p. 161).” The clinical utility of neuropsychological assessment and treatment has become increasingly better established in the medical communities in the United States and other areas of the world.

Clinical neuropsychology is not exempt from the concerns related to ethnocultural diversity that exist in the broader profession of psychology. As the U.S. population becomes more ethnically diverse, practitioners of clinical neuropsychology are increasingly being called upon to assess individuals from non-majority ethnocultural and linguistic backgrounds, a professional activity posing significant challenges at this time (Perez-Arce, 1999). This is primarily because the neuropsychological literature provides limited guidance about sociocultural influences on cognition and its measurement (ibid, 1999). As Dr. Charles Matthews (1992) stated in his presidential address to the

International Neuropsychological Society (quoting an unnamed member of that organization),

a very limited kind of neuropsychology, appropriate to only a fraction of the world's population, is presented to the rest of the world as if there could be no other kind of neuropsychology, and as if the educational and cultural assumptions on which . . . neuropsychology is based were obviously universals that applied everywhere in the world (p. 421).

Unfortunately, although the recognition of cultural issues is a goal of clinical practice in the field of neuropsychology according to the Houston Conference guidelines (Hannay et al., 1998), it is often purely aspirational and without meaningful, empirically-supported integration at any level of training or practice in neuropsychology (Wong, 2000; Wong, Strickland, Fletcher-Janzen, Ardila, & Reynolds, 2000). Other researchers have also eloquently described such concerns. Loewenstein, Arguelles, Arguelles, & Linn-Fuentes (1994) noted the significance of demographic diversification to neuropsychology (and foreshadowed the words of Iijima Hall, 1997), saying, "We are at a crossroads in the field of clinical neuropsychology where we can decide to increase the precision of our science to better incorporate the diversity of human beings in our population, or we can maintain the status quo (p. 628)." Perez-Arce (1999) warns the field against failing

in our ethical responsibility to assess and respond to the needs of non-European Americans by colluding with those in our fields who are established and comfortable with the status quo, that is, with one conceptual frame of reference that assumes all cultural/ethnic groups are similar to the dominant European American culture in the way they view and react to the world (p. 590).

Some authors have related their impressions that at this time, even the graduates of the most prestigious training programs in clinical neuropsychology have not been didactically or experientially trained to a level sufficient enough "to achieve even

functional familiarity with ethnocultural issues, much less any meaningful level of expertise (Van Gorp, Myers, & Drake, 2000; p. 26).” It is the hope of this author and other research and clinical neuropsychologists (e.g., Pontón & Ardila, 1999; Evans, Miller, Byrd, & Heaton, 2000; Perez-Arce, 1999; Wong et al., 2000) that practitioners of clinical neuropsychology will eventually have the necessary scientific knowledge, training, and tools for competent service provision to diverse populations.

These concerns are not only of a practical, economic or theoretical nature; they are also ethical. In the most recent version of the American Psychological Association’s Ethical Principles of Psychologists and Code of Conduct (APA, 2002), Standard 2.01a stipulates that “Psychologists provide services. . .with populations and in areas only within the boundaries of their competence, based on their education, training, supervised experience, consultation, study, or professional experience (p. 1063).” Standard 2.01b continues,

Where scientific or professional knowledge. . .establishes that an understanding of factors associated with age, gender. . .race, ethnicity, culture. . .language, or socioeconomic status is essential for effective. . . services or research, psychologists have or obtain the training. . . necessary to ensure the competence of their services, or they make appropriate referrals (pp. 1063-1064).

Regarding assessment, Standard 9.01a stipulates that “Psychologists base the opinions contained in their recommendations, reports, and diagnostic or evaluative statements. . .on information and techniques sufficient to substantiate their findings (p. 1071).” As well, Standard 9.02b states that, “Psychologists use assessment instruments whose validity and reliability have been established for use with members of the population tested (p. 1071).” Finally, Standard 9.02c states that, “Psychologists use assessment methods that are appropriate to an individual’s language preference and competence (p.

1071).” Binder and Thompson (1995) discussed the application of the Ethical Principles of Psychologists and Code of Conduct of the American Psychological Association (1992) to clinical neuropsychological assessment practices. They noted that Section 1.04 of the Standards (Boundaries of Competence) specifically dictates that psychologists will practice only in the areas in which they have an appropriate level of competence.

In her consideration of ethical decision making with diverse neuropsychology clients, Harris (2002) reviewed the philosophical roots of the ethical concepts that are the foundation of psychology’s Ethics Code (American Psychological Association, 1992) and their application to clinical practice with such persons. For example, in order to act in a manner consistent with the principles of non-maleficence and beneficence, a neuropsychologist who seeks to maintain expertise and draw sound conclusions must have sufficient “knowledge of the literature regarding individual and group differences, including ethnic, cultural and linguistic considerations, in the assessment of cognitive and neuropsychological functions (p. 228).” Perhaps most importantly, she concludes that

the tools for meeting the ethical challenges of cross cultural assessment lie in achievement of competence and expertise . . . by acculturation of providers to the individual cultures of those they serve, and expansion of the empirical knowledge base regarding cross cultural and cross linguistic issues in assessment (p. 236).

The profession of psychology, through its governance by the American Psychological Association, has provided some guidance regarding professional activities in a pluralistic society. For example, the American Psychological Association’s (1991) “Guidelines for Providers of Psychological Services to Ethnic, Linguistic and Culturally Diverse Populations” describes professional expectations for practitioners working with diverse populations. It is expected that practitioners will develop the awareness,

knowledge, and skills necessary to work with clients whose backgrounds are different from those of the care provider. For example, it has been suggested that one such skill is that of linguistic fluency in the language of preference of a given patient (Artiola i Fortuny & Mullaney, 1998). More recently, the Guidelines on Multicultural Education, Training, Research, Practice and Organizational Change for Psychologists (APA, 2002) seek to provide psychologists with

- (a) the rationale and needs for addressing multiculturalism and diversity in education, training, research, practice, and organizational change; (b) basic information, relevant terminology, current empirical research from psychology and related disciplines, and other data that support the proposed guidelines and underscore their importance; (c) references to enhance ongoing education, training, research, practice and organizational change methodologies; and (d) paradigms that broaden the purview of psychology as a profession.

Attention to diversity in multicultural neuropsychological science and practice

It is encouraging that a small but growing number of neuropsychologists and neuropsychologists-in-training are attending to issues of diversity in research and clinical practice. Edited volumes on neuropsychology with ethnocultural non-majority populations recently published include Ferraro (2002), Pontón & León-Carrión (2001), and Fletcher-Janzen, Strickland & Reynolds (2000). Other research and clinical neuropsychologists, including Drs. Antonio Puente, Alfredo Ardila, Monica Rosselli, Ruben Echemendia, Josette Harris, Tony Wong, David Loewenstein, Lidia Artiola i Fortuny, Robert Heaton, Jennifer Manly, Diane Jacobs, Jovier Evans, Dan Mungas, I. Maribel Taussig, Victor Nell, Patricia Perez-Arce, and Antolin Llorente have contributed greatly to the literature on culture and cognition in neuropsychology. As well, the national professional organizations in neuropsychology have allotted time and space in their professional meeting programs to scholarly work and discussions surrounding such

issues. International professional groups, such as the International Neuropsychological Society, also provide a forum for internationally based neuropsychologists who address issues of language and culture in their research and practice. Yet despite the growing attention to diversity issues in the profession, neuropsychology still has far to go to address adequately the needs of all patients. The present study was completed with the hope that it might add substantively to one area of this body of work.

The remainder of this introductory chapter will provide an historical and theoretical description of the universalist and relativist perspectives on culture and cognition, two theoretical paradigms that provide context for the discussion to follow. Next, the chapter will discuss test development and validation projects conducted to address the paucity of standardized cognitive ability tests appropriate for the assessment of diverse populations. This will be followed by a discussion of important methodological challenges in the empirical investigation of sociodemographic factors more generally, and of neuropsychological test performance and clinical assessment, specifically.

The last portions of this introductory chapter will present information relevant to the neuropsychological assessment of the target population of the present study, namely persons of Latino and/or Hispanic origin. First, an overview of important sociodemographic characteristics of the Latino/Hispanic population in the United States will be presented. Next, current neuropsychological practices with Latino populations will be discussed. Finally, I will describe neuropsychological instruments that are currently used with Spanish-speakers, and I will review of the literature on ethnocultural

and demographic influences in neuropsychological testing generally, and with persons of Latino and/or Hispanic origin, specifically.

Two theoretical positions in neuropsychology: universalism and relativism

Neuropsychology has historically entertained two quite different theoretical positions on the relationship between brain and behavior: universalism and relativism (Nell, 2000). The universalist framework holds that all psychological processes, including neurocognitive functions, are fundamentally “universal” (i.e., the same in every person regardless of cultural or environmental context or developmental milieu). Neuropsychologists have tended to impose universalist theoretical expectations on the scientific investigation and clinical evaluation of brain-behavior relationships (ibid, 2000). That is, the majority of neuropsychological research has assumed that observed test behaviors are a direct reflection of the integrity and physiology of the central nervous system, without regard for any environmental or individual factors that might moderate the expression of these behaviors.

Scholars have noted that this assumption is erroneous (e.g., Nell, 2000). Although physiology and neuroanatomy may in fact be quite equivalent across cultures or human environments, the neurobehavioral and neurocognitive expressions arising from such substrates are far from equivalent (ibid, 2000). The universalist perspective has nevertheless been more commonly accepted by neuropsychological scientists, and thus, has been widely utilized to guide research efforts.

According to Nell (2000), the allure of the universalist view in neuropsychology lies in the freedom it implies from the need to examine psychometric construct validity (i.e., whether psychometric tests actually measure the cognitive constructs they are

designed to measure; construct equivalence refers to the equivalence of this quality when the test is utilized across cultural groups). The universalist perspective would hold that the basic constructs being measured, and most importantly the behavioral expression (and thus, measurement) of such constructs, are the same across cultures (i.e., universal). Following this logic, one may assume cross-cultural construct validity without being compelled to empirically demonstrate this psychometric quality. When construct validity is assumed, all that is needed in order to utilize neuropsychological tests across cultures are linguistic translations and possibly new normative data for various groups of people.

The universalist perspective is problematic in neuropsychology because it may logically lead to a biologically deterministic, and thus to a racist, ontology. That is, if human beings are presumed to be universally equivalent in neurocognitive functioning across cultures, then in cases where groups do in fact differ in performance on cognitive tests, the attribution of such differences is made not to culture or environment but to genetic, intrinsic, biologically determined endowments (Nell, 2000). Such an interpretation of the phenomenon of differential test performance among human groups does not account for the myriad factors that may, in fact, moderate such test performance (e.g., socioeconomic status, educational background, saliency of test content across cultures).

Possibly the clearest examples of the failures of a universalist position on brain-behavior relationships come from anecdotal examples in the literature. Nell (2000) recounted that early in his career as a neuropsychologist, he assessed an African woman with 3 years of formal education who worked as a dressmaker. Although upon interview she presented without obvious cognitive dysfunction, her performance on Raven's

Colored Matrices (Raven, 1960), a non-verbal reasoning task, was severely impaired with consistently odd, incorrect answers. Nell began to entertain the hypothesis of a focal right parietal lesion, a likely etiology for visuoconstructional dyspraxia. Later in the day, however, the patient performed within normal limits on subsequent trials of a Greek cross copy task and other similar visuoconstructive measures.

Nell decided to ask his patient to qualitatively describe ‘why’ she had selected the answers she had given on the Raven’s Colored Matrices, to which she responded that she chose her response “not because it matched the pattern (that seemed to her to be too easy) but because it made the most colorful and aesthetically pleasing patch (p. 17)” on what she saw as a piece of fabric with a piece torn from it. Based on universalist expectations of a direct relationship between test performance and neurological integrity, her performance would be interpreted as indicating severe and focal neuropsychological impairment, yet from her own cultural perspective as a dressmaker from a rural African village, her responses had been appropriate and not at all indicative of cognitive dysfunction.

Similarly, in a study of neuropsychological test performance with Aruaco Indians from Colombia with varying levels of education and exposure to industrialized society and the Spanish language, Ardila and Moreno (2001) found that only three tests administered were appropriate, meaningful and comprehensible for the most “traditional” individuals. Other tests were confusing or incomprehensible. Across the whole sample, the greater the years of formal schooling, the better the neuropsychological test performance. Performance on the WISC-R Block Design subtest was notable; none of the participants finished the designs within the time limit. Aruaco culture, the authors

noted, does not make use of rigid timetables for any activities, and so, this aspect of the Block Design task was not salient. Also of significance, it was precisely the set of "non-verbal" tests that were most problematic for these participants whereas tests of a more verbal nature, such as Verbal Fluency, yielded relatively better performance, in contrast to common expectations that "non-verbal" tests are more appropriate for cross-cultural use. The authors concluded that cultural relevance of tests, formal education level, and age significantly impacted test performance in this exploratory study.

In summary, the universalist perspective, which holds that cognition and its expression (and thus, measurement) is the same in every person regardless of the potentially moderating influences of cultural and environmental variables, generally has been dominant in neuropsychological science. However, evidence for the construct validity, if any, of data from neuropsychological instruments administered cross-culturally cannot be simply assumed; rather, it must be empirically demonstrated. In most cases, this assumption has simply not been scientifically evaluated and supported. As well, universalism may lead to biologically deterministic (or racist) explanations of between-group human differences, despite a lack of scientific evidence for such hypotheses or conclusions (Nell, 2000). This state of affairs may have two distinct consequences. It could prevent ethnic and racial minority persons from receiving adequate clinical neuropsychological diagnosis and services, if the psychometric properties of assessment technology are not sufficient in cross-cultural usage. It may also impede the development of accurate and reliable knowledge of brain-behavior relationships across human groups, if a cogent, empirically supported theory of culture and cognition is not developed by scientists.

In contrast, the relativist perspective holds that many, if not all, neurocognitive behaviors are fundamentally moderated (in both their development and expression) by an individual's culture, environment and individual demographic characteristics. The moderating influences of cultural variables on neurocognitive behavior are, thus, primary and always present to some degree. Nevertheless, the use of "cut off" scores for determination of cognitive impairment was formerly common in the earlier years of clinical applications of neuropsychology, particularly when referral questions centered on a simple diagnostic determination of whether behaviors had an "organic" or "functional" etiology (i.e., brain-damaged, or not). In more recent years, descriptions of levels and patterns of any cognitive impairment have become the norm in clinical neuropsychology, and the relativist paradigm has contributed useful theoretical direction to the field through investigation of the moderation of test performance by demographic characteristics such as age, education, and gender.

One of the earliest studies conducted under this paradigm (Heaton, Ryan, Grant, & Matthews, 1996) was designed to evaluate the influences of age, gender and education on neuropsychological test performance and to appropriately stratify normative data obtained through the project. The authors reported significant effects for education and age on a number of the tests from the Halstead Reitan Neuropsychological Test Battery, generally indicating better performance with higher levels of formal education and worse performance with increasing age. These authors were among the first to suggest that high false positive misdiagnosis rates may occur when ignoring demographic influences on test performance.

Further, Heaton and colleagues argued for a “relativistic approach to normality (and hence, abnormality) where normal is defined as the range of behaviors and abilities within a group of like individuals who share social, educational, cultural and generational backgrounds (p. 142).” They also stated that

adequate assessment of an individual’s cognitive functioning entails a knowledge of the demographic variables that have an effect on neuropsychological test performance. Many of the assumptions that clinicians and researchers sometimes make, such as that Finger Tapping is not affected by education, that “nonverbal” or “performance” tests are culture-free, that matching on age and education level is sufficient to equate performance on tests between people of different ethnic backgrounds, are not warranted (p. 159).

Despite such warnings, the influences of demographic factors related to the client’s ethnocultural or linguistic backgrounds have often been overlooked by researchers and clinicians. As such, demographic corrections or stratification of normative data do not account for factors such as ethnicity, acculturation status, linguistic status, or in many cases, level of formal education. As Heaton et al. (1996) noted with respect to ethnic origin, “In many cases we do not even know on which tests ethnicity is or is not an important variable to consider (p. 156).”

Importance of ethnocultural factors in cognitive testing

That ethnic or “racial” groups perform differently, as a whole, on neuropsychological and intellectual instruments is not new information (c.f., Helms, 1992). Ethnic discrepancies in test performance, where non-White persons obtain lower scores (i.e., poorer performance) than their non-Hispanic White counterparts, occur across multiple cognitive domains (Manly, 2001). Not only are ethnic minorities disproportionately diagnosed as cognitively impaired relative to dominant culture patients based on their neuropsychological test performance, but also such discrepancies are not

always erased when scores are equated on important demographic variables, such as age and education (ibid, 2001). Clearly, then, there are other factors apart from “racial” differences contributing to such discrepancies.

One is left to wonder just how often unacceptably high false positive diagnoses are rendered when relevant variables are not accounted for in the interpretation of results yielded by diverse patients. Manly (2001) described results from a recent analysis of Wechsler Adult Intelligence Scale – III oversampling data from the standardization sample for this instrument. This analysis revealed that when 1.5 standard deviations below the Full Scale IQ mean was used as a cut-point for cognitive impairment, over 40 percent of African Americans and over 30 percent of Hispanics would be judged to be impaired, compared with just over 10 percent of non-Hispanic White subjects. A false-positive error rate of approximately 10 percent is generally considered acceptable. When the covarying factors of age, education, and gender were statistically controlled, the misclassification rate dropped significantly for Hispanics, but did not drop below 35 percent for African Americans (Manly, 2001). This finding contributes to the growing evidence that differences in performance are due to complex dynamics that go beyond differences in age, education, or gender. Ethnoculturally relevant variables seem a likely target for further investigation.

Addressing ethnocultural factors in cognitive testing

Scientist-practitioners in the field have sought to address the influences of culture and ethnicity in neuropsychological testing in various ways. These have included the creation of putatively “culture free” tests, the use of “non-verbal” tests, the creation of

“emic” instruments, and the translation and adaptation of existing measures for use with a new, target population. Each of these methods is discussed below.

Psychologists have attempted the creation of new tests that would be, theoretically, “culture-free” or “culture-fair” (c.f., Cattell, 1940). However, although well intentioned, these attempts have been primarily based on faulty assumptions related to the influences of cultures and environments on cognition. For example, clinicians have often simply adapted a test for use in another linguistic culture by translating it to the target language and making changes consistent with a more “local” content. Quite often, neither the linguistic translation nor the content adaptation is satisfactorily accomplished in such cases (Artiola i Fortuny & Mullaney, 1997). The empirical support for the hypothesis that any neuropsychological or intellectual measurement instruments can be “culture-free” simply does not exist. Human behavior always exists in a cultural context and cognition is a form of behavior, so therefore, cognition (and thus, its measurement) is always influenced by culture (Perez-Arce, 1999). By this logic, a “culture-free” psychometric instrument is theoretically impossible.

Psychologists and neuropsychologists have also attempted to “reduce” the influence of cultural variables on test performance by utilizing tests with minimal linguistic content in stimuli or oral responses. However, the use of assessments that require non-verbal responses to control for the effects of culture on test performance is in error; effects of cultural variables on such tests have been empirically demonstrated, as discussed previously (c.f., Ardila & Moreno, 2001; Heaton et al., 1996; Pontón, Satz, Herrera, Ortiz, Urrutia, Young, D’Elia, Furst, & Namerow, 1996). Moreover, attempts to reduce cultural bias in cognitive testing by utilizing “non-verbal” measures actually stems

from the aforementioned universalist perspective on cognition and its measurement, despite evidence of the failings of that paradigm (Nell, 2000).

In another attempt to deal with cross-cultural issues in neuropsychological assessment, instruments have been specifically created from an emic perspective. For example, Gutierrez (2002) developed the Culturally-sensitive Assessment of Neuro-cognitive Abilities (CANA) for Mexican Spanish speakers using ethnopsychological methods. This measure has been developed within the target culture and language, is being normed and standardized using data from the Mexican American population.

Perhaps the most frequent, approach to dealing with ethnocultural differences in neuropsychological assessment is the adaptation of existing cognitive measures for use with non-majority populations (Gutierrez, 2002). This has generally taken the form of translation and back-translation procedures (i.e., for linguistic equivalence), adaptation of items to retain cross-cultural relevance of content (i.e., for content equivalence), and adaptation of the measure such that the meanings of items, relative to the purpose of the test, are maintained (i.e., for construct equivalence) (ibid, 2002). In most cases, a restandardization of the instrument follows, whereby normative data for the “new” target population are collected and made publicly available.

Two primary criticisms of this practice of translating and adapting existing instruments have been offered. First, although cross-cultural equivalence of adapted measures may be an explicit goal during the process of adaptation and translation, it is relatively more rare for the construct validity of the “new” instrument to be formally evaluated through empirical research with the adapted measure and its target population (ibid, 2002). Nell (2000) supports this criticism, stating that the first step in cross-

cultural neuropsychological research involves the investigation of the construct validity of a given instrument across cultures. Until this has been established, normative data for a given instrument and cultural group are really no more than an impressive set of standardized descriptive statistics against which a truly “normative” comparison cannot be made (ibid, 2000).

The second primary criticism of this practice is that when cognitive instruments are restandardized and normed with “new” ethnocultural or racial groups, a practice that has been called “race-norming” (Gasquoine, 1999; Helms, 1992; Manly, 2001), the focus on the “need” for ethnoculturally separate normative data may prevent further investigation of the actual factors that contribute to such group differences in test performance. For example, it is probably the case that there is variability among members of a minority group in their degrees of exposure to quality schooling, the degree of their familiarity with test procedures and demands (e.g., the schema of cognitive testing or the implicit requirements to do one’s best, often as quickly as possible), or the value they place on task demands (such as time limits) (Manly, 2001). In fact, grouping such persons together based on ethnic and racial categories obscures important within-group differences that probably actually account for variance in test performance (Manly & Jacobs, 2002). Without research seeking to understand such variables, it will be difficult to ever develop a cogent theory of culture and cognition and to apply such a theory towards the improvement of clinical decision making with diverse patients.

Operationalization of ethnocultural constructs

The study of culture and related variables in psychological research has been problematic (Betancourt & Lopez, 1993). This has been partly due to a lack of detailed operationalization of these constructs (ibid, 1993). These authors stated that

variations in psychological phenomena observed in the comparative study of groups identified in terms of nationality, race, ethnicity, or socioeconomic status (SES) are often attributed to cultural differences without defining what is meant by culture, and what about culture and to what extent is related to the differences (p. 630).

Such a lack of specificity in operational definitions and associative inferences, particularly when culture and ethnicity are confounded with “race,” could lend itself to the biological determinism view of genotypic, and thus inherent, causality of observed “racial” differences in cognitive test performance. Research will be improved to the extent that investigators identify and directly measure the specific elements of group variables (e.g., cultural variables) of interest that may influence behavior (Betancourt & Lopez, 1993).

Other authors have called for improvements in the operational definitions of such variables in behavioral research. It has been suggested that sex, race and age should be considered constructs, rather than biologically referenced terms, and therefore, “their measurement should meet the same standards of measurement and clarity as other constructs used in research. Reports should include descriptions of how these constructs are defined and operationalized, as well as justification for their definition and measurement (Beutler et al., 1996, p. 900).” Similarly, Okazaki and Sue (1995) called for the specification and direct measurement of the “underlying psychological variables

associated with culture that are hypothesized to produce cultural or ethnic group differences (p. 368).”

In the specialty of neuropsychology, researchers such as Gasquoin (1999) and Manly (2001, 2002) have called for the operationalization of those specific constructs comprising the relevant components of culture and ethnicity that may influence neuropsychological test performance across cultural or ethnic groupings. According to Gasquoin (1999), a number of researchers have recommended

replacing culture and ethnicity as independent variables with measurable psychological dimensions on which these groups differ and which are likely to impact the outcome of interest. In neuropsychology, where the outcome of interest is . . . test scores, such variables include language fluency, acculturation, education and socioeconomic status. These variables are then considered the measures of interest and not simply as correlates of culture or ethnicity (p. 377).

Another consideration is the criteria by which a person is considered to be a member of a given group, particularly in light of the heterogeneity along ethnic, national, racial, social class and linguistic dimensions that are present across groups. In the case of U.S. Latinos, Puente and Ardila (2000) noted that the term “Hispanic” usually defines a person whose dominant language is Spanish and who may in theory trace his or her ancestry to Spain, two assumptions that are often incorrect. Differences in ancestry, culture and even language are likely to be present, for example, between a person of Puerto Rican origin and one of Mexican-American origin. Culebras (1995) addressed this methodological concern, stating that

the concept of Hispanic appears to be in constant flux from study to study. . . The question is whether Hispanic defines an anthropologic cohort with sufficient biomedical homogeneity to warrant epidemiological studies. . . There is no biomedical commonality to Hispanic people, and the concept, being solely sociopolitical in nature, should be banned from medical science as confounding and misleading in clinical research (pp. 533-534).

The challenge of research with ethnocultural groups such as Hispanics is to adequately define the specific sample. In light of such concerns and recommendations, the present study specifically recruited and enrolled participants of Mexican ethnocultural or national ancestry who lived in the Denver metropolitan area.

Latinos of Mexican origin

For the purposes of the present discussion and investigation, the term Latino will generally be utilized; it can be perceived by some as a more inclusive term, as Hispanic implies an ancestral connection to Spain. Persons of Latino origin, following U.S. Census standards, are those who indicate that their origin is Mexican-American, Chicano, Mexican, Mexicano, Puerto Rican, Cuban, Central or South American, or other Hispanic. Being of Latino origin is self-determined, both for Census purposes and for identification of participants in this investigation. It is important to note that Latinos can be of any racial background. They are, thus, considered to be an ethnic, rather than a racial, group. Although the construct of race is determined socially and not biologically, the distinction that Latinos can be of any “racial” background is consistent with current U.S. Census definitions (U.S. Census Bureau, 2001), which recognize that persons of Latino or Hispanic ethnocultural ancestry may be categorized across multiple “racial” groupings, such as Black or White.

Latinos (of any race) now represent at least 12 percent of the total U.S. population (U.S. Census, 2001). The Latino population increased by over 55 percent from 1990 to 2000, compared with an increase of only just over 13 percent in the total U.S. population in the same period (ibid, 2001). Persons of Mexican origin represented the greatest portion of this growth, with a rate of 53 percent during this period, up to 20.6 million

people. U.S. Census Bureau projections forecast similar growth rates in the next 50 years. Currently, the majority (58.5 percent) of U.S. Latinos are of Mexican origin (U.S. Census Bureau, 2001), representing over 20 million people. In fact, the total Latino population in the U.S. is predicted to double in size between 1995 and 2025, to a total of 59 million people (U.S. Department of Commerce, 2000). In Colorado, where the present investigation was conducted, over 17 percent of the state population was of Hispanic or Latino origin in 1999 (U.S. Census Bureau, 2001). Between July 1, 1990, and July 1, 1999, this group grew by 42.0 percent in Colorado (U.S. Census Bureau, 2001), far outpacing growth rates of non-Hispanic Whites.

In general, Latinos in the U.S. tend to be younger than other Americans, with a median age of 26.1 years, in comparison with 37.5 years for non-Hispanic Whites (Suárez-Orózco & Pérez, 2002). U.S. Latinos also tend to have lower educational attainment than persons of other backgrounds; 43.9 percent of U.S. Latinos have less than a high school education, in comparison with only 13.8 percent of non-Latinos (ibid, 2002). The household incomes of Latinos also are significantly lower than those of non-Latinos (for 1998: \$28,330 for Latinos and \$40,251 for non-Latinos; ibid, 2002). This is also reflected in the number of U.S. Latino families below the poverty line, which in 1998 was 22.7 percent, in comparison with only 8.6 percent of non-Latinos in the U.S. (ibid, 2002). Such disparities are also present in access to public and private health insurance. More than one-third of U.S. Latinos (37 percent) do not have either public or private health insurance, in comparison with 14 percent uninsured non-Hispanic Whites (Brown & Yu, 2002). Clearly, this is a population with very real and concerning social and economic disparities. It would not be surprising to see such problems reflected in the

quality and access of this group to U.S. health care resources, including neuropsychological services.

Another defining characteristic of Latinos in the United States is the elevated risk for fatal and non-fatal occupational injuries, particularly given the predominant industries in which Latinos work. This group accounts for more than 15 percent of all construction laborers, more than 25 percent of all textile workers, more than 20 percent of all cleaning and building service workers (Bureau of Labor Statistics, 2002), and an overwhelming percentage of agricultural workers (e.g., over 90 percent of California agriculture workers were born in Mexico; California Policy Research Center, University of California, Office of the President, 2002). The former three of these industries expose workers to a variety of noxious chemicals, physical injuries and falls (ibid, 2002), and the agriculture industry is the second most dangerous industry in the nation, following mining (Bureau of Labor Statistics, 2002).

Latinos are similarly disproportionately represented in occupational fatalities. In the construction industry, between 1996 and 1999, there was a 68 percent increase in Latino fatalities, in the presence of an increase of only 20 percent of Latinos in the construction workforce (California Policy Research Center, University of California, Office of the President, 2002). More generally, the number of fatal work injuries among Latino workers rose from 730 in 1999 to 891 in 2001, an 18 percent increase (Bureau of Labor Statistics, 2002; California Policy Research Center, University of California, Office of the President, 2002). Given the number of undocumented immigrants present in the U.S. workforce, it is probable that these injury rates are even higher. Immigrant workers, in particular, have risk factors for occupational injury and for poor (or no)

treatment of such problems; language and cultural factors may hinder adequate safety training and workers may not report hazards or injuries on the job due to fear about job status, language issues, legal status, or lack of knowledge about individual and laborer rights (California Policy Research Center, University of California, Office of the President, 2002).

Clearly, Latinos are at unacceptably elevated risk for occupational injury and death in the United States, and it would not be surprising to see traumatic brain injuries, neurotoxic exposure injuries, or other conditions with cognitive consequences represented among the problems encountered by Latinos in the workforce. Anecdotally, my own experience in Northern Colorado included interpretation and neuropsychometric test administration to a number of such clients, and I can personally attest to the prevalence and effects of such injuries in neuropsychological and psychosocial contexts. Given the heightened risk for such injuries in the U.S. Latino population and the healthcare and psychological needs generated by such events, it is incumbent upon psychologists and neuropsychologists to develop the knowledge base and tools to deal with this significant and growing public health problem facing one of the underserved (but ever larger) groups in our society. The present study seeks to augment the clinical neuropsychological knowledge base toward those ends.

Latinos as neuropsychological patients: Reality and practice in the U.S.

Latinos are expected to represent an increasing proportion of neuropsychological patients; in many geographical regions, such as in the Western and Southwestern United States (particularly California, Texas, Arizona, and New Mexico), they already comprise a significant portion of referrals (Perez-Arce, 1999). However, neuropsychological

practitioners are generally not well prepared to provide appropriate and sensitive services to Latino/a patients presenting at their offices. Echemendia, Harris, Congett, Diaz, & Puente (1997) conducted a national survey of neuropsychological training and practices with Hispanic clients. The survey was completed by full members and fellows of Division 40 (Clinical Neuropsychology) of the American Psychological Association and of the National Academy of Neuropsychology.

Over 80 percent of respondents rated the adequacy of their formal training for work with Hispanic patients as ‘less than adequate to totally inadequate.’ Fully 40 percent of respondents reported that they had not had a graduate course dealing with the provision of neuropsychological services to “culturally different” groups. The modal respondent had not had any training in “Hispanic cases” at the pre-doctoral, internship or post-doctoral level. The authors opined that neuropsychological training programs needed to actively incorporate cultural variables and issues into their curricula.

Neuropsychologists who responded to this survey also were queried about their current practices with Latino patients. Results indicated that although the total sample of respondents reported an average of 14.48 “Hispanic patient referrals” for neuropsychological assessment per year, the actual modal number of evaluation and treatment contacts with Latino patients was 0.0, indicating that most respondents did not provide services to Latinos. That is, although a significant number of Hispanic referrals were reported, on average, the reality was that only a small portion of respondents reported actually conducting evaluation and treatment with these patients. Nevertheless, results also showed that those respondents feeling the *least* competent to provide neuropsychological services to Latinos conducted a total of 1600 neuropsychological

evaluations with this population per year and together, in their combined careers, had conducted a total of over 9000 evaluations of Latinos (Echemendia et al., 1997). In other words, a significant portion of the practitioners conducting evaluation and treatment with Hispanic referrals were those who actually rated themselves as least competent to do such work.

The training and competence of practitioners is not the only problematic issue in this area, however. A review of the literature pointed to a number of other practical problems that may hinder appropriate and effective cognitive assessment and diagnosis with Latinos/as. First, there are not enough standardized instruments yielding results of acceptable validity and reliability to adequately assess Spanish speaking persons (Ardila, Rosselli, & Ostrosky, 1992; Artiola i Fortuny & Mullaney, 1997; Pontón et al., 1996). Second, there is a scarcity of solid normative data available for Latinos (Loewenstein et al., 1994; Rey et al., 1999; Pontón et al., 1996). And third, as mentioned previously, psychometric tests may represent tasks that differ in saliency, typicality or relevancy across cultural groups or educational backgrounds, making it difficult to interpret decreased scores (Ardila, 1995).

There are a number of common “in-house” solutions to these problems. Perhaps the most problematic among these practices is the use of untrained interpreters to translate the content of the tests at the time of administration. This is problematic when interpreters have not been formally trained in psychological test administration; rather, they are only trained to translate between languages, if they have been trained at all. Some practitioners, in the absence of a formally trained interpreter, may request that

(somewhat) bilingual family members or friends of monolingual patients translate interviews and testing.

Results of the survey conducted by Echemendia et al. (1997) demonstrated that the majority of the respondents conducting neuropsychological evaluations with monolingual Spanish-speaking patients utilized interpreters for interview and test administration. This practice may not only violate rules for standardized administration of neuropsychological tests, but it may also violate cultural norms and compromise the validity of test performance by introducing a third party into the testing environment. As well, the use of interpreters may interfere with the establishment of clinical rapport with the patient and may prohibit the examiner from obtaining needed qualitative information regarding language pragmatics, prosody, content and organization (Loewenstein et al., 1994; Perez-Arce & Puente, 1996; Rey et al., 1999). Often, literal translations (i.e., only for words, not for content) of English language instruments are administered through an interpreter, and followed by the comparison of a Latino patient's scores to those of the original English language normative sample. This is done despite a lack of empirical data to support the claim that psychometric properties of adapted or translated tests are comparable when administered to different cultural groups (Loewenstein et al., 1994; Perez-Arce & Puente, 1996; Rey et al., 1999). The implications of such practices may be profound and deleterious. Deviations from standardized administration procedures will likely increase measurement error, leading to obfuscation of the real meaning and cause of obtained test performance. Even worse, false positive diagnoses of cognitive impairment that may result from such practice raise ethical and practical concerns about the care provided to Latino/a patients by neuropsychologists.

A related practice in the assessment of ethnocultural and linguistic non-majority patients is the use of caveats in assessment reports or case consultations. Clinicians sometimes state that because of cultural differences or other factors, normative data utilized for psychometric evaluation of a given patient may not be appropriate. However, following this statement, clinicians often engage in the direct application of such normative comparisons to that patient's test scores without further consideration (Wong et al., 2000). Although it is likely that such practices persist in part due to a lack of normative or other empirical resources to guide interpretive activities, they are still inappropriate. False positive or false negative diagnoses and similarly faulty treatment recommendations may result at an unacceptably high rate when inappropriate normative comparisons are made (ibid, 2000). The challenge to the field of neuropsychology is to determine the cases where different normative data sets are needed for a given classification of patient on a given psychometric test (Heaton et al., 1996) and to better understand the relationships among variables moderating test performance.

There are a number of additional problems in the provision of neuropsychological services to persons of Latino cultural, ethnic or linguistic background. One common practice is the provision of neuropsychological services to English speaking Latinos without any sort of differential adaptation or test selection (Echemendia et al., 1997). This practice appears to be based on the faulty assumption that because of English language fluency, such a client must be fully acculturated and therefore equally comparable to dominant culture normative samples (Nell, 2000).

This assumption is flawed for a number of reasons. First, this assumes (without empirical evidence to support such an assumption) that there exists cross-cultural

construct equivalence in the use of a certain test with an ethnocultural or linguistic group other than that for which it was developed (ibid, 2000). Second, language preference and fluency is only one aspect of an individual's acculturation level (Cuéllar, Arnold & Maldonado, 1995). Third, there is a dearth of literature investigating the effects of acculturation on neuropsychological test performance (Gasquoin, 1999). Inattention to these concerns may result in interpretations of test scores that are based on inappropriate normative data, along with resultant diagnostic misclassifications of minority patients. That is, it is not simply the case that a minority patient's ability to communicate in English makes him or her "comparable" to normative data from English-speakers (who were more than likely dissimilar to the patient on a number of other dimensions).

Neuropsychological measures available for Spanish speaking populations

Although the development, standardization and validation of emic or "local culture" instruments (i.e., those developed with content and constructs native to a particular culture) is a laudable goal, this has not been an actively pursued or widely successful activity (Nell, 2000). Instead, clinicians have focused on the translation and adaptation of etic (i.e., developed within one cultural milieu and then applied to another) instruments with known psychometric properties and neurobehavioral correlates. As described previously, this practice is not without its problems and concerns. However, a complete lack of measures in Spanish, standardized and normed with this target population, is not desirable.

One example of this approach is the standardization project for the *Batería Neuropsicológica en Español* (BNE; Artiola i Fortuny, Heaton, & Hermosillo, 1998). This adaptation and re-standardization project was conducted for 16 widely utilized

English-language neuropsychological measures emphasizing attention, learning and memory, and executive functioning. The BNE measures were translated and adapted by the researchers for use with both a U.S.-Mexico “Borderland” sample from southern Arizona/Mexico and a Spanish sample from urban Madrid. A particular strength of this technical resource is the inclusion of participants with very low levels of formal education, providing data that was lacking in the field.

Another example of linguistic and cultural tests adaptation is the set of neuropsychological instruments that comprise the *Neuropsychological Screening Battery for Hispanics* (*NeSBHIS*; Pontón et al., 1996). Issues considered in this project included the need for the development of standardized instructions in universal Spanish, the need for culturally appropriate test materials with content relevant to the culture being tested, and the need for appropriate normative data that account for age and education (Pontón et al., 1996). This screening battery includes measures of language, memory, visuospatial abilities, mental control, psychomotor functioning, and nonverbal reasoning. The purposes of this standardization study were (a) to provide normative data for the set of instruments included in the battery, obtained from a representative sample of monolingual Spanish-speaking Latinos in the Southern California area and (b) to assess the effects of various demographic variables, such as age, education and sex on test performance and to stratify the obtained normative data accordingly.

Normative data have also been published for multiple measures from the Benton Laboratory and for the Wisconsin Card Sorting Test (Rey et al., 1999). This research first provided normative data and statistical comparisons between linguistic/cultural groups on the Multilingual Aphasia Examinations, English (MAE; Benton & Hamsher,

1989) and Spanish versions (*MAE-S*; Rey & Benton, 1991). It also provided normative data for the Wisconsin Card Sorting Test (Heaton, Chelune, Talley, Kay, & Curtis, 1993) in a Spanish-speaking sample, along with statistical comparisons of the English-speaking and Spanish-speaking normative data samples. In all cases, participants' scores on these measures were classified and compared across age, sex and education level. Results indicated that the administration of the Spanish versions of these tests to Hispanic participants would yield clinically useful and reliable findings, just as the English language versions have been shown to do. However, the researchers did note that the participants (Latinos from Dade County, Florida) are a fairly homogenous and highly educated group, and the researchers noted that generalizations to other Latino groups should be made with caution (Rey et al., 1999).

Another screening battery of Spanish-language neuropsychological tests, the *NEUROPSI* (Ostrosky-Solís, Ardila, & Roselli, 1999) has been developed, standardized and psychometrically investigated. This brief battery assesses various cognitive functions, including orientation, attention, memory, language, visuoperceptual abilities, and executive functions. Strengths of this battery include its brevity, its normative database of 800 monolingual Spanish-speaking participants, its inclusion of normative data for individuals with very low levels of formal education, and its normative stratification by age and education level for all measures. Although most measures included in the *NEUROPSI* are adaptations of English-language instruments, all were designed to provide culturally relevant content for Spanish-speaking individuals. However, as with all the tests for use with Spanish-speakers mentioned thus far, the construct validity of the tests has been less than adequately demonstrated.

The most widely used psychological test with Hispanic Americans, however, is the WAIS Spanish translation, the *Escala de Inteligencia Wechsler para Adultos (EIWA)*; Wechsler, Green, & Martinez, 1968). The majority of items in the *EIWA* however were translated and adapted for use with an exclusively Puerto Rican sample. Differences in conversions from raw scores to scaled scores between the two tests, predicated upon assumptions of the need to adjust such conversion calculations for use with Spanish-speaking participants, result in an overestimation of IQ of Hispanic examinees by as much as 20 points compared to U.S. English-speaking normative samples (López & Romero, 1988). Due to this concern, clinicians have been cautioned that it may be unethical to utilize this instrument with U.S. Latino populations (Meléndez, 1994).

Other instruments or batteries for use with special segments of the Latino population have been developed and investigated. For example, neuropsychological assessment procedures to evaluate dementia or other common neurocognitive dysfunctions of older Latino adults have been developed (Dick, Teng, Kempler, Davis, & Taussig, 2002; Jacobs, Winston, & Polanco, 1997; Mungas, 1996; Stricks, Pitman, Jacobs, Sano, & Stern, 1998; Taussig, Mack, & Henderson, 1996). As well, the use of the Mini-Mental State Examination, a common screening procedure for mental status (often with older adults), with Spanish-speaking persons has been investigated, and adaptation/translations in Spanish developed (Marshall, Mungas, Weldon, Reed, & Haan, 1997; Mungas, Marshall, Weldon, Haan, & Reed, 1996; Ostrosky-Solís, López-Arango & Ardila, 2000).

Certainly, the ability of neuropsychologists to conduct cognitive evaluations with ethnocultural and linguistic minorities, including Latinos/as, has been improved by the

development and standardization of instruments with language and content adapted for use with these populations. Without such tools, psychometric evaluation would be difficult, or even impossible, and a growing portion of the U.S. population would remain underserved in that regard. However, as previously noted, the development of such measures, and the particularization of normative data to distinct ethnic, racial, and linguistic groups does not address questions of how and why the expression and measurement of cognition varies across groups. The following section reviews evidence from studies that have explicitly examined variables that influence cognitive test performance in neuropsychological testing.

Moderator variables of neuropsychological test performance

Age

The age of examinees has been shown to have significant impact on neuropsychological test performance in a number of empirical studies, both with majority culture samples and with persons of Hispanic or Latino background (e.g., Heaton et al., 1996, Ostrosky-Solís et al., 1999; Pontón et al., 1996). In the case of the WAIS and WAIS – R standardization samples, after approximately 35 years of age, lower average performance was observed for each successive age group, with more pronounced differences for nonverbal than for verbal tasks (Heaton et al., 1996). In the case of the Halstead-Reitan Neuropsychological Test Battery (HRNTB), most individual tests have shown a significant negative relationship with age, an effect that becomes increasingly evident after approximately age 40. The most powerful age effects occur in complex, novel tasks requiring reasoning, abstraction, and logical analysis, commonly referred to as “fluid intelligence.” Heaton et al. (1996) demonstrated age effects on an expanded

HRNTB, where participants showed poorer performance associated with older age on all test measures except Vocabulary and Hand Dynamometer, with the strongest effects of age present for WAIS-R Digit Symbol and Picture Arrangement and on measures of psychomotor speed, conceptual ability, flexibility of thought and incidental memory.

Consistent with previous findings, when a sample of 883 monolingual, adult participants from Mexico was administered a brief battery of Spanish-language neuropsychological measures, there was a general tendency for performance to decrease with increasing age, with instruments (e.g., Visual Detection, Verbal Memory, and delayed recall of verbal and visuospatial information) showing more marked age effects (Ostrosky-Solís et al., 1999). In addition, the researchers in concert with prior neuropsychological aging research, found that tests tapping accumulated knowledge (i.e., “crystallized intelligence”) tended to be less sensitive to normal aging, whereas tests requiring problem solving in novel situations, learning and conceptual operations (i.e., “fluid intelligence”) were more susceptible to aging effects. Moreover, in the normative and standardization study for the *NeSBHIS*, results indicated that age had a significant inverse relationship with level of performance on tests of memory, psychomotor, attentional, and visuospatial tasks (Pontón et al., 1996). In the present study, Age is operationally defined as the number of years in a participant’s lifetime.

Sex

The effect of sex on neuropsychological test performance has been demonstrated in a number of empirical studies with both White non-Hispanic and Hispanic populations (e.g., Heaton et al., 1996; Ostrosky-Solís et al., 1999; Perri, Naplin, & Carpenter, 1995; Pontón et al., 1996). Males tend to perform better on tests of manipulation of spatial

relationships, quantitative skills, physical strength and simple motor speed, but females perform better on tests of certain verbal abilities (Heaton et al., 1996). Heaton et al. (1996), in a study including overwhelmingly White, non-Hispanic participants, found virtually no difference between males and females on any general measure of intellectual and overall neuropsychological functioning. However, males performed better on the HRNTB subtests of Finger Tapping and Hand Dynamometer, and females performed better on the Aphasia Screening Exam and on WAIS-R Comprehension.

Sex effects have also been examined in investigations focusing on Hispanic participants. In general, few significant differences have been found on neuropsychological measures. One study found no significant differences between males and females on any tests in a brief battery of neuropsychological tests administered to a sample of 883 Spanish-speaking persons in Mexico. In two of four educational groups, however, males performed better than females in tests that specifically included numerical and calculation information (Ostrosky-Solís et al., 1999). In the standardization project for the *NeSBHIS*, conducted with 300 Hispanic volunteers in the Los Angeles, CA, area, sex effects were found on two tests, in which males scored higher than females on the nondominant hand performance on a test of psychomotor functioning and speed and on a test of confrontational naming. No differences were found on any other tests (Pontón et al., 1996). Another study found that participants' performance did not differ by sex on any measures of auditory verbal learning and memory (Perri et al., 1995). In summary, evidence of sex effects on neuropsychological test performance has been present primarily in the case of psychomotor functioning and speed measures, as well as for calculation tasks, in both non-Hispanic and Hispanic populations. In the

present study, Sex is operationally defined as the biological sex of participants, male or female.

Country of origin

Few empirical studies have evaluated the effects of country of origin on neuropsychological test performance by Latinos. The *BNE* normative and standardization investigation (Artiola i Fortuny et al., 1998) compared neuropsychological test performances by Place of Birth (U.S.-Mexico “Borderland” versus Spain), after adjusting for effects of age and education. This sample included 185 healthy adults from the Borderland region and 205 healthy adults from Madrid, Spain. Significant main effects were found only on Figure-Memory Test – Learning score and WCST – Perseverative Response score, with Spanish-born participants performing better on Figure-Memory and Borderland participants better on WCST – Perseverative Responses.

Artiola i Fortuny et al. (1998) suggested that the observed near-equivalence of test performances between the highly-educated participants from both samples may have been due to the similarity in educational experiences being greater for these two groups than for the lower-education, lower-socioeconomic status participants from both samples (i.e., Borderland and Spain). The authors also suggested that what are commonly referred to as cultural differences in test performance may be “more parsimoniously described” as differences in standard of living regardless of country of origin, in effect explaining away any observed differences by Place of Birth in their study. In the present study, Country of Origin is operationally defined as the country or nation (e.g., Mexico or United States) from which a person originates (i.e., where he or she was born).

Acculturation status

The influence of the acculturation status of ethnocultural minority persons on neuropsychological test performance has not been extensively studied, despite its theoretical importance to cognitive testing. Pontón & Ardila (1999) suggest that

since tests and procedures tend to reflect what is relevant to a particular culture, acculturation assumes that the individual becomes familiar with those relevant elements in the new culture, and consequently has a higher probability of understanding and successfully completing test items developed within the new culture (p. 573).

In one study (Arnold, Montgomery, Castaneda, & Longoria, 1994), some measures of the HRNTB were administered to a sample of 150 college students in south Texas (including English-version tests to Anglo-American students and Spanish-version to Mexican and Mexican-American students) along with the Acculturation Rating Scale for Mexican Americans (ARSMA; Cuellar, Harris, & Jasso, 1980). Results indicated that no group differences (Anglo-American versus bicultural Mexican American versus Mexican) were present on any of the primary factors of the neuropsychological test results, except on the Tactual Performance Test (TPT) – dominant hand, TPT non-dominant hand and TPT-total time, where Anglo-Americans performed significantly better than Mexican-identified participants. Differences were also present on the Seashore Rhythm Test – Errors, where Mexican-American bicultural participants performed better than Mexican-identified participants, and on the Category Test – Errors, where Anglo-Americans did better than either Mexican-identified or Mexican-American bicultural participants (Arnold et al., 1994).

The effects of acculturation status have also been studied with one other ethnocultural non-majority group, African-Americans. Manly and colleagues (1998)

studied the effects of linear African-American acculturation on the neuropsychological test performance of a group of African-American participants sampled for a large-scale normative study for HRNTB measures. These investigators found that linear acculturation status was related to neuropsychological test performance. On neuropsychological measures, acculturation status accounted for a significant amount of variance in performance on the following: Category Test errors, Trails A and B time, Boston Naming Test, WAIS-R Information, Block Design, and Digit Symbol subtests, Grooved Pegboard – Dominant hand, and the learning components of the Story and Figure memory tests. After controlling for age, education and sex, acculturation still accounted for a significant degree of the variance on the Boston Naming Test and the WAIS – R Information subtest. Results suggested that on many neuropsychological tests, persons more highly acculturated to normative, dominant culture standards tended to perform better than those more traditional in their cultural beliefs and practices.

Not all investigators have chosen to utilize acculturation rating-scales in their attempts to examine the effects of acculturation status on neuropsychological test performance. Artioli i Fortuny et al. (1998), in their normative and standardization study for the BNE, included time of residence in the U.S. and bilingualism as indicators of acculturation. These authors believed that “customs. . .only play a role in cognitive testing if we choose to load the material used for testing with information that is familiar to certain groups and not to others (p. 364).” They found that the longer participants had lived in the U.S., the poorer their oral fluency in Spanish, and the fewer perseverative errors they made on the Wisconsin Card Sorting Test. In the present study, Acculturation is operationally defined as the degree to which values, language and cognitive styles are

shared with the (ethnic) community of origin versus those of the dominant (majority) culture. Furthermore, it is operationally defined through an orthogonal paradigm, in which orientation to the ethnic or majority culture may be independently high or low, respectively, resulting in a combination of two orthogonal affiliations.

Education

Perhaps the most robust and powerful demographic influence on neuropsychological test performance, based on available empirical evidence, is that of an examinee's level of formal education, which has most commonly been measured in number of years. In a primarily non-Hispanic White sample, significant differences in test performance on the HRNTB between groups of <10 years, 12 years, and 15 years formal education were found on the Category Test, Sashore Rhythm Test, Speech - sounds Perception Test, and the Trails A & B tests, but not on the TPT or Finger Tapping (Finlayson et al., 1977; cited in Heaton et al., 1996). In the aforementioned Heaton et al. (1996) study, participants with higher degrees of formal education performed better on all WAIS and HRNTB subscales, especially on tests of verbal skills and past, accumulated knowledge.

Education effects on neuropsychological test performance have been empirically demonstrated with numerous samples of Latino individuals, as well. Results from the *NeSBHIS* normative study indicated that formal education, as measured by years of education, was the single most important factor in test performance (i.e., "moderate to high education effects") on all but one of test variables included in the analysis (that is, the immediate recall trial of an auditory verbal learning test, which was more strongly related to age than education) (Pontón et al., 1996). Therefore, level of formal education

influenced performance on both the verbal and non-verbal tests. These findings suggest that the use of non-verbal measures does not effectively reduce any educational influences on test performance.

In another study, level of formal education was significantly positively correlated with test performance on all tests except a test of orientation and a test of verbal recognition memory (Ostrosky-Solís et al., 1999). Education effects were strongest on measures of visuoconstruction, phonological verbal fluency and conceptual functions, including similarities, calculating abilities, and motor sequences. In secondary analyses of only those participants with 10-24 years of formal education, these investigators found that although test scores tended to increase with increasing education, statistically significant differences were found only on Digits Backwards, Encoding-Verbal Memory, Phonologic Verbal Fluency, and Reading, implying that after 10 years of formal education performance on the overall set of tests in this battery was fairly homogenous, representing a ceiling effect (ibid, 1999).

Education effects have been reported in other publications of studies with this population. It has been found, for example, that illiterate Colombians performed significantly worse than highly-educated Colombians on neuropsychological measures of visuoperception, language, praxis, and memory (Ardila, Rosselli, & Rosas, 1989), suggesting to these authors that the cognitive abilities assessed by most neuropsychological tests are highly trained and do not represent inherent and universal skills. Measures of auditory verbal learning and memory (trials 1-3 and interference, recognition and total learning) have been found to differ significantly by education, where persons with more formal education tended to perform better than those with less

(Perri et al., 1995). The overall education effect in this latter study was most pronounced at extreme educational levels (less than 6 years and more than 17 years).

Overall, education effects on neuropsychological tests do not appear to be linear, but rather, are represented by a negatively accelerating curve, with most pronounced effects for those in lower educational strata (Ostrosky-Solís et al., 1999). It has been suggested, as well, that with the Hispanic population, education is not a unitary influence on test performance; rather, it most likely interacts in a complex fashion with age, degree of acculturation, country of origin, and bilingualism in the Hispanic population (Pontón et al., 1996). Furthermore, some authors have argued that the effects of education may not reside solely in the number of years of formal education, but also in the overall quality of individuals' educational experiences. Gasquoine (1999) has suggested that formal education, as measured in number of years, implicitly assumes that there are no differences in educational quality across people with equivalent years of education. The recognition of cultural and ethnic differences in quality of education has intuitive importance for neuropsychological test performance, as simply adjusting normative data along groupings by years of formal education may not capture the complexity of the effect (Gasquoine, 1999), but information as to how to assess the relevant factors involved in educational quality is lacking. In the present study, Education is operationally defined as the number of years of formal education (in a didactic context) obtained by participants in their lifetimes.

Socioeconomic status (SES)

Few empirical studies have actively and systematically pursued investigation of the effects that socioeconomic status (SES) may have on neuropsychological test

performance. Amante, Vanhouten, Grieve, Bader, & Margules (1977) presented a model for understanding the effects of SES on “neurological integrity,” which suggests that such discrepancies are due to environmental social causation by factors such as malnutrition, inadequate obstetric and pediatric care, and “environmental deterioration.” The strength of this study lies in the empirical support for an environmental, rather than inherent or “native,” model for explaining differences in neurocognitive abilities associated with SES.

Regarding Latinos and SES, Gasquoine (1999) has noted that within the U.S., ethnicity is associated with SES and that there are disproportionate numbers of Hispanic Americans with incomes below the poverty level. SES is significantly and positively correlated with years of formal education; clearly, many of the variables that may affect neuropsychological test performance represent a complex set of interactions in their influence on such outcomes (ibid, 1999).

In a study conducted to evaluate the effects of sociocultural status on the neuropsychological test performance of 109 healthy participants from various Mexico City social strata Ostrosky-Solis, Canseco, Quintanar, Navarro, Meneses, & Ardila (1985) found that occupational status and level of formal education influenced performance on measures of motor functions, somatosensory knowledge, auditory knowledge, visuospatial knowledge, cognitive processes, language, reading, writing and basic calculations, higher performance was achieved by those in the higher sociocultural level, as defined by occupation and education (workmen, factory workers, office clerks and housewives versus students and professionals with different university degrees). Results also indicated that differences between sexes were obtained in the low

sociocultural level group, where men scored higher on some tests than women. This suggested that sex differences were minimized at higher SES levels. The items most sensitive to SES influences were those requiring complex, elaborate aspects of language and reading, calculation ability and organization of motor sequences and general motor programming (ibid, 1985). The authors suggested that divergent levels of home environment and schooling between the two groups were the most likely determinants of differences between low and high sociocultural groups (as defined by occupation and educational background). In the present study, SES is operationally defined as either “above” or “below” cut-points for governmental poverty guidelines, which define poverty level by income as a function of household size.

Linguistic variables

The influence of linguistic status (e.g., monolingual versus bilingual, balanced bilingual versus unbalanced bilingual) on the neuropsychological test performance of U.S. Latinos has been reported in the literature (e.g., Artiola i Fortuny et al.; 1998, Harris, Cullum, & Puente, 1995; Pontón et al., 1996). In a comparison of bilinguals to monolinguals on neuropsychological test performance in the *BNE* normative study, bilingualism significantly contributed to the variance of performance on an auditory verbal learning measure. For that same measure, time of residence in the U.S. had no relationship (Artiola i Fortuny et al., 1998). A Latino person’s language of choice (bilingual versus monolingual) has been shown to play influence performance on measures of mental control/attention (Digit Span, Digit Symbol, Color Trails 1 & 2), and abstract nonverbal reasoning (Block Design and Raven’s Standard Progressive Matrices) (Pontón et al., 1996). These latter authors note that bilingual participants tended to

perform better on most measures even when participants were matched for education, suggesting some degree of advantage in performance incurred by being bilingual.

The influences of linguistic status of Hispanic participants on auditory verbal learning and non-verbal abstract reasoning have also been examined. In a study of 44 bilingual Hispanics and 22 monolingual English-speaking non-Hispanic Whites, non-balanced bilinguals (i.e., who did not speak both languages equally well) performed worse on the measure of nonverbal abstract reasoning, Raven's Colored Progressive Matrices, compared to monolingual English-speakers (Harris et al., 1995). In this same study, non-balanced Mexican-origin bilinguals examined in English recalled fewer words than either balanced bilinguals or monolingual English-speakers on a test of auditory verbal learning and memory. The non-balanced group also retained fewer words compared with monolingual English-speakers. Equivalent performances on indices of verbal learning and recall were obtained by balanced bilinguals and monolinguals tested in English. Balanced bilinguals recalled and retained an equivalent number of words in either language and used the organizational strategy of semantic clustering in both languages, regardless of which list was presented. Performance differences between the three groups were not evident when individuals were assessed in their dominant languages (ibid, 1995).

In a study of 236 English- and Spanish-speaking elder Hispanics in New York City, results on a battery of neuropsychological tests were analyzed as a function of language of preference (Jacobs et al., 1997). English-speaking and Spanish-speaking elderly Hispanics were found to differ significantly on measures of category fluency, abbreviated Complex Ideational Material from the Boston Diagnostic Aphasia

Examination (comprehension of spoken language), Identities and Oddities from the Mattis Dementia Rating Scale, and on the Benton Visual Retention Test matching and recognition memory subtests, with Spanish-speakers scoring lower. Performances of these two groups, however, did not differ significantly on the majority of verbally mediated measures, including the Selective Reminding Test, Boston Naming Test and WAIS-R Similarities (ibid, 1997). These authors suggested that level of acculturation, as reflected by English fluency, was an important determinant of test performance in this study (i.e., participants tested in Spanish who spoke English “not well” or “not at all” scored significantly lower than participants tested in English on a number of measures, including two non-verbal ones, but participants tested in Spanish who spoke English “well” or “very well” did not differ significantly from participants tested in English on any measure in battery). In the present study, linguistic status is operationally defined most generally as the ability to speak one or more languages.

Purposes of current investigation

There were two primary purposes of the current investigation. The first purpose was to examine the influences of ethnoculturally relevant variables on neuropsychological test performances in healthy, bilingual Latinos of Mexican ethnocultural origin. The second purpose was to examine the ideographic experiences of those healthy, bilingual Latinos of Mexican ethnocultural origin in completing neuropsychological measures in the context of an empirical, scientific research project.

Research questions

Several research questions were addressed in this study:

1. Which demographic and cultural variables influence the performance of healthy, bilingual Latinos of Mexican origin on measures representing the following neuropsychological domains: (a) auditory verbal learning and memory, (b) visuoconstruction, (c) simple and complex attention, (d) freedom from distractibility (an aspect of complex attention), and (e) verbal fluency?
 - a. First: After accounting for the explanatory power of demographic predictors on neuropsychological outcomes, does the *language of test administration* (i.e., English or Spanish) explain an incrementally significant portion of test performance variance in the cases of the above neuropsychological domains?
 - b. Second: After accounting for the explanatory power of demographic predictors on neuropsychological outcome, and after determining whether language of test administration augmented explanatory power, do ethnocultural predictors (i.e., *orthogonal acculturation status* and *level of psychosocial "Hispanic" stress*) explain an incrementally significant portion of test performance variance in the cases of the above neuropsychological domains?
2. What are the emergent phenomenological themes in the subjective experiences of healthy, bilingual persons of Mexican ethnocultural origin, in completing neuropsychological tests and cultural experience questionnaires (in either English or Spanish), in the context of a research study conducted by a non-Hispanic White researcher?

Method

Participants

Participants were 80 community-dwelling, healthy adults and older adults of Mexican ethnocultural or national origin. Participants' ages ranged from 20 to 74 years, with a mean age of 39.30 years ($SD = 13.85$). A total of 27 males and 53 females participated. Participants reported a mean of 12.96 years ($SD = 3.40$) of formal education. On average, participants had lived in the U.S. (as a total percentage of their lives) for nearly two-thirds of their years ($M = 63$ percent, $SD = 37$ percent). The sample was, on average, bicultural, where the mean linear acculturation scale value was -0.09 ($SD = 1.10$; values range from -4.00 to $+4.00$, where positive values indicate Anglo Orientation and negative values indicate Mexican Orientation, and 0.00 is the midpoint of the linear scale). The sample reported very low psychosocial stress levels. The mean score on the Hispanic Stress Inventory was 1.36 ($SD = 0.32$; values range from 1.00 to 5.00 , and lower scores represent less reported stress). Table 1 presents further descriptive values for the present sample. Analyses of variance comparing descriptive values across language conditions (i.e., being tested in randomly assigned English or Spanish language conditions) demonstrated that no group differences were present at the a priori alpha level of .05.

Table 1.

Means and standard deviations for demographic variables as a function of language condition.

	Condition		Total ^b <i>M</i> (<i>SD</i>)	<i>F</i>
	English ^a <i>M</i> (<i>SD</i>)	Spanish ^a <i>M</i> (<i>SD</i>)		
Age (Years)	36.52 (11.97)	42.07 (15.14)	39.30 (13.85)	3.31
Education (Years)	13.57 (2.51)	12.35 (4.03)	12.96 (3.40)	2.66
Time in U.S. (Years)	23.75 (19.81)	31.30 (23.41)	27.53 (21.88)	2.43
Proportion Life in U.S. (%)	0.59 (.37)	0.66 (.37)	0.63 (.37)	.75
Education – Father (Years)	7.49 (5.43)	6.09 (3.79)	7.18 (5.06)	1.62
Education – Mother (Years)	8.45 (4.84)	6.72 (4.32)	7.59 (4.65)	2.81
Annual HHI (Dollars x 1,000)	4.27 (2.57)	3.76 (2.11)	4.01 (2.35)	.94
Age at L2 (Years)	15.17 (10.54)	15.70 (10.19)	15.44 (10.31)	.05
ARSMA-II LA	-0.15 (1.16)	-0.02 (1.05)	-0.09 (1.10)	.30
ARSMA-II AOS	3.56 (.73)	3.61 (.73)	3.58 (.73)	.09
ARSMA-II MOS	3.71 (.70)	3.63 (.69)	3.67 (.69)	.30
Total Hispanic Stress	1.36 (.29)	1.36 (.36)	1.36 (.32)	.01

Note. Age at L2 = Age at acquisition of second language; Annual HHI = Annual Household Income; ARSMA-II LA = Acculturation Rating Scale for Mexican Americans – II (ARSMA-II) Linear Acculturation score; ARSMA-II AOS = ARSMA-II Anglo Orientation Scale score; ARSMA-II MOS = ARSMA-II Mexican Orientation Scale score; Total Hispanic Stress = Total score on Hispanic Stress Inventory

^a *n* = 40; ^b *N* = 80

Table 2 presents further descriptive information for the present sample, as a function of language condition and as a total sample. As is apparent, most participants were born in Mexico (60 percent), and most reported that their second language was English (72.5 percent). Generational status was predominantly first and second generation American (62.5 percent and 20.0 percent, respectively). Approximately one-third of participants had lived in the U.S. as their primary residence (35.0 percent), and

approximately one-third had lived in the U.S. for the entirety of their lives (32.5 percent). Participants reported having obtained their formal education “only in the U.S.” in 37.5 percent of cases, “only in Mexico” in 32.5 percent of cases, and in a mixture of both in the remaining cases. Finally, 40.0 percent of participants’ incomes were below 200 percent of poverty (U.S. DHHS, 2002). All participants reported, by self-definition, being of Mexican or Mexican-American national or cultural heritage.

Table 2.

Sample characteristics as a function of language conditions (%).

	Condition		
	English ^a	Spanish ^a	Total ^b
Recruitment Source			
Mass	52.5	62.5	57.5
Newspaper Ad	37.5	32.5	35.0
Other Agency	10.0	5.0	7.5
Sex			
Male	40.0	27.5	33.8
Female	60.0	72.5	66.3
Nation Born			
USA	40.0	50.0	45.0
Mexico	60.0	50.0	55.0
Portion of Life in U.S.			
All	32.5	47.5	40.0
From Childhood	12.5	12.5	12.5
From Adolescence	15.0	10.0	12.5
From Adulthood	35.0	27.5	31.3
Various/Mixed Periods	5.0	2.5	3.8
Second Language			
English	72.5	75.0	73.8
Spanish	27.5	25.0	26.3
Self-identification			
Latino/a	12.5	7.5	10.0
Hispanic	17.5	20.0	18.8

Chicano/a	7.5	5.0	6.3
Mexicano/a	42.5	35.0	38.8
Mexican American	12.5	20.0	16.3
American	5.0	5.0	5.0
Other	2.5	7.5	5.0
Nation of Education			
USA	37.5	47.5	42.5
Mexico	32.5	27.5	30.0
Mainly USA	7.5	0.0	3.8
Mainly Mexico	15.0	15.0	15.0
USA & Mexico equal	7.5	10.0	8.8
Generation American			
First	62.5	52.5	57.5
Second	20.0	15.0	17.5
Third	5.0	5.0	5.0
Fourth	7.5	10.0	8.8
Fifth	5.0	15.0	10.0
Beyond Fifth	0.0	2.5	1.3
Poverty Line			
Above	60.0	50.0	55.0
Below	40.0	50.0	45.0

Note. Table 2 Continued

A review of significant correlations between independent sample characteristics is also useful in describing the present group of volunteers (see Table 3 for full correlation matrix). To highlight, statistically significant correlations revealed the following relationships in the present sample. In comparison with younger participants, older participants reported having less years of formal education, reported residing in the U.S. for a greater percentage of their lives, indicated that their acculturation status was more Anglo-oriented, and reported lower levels of psychosocial stress. In comparison with participants with lower levels of formal educational attainment, those with greater years of formal education were more likely to be male and to have a higher annual household income. In comparison with participants who had lived in the U.S. for a smaller portion of their lives, those who had resided in the U.S. for a greater portion of their lives were

more likely to have a greater annual household income and be above 200% of the poverty line, and to indicate that their acculturation status was more Anglo-oriented than Mexican-oriented. Apart from males tending to have a greater level of formal education than females, biological sex was not significantly correlated with other independent characteristics in this sample.

Table 3.

Correlation Matrix of Selected Independent Variables in Sample ^a

	1	2	3	4	5	6	7	8	9	10	11
1. Age	--	-.24*	.58**	-.10	-.20	-.26*	.08	.17	.42**	-.33**	-.22*
2. Education		--	-.02	-.22*	.47**	.45**	.40**	.15	.10	.04	.06
3. % Life US			--	-.11	.09	.07	.25*	.26*	.67**	-.38**	.05
4. Sex				--	.04	-.01	.01	.06	-.13	.01	.12
5. Father Ed					--	.68**	.30**	.30**	.21	-.11	.11
6. Mother Ed						--	.33**	.32**	.19	.11	.04
7. HHI							--	.47**	.24*	-.06	-.03
8. Poverty								--	.30**	-.28**	.07
9. AOS									--	-.20	.07
10. MOS										--	-.19
11. Total HSI											--

Note. % Life US = Percent of lifetime lived in United States; Sex = biological sex; Father Ed = years of formal education of father; Mother Ed = years of formal education of mother; HHI = Annual Household Income; Poverty = Poverty status at 200% of Department of Health and Human Services cut-point; AOS = Acculturation Rating Scale for Mexican Americans – II (ARSMA-II) Anglo Orientation Scale score; MOS = ARSMA-II Mexican Orientation Scale score; Total HSI = Total Hispanic Stress Inventory score.

^a N = 80

* $p \leq .05$. ** $p \leq .01$.

Materials

The materials developed by the principal investigator for the purposes of this study (two screening questionnaires and a demographic questionnaire) were co-developed and edited by the co-investigator, who is a native speaker of the Spanish language, and were independently evaluated for grammatical and semantic content by a third native Spanish-speaker, also a member of the Psychology Department to which the principal investigator belongs. Formal back-translation methods were not utilized, as such instruments were questionnaires designed to elicit basic information, not to psychometrically measure particular constructs.

Health-History Screening Questionnaire

For the purposes of this study, it was essential to exclude all but neurologically and psychiatrically healthy persons. This was necessary to avoid confounding variability in data obtained from dependent measures with actual brain injury or other conditions that could affect test performance. Therefore, following the example of numerous clinical and experimental neuropsychological investigators, this study utilized a Health-History Screening Questionnaire (HHSQ; see Appendix E), which was administered by phone prior to actual test administration.

Potential participants were excluded if the results of the questionnaire identified: (a) any history of past neurological illness or injury (e.g., epilepsy, cerebrovascular accident, head trauma with loss of consciousness greater than 15 minutes, neoplastic disease, or significant exposure to neurotoxins), (b) the current use of any psychoactive medications suggesting ongoing neurologic or psychiatric illness; (c) any chronic medical conditions (e.g., diabetes or hypertension) when cognitive sequelae were reported; (d)

complaints of current cognitive or emotional difficulty (suggesting disorders with potential neurobehavioral effects, such as major depression), (e) reported history of substance abuse; (f) reported history of difficulty with acquisition of reading, writing or arithmetic skills (requiring special remedial services, where available). Participants were also screened for color-blindness, as color discrimination was required on one of the neuropsychological instruments utilized in this study.

Following administration of the Health-History Screening questionnaire, 15 of the 126 total screened potential participants were excluded from participation in the study due to reported risk factors for neurocognitive impairment. Specifically, the following figures represent the reasons for study exclusion among the 15 excluded persons: history of neurological illness or injury ($n = 8$), history of substance abuse ($n = 4$), history of Axis I or II psychiatric diagnosis or significant symptoms of such disorders ($n = 2$), and history of chronic general medical condition with risk of neurocognitive sequelae ($n = 1$). At the time of health history screening, an additional 10 potential participants (of the total 126 screened) were excluded because they reported ethnocultural or national origins other than Mexican or Mexican-American.

Bilingualism Screening Instrument

Although randomization procedures were designed to remove linguistic status confounds to results, a bilingualism screening measure (Bilingualism Screen; see Appendix F) was administered over the phone at the same time as the Health-History Screening Questionnaire was utilized to examine participants' level of oral and comprehensive fluency in the potential participant's non-dominant language. Potential participants stated, upon query, whether Spanish or English was their current dominant

language, and the linguistic screening measure was administered in the reportedly non-dominant language, to assess for fluency in that tongue.

This instrument, developed by the principal investigator, for the purpose of this study, is comprised of items from the Mini-Mental State Exam (Folstein, Folstein & McHugh, 1975) and a Spanish language analogue (Ostrosky-Solís, López-Arango & Ardila, 2000). All items were those that a person without risk for neurocognitive impairment or altered mental status, would respond to without error in either language if sufficiently bilingual. These items were chosen because of their similarity to the types of activities that would be completed in data collection; thus, items assessed mental status in major cognitive areas, (e.g., attention, episodic memory, oral comprehension, and orientation). Potential participants were excluded, under the following conditions (a) if they could not linguistically comprehend screening item instructions (b) if they were unable to produce utterances that were communicative and consistent with expressive fluency in this non-dominant language, or (c) if they responded incorrectly (however fluently) to any items, which might indicate neurological impairment. In this manner, this screening procedure served both the purpose of being a linguistic screen and of being a basic mental status screen.

Following screening procedures prior to study inclusion and data collection, 21 of the 126 total screened, potential participants (16.7 percent) were excluded from the study due to insufficient levels of fluency in their non-dominant language and/or incorrect responses to items on this screening measure. Failures on the linguistic screen comprised 45.7 percent of the total *excluded* potential participants. Overall, accounting for both health history and linguistic screening procedures, 46 of 126 total screened, potential

participants (36.5 percent) were excluded from study participation; the remaining 80 of 126 potential participants (63.5 percent) were included as participants in the study.

Demographic Questionnaire

This questionnaire, was developed for the purposes of this study to obtain basic demographic (e.g., sex, age) and other relevant self-report data (e.g., handedness)from participants (see Appendix G).

Other measures of independent sample characteristics

Two other measures of independent sample characteristics were utilized in this study in order to quantify (a) the acculturation status of participants, relative to Mexican American and Anglo-American cultural perspectives and practices and (b) the psychosocial stress levels of participants, based in their status as persons of Hispanic origin.

Acculturation Rating Scale for Mexican Americans – II (ARSMA-II)

The Acculturation Rating Scale for Mexican Americans – II (ARSMA-II; Cuéllar et al., 1995) was administered to participants. This instrument, a revision of the original ARSMA (Cuéllar et al., 1980), allows for both linear and orthogonal classification of acculturation status, and has English- or Spanish-language versions. The ARSMA-II was utilized in this study to produce Anglo Orientation score and a Mexican Orientation score, representing orthogonal acculturation dimensions. A linear acculturation score can be determined by subtracting the Mexican Orientation scale score from the Anglo Orientation scale score, yielding a Linear Acculturation Score that ranges from – 4.00 to + 4.00, where higher (i.e., positive) values indicate greater levels of Anglo Orientation. Orthogonal acculturation status is determined as a function of the orthogonal coordinates

(i.e., X and Y, on the respective orthogonal axes, as per Cartesian analytic geometry; Cuéllar et al., 1995), where coordinates represent the Anglo Orientation scale raw score and the Mexican Orientation scale raw score, respectively. This allows categorization, relative to cut-point coordinates, into one of four orthogonal typologies (as represented by location in one of the four possible Cartesian quadrants): High Biculturals, Marginals (Low Biculturals), Traditionals and Assimilated types.

The reliability and validity of ARSMA-II scores have been established by Cuéllar, Arnold & Maldonado (1995). Split-half reliability of the Anglo Orientation Scale (.77) and the Mexican Orientation Scale (.84) is sufficient, as is internal consistency, where coefficient alphas were for the Anglo Orientation Scale (.83) and the Mexican Orientation Scale (.88). Test-retest reliability for the Anglo Orientation Scale (.94) and the Mexican Orientation Scale (.96) are also sufficient. Concurrent validity data is available from Cuéllar, Arnold & Maldonado (1995). Initial analyses (i.e., correlation of ARSMA-II scores with original ARSMA scores produced by a sample of 171 individuals) yielded a Pearson product moment correlation coefficient of .89. Further analyses demonstrated a Pearson product moment correlation of .61 ($p < .001$) between acculturation and generational status. Factor analysis of the Mexican Orientation and Anglo Orientation items of Scale 1 indicate that the ARSMA-II supports a three-factor scale consisting of the following factors consistent with those reported for the original ARSMA: a language factor, an ethnic identity factor, and an ethnic interaction/distance factor.

Hispanic Stress Inventory (HSI)

The HSI (Cervantes, Padilla & Salgado de Snyder, 1991) was administered to measure psychosocial stress levels associated with participants' status as persons of Hispanic origin. The HSI provides quantitative information about the psychosocial stress experience of Hispanics by documenting the current presence of culturally relevant stressors (ibid, 1991). It is available in English- and Spanish-language versions (the latter was developed using systematic back-translation methods (ibid, 1991)). Respondents may complete either the Immigrant or U.S.-born version of the instrument depending on their place of birth. Items for the Immigrant and U.S.-born versions of the scale were systematically derived empirically, through a process that began with interviews of Hispanic community members to elicit stressors across different life domains. Items are, thus, conceptually relevant to the study of such areas of psychosocial stress and are emically developed, rather than etically imposed from research on psychosocial stress in other ethnocultural (i.e., majority) populations (ibid, 1991).

Scoring of the HSI is conducted by summing the cognitive stress appraisal levels for items on each of the subscales, respectively, where such levels range from 1 (Not at all worried or tense) to 5 (Extremely worried or tense). Average levels of stress on each subscale are computed by dividing the aforementioned sum by the number of items present in the subscale. A total level of stress is computed by summing the raw cognitive stress appraisal levels for all subscales on the HSI version completed by the total number of items across subscales.

Psychometric characteristics of the HSI are presented by Cervantes, Padilla & Salgado de Snyder (1991). Internal consistency reliability estimates yielded subscale

coefficient alphas on the Immigrant version ranging from .91 (Occupational/Economic stress) to .77 (Family/Culture stress) and subscale coefficient alphas on the U.S.-born version ranging from .90 (Marital stress) to .85 (both Parental stress and Family/Culture stress). Test-retest reliability coefficients were obtained only for the Immigrant version of the HSI, utilizing a group of older Hispanic adults. Coefficients ranged from .86 (Family/Culture stress) to .61 (Marital stress). It should be noted that measures of life-events, such as the HSI, elicit responses that are dependent upon changes in stressful life circumstances, and therefore, logically will yield variable scores across time (Cervantes, Padilla & Salgado de Snyder, 1991). Construct validity of the HSI has also been evaluated (Cervantes, Padilla & Salgado de Snyder, 1991). Factor analyses results indicate two distinct but similar factor structures for the two HSI versions. Factor loadings for the Immigrant version include: Occupational/Economic Stress, Parental Stress, Marital Stress, Immigration Stress, and Cultural/Family Conflict, in descending order of portion of explained variance in the model. Factor loadings for the U.S.-born version of the HSI include: Marital Stress, Occupational/Economic Stress, Parental Stress, and Cultural/Family Conflict, also in descending order of portion of explained variance.

Outcome measures

Six separate outcome measures/instruments were administered either in English or Spanish (thus, in theory, comprising 12 separate instruments). All English-language versions have been commonly used by clinical neuropsychologists in the assessment of neurocognitive functioning, and their Spanish-language counterparts have been recently adapted, translated and well standardized for use with the Spanish-speaking population

(Artiola i Fortuny et al., 1999; Pontón et al., 1996). Each of the following neuropsychological test instruments was selected for specific reasons, and principal among them was the existence of prior research utilizing and investigating both the English- and Spanish-language versions of these measures with appropriate ethnocultural populations. Adequate standardization and normative empirical data exist for each measure and are appropriate to the population sample targeted for this investigation.

Instruments were partially selected such that a variety of cognitive domains were sampled. Specifically, the domains of attention, episodic verbal memory, visuoconstruction, verbal fluency, and freedom from distractibility (one aspect of executive functioning) were measured for each participant. The measures primarily engaging visuoconstruction, spatial attention, and sustained visuospatial attention were administered during the delay period of an auditory verbal learning test (i.e., prior to a recall task for verbal information 20 minutes after its initial presentation) in order to avoid confounding verbal memory consolidation with the content of other “verbal” tests. Instruments were also selected such that the total administration time for each participant, not including the demographic questionnaire, acculturation scale, and psychosocial/acculturative stress inventory, would not exceed 45 minutes.

Spanish Verbal Learning Test (Aprendizaje de Palabras [SVLT]) and California Verbal Learning Test (CVLT)

The first of these instruments, the SVLT (Artiola i Fortuny, Hermosillo Romo, Heaton, & Pardee, 1999), is identical in format and procedure to the second, the California Verbal Learning Test (CVLT; Delis, Kramer, Kaplan, & Ober, 1987). Both measures are designed to assess auditory verbal learning and memory. The primary

difference between them is in the content of the verbal learning lists presented to examinees, which represent four semantic categories of 16 total items that examinees must learn and remember. That is, the content differs because one is in English and one is in Spanish, and the words and semantic categories are distinct across these two measures.

These two instruments each consist of a list of 16 relatively simple words representing four semantic categories (for the SVLT: animals, family members/relatives, furniture, and parts of the body; for the CVLT: tools, clothing, fruit, and spices and herbs) presented at a rate of approximately one word per second. After each reading of the list (a total of five readings are presented), examinees are asked to recall as many of the words as possible, in any order. After the five learning trials, a second list of 16 words is presented, in which two of the prior semantic categories are represented by new words, and the remaining eight words are novel. A free recall trial for the second list follows. Immediately after this, examinees are asked to freely recall words from the first list. Subsequently, they are asked to recall words from the first list upon semantic cueing by the examiner, once for each of the four categories. Following a 20 minute delay (during which other “non-verbal” tests are administered), examinees are asked to once again recall the words from the first list, first upon free recall and then upon semantically-cued recall, as before. Finally, examinees are asked to recognize from a list of 44 items the 16 that were originally presented in the first list.

Psychometric data from the standardizations of these instruments is available in the published professional manuals. For the CVLT, internal consistency reliability estimates range from .92 for total score over five trials to .70 for item totals across five

trials (i.e., for each of the 16 stimulus words) (Delis et al., 1987). Test-retest reliability estimates are somewhat more problematic, given that this test evaluates episodic, novel learning where subsequent test performances build upon the first. After a one-year interval, statistically significant test-retest reliability estimates for various indices of the test ranged from .50 to .79 (Delis et al., 1987).

Validity of these instruments has also been established. For the SVLT, validity was demonstrated through calculation of a Wilks lambda coefficient confirming the lack of significant difference between means of a base sample and a validation sample, where Wilks lambda $F [33, 320] = .81$ ($p = .76$) (Artiola i Fortuny et al., 1999). For the CVLT, validity has been established through results of factor analyses, criterion-related validity research and through research to determine its discriminative power among individuals suffering from various clinical disorders. Results of factor analyses overall support theoretically meaningful factors that are consonant with the experimental constructs they were designed to evaluate. The six-factor solution from exploratory factor analysis reflected General Verbal Learning, Response Discrimination, Learning Strategy, Proactive Effect, Serial Position Effect, and Retroactive/Short-Delay Effect (Delis et al., 1987). Criterion-related validity, examined through correlational analyses between the CVLT and the Wechsler Memory Scale (WMS), was demonstrated. Correlations between total immediate recall of the first CVLT list across five learning trials correlated .66 with the WMS Memory Quotient, and the CVLT semantic clustering strategy score correlated positively with the majority of WMS memory scores (Delis et al., 1987).

Color Trails Test, 1 and 2– English- and Spanish-language administrations

The Color Trails Test was developed by D’Elia and colleagues (1994) and is adapted from the Trail Making Test (Reitan & Wolfson, 1993). The Trail Making Test is an orthographic neuropsychological test, consisting of two parts, A and B, designed to measure aspects of visuospatial attention, cognitive flexibility, and cognitive processing speed. Part A requires examinees to draw straight lines between circles enclosing the numbers 1 to 25 on a single sheet of paper, in order of the numbers, as rapidly as possible. It is a test primarily of sustained visual attention and visuomotor tracking and sequencing. Part B of this test also requires the examinee to draw straight lines between circles on a single sheet of paper as quickly as possible. However, the additional requirement of alternating between numbers and letters enclosed in the circles (e.g., 1 to A, A to 2, 2 to B, and so on) make this also a test of complex, divided attention with sensitivity to frontal systems. Quantitative raw scores for Parts A and B are represented by the time in seconds to completion, including any time the examiner spends correcting any errors made by the examinee.

The Trail Making Test, however, given its English-language alphabetical as well as Roman numerical content, may have limited validity and applicability to members of other cultures not familiar with such symbols, particularly the letters A through L. When such concerns were brought to the committee for the World Health Organization multicenter study of HIV infection in 1990, the committee was charged with the task of developing “a test similar to the TMT that had the sensitivity and specificity of the standard TMT, but which had broader application in cross-cultural context (D’Elia, et al., 1996; p. 2).”

The result of this change was the Color Trails Test (CTT), which includes yellow- and pink-colored, numbered circles, and no alphabetical letters. In the CTT, Part 1, the examinee must connect circles in the order of their numbers, as in the TMT, Part A; the circles are alternately colored yellow or pink, but where circle color is not a salient characteristic of Part 1. In the CTT, Part 2, examinees are shown a sheet where two circles exist for every number, one colored yellow and the other pink. The examinee must connect the circles in numerical order, but where they consecutively alter the color of the circles being connected [i.e., 1 (pink) to 2 (yellow) to 3 (pink), and so on], ignoring the other circles. Quantitative raw scores are computed in the same manner with this instrument as with Trails A and B, total time to completion.

Psychometric data regarding reliability and validity with the Color Trails Test are available. Test-retest reliabilities for the Color Trails Test, 1 and 2, have been demonstrated to be .644 and .787, respectively (D'Elia et al., 1996). Validity has been established on various levels, as well. Construct validity has been established through a comparison of scores from the new test (i.e., Color Trails) and the original test (i.e., Trail Making Test), where lower variability across cultures of scores on Color Trails 2 than scores on TMT Part B and not between Color Trails 1 and TMT Part B (Maj et al., 1994). This latter result should be expected, as neither Color Trails 1 nor TMT Part B contain anything except numbers; alphabetical figures are hypothesized to contribute most strongly to cultural bias in the Trail Making Test, as previously mentioned. Convergent validity of the Color Trails Test has been established, as well, and it has been found that the time variables of this instrument are highly correlated with one another (Maj et al., 1994). Four primary factors have been found in exploratory factor analyses, including

speed of perceptual tracking, susceptibility to interference, simple perceptual sequencing, and impulsivity (Uchiyama, Mitrushina, D'Elia, Satz & Matthews, 1994). Criterion-related validity of this measure has also been established. In particular, Color Trails 2 has been shown to be sensitive to symptomatic HIV-1 serostatus across a number of different cultural groups (Maj et al., 1994).

Atención Visual and Spatial Span

The Spatial Span test is identical in item content and format in both the English- and Spanish-language versions, differing only in the language of administration. Spatial Span and *Atención Visual* (Artiola i Fortuny et al., 1999) are designed to assess visuospatial attention and concentration, along with the additional requirement of utilization of short-term working memory in the backward portion of the test. These instruments are similar to the Digit Span subtest of the Wechsler Adult Intelligence Scales, in which examinees must recall and repeat, either in the same or reverse order as presented by examiner, a span of digits immediately after they are said by the examiner. Yet in the case of Spatial Span, a modified Corsi board (a board with a set of three-dimensional cubes on top, in various positions) is utilized in the place of orally presented digits. The examinee must immediately recall and physically repeat a sequence of tappings with an index finger on the cubes, in the same or reverse order as presentation, after observing the examiner tapping them in the presentation sequence. The *Atención Visual* Spanish-language version of this test was developed and standardized by Artiola i Fortuny, et al. (1999).

Psychometric data on the reliability and validity of these measures are available. Spatial Span (WMS-III) split-half reliability has been demonstrated at an average level

(across all standardization age groups) of .79 (The Psychological Corporation, 1997). Interscorer agreement stability coefficients for Spatial Span Forward and Spatial Span Backward (WMS-III) have been shown to be .62 and .62, respectively (ibid, 1997). Spatial Span (WMS-III) has been shown to be sensitive to the existence of lateralized temporal lesions and to frontal lobe lesions (Lezak, 1995). Validity of Atención Visual was demonstrated through calculation of the abovementioned Wilks lambda coefficient confirming the lack of significant difference between means of a base sample and a validation sample, where Wilks lambda $F [33, 320] = .81$ ($p = .76$) (Artiola i Fortuny et al., 1999).

Diseño de Bloques and Block Design

Diseño de Bloques is a subtest of the *Escala de Inteligencia Wechsler para Adultos* (EIWA; Wechsler et al., 1968). Block Design (BD) is a subtest of the Wechsler Adult Intelligence Scale-Revised (WAIS-R). These instruments assess constructional praxis and visuospatial functioning. Although the EIWA BD subtest differs somewhat in content (3 of 10 items are different from those in the WAIS-R), the overall format and administration are the same. These instruments require that examinees reproduce, using a certain number of colored cubic blocks (all are red on two sides, white on two sides and half-red/half white on two sides), a design pictured on stimulus cards that can be constructed using the number of blocks given to the examinee. Each item is scored for correctness of design construction and for the time in which it is completed, with some items giving extra points as a function of the speed of completion. Psychometric data are readily available for these tests. Not only are these tests sensitive to various forms of neurocognitive impairment and neurological damage (Lezak, 1995) but they also have

been shown to be effective in cross-cultural contexts in discriminating between cognitively impaired and unimpaired individuals (Maj et al., 1994).

Fluidez Oral por Letra PMR & Controlled Oral Word Association Test (COWA)

The *Fluidez Oral por Letra, PMR*, test is an adaptation (Artiola i Fortuny, et al., 1999) of the Controlled Oral Word Association Test (COWAT; Benton & Hamsher, 1989). These tests measure an examinee's verbal fluency. Examinees are asked to name within a time limit all the words they can think of that begin with a specific target letter, excluding the proper names or the same words with a different suffix (e.g., eat and eating). In the Spanish language version developed by Artiola i Fortuny, et al. (1999), the letters P, M and R were selected based on their phonemic and graphemic appropriateness and relative frequency with regard to the Spanish language, whereas in the COWAT, the letters C, F, and L are utilized. Scoring of these measures is simply the total raw number of correct (i.e., non-perseverative, non-intrusive) responses given over the three one-minute trials of the test.

Reliability and validity data for these measures is available and sufficient. Test-retest reliability of the COWAT after 19-42 days in adults has been shown to be .88 (des Rosiers and Kavanaugh, 1987). Concurrent validity of the COWAT has been established in relation to a number of WAIS-R subtests. In the case of the *Fluidez Oral por Letra, PMR*, test, validity has been established in the same manner described above for other tests developed by Artiola i Fortuny (1999). In addition to its sensitivity to language impairment, the COWAT is quite sensitive to bilateral lesions located in the frontal lobes (Lezak, 1995).

Stroop Test-English and Spanish Versions

These two versions of the Stroop Test (Golden, 1978; Artiola i Fortuny, et al., 1999, respectively) are identical in procedures and instructions, differing only in the language of stimuli and administration, and they are designed to measure sustained attention, speed of cognitive processing, and freedom from distractibility. They each consist of three trials of 45 seconds each, with 100 total stimulus items on a (single page) trial. In the first trial, the Word trial, the examinee is asked to read as rapidly as possible the words on a page, which are “red (or rojo),” “green (or verde),” and “blue (or azul),” written in capital letters. If the examinee finishes all 100 items before the time limit expires, they simply continue on from the beginning once again. In the second trial, the Color trial, the examinee must name the color of ink in which each item, which consists of five capital case Xs (i.e., ‘XXXXX’), is printed, as quickly as possible. On the third trial, the Color-Word trial, the examinee must again name the color of ink for each item, except that in place of five Xs, the items contain the same color words as in the first trial, but written in a different color of ink from the semantic meaning of the word (e.g., ‘RED (or ROJO)’ will be written in blue or green ink). Thus, the examinee must ignore the word written and not name it, and name the color of the ink in which the word is written. When the examinee makes a mistake, the examiner says, “No,” and the examinee must correct their mistake and continue on from there.

Each trial is scored only for the number of items completed in the 45-second time limit. Importantly, color blindness will preclude the administration of this test.

Quantitative scoring procedures yield the following psychometric indices of

performance: (a) Word score, (b) Color score, (c) Color-Word score, and (d) Interference score.

Psychometric data from the above authors indicate that scores obtained from these tests are reliable and valid. Golden's version of the Stroop has demonstrated test-retest reliability coefficients of .86 (Word score), .82 (Color score) and .73 (Color-Word score). The Spanish language version of this test has been shown to be valid through the same analyses yielding Wilks lambda coefficients mentioned above (Artiola i Fortuny et al., 1999). Tests of the Stroop format have been utilized to assess concentration and ability to filter out unwanted stimuli and have been shown to be quite sensitive to neurocognitive dysfunction of various types (Lezak, 1995). The Spanish-language standardized administration instructions and normative data are available in Artiola i Fortuny (1999), and those for the English-language format are available from the Psychological Corporation.

Outcome indices for statistical analyses

Among the six instruments employed in this investigation, there are a very large number of outcome indices that may be calculated. From among those possible outcome variables, a subset was selected for quantitative analyses because they reflect key neuropsychological outcomes. For example, the total number of unique words produced on the letter fluency (COWAT/PMR) task, was selected (i.e., *Fluency Total*). Higher numbers of total words produced on this task represents better performance. Other indices selected included: (a) total words recalled across the five learning trials of the list learning task (i.e., *VLT 1-5*), where more words recalled represents relatively better performance; (b) total words recalled without cue on the list learning task after a 20-

minute delay (i.e., *VLT LDFR*), where more words recalled represents relatively better performance; (c) total correct responses across all trials of the Spatial Span task (i.e., *Spatial Span Total*); (d) the freedom from distractibility index on the Stroop Color-Word task (i.e., *Stroop Interference*), where higher interference scores represent relatively poorer performance; (e) total time to complete Color Trails Test 1 (i.e., *CTT1 Time*), where more time represents relatively poorer performance; (f) total time to complete Color Trails Test 2 (i.e., *CTT2 Time*), where more time also represents relatively poorer performance; and (g) percent correct responses on the Block Design task (i.e., *BD Percent Correct*).

Design and Procedure

Participants were recruited from a variety of religious, social service and print media sources along the Front Range and Denver Metro Area of Colorado. The principal investigator developed relationships of cooperation with such parishes and solicited the assistance of community gatekeepers. Specifically, 46 participants from the sample (57.5 percent) were recruited through announcements (*anuncios*) made following Catholic Masses at churches with very large populations of Mexican and Mexican American parishoners. Announcements were made in the language in which the Mass had been administered (see Appendix A for recruitment scripts utilized in such *anuncios*).

Following the service, the principal investigator would meet interested potential participants at a table in front of the church, where they could sign up for the study or ask for more information. A toll-free number was set up for participants to call for more information. A bilingual message greeted callers. This served as the vehicle of communication with the researcher for many potential participants and a number of

upcoming or past participants, throughout the study. Many potential participants chose to read and sign consent forms (see Appendix B) at the time of initial face-to-face recruitment and to provide their phone numbers for later eligibility screening (which took place within a few days, generally).

Recruitment relationships were also established with county departments of public health and environment, a community health clinic, and community and social service centers serving predominantly Hispanic populations. Six participants were (7.5 percent) recruited from such sources. Lastly, 28 participants (35.0 percent) responded to advertisements placed over the course of 12 weeks in newspapers with primary readership in the Hispanic and Spanish-English bilingual populations of the Denver Metro Area. All written materials used in this study had prior approval from the CSU IRB.

The principal investigator, who personally obtained all data included in this investigation, is fluent in Spanish, his second language. This includes fluency in reading, writing, speaking and comprehending spoken Spanish. He has conducted Spanish-language psychometric test administration for numerous supervised clinical neuropsychological evaluations in an independent practice in Northern Colorado, utilizing many of the same instruments employed in this study with a population similar to the target population for this study.

This researcher and his graduate dissertation committee were committed to an approach to social science research in ethnocultural minority communities that took actions to avoid conducting “safari research.” This term has been used to describe research in which investigators, generally of the dominant culture, may enter a minority

community, obtain data with little to no input from the community as to the factors or questions targeted in the study, and then leave the community, taking away data but leaving little of value to participant communities (including even, at times, future provision of results from the study).

From this perspective, it was important to bring something of value to the participant communities in a number of ways. First, as a way to thank interested persons and as a way to give something of value back to the community of participants, the principal investigator offered a free brochure from the National Cancer Institute regarding nutrition and free calendars from the Department of Health and Human Services Office on Women's Health (see, www.4woman.gov). These were very popular items. Second, presentations were made at community gatekeeper agencies on health topics of interest to community members (e.g., stress and coping). Third, participants were made aware of the opportunity to hear a brief presentation of the results of the project at recruitment and community agencies, upon completion of data collection. Unfortunately, such informational presentations and feedback meetings were not well attended, probably due to inadequate publicity. The researcher generally relied on announcements in agency literature, such as *Misa Boletines* (Mass Circulars) or word of mouth, which appeared to be less effective than was desired. Fourth, all participants were made aware that results of the study, in lay language, would be made available to them in future months, pending completion of the project, through two distinct sources – by paper copy sent to the recruitment source agency through which they were contacted or as a World Wide Web document through a link at the researcher's personal web site through Colorado State University (an option developed specifically to benefit those who

had been recruited through newsprint media, and not through a community agency). Those participants without computers and internet access at home were encouraged to make use of public library computer resources.

Screening Procedures

Inclusion criteria for this study included the following: (a) self-reported Mexican or Mexican American ethnocultural or national origin; (b) demonstrated status as a functional English-Spanish bilingual; (c) self-reported freedom from risk factors for neurocognitive impairment; and (c) self-reported age from 18 to 75 years old. The age range for this study was determined according to the age ranges described in the development and standardization literature for the neuropsychological measures employed. Potential participants reporting other ethnocultural or national backgrounds such as Italian or Costa Rican, were excluded. Following informed consent procedures, potential participants were given a Health-History Screening Questionnaire to determine their health status. All participants who comprised the study sample were, therefore, free of risk factors for neurocognitive impairment (both physical and psychiatric), in order that these factors not confound interpretation of obtained data. Finally, all participants were sufficiently bilingual in both English and Spanish (in terms of production of and comprehension of speech) to complete activities in either of two randomly assigned language conditions.

Following initial recruitment, potential participants were screened for health history and bilingual linguistic fluency, as described below. Participants who met the criteria were scheduled for appointments, at their convenience, in a location of their choosing. Excluded participants were thanked for their time and interest. When a

potential participant's exclusion resulted from physical or mental health concerns, the researcher offered referral information to primary care providers and clinics in order that excluded participants with health concerns receive adequate care. Many such persons stated that their concerns had already been addressed by a primary care provider or were historical concerns that were not presently troublesome. However, in a minority of cases, referral information for a new and untreated concern was provided by the researcher, after which he followed up by phone with the potential participant to ensure that their needs had been met through the referral.

Randomization procedures

Included participants were randomly assigned to either the English-language instrument condition or the Spanish-language instrument condition. This was accomplished through the Random Allocation procedure (Ranuni; SAS, 2001). In this manner, each participant had an equal chance of being assigned to either of the two language conditions.

Data Collection

To ensure confidentiality of results, each supplementary material, including the Health-History Screening Questionnaire, was assigned the same numerical code for a single participant. Consent forms (which included identifying information) and study materials (which did not) were maintained in separate, locked storage locations. In this manner, participants' identities could not be matched to their responses on study materials.

Data collection took place in locations that were comfortable and safe for each participant. This included community centers, churches, and participants' homes,

according to each participant's preference. Environmental conditions were always free from distractions, noises or other elements specified in the instrument professional manuals, such that standardized administration conditions were maintained and measurement error was minimized during data collection. Generally, testing settings consisted of empty rooms with tables and chairs (such as at a church) or quiet dining rooms in participants' homes.

The determination was made to allow for data collection in such non-traditional, yet reasonably quiet and uncluttered, settings in order to address low comfort levels that members of ethnocultural non-majority communities might likely have with formal scientific investigation and cognitive testing that might make them less likely to participate or to be able to put forth their best effort when participating. The principal investigator spent time before testing explaining the need for standardized testing conditions during data collection and readying the immediate environment to address such issues (e.g., cleaning off a table, closing off a quiet room, turning off telephone ringers).

Using a standard set of questions administered in the participant's preferred language, the researcher queried each participant, regarding non-neurological, circumstantial factors that could influence present test performance (Extra-test Factors; see Appendix C). Specifically, participants were asked about the following: (a) sleep on the night prior to testing and level of fatigue, if any, at the time of data collection; (b) mood state at the time of data collection; (c) levels of current physical pain, if any; (d) any medications taken that day (or not taken, if taking some medication was normal); and (e) any other factors that participants could identify that might influence their ability to

produce their best possible effort. Any participants noting high levels of fatigue or pain, significantly dysthymic mood, medications (or lack thereof) that could affect cognition, or other participant-identified factors that might negatively affect test performance were asked to reschedule for a different day. Data collection with all such participants, who represented approximately 5 percent of the total sample, was completed on alternate days.

Test Administration

Total data collection time, excluding time spent greeting participants and building rapport, took approximately 65 to 90 minutes, depending on the length of time to complete any one instrument (especially questionnaires). Participants first responded to an oral presentation of the Demographic Questionnaire. Participants next completed, in writing, the ARSMA – II with the principal investigator available to assist or troubleshoot. Next, participants completed the Hispanic Stress Inventory, either in the Immigrant or Non-Immigrant Version, depending on their particular status. Neuropsychological instruments were administered in a semi-counterbalanced order, with the verbal learning test pre-delay trials always first and the verbal learning test delayed trials always penultimate. The Block Design, Color Trails and Spatial Span tests were administered, in counterbalanced order, during the 20- minute SVLT/CVLT delay. The Stroop Test and the COWAT (or their Spanish-language counterparts) were presented last, also in counterbalanced order.

Debriefing

Debriefing of participants consisted of a period of time after the completion of testing during which the principal investigator briefly queried the participant about his or her experience during testing and addressed any questions or concerns that had arisen.

The principal investigator presented each participant with a debriefing statement (see Appendix D), in both English and Spanish, more fully describing the project's content and goals. After reading the statement, participants were offered the opportunity to ask any questions they might have. Lastly, participants received a \$20.00 incentive, in the form of a gift certificate to a major retail store to thank them for their time and participation. Participants were notified that results of the study, presented in a form comprehensible to non-scientists, would be made available upon completion of the study, through the agency or organization where they were originally recruited or at the researcher's personal web site.

Qualitative methodology

This project sought to evaluate the influence of ethnocultural factors in cognitive testing through a multi-method paradigm, integrating quantitative and qualitative research methods (Brannen, 1992) for two specific purposes. The first goal was to enrich and deepen the understanding of quantitative data and their interrelationships. This was important especially important, given that the present study is exploratory. The second goal was to provide the scientific community with a window on the phenomenology of the experience of cognitive testing by participants of Mexican ethnocultural origin. This latter goal was proposed because behavioral science work with ethnocultural non-majority populations conducted through purely positivist, actuarial methods may obfuscate the influence of lived, phenomenological, emic, and ideographic experience that may influence cognitive test performance outcomes.

The utilization of this combination of qualitative and quantitative methods is appropriate for a number of reasons. First, the factors influencing measured outcomes

are the same whether they are viewed from positivist or postmodernist epistemological perspectives. These are simply two different ways to view and understand the same factors and phenomena. This investigation benefits from the depth of understanding of participants' experiences of completing the study activities, where this depth is used as a vehicle to enhance understandings of observed quantitative relationships regarding a certain set of variables. Second, the body of knowledge regarding ethnocultural factors in cognitive behavior and its psychometric measurement is still rather minimal, and is only loosely based on a theoretical models of culture and cognition (Perez-Arce, 1999). Thus, the addition of ideographic data regarding the experience of cognitive testing by persons of Mexican ethnocultural origin will likely enhance attempts at theory building based in interrelationships among nomothetic, quantitative data.

The primary methods of this investigation do remain quantitative, and thus, consistent with the scientist-practitioner, empirical, and actuarial foundations of clinical neuropsychology, as well as with prior studies of the influence of ethnocultural moderator variables on neuropsychological test performance. However, it is proposed that the addition of qualitative data from a subset of participants may enhance interpretation of observed relationships between quantitative data, aid in theory construction, and provide researchers and clinicians with some of the first data on the phenomenology of completing cognitive tests by members of the population of Mexican origin.

A phenomenological study "describes the meaning of the lived experiences for several individuals about a concept or the phenomenon" (Creswell, 1998, p. 51). Emphasis in a phenomenological study is given to the primacy of the subjective

experience. In such a study, the researcher utilizes data from informant/participant interviews, consisting of verbalizations relevant to the experience of the phenomenon, to search for the essential structure or central meaning of the experience. Phenomenological data analysis includes the analysis of specific statements and themes contained in the verbatim interview data. In the search for all possible meanings, the researcher explicitly describes and sets aside all prejudgments, "bracketing" his or her own experiences and "knowledge" of the phenomenon, and seeks to obtain a picture of the experience that is true to the statements and meanings expressed by informants (Creswell, 1998).

The phenomenon of interest in this investigation is: the completion of tests of cognitive abilities by persons of Mexican ethnocultural origin, in the context of a research study targeting members of this group, where data were collected by a non-Hispanic, White, bilingual man.

Assumptions

A number of assumptions or prejudgments must be made explicit, and bracketed or suspended during data collection and analysis in order to not impose a priori hypotheses or interpretations on the data. These assumptions are: (a) that cultural identity will be a salient element of participants' experience of the phenomenon, (b) that ethnocultural background will somehow influence participants' experiences of the phenomenon, (c) that some interaction dynamic will be based on participants' experience of being a person of ethnocultural non-majority origin who is meeting with and being tested by a researcher of non-Hispanic, White origin, (d) that participants have some active thought processes, related to or occurring during the phenomenon, of which they may be explicitly aware upon researcher inquiry, (e) that participants serving as

informants may be able to utilize and comprehend some level of abstraction in discussing conceptual elements of experience of the phenomenon, (f) that the educational activities and experiences of participants will be a salient element of participants' experiences of the phenomenon, and (g) that the language context (i.e., Spanish or English) of the activities will be a salient element of participants' experiences of the phenomenon.

Elements and Design

A number of terms must be defined in order to make explicit that which distinguishes this phenomenon of interest from others that may exist.

- (a) *Research project*: The context within which the phenomenon takes place or is situated is that of a research project, in which a participant, just prior to interviewing, has provided information to a researcher conducting a scientific investigation. Consent forms have been signed, and the participant knows that he or she will receive no direct or individual feedback about his or her performance. He or she knows that the research project targets specifically persons of Mexican ethnocultural origin, and that results will only be published in the aggregate.
- (b) *Research volunteer/participant*: The role of the participant is that of a volunteer solicited from the community. Although present voluntarily, it is important to acknowledge that ethnocultural non-majority communities may have a historically based distrust of researchers and scientific projects. Moreover, the project is embedded in an overall societal climate of overt and subtle racism in the United States.
- (c) *Researcher*: The role of the researcher was that of a university-based, not community-based, scientist. Although the primary purpose of this research was to

obtain information from the participant community, efforts were made to give back and add value to the participant communities. Informants were aware of this fact.

(d) *Completion of tests of cognitive abilities* Participants engaged in and experienced the phenomenon of interest immediately prior to being interviewed, and both activities were facilitated and conducted by the same researcher.

Overall, the research activities consisted of provision of demographic information, answering culturally-oriented questionnaires, and completing a variety of cognitive tests in one or the other of their primary languages (i.e., Spanish or English).

(e) *Mexican ethnocultural origin*: Participants were those who self-identified as being of Mexican or Mexican American ethnocultural or national heritage.

(f) *Test of cognitive abilities*: A cognitive test is an instrument administered in a standardized manner to elicit observations of cognitive behavior that are both reliable and valid. These were generally referred to as "tasks" or "activities;" however, some standardized instructions contained the word "test."

A subset of the total sample was selected for the qualitative portion of the study.

Informants were chosen based on their engagement in the process of study participation as well as on their levels of verbal expressiveness. The subset of informants also was chosen in such a way as to represent some degree of within-sample demographic diversity. Audiotaped oral interviews immediately followed testing with participants who were asked, and agreed, to be informants. Interviews were conducted by the same researcher who had administered the testing measures. In contrast to many other

phenomenological studies in which researcher interrogatives may be quite general or relatively infrequent, this study employed fairly standardized researcher queries around a set of specific, predetermined areas of interest to the research committee. Initial, guiding queries utilized with all informants included the following, although not always in this order:

1. How did these tasks compare to your experiences in school?
2. What was it like to take these tests in (English or) Spanish? What would it have been like to take them in the other language?
3. What were you thinking about while you completed these tests?, Was it important for you to (remember the words, make a correct design, etc.)?
4. What, if anything, did I do as an examiner that made this comfortable or uncomfortable for you? Is there anything you would have liked me to do differently?
5. What did you particularly enjoy or not enjoy about completing these tasks?
6. If you were to go to a doctor who examined you by having you do tasks such as these, what do you think he or she might learn from your answers/responses?, What do you think they might tell him or her about how your thinking abilities were functioning?
7. How do you think that people from a Mexican cultural background would perform on these tests? How do you think a person from another cultural background might have done? How might culture affect how someone completes these tasks?

8. How did you decide to participate in this study? What are your opinions about it now that you have completed it?

Data analysis

Raw data were transcribed verbatim from the original audiotapes. The transcriptions were subjected to phenomenological analysis, following the structure and six-phase process described by Giorgi (1975a, b). In the first phase, individual transcripts (protocols) were read through completely to obtain an initial overview of the whole set of statements and possible meanings. In the second phase, each protocol was read through a second time and divided into units or blocks that expressed self-contained meanings (from a psychological perspective). These blocks are referred to as “meaning units.”

Third, the researcher stated, as simply as possible in his own language, the meaning that dominated each natural unit, protocol by protocol. This transformation from the informant’s words to the researcher’s words lead to blocks of text stated in the third person, but which retained the situated character of the informant’s initial description. In the fourth phase, the researcher analyzed each meaning unit and its theme in terms of relevance to the specific phenomenon of interest state what the phenomenon was , protocol by protocol. Aspects of the meaning units that were related to the phenomenon of interest were redescribed in language from the perspective of psychological science, where the resultant description retained the situated context in which the experience occurred to the individual informant.

Fifth, the researcher began to analyze the data across informants and protocols, seeking to synthesize and tie transformed meaning units together into descriptive statements of essential and nonredundant psychological meanings. At this stage, the

synthesized meanings retained the situated character in which the experience occurred to the participants taken as a whole group.

Results

Quantitative Results

Descriptive Results: Outcome Indices

Table 4 presents descriptive data on neuropsychological test performance of participants, by language condition and as a complete sample. As can be seen in the Table, those participants completing the EIWA (Spanish) version of Block Design achieved a greater portion of correct answers than did the group completing the WAIS-R (English) version of this instrument. As well, those completing the Spanish Verbal Learning Test (SVLT) recalled more words than did those who completed the English language California Verbal Learning Test (CVLT). No other statistically significant relationships were found.

Correlational analyses and selection of predictors

Results of correlational analyses were utilized in conjunction with evidence from the literature reviewed for this study to identify the predictor variables that should be included in the hierarchical regression analyses that follow. In this manner, relevant predictors were selected such that they would not have an inappropriately high degree of redundancy or multicollinearity in the resulting hierarchical regression models. Table 5 presents Pearson *r* intercorrelations for demographic, cultural, and outcome variables. Correlations among the *independent* variables included in Table 5 have been previously presented in Table 3.

Table 4.

Means and Standard Deviations of Outcome Indices, by language condition and total sample

Outcome Index	Condition		F	Total <i>M (SD)</i>
	English ^a <i>M (SD)</i>	Spanish ^b <i>M (SD)</i>		
Fluency Total	32.90 (9.86)	34.60 (11.58)	0.50	33.75 (10.72)
BD Percent Correct	.50 (.20)	.73 (.16)	34.31**	.61 (.21)
Stroop Interference	2.25 (8.40)	1.53 (5.02)	0.22	1.89 (6.89)
CTT1 Time	34.80 (14.43)	35.28 (12.09)	0.03	35.04 (13.23)
CTT2 Time	79.73 (40.58)	84.80 (25.84)	0.45	82.26 (33.90)
Spatial Span Total	15.78 (2.92)	15.25 (2.50)	0.75	15.51 (2.71)
VLT 1-5	45.10 (11.27)	49.25 (11.72)	2.61	47.18 (11.62)
VLT LDFR	9.65 (3.25)	11.07 (3.07)	4.06*	10.36 (3.22)

Note. Fluency Total = total words, verbal fluency task; BD Percent Correct = percent correct responses, Block Design; Stroop Interference = Interference score, Stroop Test; CTT1 Time = Seconds to complete Color Trails Test, Part 1; CTT2 Time = Seconds to complete Color Trails Test, Part 2; Spatial Span Total = Total correct responses on Spatial Span test; VLT 1-5 = Words recalled across five learning trials on Verbal Learning Tests; VLT LDFR = Verbal Learning Test Long-Delay Free Recall.

^a *n* = 40. ^b *n* = 40.

* *p* ≤ .05. ** *p* ≤ .01.

As Table 5 shows, the sex of participants was significantly associated with test performance on both VLT 1-5 and VLT LDFR, where females obtained less-favorable scores than males. Therefore, sex was added as a predictor to subsequent hierarchical regression analyses for these outcome variables. In the case of both CTT1 Time and CTT2 Time, poverty level status (SES) demonstrated significant correlation values with the outcome index, where participants below the poverty level performed worse than those above it. Therefore, SES was included as a predictor in subsequent hierarchical regression analyses for both CTT outcome indices. The literature has demonstrated that

age and level of formal education are significant influences on performance in all outcome measures utilized in the present study, therefore these two variables were included as predictors in all hierarchical regression analyses.

Table 5

Pearson r intercorrelation matrix of demographic, cultural and outcome variables in total sample ^a

Variable	8	9	10	11	12	13	14	15
1. Age	-.11	-.18	-.42**	.38**	.47**	-.42**	-.26*	-.35**
2. Sex	-.07	.12	.17	.01	.06	.09	-.24*	-.23*
3. Education	.25*	.05	.16	-.15	-.29**	.18	.35**	.34**
4. SES	.05	.09	-.06	-.25*	-.25*	.01	.00	.03
5. AOS	-.09	-.07	-.21	-.22*	-.03	-.25*	.13	.08
6. MOS	.15	.10	.22*	-.12	-.22*	.20	.12	.04
7. HSI Total	.08	.19	.04	-.14	-.16	.07	-.02	-.04
8. Fluency Total	--	.03	-.13	-.01	-.03	.02	.58**	.45**
9. BD Percent Correct		--	.32**	-.39**	-.36**	.35**	.25*	.30**
10. Stroop Interference			--	-.21	-.31**	.36**	-.08	.05
11. CTT1 Time				--	.80**	-.33**	-.25*	-.31**
12. CTT2 Time					--	-.42**	-.33**	-.40**
13. Spatial Span						--	.22*	.22*
14. VLT 1-5							--	.88**
15. VLT LDFR								--

Note. Fluency Total = total words produced on verbal fluency task; BD Percent Correct = percent correct responses on Block Design; Stroop Interference = Interference score on Stroop Test; CTT1 Time = Seconds to complete Color Trails Test, Part 1; CTT2 Time = Seconds to complete Color Trails Test, Part 2; Spatial Span Total = Total correct responses on Spatial Span test; VLT 1-5 = Words recalled across five learning trials on Verbal Learning Tests; VLT LDFR = Verbal Learning Test Long-Delay Free Recall.

^a $N = 80$.

* $p \leq .05$. ** $p \leq .01$.

Research Question #1

Hierarchical regression analyses (HRAs) were conducted to understand the contribution of cultural variables to neuropsychological testing outcomes (see Figure 1 for flow chart). Separate regression equations were developed for each criterion variable. In order to partial out criterion variance predicted by demographic variables, these were entered as predictors in Step 1 of the HRAs. In Step 2, language of test administration (Language) was entered as a predictor to empirically determine whether there were reliable differences in performance on outcome measures as a function of the version of the measure administered (i.e., English or Spanish) after accounting for variance attributed to relevant demographic variables. For those outcome indices in which Language accounted for an incrementally significant amount of variance, subsequent HRAs were performed separately for English and Spanish conditions. In contrast, when the language condition did not account for an incrementally significant amount of variance, subsequent HRAs were performed using the entire sample.

The purpose of subsequent HRAs (see Figure 2 for flow chart) was to empirically evaluate the incremental portion of criterion variance explained by cultural variables (e.g., acculturation or psychosocial “Hispanic” stress), beyond that already accounted for by demographic predictors entered into the HRA models in Step 1; thus, in Step 2 orthogonal acculturation variables were included. Although this study was designed to operationalize and code levels of psychosocial stress using the Hispanic Stress Inventory (HSI), data obtained from the present sample of participants was heavily skewed toward low levels of stress, and variance was minimal, rendering it a poor predictor variable. Therefore, only acculturation status indices from the ARSMA-II were included in

subsequent hierarchical regression models, as Step 2. It was determined, a priori, that the Anglo Orientation Scale (AOS) data and the Mexican Orientation Scale (MOS) data would be entered separately as two independent predictor variables. This is important because whereas prior studies have utilized linear measures of acculturation status, the ARSMA-II allows for an orthogonal consideration of this construct.

Figure 1

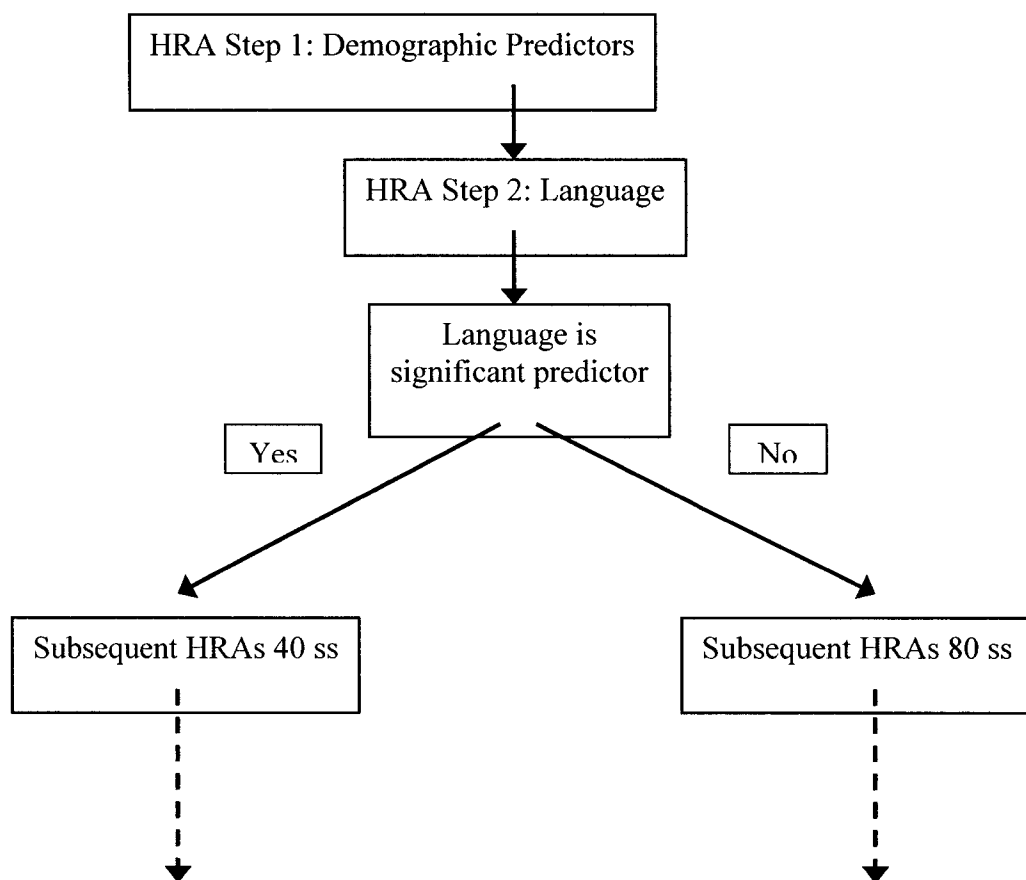
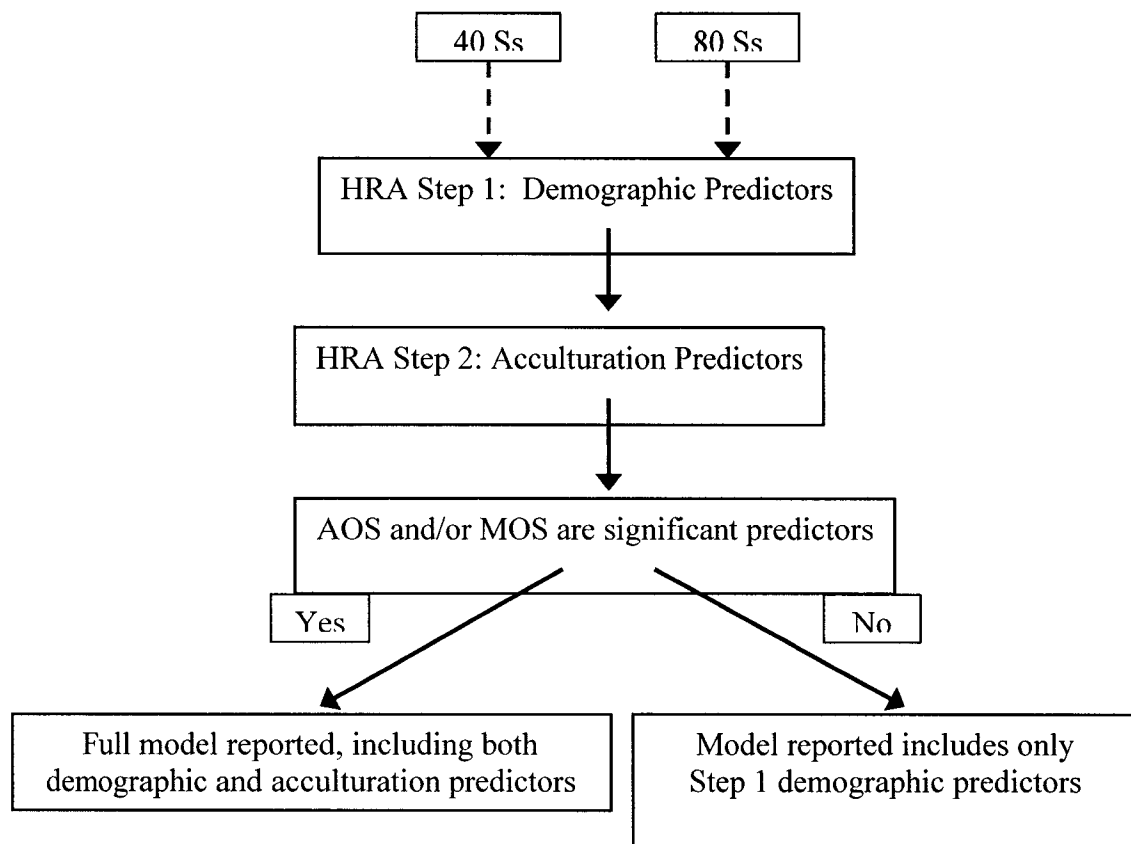


Figure 2



Spatial Span Total

The Spatial Span test is a measure of simple and complex visual attention, and the outcome index, Spatial Span Total, represents the cumulative visual attention performance on this instrument. As can be seen in Table 6, the full hierarchical regression equation for predicting performance on Spatial Span Total did not explain an incrementally significant portion of the criterion variance beyond that accounted for by sociodemographic predictors. After accounting for Age, Education and Sex, Language was not significantly associated with Spatial Span Total performance. Therefore, subsequent HRAs were conducted with data from both language versions of Spatial Span.

Table 6.

Hierarchical regression results with Language as Step 2: Spatial Span Total ^a

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1: Demographics				.19	5.93**
Education	0.08	0.09	.10		
Sex	0.42	0.62	.07		
Age	-0.08	0.02	-.39**		
Step 2: Instrument Version				.00	.01
Language	-0.05	0.56	-.01		

Note: Full Model $R^2 = .19$ (adjusted $R^2 = .15$)^a $N = 80$ * $p \leq .05$. ** $p \leq .01$.

As can be seen in Table 7, after controlling for Age, Education, and Sex, neither AOS nor MOS were significant predictors of visual attention. Age emerged as a significant predictor, where increased age predicted lower rates of correct responses. The statistically significant model explained 15.8 percent (adjusted) of the criterion variance.

Table 7.

Hierarchical regression results with AOS & MOS as Step 2: Spatial Span Total ^a

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1: Demographics				.19	5.93**
Education	0.10	0.09	.12		
Sex	0.40	0.62	.07		
Age	-0.06	0.03	-.32**		
Step 2: Acculturation				.01	0.64
MOS	0.29	0.43	.07		
AOS	-0.38	0.44	-.10		

Note: Full Model $R^2 = .20$ (adjusted $R^2 = .15$)^a $N = 80$ * $p \leq .05$. ** $p \leq .01$.

Stroop Interference

The Stroop Interference neuropsychological index is a measure of freedom from distractibility, an aspect of attention and executive functioning. As can be seen in Table 8, after controlling for Age and Education, Language was not significantly associated with Stroop Interference performance. Thus, subsequent HRAs included the combined data from participants in both language conditions.

As can be seen in Table 9, after controlling for Age and Education, neither AOS nor MOS were significantly associated with Stroop Interference performance. In the significant model, in which Age and Education were predictors, only Age was a significant predictor of Stroop Interference performance, where older age predicted greater freedom from distractibility. The statistically significant model accounted for 16.2 percent (adjusted) of the criterion variance.

Table 8.

Hierarchical regression results with Language as Step 2: Stroop Interference ^a

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1: Demographics				.18	8.63**
Education	0.14	0.22	.07		
Age	-0.21	0.05	-.42**		
Step 2: Instrument Version				.00	0.17
Language	-0.60	1.46	-.04		

Note: Full Model $R^2 = .19$ (adjusted $R^2 = .15$)

^a $N = 80$

* $p \leq .05$. ** $p \leq .01$.

Table 9.

Hierarchical regression results with AOS & MOS as Step 2: Stroop Interference^a

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1:					
Demographics				.18	8.63**
Education	0.15	0.22	.07		
Age	-0.18	0.06	-.36**		
Step 2: Acculturation				.01	0.40
MOS	0.86	1.10	.09		
AOS	-0.42	1.12	-.05		

Note: Full Model $R^2 = .19$ (adjusted $R^2 = .15$)^a $N = 80$ * $p \leq .05$. ** $p \leq .01$.*Fluency Total*

The Fluency Total outcome index is a measure of an examinee's phonemic (i.e., letter) verbal fluency, which is related to both language and executive functioning. As can be seen in Table 10, the full hierarchical regression model for predicting performance on Fluency Total only approached statistical significance ($p = .07$). This was only a mild improvement over the fit of the model containing only sociodemographic predictors; the difference in explanatory power between the models, based on the significant *F change* statistic, was not reliable at the .05 alpha level. Overall, after accounting for sociodemographic influences on test performance for the Fluency Total dependent variable, Language did not explain an incrementally significant portion of outcome variance. Thus, subsequent HRAs included the combined data from participants in both language conditions.

Table 10.

Hierarchical regression results with Language as Step 2: Fluency Total ^a

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1:					
Demographics				.07	2.70
Education	0.81	0.36	.26*		
Age	-0.06	0.09	-.08		
Step 2: Instrument					
Version				.02	1.59
Language	-3.04	2.41	-.14		

Note: Full Model $R^2 = .09$ (adjusted $R^2 = .05$)^a $N = 80$ $p \leq .05$. ** $p \leq .01$

Table 11 shows that after controlling for Age and Education, neither AOS nor MOS were significantly associated with Fluency Total performance. In the first step of the model that approached significance ($p = .07$), in which Age and Education were predictors, only Education was a significant predictor of Fluency Total performance, where higher levels of education predicted greater verbal fluency. The model including only demographic variables explained only 4.1 percent (adjusted) of the criterion variance. Although Education emerged as a predictor of verbal fluency, it explains a small portion of the total variance in scores, suggesting that this model does not fit the data particularly well.

Color Trails Test, Part 1 Time (CTT1 Time)

The CTT1 Time index is a measure of sustained attention and visual search and motor function. As can be seen in Table 12, after controlling for Age, Education, and Poverty, Language was not a significantly predictor of variance in this outcome index. Thus, subsequent HRAs included the combined data from participants in both language conditions.

Table 11.

Hierarchical regression results with AOS & MOS as Step 2: Fluency Total ^a

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1:					
Demographics				.07	2.70 ^a
Education	0.84	0.37	.27*		
Age	0.02	0.10	.04		
Step 2: Acculturation				.02	0.99
MOS	1.99	1.82	.13		
AOS	-1.52	1.85	-.10		

Note: Full Model $R^2 = .09$ (adjusted $R^2 = .04$)^a $N = 80$ * $p \leq .05$. ** $p \leq .01$; ^a $p = .07$

Table 12.

Hierarchical regression results with Language as Step 2: CTT1 Time ^a

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1:					
Demographics				.25	8.58**
Education	-0.05	0.41	-.00		
Poverty (200%)	-9.09	2.73	-.34**		
Age	0.45	0.10	.47**		
Step 2: Instrument Version				.01	1.16
Language	2.91	2.70	.11		

Note: Full Model $R^2 = .26$ (adjusted $R^2 = .23$)^a $N = 80$ * $p \leq .05$. ** $p \leq .01$.

As can be seen in Table 13, the full hierarchical regression equation for predicting performance on CTT1 Time accounted for 34.5 percent (adjusted) of the criterion variance. The Step 2 addition of AOS and MOS as predictors in the model accounted for an additional 13 percent of the variance, beyond the 22 percent accounted for by the model including only Step 1. In the model also including Step 2, after controlling for Age, Education, and Poverty, AOS was significantly associated with CTT1 Time

performance, where greater levels of Anglo orientation predicted improved performance on this outcome variable. MOS was not significantly predictive of CTT1 Time performance in the full model. Also in the full model, Age and Poverty yielded significant standardized coefficient values; older age predicted poorer performance, as did being below the poverty level.

Table 13.

Hierarchical regression results with AOS & MOS as Step 2: CTT1 Time ^a

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1: Demographics				.25	8.58**
Education	0.33	0.38	.08		
Poverty (200%)	-7.05	2.62	-.27**		
Age	0.57	0.11	.60**		
Step 2: Acculturation				.13	8.01**
MOS	-1.64	1.90	-.09		
AOS	-7.55	1.93	-.42**		

Note: Full Model $R^2 = .37$ (adjusted $R^2 = .35$)

^a $N = 80$

* $p \leq .05$. ** $p \leq .01$.

Color Trails Test, Part 2 Time (CTT2 Time)

The CTT2 Time index is a measure of complex sustained attention, mental flexibility, and visual search and motor function. As can be seen in Table 14, after controlling for Age and Education, Language was not significantly associated with CTT2 Time performance. Thus, subsequent HRAs included the combined data from participants in both language conditions.

Table 14.

Hierarchical regression results with Language as Step 2: CTT2 Time ^a

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1: Demographics				.35	13.63**
Education	-1.34	0.98	-.13		
Poverty (200%)	-22.27	6.55	-.33**		
Age	1.25	0.24	.51**		
Step 2: Instrument Version				.01	0.79
Language	5.74	6.48	.09		

Note: Full Model $R^2 = .36$ (adjusted $R^2 = .32$)^a $N = 80$ * $p \leq .05$. ** $p \leq .01$.

As can be seen in Table 15, the full hierarchical regression equation for predicting performance on CTT2 Time accounted for 35.6 percent (adjusted) of the criterion variance, although it only approached statistical significance ($p = .06$). In that full model, after controlling for Age, Education, and Poverty, the standardized regression coefficient for AOS approached significance in its relationship with CTT2 Time performance ($p = .08$), where greater levels of Anglo orientation predicted improved performance on CTT2 Time. The level of Mexican Orientation (MOS) was not a significant predictor of CTT2 Time performance in the full model. Also in the full model, Age and Poverty were significant predictors of criterion variance, where older was a predictor of poorer test performance, as was being below the poverty level.

Verbal Learning Test Trials 1-5 Total (VLT 1-5)

The VLT 1-5 index is a measure of immediate auditory verbal learning and free (i.e., uncued) recall. As can be seen in Table 16, in the full model, after controlling for Age, Education and Sex, Language was a significant predictor of VLT 1-5 performance

Table 15.

Hierarchical regression results with AOS & MOS as Step 2: CTT2 Time ^a

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1:					
Demographics				.35	13.63**
Education	-0.92	0.97	-.09		
Poverty (200%)	-21.55	6.67	-.32**		
Age	1.29	0.27	.53**		
Step 2: Acculturation				.05	2.88 ^a
MOS	-7.99	4.83	-.16		
AOS	-8.59	4.89	-.18 ^a		

Note: Full Model $R^2 = .40$ (adjusted $R^2 = .36$)^a $N = 80$ * $p \leq .05$. ** $p \leq .01$; $p = .06$; ^a $p = .08$

(i.e., those taking the test in Spanish recalled more total words) and explained an additional 6 percent of the criterion variance. Therefore, subsequent HRAs for VLT 1-5 – Spanish (i.e., SVLT 1-5) and VLT 1-5 – English (i.e., CVLT 1-5) were conducted with data for each language condition, separately.

Table 16.

Hierarchical regression results with Language as Step 2: VLT 1-5 ^a

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1:					
Demographics				.20	6.14**
Education	1.01	0.37	.30**		
Sex	-4.17	2.55	-.17		
Age	-0.22	0.09	-.26**		
Step 2: Instrument Version				.06	6.41**
Language	-6.07	2.40	-.26**		

Note: Full Model $R^2 = .26$ (adjusted $R^2 = .22$)^a $N = 80$ * $p \leq .05$. ** $p \leq .01$.

CVLT 1-5

As can be seen in Table 17, the full hierarchical regression equation for predicting performance on CVLT 1-5 accounted for 47 percent (adjusted) of the criterion variance. The addition of AOS and MOS as predictors in the model accounted for an additional 31% of the criterion variance, beyond the 17 percent (adjusted) explained by the model including only demographic variables. Specifically, in the full model, after controlling for Age, Education, and Sex, greater levels of Anglo orientation predicted better CVLT 1-5 performance. MOS was not a significant predictor of CVLT 1-5 performance in the full model. Also in the full model, Age was not a significant predictor of CVLT 1-5 performance, but greater levels of education predicted greater rates of word recall on this index.

Table 17.

Hierarchical regression results with AOS & MOS as Step 2: CVLT 1-5 ^b

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1: Demographics				.23	3.56*
Education	1.21	0.61	.27*		
Sex	1.31	3.01	.06		
Age	0.08	0.12	.08		
Step 2: Acculturation				.31	11.22**
MOS	-0.12	2.13	-.01		
AOS	9.52	2.10	.62**		

Note: Full Model $R^2 = .54$ (adjusted $R^2 = .47$)

^b $n = 40$

* $p \leq .05$. ** $p \leq .01$.

SVLT 1-5

As can be seen in Table 18, the full hierarchical regression equation for predicting performance on SVLT 1-5 accounted for fully 60 percent (adjusted) of the criterion

variance. The addition of AOS and MOS as predictors in the model accounted for an additional 7% of the criterion variance, beyond the 55 percent (adjusted) of the variance explained by the model including only demographic predictors. Specifically, in the full model, after controlling for Age, Education, and Sex, greater degrees of Mexican orientation predicted better SVLT 1-5 performance. AOS was not a significant predictor of SVLT 1-5 performance in the full model. Also in the full model, both Age and Education were significant predictors; greater age predicted poorer performance on this index, whereas greater levels of formal education predicted higher rates of word recall.

Table 18.

Hierarchical regression results with AOS & MOS as Step 2: SVLT 1-5^b

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1: Demographics				.59	17.04**
Education	0.89	0.33	.31**		
Sex	-1.88	2.76	-.07		
Age	-0.36	0.11	-.46**		
Step 2: Acculturation				.07	3.26*
MOS	4.58	1.91	.27*		
AOS	-2.54	1.99	-.16		

Note: Full Model $R^2 = .65$ (adjusted $R^2 = .60$)

^b $n = 40$

* $p \leq .05$. ** $p \leq .01$.

Verbal Learning Test Long-Delay Free Recall Total (VLT LDFR)

The VLT LDFR index is a measure of delayed free recall for auditory verbal information. As can be seen in Table 19, in the full model, after controlling for Age, Education and Sex, Language was a significant predictor of VLT 1-5 performance (i.e., those taking the test in Spanish recalled more total words). Therefore, subsequent HRAs

were conducted for VLT LDFR – Spanish (i.e., SVLT LDFR) and VLT LDFR – English (i.e., CVLT LDFR) separately.

Table 19.

Hierarchical regression results with Language as Step 2: VLT LDFR ^a

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1:					
Demographics				.24	7.85**
Education	0.261	0.10	.28**		
Sex	-1.11	0.67	-.16		
Age	-0.09	0.02	-.37**		
Step 2: Instrument					
Version				.10	10.92**
Language	-2.08	0.63	-.33**		

Note: Full Model $R^2 = .33$ (adjusted $R^2 = .30$)

^a $N = 80$

* $p \leq .05$. ** $p \leq .01$.

CVLT LDFR

As can be seen in Table 20, the full hierarchical regression equation for predicting performance on CVLT LDFR accounted for 25 percent (adjusted) of the criterion variance. The addition of AOS and MOS as predictors in the model accounted for an additional 14% of the variance, beyond the 11 percent (adjusted) accounted for by the model including only demographic predictors. Specifically, in the full model, after controlling for Age, Education, and Sex, greater degrees of Anglo orientation predicted improved CVLT LDFR performance. MOS was not a significant predictor of CVLT LDFR performance in the full model. Also in the full model, interestingly, Age was not a significant predictor of CVLT LDFR performance (as also in the case of CVLT 1-5). However, level of formal education approached statistical significance ($p = .09$) as a

predictor of performance, where greater levels of formal education predicted greater recall of words on this index.

Table 20.

Hierarchical regression results with AOS & MOS as Step 2: CVLT LDFR ^b

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1:					
Demographics				.18	2.57
Education	0.37	0.21	.28		
Sex	-0.52	1.03	-.08		
Age	-0.06	0.04	-.23		
Step 2: Acculturation				.17	4.28*
MOS	-0.90	0.73	-.19		
AOS	1.60	0.72	.36*		

Note: Full Model $R^2 = .34$ (adjusted $R^2 = .25$)

^b $n = 40$

* $p \leq .05$. ** $p \leq .01$.

SVLT LDFR

As can be seen in Table 21, the full hierarchical regression equation for predicting performance on SVLT LDFR did not improve over the model that included only demographic predictors. That is, after accounting for sociodemographic influences on test performance for the SVLT LDFR dependent variable, orthogonal acculturation variables were not significantly related to test performance for this outcome index. The first step of the model was significant and accounted for 53.8 percent (adjusted) of the variance, however. In that model, both Age and Education were significant predictors of test performance; older age predicted poorer test performance, and greater levels of formal education predicted higher rates of word recall.

Table 21.

Hierarchical regression results with AOS & MOS as Step 2: SVLT LDFR ^b

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1:					
Demographics				.57	16.14**
Education	0.21	0.09	.28*		
Sex	-0.27	0.79	-.04		
Age	-0.12	0.03	-.60**		
Step 2: Acculturation				.01	0.56
MOS	0.57	0.54	.13		
AOS	-.01	0.57	-.00		

Note: Full Model $R^2 = .59$ (adjusted $R^2 = .53$)^b $n = 40$ * $p \leq .05$. ** $p \leq .01$.*Block Design Percent Correct (BD Percent Correct)*

The BD Percent Correct index is a measure of speeded visuoconstruction ability. As can be seen in Table 22, in the full model, after controlling for Age, Education and Sex, Language was a significant predictor of BD Percent Correct performance (i.e., those taking the test in Spanish achieved a greater percentage of correct designs). Therefore, separate HRAs were conducted for BD Percent Correct – Spanish (i.e., EIWA BD Percent Correct) and BD Percent Correct – English (i.e., WAIS-R BD Percent Correct).

WAIS-R Block Design Percent Correct (WAIS-R BD Percent Correct)

As can be seen in Table 23, the full hierarchical regression equation for predicting performance on WAIS-R BD Percent Correct did not improve in its fit for the data beyond that provided by the model including only demographic predictors. The first step of the model was significant and accounted for 24.6 percent (adjusted) of the criterion variance, however. In this model, Age was not a significant predictor of test performance. However, both Sex and Education were significant predictors of WAIS-R

BD Percent Correct performance; being male predicted better performance, as did greater levels of formal education.

Table 22.

Hierarchical regression results with Language as Step 2: BD Percent Correct ^a

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1:					
Demographics				.04	1.16
Education	0.01	0.01	.16 ^a		
Sex	0.10	0.04	.21*		
Age	-0.04	0.00	-.25**		
Step 2: Instrument					
Version				.40	54.19**
Language	-0.28	0.04	-.66**		

Note: Full Model $R^2 = .45$ (adjusted $R^2 = .42$)

^a $N = 80$

* $p \leq .05$. ** $p \leq .01$; ^a $p = .09$

EWIWA BD Percent Correct

As can be seen in Table 24, the full hierarchical regression equation for predicting performance on EWIWA BD Percent Correct accounted for 26.3 percent (adjusted) of the variance. The addition of AOS and MOS as predictors in the model accounted for an additional 15% of the criterion variance beyond the 11 percent (adjusted) accounted for by the model containing only demographic predictors. That is, in the full model, after controlling for Age, Education and Sex, greater degrees of Anglo orientation predicted better EWIWA BD Percent Correct performance. MOS was not a significant predictor of variance on this outcome index. In the case of this outcome index, the pattern of other significant predictor variables was quite different than for WAIS-R BD Percent Correct. That is, in this case, neither Sex nor Education was a significant predictor, but older age predicted poorer performance on this outcome index.

Table 23.

Hierarchical regression results with AOS & MOS as Step 2: WAIS-R BD Percent Correct^b

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1:					
Demographics				.31	5.44**
Education	0.03	0.01	.36*		
Sex	0.17	0.06	.43**		
Age	-0.00	0.00	-.11		
Step 2: Acculturation				.03	0.84
MOS	0.03	0.04	.10		
AOS	-0.04	0.04	-.15		

Note: Full Model $R^2 = .34$ (adjusted $R^2 = .25$)

^b $n = 40$

* $p \leq .05$. ** $p \leq .01$.

Table 24.

Hierarchical regression results with AOS & MOS as Step 2: EIWA BD Percent Correct^b

Step and variable	B	SE B	β	ΔR^2	ΔF
Step 1:					
Demographics				.18	2.70 ^a
Education	-0.00	0.01	-.04		
Sex	-0.02	0.05	-.05		
Age	-0.00	0.00	-.76**		
Step 2: Acculturation				.17	4.59*
MOS	-0.05	0.04	-.24		
AOS	0.11	0.04	.48**		

Note: Full Model $R^2 = .36$ (adjusted $R^2 = .26$)

^b $n = 40$

* $p \leq .05$. ** $p \leq .01$; ^a $p = .06$

Research Question #2

The following are the “emergent themes” of experience of the phenomenon (organized by conceptual cluster), as the phenomenon is stated in the Methods section of this manuscript. These results represent the *fifth* stage of phenomenological data analysis, in which data analysis is conducted across protocols, seeking to synthesize

transformed meaning units together into descriptive statements (i.e., emergent themes) of essential and nonredundant psychological meanings, retaining their situated character for participants as a whole group. The reader may also note that Appendix H contains, in the tradition of phenomenological research publication, the full and original interview transcriptions for each of the six informant-participants.

Cluster A: General experience of completing testing and questionnaire activities

- Activities were interesting and generally enjoyable; in some cases, they were like games. However, such a perspective was easier to have once the tasks were completed and the participant perceived no further pressure to perform well, as such subjectively perceived pressure was often viewed as discomforting.
- Despite participants' expectations of some cognitive tasks being relatively more difficult, some degree of discomfort or frustration was present when unable to obtain the correct solution to some items. This was particularly the case with Block Design and with the Verbal Learning Tests.
- The difficulty of solving items on some tasks was experienced as existing in stark contrast with participants' experiences of utilizing the operative cognitive function(s) with less or no difficulty in everyday life. This discrepancy was explained to be due to the context in which such activities took place in the study (i.e., testing, with the resultant anxiety or heightened arousal). Generally, abilities or behaviors utilized in everyday life were perceived to be more difficult in the context of the relative pressure of a testing situation.
- Completing the tasks gave participants a sense of how well their own cognitive abilities were functioning, relative to their own expectations of how well they might

perform, like holding up a mirror in which to view oneself. Some preconceptions of ability were confirmed, whereas some tasks elicited surprise at the disparity between expected and observed cognitive ability levels.

- Variability in the difficulty level of items was apparent to participants. The items progressed logically and predictably, from less to more difficult. This was viewed as providing structure to the task and, thus, as enabling a participant to expect increasing difficulty on successive items and to meet successive items with a desire to surmount challenges and to put forth good effort, rather than become distressed and discontinue the task.
- Associations and reactions to the “tests” were dependent upon participants’ past experiences with testing in an academic environment. In particular, anxiety and nervousness, sometimes leading to a subjective sense of mental blockage, were reactions when a participant had experienced such emotions during examinations in past educational settings. Having experienced a strict parenting style while growing up, in which incorrect responses or poor school performance was unacceptable, was also perceived to influence anxious reactions to the testing. Measures provoked less anxiety when referred to as “activities.”
- A perceived lack of significant personal consequences resulting from how well participants had performed on the cognitive tests often lead to the measures being viewed as non-threatening. The context of testing in a research study, in the absence of clinical, legal or other personal concerns or uses for test data, was judged to be the cause of such a perception.

- The potential for a loss of personal dignity or self-worth was salient at times during testing. Perseverance and maintenance of effort on difficult items lead to a sense of having maintained one's dignity.
- Perseverance in the face of frustration was also motivated by desire not to fail, where failure was simply defined as being unable to correctly obtain the solution to a given item. Recognition of the inherent potential for success or failure, thus defined, was apparent immediately upon presentation of the tests. Motivation to correctly complete the tasks was either personal and self-directed or based in a desire to demonstrate competence to the examiner.
- The quality of responses was more important to participants than the speed of completion. This conscious willingness to sacrifice speed in favor of the quality of response was possible due to a perception of a lack of personal consequences to test performance.

Cluster B: Experience of language of testing

- If given a choice, the preferred language of testing would be the primary language of schooling, which was generally the dominant language of everyday living.
- A perception of a greater vocabulary in one language or the other lead to a prediction of better abilities on verbally-mediated tasks when those were presented in the language of larger vocabulary and access to words.
- Once having seen the nature of the particular tasks presented, participants were confident that they could comprehend the nature and requirements of the tasks and complete the tasks generally as well in either English or Spanish. Use of both languages in everyday life lead to a sense of competency in both languages, and the

nature of the particular tasks presented was not judged to be an obstacle to comprehension and performance in either language condition.

- Participants were aware of disparate abilities in areas of language competency across both English and Spanish, such as in reading, writing, speaking and comprehending. Predictions of performance on different tasks depended on the extent to which a task required an ability or aspect/area of language functioning. Where language ability was perceived to be relatively poorer, performance on tasks requiring such an ability was predicted or perceived to be poorer.

Cluster C: Thoughts during testing

- Participants were generally thinking about the quality of their performance on tests. They were thinking about putting forth their best effort. Often, they were explicitly aware of the time limit and need to work quickly that was apparent or explicit on some tests.
- Participants thought about being graded on tests during past school experiences, while completing study tests. There was an experience of difficulty retrieving information believed to have been effectively learned when such retrieval was attempted in context of testing, similar to that experienced in past school experiences.
- Some participants were thinking about the anxiety they experienced in such testing. This association was sometimes linked to a sense that such testing was like being "back in school," including thinking about being graded and evaluated by teachers through the medium of tests/examinations. Although the examiner in this study had prefaced testing with attempts to normalize experience of differential item difficulty, one experience was that "a test is still a test." In such a case, past testing experiences,

and associated emotional reactions, were salient and difficult to ignore during testing in the study.

Cluster D: Relationship of culture to testing/cognition

- Cultural background was perceived to have a strong influence on tasks such as the cognitive testing done in the study. In particular, educational background and linguistic fluency were mentioned as examples of such factors. Educational experience could predispose a person to methods of learning and memorization. Simply being literate as a function of being schooled would affect how someone completed such tests. As well, one element of culture might be nutritional resources, and poor nutrition could be a cause of poor performance on such tests. Finally, one participant believed an immigrant's legal status, to the degree that this presented a stressor on the person's mind, could influence test-taking performance.
- Food preferences, religious preferences and music preferences were not seen as elements of culture that ostensibly influenced such testing.

Cluster E: Mexican culture and testing

- It is best to do one's best on tests like those in the study, but to do so in the time necessary to complete each item correctly, however long that may be. A participant will likely perform better on the tests in that manner than if simply told to do the best but also to do it in the least time possible. Doing a task in a hurry will leave a lot of room for error. Production of a high-quality product takes sufficient time. Doing test items as quickly as possible will be done at the behest of the examiner, but will not necessarily allow a participant to show optimal performance.

- Hypothetically, persons of Mexican origin would not perform any differently on such cognitive tests than anyone of another background. It was difficult to impossible to imagine factors that would lead persons of different cultural backgrounds to perform any better or worse than one another on such tests.

Cluster F: Perceptions of (hypothetical) experience/performance of persons of low education (e.g., from rural Mexico)

- Participants were aware that their relatively higher levels of formal education put them at an advantage on cognitive tests similar to what a person might have done in school.
- A person with little formal education would likely see the tests as very difficult. He or she might be surprised to think it was necessary to study for a doctor's exam. Persons with little formal education, such as some participants' parents, would likely not want to even attempt such tests, and might become angry and frustrated. They might not understand the purpose of completing such tests.
- Even if tests had been presented in such a person's language of choice, they might have been frustrating for a person of little formal education.
- The opposite opinion was also represented. Parents with little formal education were predicted to perform "great" on such tests. Despite being illiterate, a mother might try to hide this from an examiner, and might do so successfully. The mother was perceived to have an "extra" sense or thinking ability that is lost when a person goes to school to be formally educated.

Cluster G: Experience of ethnicity mismatch with non-Hispanic White examiner

- A feeling of slight discomfort with being tested by the examiner was experienced.
The perception that Hispanic persons may be perceived in society as being less educated or of having less innate ability to learn was salient in this context. There was a concern that an inability to answer correctly would make the examinee feel "stupid." Less discomfort was judged to be likely in the event that the examiner were of Hispanic origin. Some embarrassment about having these feelings was expressed.
- This feeling of discomfort was only mild to moderate in intensity, and it was judged to have no bearing on test performance.
- The dynamic that might be present in a testing situation with a non-Hispanic White examiner might be characterized by the examinees perceiving themselves as of lesser status or worth than the examiner, and by feeling at a "disadvantage" simply by being in the country or culture of origin of the examiner. This dynamic might vary as a function of the experiences the Hispanic examinee has had with other non-Hispanic white people.
- This dynamic might lead the examinee to decide to do his or her best to prove his or her ability and worth to the examiner because he or she already feels "less" than the examiner upon meeting him.
- In such a dynamic, an examinee of Mexican origin would likely want to simply know that the reason for the evaluation and testing is that the examiner is there to help the examinee, or persons like the examinee. The expression of this attitude would likely allow the examinee to "forget about the other stuff."

Cluster H: Stereotype threat in a study with Hispanic sample

- Some overt and noticeable stress was experienced in completing testing for the study, related to the Hispanic ethnocultural origin of the participant. Because membership in the Hispanic sociodemographic group was salient during study participation, there was a desire to perform on the tests in such a way as to not reinforce any societal stereotypes of Hispanic persons, as a group, having poorer or inferior thinking abilities. The non-Hispanic, White ethnicity of the examiner was specifically discounted as a variable in this dynamic; rather, the general societal prejudices that those of Hispanic origin might have inferior cognitive abilities, and the perceived pressure to avoid reinforcing such stereotypes, was judged to produce this concern and stress.

Cluster I: Comparison of study testing to school experiences

- Study activities were reminiscent of school activities. In particular, they were consistent with testing and examination in school. Furthermore, they were more similar to school activities, in their format and in the experience of stress they produced, than they were to everyday activities involving thinking abilities.
- When school-based testing produced an experience of stress due to a lack of studying, historically, for tests, this feeling was recapitulated in the study testing, to a degree. Reminding oneself to relax appeared to help to improve performance on tests in school and during the study.
- Testing was in one case not very similar to school activities. Specifically, in Mexico, teaching activities may have rarely included methods such as the use of game-like activities. A more rote, recitation-based teaching method was experienced, in which

learning the alphabet by repeating after the teacher was utilized. Despite not being similar to prior school-based activities, the study tests were experienced as enjoyable and fun, like games.

- Where school experiences had included perceived threats to personal dignity and sense of self-worth due to others' actions or prejudices, having a knowledge that one could not control or own responsibility for such prejudices was important to a maintenance of personal dignity.
- Where school experiences had been very limited, possibly due to a need to work as a child, formal education was discounted as similar to testing activities. More importance was placed on what had been learned through everyday life circumstances, events and experience.

Cluster J: Effort and motivation

- It was important to do one's best to solve the items correctly on the tests for a number of reasons, including an internal and personal desire to see if one could perform well, a sense that the tests were interesting and engaging, a desire to get an accurate sense of how well one's brain was functioning, and simply because of a desire to do what was agreed upon in volunteering to participate in the study.
- Exerting maximal effort during testing was important because doing so was congruent with the nature of a performance-based society, where one may be valued as a person in a way consistent with others' valuations of his or her performance on any number of things, such as on the job, in school, or on tests of intellectual ability. The rewards one receives in "Life 101" are dependent on how well one does many

things. One may be devalued as a person if one does not do something quickly enough or well enough.

- Hypothetically, a person from a culture with less emphasis on a performance standard and on the valuation of a person based on their performance might be expected to have different motivations for doing his or her best. That is, he or she may simply exert maximum effort during testing because an examiner requests it, and not for any other reason, such as to please the examiner. Such a person may simply live from day to day, doing what is necessary to live as it comes, and may take such an attitude toward cognitive testing.

Cluster K: Perception of medical data testing yields

- Participants often believed that a doctor might learn, in seeing the testing results, that their memories were “not that good.” The doctor also might learn about the participant’s reading ability or that the participant would persevere in the face of frustration with particular items.
- One participant believed that if a doctor were to compare her thinking abilities, such as comprehension or communication ability, from before an accident and after an accident, the doctor would see the difference in her ability levels.
- One participant said he trusts that tests requested by a doctor are necessary and are done for his benefit, so he would complete them without question. He bases this trust on the fact that a doctor has a higher level of formal education than he does. He understands the nature of the tests are that the doctor will use the results for his benefit.

Cluster L: Culturally relative definitions of “intelligence”

- One participant noted that in his opinion, the construct of intelligence is not defined by whether or not one can remember a set of words from a list, such as is requested in formal cognitive testing. Rather, intelligence is the ability to adapt to different environments and to live and survive in the environment in which one finds oneself. For example, although a doctor or lawyer would likely not have the intelligence to survive in the Amazonian forest, a person from the Amazon has the skills to survive there. Intelligence should be measured relative to the skills and environment in which a person grows up. It is not necessarily the case that a person has brain damage, simply because he or she cannot perform mathematics on a test, if one did not grow up utilizing such skills.

Additional Cluster 1: Reasons for participating

- Participants chose to volunteer for the study for a number of reasons. General interest in the study was common. A desire to find out more about what kind of tests and instruments were used to measure thinking abilities and an interest in the study's focus on persons of Mexican origin created interest. Some desired to provide information that might serve to help others of Mexican or Latino origin. Others believed they would personally benefit from completing some tests that would show them the quality of their current thinking abilities, especially had they noticed changes in memory commonly associated with aging. Also, a belief in the moral value of the study was present. The desire to assist a person who was pursuing an education, “seeking to better” himself, was a motivation.

- The fact that the researcher made an announcement in the participant's church was a motivation to participate. In a place where the participant practiced religion and spirituality, he was bound by religious expectations of helping others in need, and if one didn't offer such assistance if one could, one should not be in Mass in the first place. Rather than being a religious or Catholic issue, this was a more personal and spiritual motivation.
- The offer of a gift certificate to a retail store to thank participants for their time and effort was not mentioned as an incentive or motivation to participate. One participant specifically denied that the gift certificate had been a motivator to participate.
- Hypothetically, it was judged that a person might chose not to participate in such a study because of a desire to avoid completing tests of thinking abilities that might produce anxiety and stress. Some people don't like to "put themselves through that."

Additional Cluster 2: Miscellaneous thoughts and opinions about the study

- It was important for one participant that the researcher was interested in the population of Mexican origin in the Denver area, as opposed to persons of only Anglo origin. She was grateful that the researcher had an interest in the Latino culture. It was important to her that the researcher will attempt to help the Mexican population in the Denver area.
- One participant noted that it was difficult to answer items on one of the culturally oriented questionnaires. It required him to make a judgment or express an attitude about a group of people regardless of their within group heterogeneity. He felt unable to effectively express such opinions because he could not judge the group as a whole when there were so many possible differences within the group that would

invalidate the judgment as it applied to the group. Thus, he answered, for example, that he had ‘no’ difficulty accepting behaviors of a certain group (such as Mexican-Americans, where he could express measured degrees of such difficulty). He believed that such questions seemed to “stereotype the whole Mexican issue.”

- A participant stated that he hoped that the information gathered from the study would go beyond enabling the researcher to obtain a degree or write a paper needed for graduation or another “hoop.” He stated that the “bottom line” was that the value of the study was in the effect it could have to benefit the growing Mexican population around Denver. He believed that the project could “enable and empower” medical patients of Mexican origin. He sees the value of the project in its application to hospitals and medical centers where “they’re better able to treat the *mexicano* than in the absence of it.”
- One participant stated that the language of testing, in the context of a research project would not matter to a bilingual person because the activities were not “a matter of life and death.” That is, the test results would not determine whether the person would receive social services, a salary raise, legal status in the United States or any other serious and personal consequence. Variability in performance based on language of testing for a bilingual person would have no serious consequences in the context of a research project.
- One participant noted that it was good that the researcher had solicited volunteers for the project, rather than having somehow commanded or ordered anyone to participate. She noted that such a command would be a certain way to immediately make a person not want to participate.

Discussion

The present study sought to address, in an exploratory, nomothetic manner, the question of which demographic and cultural variables influence the performance of healthy, bilingual Latinos/as of Mexican origin on a number of neuropsychological measures representing a relatively broad sample of cognitive domains. These included auditory verbal learning and memory, visuoconstruction, simple and complex attention, and verbal fluency. In addition, it sought to understand from an ideographic perspective what were the themes of subjective, phenomenological experience of such a person in completing study materials (i.e., neuropsychological tests and cultural questionnaires) as they participated. This study was successful on both fronts, and results provide important information regarding both the influence of culture on cognitive testing and the themes of experience of participants.

Language version of instruments: Demonstration of influences on test performance

The nomothetic, quantitative portion of this study addressed two sequential research questions, as delineated in the Introduction chapter. The first question dealt with the possibility that variance in test performance might, in some cases, be not only a function of demographic variables, but also, of the simple fact that two versions of presumably analogous instruments (i.e., either English or Spanish) were administered. Prior investigations have not examined this relationship. Rather, they have tended to combine outcome data from English and non-English versions of instruments, whereas the present study sought to explicitly evaluate the potential influences of language of test

administration of neuropsychological measures, prior to subsequent analyses. This study did not make an a priori determination that a confound would *not* be present in outcome data that may simply be an artifact of psychometric inequivalence across instrument versions, an assumption that has been present in other investigations.

Results of hierarchical regression analyses demonstrated that after accounting for the neuropsychological outcome variance explained by demographic variables, the language of test administration accounted for a significant incremental portion of outcome variance in a number of domains, including verbal learning and visuoconstruction. The direction of this influence indicated that those completing the Spanish Verbal Learning Test (*Aprendizaje de Palabras*) tended to recall more words across five learning trials and after a 20-minute delay than those completing the California Verbal Learning Test. In addition, a greater portion of correct responses tended to be achieved by those completing the Spanish version of the Wechsler Block Design task (*EIWA Diseño de Bloques*) than by those completing the English-language version.

The observation that variance in verbal learning and memory test performance could be explained by the language condition of the task is perhaps not unexpected, given the evidence in the literature of the influences of bilingualism on just this type of test performance (e.g., Harris, Cullum, & Puente, 1995). However, the present study differs from such investigations in that its methodology of random assignment of bilingual participants to either language condition minimized linguistic fluency effects. In so doing, it allows one to interpret obtained results from a perspective in which such potential linguistic confounds were methodologically controlled, unlike prior

investigations, which could not do so. Thus, the present study is unique in its ability to infer that observed test performance differences are not an artifact of linguistic fluency variation in bilingual participants, but rather, are more parsimoniously accounted for by other differences across these tests. Whether present results point to the possible inequivalence of construct-related validity of data obtained from these measures, with this population, remains an open question. At the least, an a priori determination that no variance in test performance in such a sample will occur as an artifact of the language version of such a verbal learning and memory test appears less-than-adequately justified.

Another hypothesis may be offered for why these results were obtained. There may be some inherent difficulty (i.e., content bias) in the items and categories presented in the two tests, particularly for functional bilinguals completing the measure in their non-dominant language. The CVLT contains words belonging to the categories of Spices and herbs, fruits, tools and clothing. The SVLT contains words belonging to the categories of family members, body parts, animals, and furniture. It is possible that the categories represented in the two tests were not equally as familiar to participants completing the tests in their non-dominant language.

The examiner noted, anecdotally, that the most difficult categories on the CVLT (as reflected in poorer recall) for bilinguals whose dominant language was Spanish were spices and herbs, and in particular, tools. Items such as chives and nutmeg, and items such as pliers, wrench, and chisel, appeared much less familiar to such participants than other categories and items. In contrast, most categories and items on the SVLT appeared substantively familiar to bilingual participants whose dominant language was English. This pattern, and the hypothesis that the SVLT may have less content bias than the CVLT

for unbalanced bilinguals, is consistent with the observed direction of discrepancy in scores on these outcome indices.

Contrary to what might be predicted by conventional wisdom regarding the “non-verbal” nature of the Block Design test, the visuoconstruction domain was among those two in which language of administration was a significant predictor of test performance. One possibility for this finding is that the construct-related validity of data obtained on these measures is inequivalent. However, given my observations while administering these instruments to participants, it appeared that the *EIWA Diseño de Bloques* measure was simply less challenging, particularly in the early items, than its English-language counterpart. This observation is consistent with reports of overestimation of Full Scale IQ by as many as 20 points in use of the *EIWA* with Hispanics (López & Romero, 1988). If this, and not construct-related validity differences, accounts for differences observed in portion of correct responses across these tasks, it points to an important dynamic that needs to be recognized. The inequivalence of cross-cultural neuropsychological measures may not always be a function of construct-related or other theoretical psychometric factors, but rather to something as simple as differences in content, where one version of a test is more difficult than the other.

The language of test administration did not appear to significantly influence test performance in other cases. Results of hierarchical regression analyses in this study demonstrated that after accounting for the neuropsychological outcome variance explained by demographic variables, the language of test administration did not account for a significant, incremental portion of outcome variance in the domains of simple and complex attention and verbal fluency. This was the case, specifically, with the Spatial

Span Test, the Stroop Test, the Controlled Oral Word Association Test, and both Part 1 and Part 2 of the Color Trails Test.

It is not surprising that variation in test performance was not accounted for by language condition in the cases of Spatial Span or the Color Trails Test. The language conditions differ, in fact, only in the language in which task instructions are presented; the stimuli and trial content is the same in either condition. That is, all participants completed the same task, although half were oriented to it in one language, and half in the other. This is very nearly the case with the Stroop Test, as well, which differs across language condition only in the fact that words and colors are presented and read in either English or Spanish.

A result that would appear to be more unexpected is that language condition was not a significant predictor of outcome variance in the case of the verbal fluency tasks, COWAT and *Fluidez Oral por Letra*, PMR. Clearly, these measures are heavily language-based. However, here again, we are reminded of the methodology of random assignment to language condition. In the case of these verbal fluency tasks, the absence of significant differences in test performance across conditions actually reinforces the success of randomization in minimizing the effects of linguistic fluency. That is, if the number of words produced by a bilingual participant can be said to be a proxy for linguistic fluency in that language (Artiola i Fortuny, personal communication), then present results appear to support the conclusion that randomization to language conditions in the present study successfully produced two groups of bilingual Latinos/as with similar levels of fluency in each language.

Sociodemographic variables: Influences on test performance

This study sought to examine the influences of ethnocultural variables on neuropsychological test performance, after the influences of sociodemographic variables (such as age, education, sex, and SES) had been accounted for in statistical models. Before discussing the results of models that included ethnocultural predictors of test performance variance, it is important to discuss the influence of sociodemographic predictors observed in this study. Gender did not have a significant influence on test performance on any outcome index except WAIS-R BD Percent Correct, where males obtained a higher portion of correct responses than females. This general lack of significant influence is consistent with the extant literature with Hispanic samples (e.g., Ostrosky-Solís et al., 1999; Perri et al., 1995; Pontón et al., 1996), and the observed advantage for males on Block Design is consistent with findings of visuospatial manipulation advantages for males found by Heaton and colleagues (1986, 1996).

Socioeconomic status (SES) was a significant predictor of test performance on both CTT1 Time and CTT2 Time, where being below 200% of the government poverty cut-point (for household size) was inversely related to better performance on these indices. This appears to be the first study to evaluate the influence of SES on the Color Trails Test (CTT). The reason that SES might influence CTT performance is likely complex; SES probably interacts in a complex fashion with other predictor variables, such as level of formal education and acculturation status. It might be posited, for example, that Latinos/as of Mexican origin with lower SES are those who are more likely to be less acculturated to the dominant, Anglo culture, and therefore, may emphasize not making mistakes on these tasks in favor of speed of completion, and therefore, might

complete them more slowly. SES did not appear to account for test performance variance on any other outcome variables in this study. Further investigation of the influences of SES (and its potential interactions with other moderator variables) is needed to enhance our understanding of the manner in which SES influences cognitive test performance.

Age demonstrated a significant, inverse relationship with Spatial Span Total, Color Trails Test 1 Time, Color Trails Test 2 Time, SVLT 1-5, SVLT LDFR, and EIWA BD Percent Correct, and demonstrated a significant, direct relationship with Stroop Interference performance. These relationships are consistent with theoretical expectation and the extant literature, where advancing age predicts poorer test performance (Artiola i Fortuny et al., 1998; D'Elia et al., 1994; Wechsler, 1997; Wechsler et al., 1968), except in the case of Stroop Interference. It is unclear why older participants in this study tended to demonstrate greater freedom from distractibility than younger participants. The absence of significant prediction of performance on CVLT 1-5, CVLT LDFR, and WAIS-R BD Percent Correct by age is also without clear explanation and is contrary to reports in the literature, where advancing age has been shown to be directly related to poorer test performance (Delis et al., 1987; Wechsler, 1981). Generally, however, results support the observation in extant literature that neuropsychological test performance decreases with advancing age, regardless of the ethnocultural origins of examinees.

Level of formal education demonstrated a direct relationship with performance on Fluency Total, CVLT 1-5, CVLT LDFR, SVLT 1-5, and SVLT LDFR, but it was not a significant predictor of outcome variance on Spatial Span Total, Stroop Interference, Color Trails Test 1 Time, Color Trails Test 2 Time, and EIWA BD Percent Correct. The lack of significance as a predictor of test performance variance in these latter cases is

somewhat surprising, given the evidence in the literature of the robust effects of level of education on neuropsychological testing, both with Latinos/as and other ethnocultural samples (e.g., Ardila et al., 1989; Artiola i Fortuny et al., 1998; Heaton et al., 1986, 1996; Ostrosky-Solís et al., 1999; Pontón et al., 1996). Notably, in the present study, level of formal education was a significant predictor of test performance on verbally based measures, but not on other measures. One possible explanation for this result is that simple and complex attention and visuoconstruction are cognitive domains that are less impacted by educational experience in this population, but such a hypothesis is not well-supported, given the evidence from other studies of a significant relationship between education and test performance. However, one difference between the present sample and other Latino/a samples reported in the literature is that the mean education level of this sample was somewhat higher than for other reported samples. An artifact of this relatively high education level was that, contrary to reports of a negatively accelerating curvilinear relationship between education and cognitive test performance (Ostrosky-Solís et al., 1999), education demonstrated a linear relationship with test performance.

Ethnocultural variables: Influences on test performance

This study also sought to address the question of which ethnocultural variables, such as acculturation status and psychosocial stress, influence neuropsychological test performance in this population. As stated previously, the psychosocial “Hispanic” stress levels of enrolled participants did not vary enough to adhere to assumptions in linear regression analyses, therefore this variable was omitted from all models. It would appear that volunteers for this study generally were not experiencing high levels of psychosocial stress related to being of Hispanic origin. Thus, only participants’ orthogonal

acculturation statuses, operationalized through the ARSMA-II Anglo Orientation Scale (AOS) and Mexican Orientation Scale (MOS) were included in the second step of hierarchical regression models.

To my knowledge, this is the first neuropsychological study to operationalize and analyze acculturation status through an orthogonal model, wherein the potential influences of orientation to the dominant, Anglo culture and the Mexican culture may be separately evaluated. One of the advantages to this approach is that it is consistent with the theoretical underpinnings of the hypothetical mechanisms of acculturation status' influence on cognitive test performance. That is, one may evaluate whether examinees perform better on neuropsychological tests when they report a greater degree of orientation to the dominant, Anglo culture within which the measures were created. Yet in contrast to prior studies that utilized a linear model of acculturation, the present study also allowed these same analyses to consider whether orientation to the Mexican culture influenced performance. Results of the present study appear to bear out the utility and elegance of interpretations based on orthogonal acculturation measurement.

Certainly, the most prominent influence of orthogonal acculturation status in the present sample was that of Anglo Orientation, where better greater orientation to the Anglo culture was a significant predictor on a number of neuropsychological outcome indices. Where this was the case, the degree of Mexican Orientation was not a significant predictor of criterion variance. That is, only greater orientation to the Anglo culture predicted better performance, and orientation to the Mexican culture did not emerge as a predictor of participants' neuropsychological test scores. Specifically, this study provided evidence that AOS was a significant predictor of performance for tests of

visuomotor tracking and attention (Parts 1 and 2 of the CTT), for total learning and delayed free recall indices of the CVLT, and for the Spanish-language version of the Block Design task, *EIWA Diseño de Bloques*.

In the case of the CTT indices, it might be suggested that the Anglo cultural orientation to completing tasks quickly, possibly at the expense of the quality or correctness of responses, would predispose an examinee to complete the CTT with greater speed. Support for this interpretation was present in qualitative data from informant interviews. Specifically, it was noted that the quality of item responses (i.e., whether correct or not) was more important to some informants than was the speed with which the items were completed. The experience of testing under time constraints, when also required explicitly to do one's best, was one where the two requirements were at odds. The production of a high-quality product, one informant noted, takes time, and when the two requirements for the task are at odds, the quality of item completion trumps speed. However, one might also predict, then, that the greater the degree of Mexican orientation of participants, the poorer (i.e., slower) would be their performances on the CTT. Such a significant inverse relationship was not observed in regression models derived from the data. It would appear that the dynamics of acculturation influences on the CTT are more complex. Future research is needed to replicate these results and further understand the complexity of these influences.

AOS was a significant predictor of test performance on two other outcome indices, as noted. One might posit that this would be expected on the CVLT, an English-language verbal learning test. It is a possibility, given the apparent lack of minimization of linguistic fluency variation that was present (as in the case of CVLT indices) when

regression models were derived from subsamples of 40 participants, as discussed.

However, I think it is more likely that the salient influence leading to better performance on the CVLT indices by persons with greater degrees of Anglo Orientation is that items and categories, such as tools (e.g., chisel or wrench) and spices (e.g., chives or nutmeg), are more familiar to those with greater AOS scores. Semantic clustering of responses on free recall of the list items (i.e., recalling in chunks, for example, all the tools and then all the spices and herbs, using this as a strategy for memorization) is an expected, “normative” strategy for completing verbal learning tests, and this may simply be more possible for persons more oriented to the Anglo culture (and thus, language).

Finally, the observation that the degree of Anglo orientation was a significant predictor of *EIWA Diseño de Bloques* performance is difficult to explain, particularly when one considers that neither AOS nor MOS were significant predictors of performance on the WAIS-R Block Design Percent Correct outcome index. I believe that the differences in content (i.e., difficulty) between the two tests is rather profound, where completion of the *EIWA Diseño de Bloques* items is much less challenging, and this may account for some portion of the differential results arising from these two tests. However, if in theory, greater orientation to the Anglo culture predicts better performance on tests in which completing items as quickly as possible results in higher scores, AOS should also be a significant predictor of WAIS-R Block Design performance. Attempts to replicate these results in future research could help clarify these findings.

In contrast, greater degrees of Mexican Orientation were associated with greater recall performance on SVLT 1-5. In conjunction with the observations previously discussed for AOS and the CVLT, these results might suggest more support for linguistic

confounds to outcome performance on the verbal learning tests, where relatively higher levels of fluency in the language of test administration lead to better verbal learning and memory performances. However, neither AOS nor MOS were significant predictors of long-delay free recall performance on the SVLT (*SVLT LDFR*). That is, acculturation status did not predict the number of words recalled after a 20-minute delay, on the SVLT. These seemingly conflicting results may suggest that although learning and immediate recall on a Spanish-language verbal learning test may be facilitated by English-Spanish bilinguals' degree of Mexican cultural orientation, acculturation status may have little bearing on how much of that learned information may be recalled later, after it is consolidated in memory storage. More research is needed to enhance our understanding of these results. At the least, an implication of these results is that caution may be warranted when using the measures for which acculturation status was a significant predictor, with bilingual, Latino patients of Mexican origin, particularly when information regarding their acculturation statuses has not been obtained through psychometric methods, such as the ARSMA-II.

Finally, in addition to those cases already discussed, there were a number of outcome indices for which neither AOS nor MOS were significant predictors of test performance, after the influences of sociodemographic predictors had been controlled. Results of this study suggest that visual attention (measured by Spatial Span Total), freedom from distractibility (measured by Stroop Interference), and verbal fluency (measured by COWAT and *Fluidez Oral por Letra, PMR*) may not be significantly influenced by acculturation status. In the first two cases, results perhaps provide evidence that these measures may be used cross-culturally without correction for

acculturation status. In the case of the verbal fluency measures, there are two important lessons to take away from obtained results. First, it did appear that verbal fluency performance (i.e., the production of words beginning with a given letter) was not significantly influenced by participants' degrees of orientation to either the Anglo or the Mexican culture. Second, although it may be the case that acculturation status may not have a significant influence on verbal fluency performance, linguistic fluency levels certainly do have such an influence. That is, if practitioners administer a verbal fluency task (in either English or Spanish) to a bilingual examinee, that patient's level of verbal fluency in the language of administration will certainly influence test performance, and interpretations of obtained data will need to be made with extreme caution. In future research, investigators may seek to evaluate linguistic fluency effects (formally operationalized and measured) on tasks such as this, or even to provide normative data for such tasks when bilinguals are allowed to produce responses (given a particular letter) in either of their primary languages, on the same test/trial.

Qualitative data: Discussion of emergent phenomenological themes

Phenomenological analysis of qualitative data highlighted a number of interesting emergent themes in informants' experiences of completing the activities and measures in this project. Overall, data indicated that informants were highly motivated to perform well on cognitive tests administered, and that particular motivating factors varied. At times, the motivation was highly personal and self-directed, where the informant had an internal desire to achieve correct answers, to avoid "failing," or to simply gain an accurate sense of the limits on his or her abilities. In other cases, the motivation was to demonstrate competency to the examiner, possibly related to the issue of "stereotype

threat” (Steele, 1997; Steele & Aronson, 1995). Other motivations included maintenance of behavior consistent with having volunteered to complete such tests, and behaving consistently with expectations to do one’s best in a “performance-based society.” This qualitative evidence of good effort and motivation, regardless of the reason for such behavior or attitude, is consistent with the observation that volunteers did their best on tests administered, yielding valid data, in that regard.

The tests were, for the most part, viewed by informants as not being particularly personally threatening, generally because of a perceived lack of personal consequences resulting from the quality of test performance in the study (such as might be expected if testing were to determine eligibility for social services or to render a clinical diagnosis regarding neurocognitive disorder). One can suppose that the experience of cognitive testing, and the sense of what was riding on one’s performance and results, would be quite different if such evaluative tasks were completed in a different context. In fact, it was not the case that all informants perceived tests as non-threatening or devoid of consequences, as a function of one’s performance on them. A few informants noted their perceptions of pressure to do well and related such subjective pressure to the saliency of their identities as persons of Mexican origin, in the dynamics of testing. That is, according to one informant, he felt that he must perform well in order that public/societal consumers of the research results “wouldn’t think Mexicans are dummies.” This was explained to be not so much an issue of the ethnic mismatch with a non-Hispanic, White examiner of majority ethnocultural origin as of the informant’s awareness of societal stereotypes regarding intellectual abilities of Hispanics, where the pressure perceived was to avoid reinforcing such stereotypes through poor performance.

This experience of completing cognitive measures is very much like the phenomenon noted by Claude Steele and colleagues (1997; Steele & Aronson, 1995), in which minority persons may perform worse on intellectual tasks (in comparison to non-minority, White persons) when tasks are noted to be tests of “ability” rather than “general knowledge.” The presumption is that the pressure of stereotypes of poorer ability in minority persons, relative to non-minority, White counterparts, results in poorer performance, possibly as a result of the anxiety such pressure may generate in examinees. In the present investigation, the possibility of test performances being influenced by stereotype threat or a similar phenomenon exists, and may account for some amount of outcome variance in test performance. Informants did note a reduction in perceived anxiety when measures were referred to as “activities” rather than “tests,” although this may have been for other reasons related to prior school experiences, as described later.

Also notable among informant responses was an emergent theme that related to the dynamics of being tested, as a person of Mexican, minority ethnocultural background, by a non-Hispanic, White, male examiner. Generally, informants denied that a negative dynamic (such as where stereotype threat was present, for example) was present during testing, as a function of the ethnicity of the examiner. His ability to speak Spanish fluently and his motivation to complete a project benefiting the informant’s ethnocultural community were offered as reasons for the absence of such a dynamic. When it was reported by informants, such a dynamic was said to be only mildly discomforting and was not perceived as influencing test performance (insofar as informants were aware). Once again, the issue of the societal status and stereotypes of Hispanics being

recapitulated in the testing, as well as a need for the examinee to prove his or her “self-worth” were noted in regard to any such dynamics, when present.

Prior school experiences of informants were often salient in narrative descriptions of the experience of completing measures in this study. Emotional reactions to engaging in the tests varied as a function of individual informants’ prior experiences in school. For example, if an informant had experienced threatened “loss of personal dignity” as a student in school, such a threat appeared to be subjectively salient in testing in this study. In addition, experiences with teachers in prior schooling was often salient for informants, given the role of the examiner as a ‘tester’ and the informant as a ‘test-taker.’ Even the ethnicity of the researcher-examiner was salient in this dynamic, where experiences with non-Hispanic, White (male or female) teachers were recalled, whether positive or negative, during testing in this study. Clearly, these results reinforce the importance of education as a moderator of cognitive test performance, as demonstrated in this and other research. What is unique about the present data is the manner in which it suggests that, apart from simple years of education, that the experience of a person of Mexican origin in the U.S. in completing neuropsychological testing may be largely a function of his or her prior educational experience. Given the high school-dropout rate of children of Mexican and Hispanic origin in this country, and what that appears to say about their experiences in academic environments, the recapitulation of school experiences in neuropsychological testing may be overwhelmingly negative. Whether that experience would translate into poorer test performance is an open question.

One other notable emergent theme was the suggestion of differences in similarity between prior school-based testing or learning and that presented to informants in this

study, as a function of nation of formal education (i.e., U.S. or Mexico). Generally, most informants stated that study instruments and activities were quite similar to prior school experiences, and thus, familiar. However, one participant (who received all of her formal education in Mexico, with the exception of some language classes in the U.S.) stated that her schooling had consisted almost entirely of rote memorization and recitations led by the teacher. She stated that although the study activities were enjoyable and “like games,” they were not like tests or activities in her Mexican school experience. It did not appear that her performance on the tests was negatively influenced by such dissimilarity, but that may not have been a factor because her educational achievement in Mexico had been quite high (a university degree).

One emergent theme in informant experience appeared to have a very strong basis in differences between Mexican and Anglo cultures. It was noted that the quality of item responses (i.e., whether correct or not) was more important to an informant than was the speed with which the item was completed. The experience of testing under time constraints, when also required explicitly to do one’s best, was one where the two requirements were at odds. The production of a high-quality product, one informant noted, takes time, and when the two requirements for the task are at odds, the quality of item completion trumps speed. It may be the case that dynamic was in play for some informants, for example, in timed tests such as Block Design and Color Trails, 1 & 2. The suggestion, then, is that persons of Mexican origin (or other background that similarly emphasizes quality over speed or quantity) be given longer time limits, or untimed tests, to assess such things as visuoconstruction ability.

Regarding the language of test administration, the primary emergent theme was that the preference, if given a choice, would be for testing in the informant's language of schooling (which also happened to generally be the dominant language of daily living). Informants predicted that they would generally perform better on verbally based measures administered in whichever language the informant believed had a larger lexical fund. However, once having seen the nature and requirements of the measures administered, informants (as regular users of both English and Spanish) were generally confident that they would perform equally well on tests administered in either language format.

Informant narratives also provided important information regarding other elements of participation in the study, not targeted by examiner queries in interview, but nevertheless, very informative. Results provided a wealth of information regarding reasons for participation or for volunteering to participate, which ranged from personal curiosity, to a desire to assist a researcher interested in the health of the Latino/a community, to the desire to be involved in a project that could benefit one's own ethnocultural community. The fact that the researcher had recruited participants at a community church was positively regarded. Interestingly, the chance to receive a gift certificate for one's time and effort in participating was resoundingly denied as a motivation for volunteering. The reasons described previously were much more important to informants as a motivation to take part in the study. One participant noted that reasons a person might not want to volunteer for the study could include a desire to avoid taking tests that might produce anxiety and stress. One participant also noted difficulty in responding to one of the cultural questionnaires, as it required him to make a

judgment about sociocultural groups, as a whole, such as Mexicans or Mexican Americans, where he was unable to include his perception of the heterogeneity of these groups (and thus, the difficulty in making unitary judgments about the entire groups). Finally, most informants expressed pleasure that the study would have benefits for the participant communities. The value of the study was seen, not in being a dissertation project to get a degree, but as something of practical benefit, to “enable and empower” patients of Mexican origin. I could not agree more.

Contributions and limitations of present study

A number of strengths in the present study deserve mention and discussion. First, given that participants were screened for neurological health prior to test administration, the data presented in Table 12 can be said to represent gross normative data for the population of bilingual, adult Latinos/as of Mexican origin, for respective indices presented. However, the absence of stratification by relevant factors such as age and education, as presented at this time, indicates that a good deal of caution is merited in utilizing this data for normative comparisons, in order that the false positive error rate not be unduly inflated.

Second, this project explicitly aimed to operationalize and code in an appropriate and sufficient manner, consistent with suggestions present in the literature, both the target population to be sampled and the ethnocultural constructs/factors to be accounted for in analyses. Rather than conducting research with a sample representing the rather large and heterogeneous population of “Hispanics,” the present investigation sought to limit participants, and thus, the generalizability and applicability of results, to those of Mexican ethnocultural or national origin. Moreover, this population represented a

specific subsample from this group, that is, those residing in Northern Colorado and the Denver Metro area. The obtained sample is comprised of a unique mix of persons of Mexican origin who are, sometimes, fourth or fifth generation American citizens and long-time Colorado residents, those who are first or second generation Mexican American, and even those who consider themselves to be Mexican nationals residing in Colorado on a permanent basis.

Neuropsychological outcome measures were selected, in part, on their appropriateness or adaptation for this population, such as those Spanish-language measures from the *Batería Neuropsicológica en Español* (Artiola i Fortuny et al., 1999), which has been standardized with a Mexican “borderland” population. Independent measures, such as the ARSMA-II (Cuéllar et al., 1995), were also utilized on the basis of their appropriateness and empirical basis for use with the target population for this study. In these and other ways, the present investigation sought to avoid those problems in the consideration of ethnocultural variables in psychological research recounted in the literature review chapter for this project, thereby making results (and their interpretation) more reliable, accurate, and worthy of the time and generosity of the participant population that made it possible.

Following the above discussion, another strength of the present study exists in contrast to what could be said to be a weakness of prior investigations of similar constructs and populations. Specifically, this project included only one ethnocultural population as participants. Notably, no English-monolingual Anglos were included. Other studies, such as that by Arnold et al. (1994), that have considered ethnocultural influences on neuropsychological test performance have included a heterogeneous mix of

participants of both Anglo and Mexican cultural origins, and have considered them “together” in analyses (i.e., as a single, total, sample). In reading the interpretation that observed and reliable differences in neuropsychological test performance were significantly influenced by acculturation status, one will note that acculturative variance in such a study is achieved in such a sample by including English-speaking Anglos along with bilinguals and monolinguals of Mexican origin. Although this certainly ensures variance in acculturation status, results may simply be an artifact of other ethnocultural factors that vary as a function of ethnic or linguistic background. The present study benefited from the absence of such a potential confound.

Another strength of the present study is the combination of quantitative and qualitative data, where each may inform the other, resulting in stronger conclusions, overall, based on both nomothetic and ideographic sets of information. As mentioned in the Methods chapter, these represent two complementary angles on the same subjects and relationships, where one may inform us in a way that the other cannot. To our knowledge, the present study is the only such project to qualitatively interview participants (or even clinical examinees) of Mexican origin about their experiences of completing such activities. A wealth of data, as described earlier in this Discussion chapter and presented in the Results chapter and in appended interview transcriptions, has been provided by informants. Not only has qualitative data enhanced our understanding of observed quantitative relationships among variables, but it has also provided a perspective on conducting such a project with such a population that would have been invisible without the narratives and subjective experiences of informant-participants.

Also of note as a strength of the present study, the near-audacity of the scope of data collection has yielded a quantitative database that is more comprehensive and detailed than is represented by the set of independent and dependent variables selected for analyses conducted in this dissertation project. Future analyses and manuscripts are possible, for example, to examine the relationships between other outcome indices and the same independent variables, or between outcome indices and other independent variables (e.g., generational status, percent of life residing in U.S., nation of education).

Another strength of the present study is the systematic screening of health histories in potential participants. Although it is not common, research such as this may introduce neurological confounds to data that is expected to represent the performance of healthy, “normative” individuals. In this study, no potential participants were included, per the screening process described in the Methods chapter, if they reported a history of conditions, injuries or behaviors that could place them at increased risk of neurocognitive disorder or deficit. It is true that a complete physical examination was not possible, in order to firmly rule out the presence (at the time of data collection) of such problems, but the self-report of included participants is believed to be a reliable and sufficient proxy for this concern.

Lastly, the manner in which this study was conducted is a strength, and deserves some discussion. Community-based research, particularly for a person not ethnoculturally a member of the participant community, and moreover, for a person representing the academic research world (towards which many minority communities have, understandably, suspicion regarding scientific and health-related research), can be challenging. This project, and the participant communities in Colorado, benefited from

the perspectives and guidance provided by members of the Psychology Department at Colorado State University (particularly the dissertation committee members) and those at the CSU Tri-Ethnic Center for Prevention Research, in that regard.

Specifically, an emphasis existed in this project on avoiding “safari research” (in which scientific researchers may bring their own set of questions to a minority community, receive participation with little dialogue with participants about their perspectives or needs as a community, and leave with obtained data, but with little of value provided to the host community). As noted in the Methods chapter, to that end, presentations on health topics (with community input partially driving topic selection), distribution of literature on healthy recipes and cancer prevention, and presentation (oral/in-person and written) of findings and implications from the project were provided by the researcher, in either language, as preferred. On a personal note, the principal researcher, particularly upon expressing an interest in the health of the Latino/a community and upon demonstrating fluency in Spanish, was welcomed by potential participants and their representative communities (such as Catholic parishes) in a way that was very rewarding and validating. Gratitude for the project, and for participation in it, was certainly mutual.

The experience of conducting such community-based research with Latinos/as of Mexican origin will guide and enhance future research planned by the principal investigator, to be sure. For example, recruitment that takes place in-person, in important public organizations, such as churches, where the researcher (especially if non-Hispanic White and not, based on appearance, a fluent Spanish-speaker) can demonstrate respect for and interest in the health needs of such a population, yields mutual respect and a

decent volunteer rate. In contrast, in-person recruitment at medical offices serving the target population were not as effective, in part due to the health status (i.e., problems) of those seeking medical assistance, and in part due to the smaller numbers of persons who may be contacted in a parallel fashion in a waiting room. Collection of data in participants' homes or in another place in which they feel comfortable (such as their church or a public library) is also an element of data collection that deserves replication in future research. It is in such places that many ethnocultural minority persons may perform their best, in the absence of anxiety that may arise in unfamiliar places. In addition, this reduces the extent to which the researcher may be seen to not fully respect the participant community or to prefer his or her own familiar (academic or medical) confines.

Having a toll-free number for potential participants to express interest, or for included participants to reach the researcher, also deserves replication in future research, and the presence of a bilingual message on that line is important. Finally, when potential participants are screened by the researcher for physical and neurological health, and in particular when the target population is as likely as are U.S. Latinos/as to not have health insurance, a primary care doctor, or to receive appropriate medical care, it is incumbent upon the researcher to be prepared with a list (as was the case in this project) of clinics or providers to which a potential participant could go to seek care for a reported condition. This occurred in a number of cases of persons screened by the researcher, and in all cases in which the individual reported a lack of medical evaluation and treatment for such a condition and a lack of knowledge of appropriate medical resources available to him or

her, such information was provided and the researcher followed up at a later time to see that the concern had been addressed.

Limitations in the present study were also present, of course. First, the sample obtained was not generated through random sampling techniques. The possibility that selection biases are present in this group of participants cannot be ruled out. Therefore, the generalizability of results to the broader population of bilingual adults of Mexican ethnocultural or national origin may be limited. For example, volunteers for the present study tended to be, on average, fairly well educated. They also tended to be above Department of Health and Human Services poverty level cutoffs. It may be the case that volunteers for a research project such as this, from such a Mexican/Mexican-American community, tend to be those who have higher levels of education and are less likely to be struggling economically (at least, relative to governmental cutoffs). This may limit the degree to which results apply to those with lower educational achievement or lower socioeconomic status. That said, however, the target sample for the present study is bilingual adults. It may be the case that those of Mexican ethnocultural or national origin who are functionally bilingual in Spanish and English are more likely to be above poverty level cutoffs and to have higher levels of education, relative to the general population of Mexican origin in the U.S. In that sense, this sample may be more representative, even with potential selection biases, than one might otherwise believe at first mention of a non-random sample.

As stated previously in this chapter, one limitation that may have been present in this study was related to the manner in which HRAs were conducted, in cases where the language condition of administration was a significant predictor of test performance (i.e.,

with subsamples of 40 participants). Within these subsamples, the confound of linguistic fluency may have been present. This potential limitation points to one of the most salient and vexing aspects of conducting cross-cultural neuropsychological research of this kind with populations that are bilingual or multilingual, in addition to being ethnoculturally non-majority (i.e., non-Anglo). That is, the potential confound to obtained data of linguistic fluency variation within the sample will always be present. Conducting research examining the effects of acculturation on neuropsychological test performance in African Americans will not have such a potential degree of linguistic confound (with all due respect to dialects and linguistic properties of African American English). But the researcher conducting studies with bilingual Latinos/as must find a way to deal with within-sample and intra-individual linguistic fluency variants, in order that such effects not grossly contaminate interpretations of obtained data.

The method of random assignment to one of two language conditions (e.g., English or Spanish), as in the present investigation, is one way to address this conundrum. However, if the researcher is not planning to assume, a priori, that outcome data may be analyzed in a manner collapsed across measures due to “equivalence” of the two (or more) “versions” of the neuropsychological measures, there remains the possibility that (as in the case of the present study) some data will demonstrate the need for “separate” analyses, by language condition subsample. As noted, this may eliminate the benefits of random assignment present in the total sample.

A second potential methodological possibility in this type of research is the systematic division of participants into categories of linguistic fluency as bilinguals, such as “balanced,” “unbalanced,” or “monolingual,” where such factors become explicit

elements of planned analyses. One can compare outcome performance across such groups (c.f., Harris, Cullum, & Puente, 1995) in order to determine whether reliable differences in test performance exist as a function of linguistic fluency status (as thus defined). However, this methodology can also be problematic when results are analyzed and interpreted. That is, when data from multiple measures (e.g., English and Spanish versions of neuropsychological tests) are analyzed as a single group, results may be contaminated by the possibility that linguistic versions/adaptations of language measures are *not* “equivalent” on some level(s). The use of only a single “version” of outcome measure in such a case could eliminate this potential problem.

Finally, a third potential methodological solution to the problem of linguistic fluency variation in this type of research is similar to the second solution described above. In fact, in replication of this type of study, it would appear to be a very good way to account for or control for linguistic fluency across, for example, English and Spanish. Formal measurement of language proficiency, coded as an independent variable, may be accomplished through the use of instruments such as the *Batería Woodcock de proficiencia en el idioma* [Woodcock Language Proficiency Battery; Woodcock, 1981]. Thus operationalized and quantified, language proficiency/fluency (whether oral or written, depending on the instrument utilized) may be included in analyses, explicitly. For example, participants could be categorized in sub-samples, as a function of their language proficiency/fluency, for the purposes of analyses. Perhaps even more likely, independent data from such a measure could be included as a covariate in general linear model variant analyses, in order to “statistically control” for this factor. This latter methodology was initially considered in the present study, but the time required of

participants and the single researcher, in completing such an instrument (in addition to the 1.5 hours of already-planned data collection), was prohibitive.

It should also be noted that not only is level of linguistic proficiency/fluency across languages important in such research with bilingual populations, but also, other variables associated with bilingualism may influence test outcome (Cory, Harris, & Rojas, in press). That is, relative “balance” of linguistic fluency across languages is not the only relevant factor in neuropsychological test performance by bilinguals. For example, the age at which a person acquires proficiency or regular use in his or her second language may influence neuropsychological abilities, or even his or her neuroanatomical development (ibid, in press). Research explicitly examining the influence of linguistic factors in neuropsychological test performance is clearly a complicated endeavor. Yet to ignore such potentially important variables is to reduce the quality of obtained results, generalizability of interpretations of those results, and applicability of resultant knowledge to clinical populations.

Limitations inherent in the qualitative methods and results also deserve mention. First, results are of a primarily ideographic nature, and cannot be easily generalized to the target population as a whole. In fact, the purpose of phenomenological research is not to produce results suitable for such generalizability. Data provided by informants, and results generated from them, may or may not be representative of the essential experience or emergent themes of bilingual Latinos/as of Mexican origin who complete such measures in a research study. Second, the context of the experience of the phenomenon, that of a research study targeting bilinguals of Mexican origin, with data collected by a non-Hispanic, White, male researcher, is clearly not necessarily the same context in

which a patient of the same background would experience the phenomenon of testing, in a clinical/medical evaluation. This may further limit application of qualitative results to other settings or contexts for cognitive testing with this population.

Third, given the relatively specific and circumscribed nature of the queries posed to informant-participants during qualitative interviews, it was determined that “saturation” of description of experience of the phenomenon was not achieved in narrative data. That is, when narrative interviews in psychological research are to be used in phenomenological analyses to develop a statement of the essential structure of the experience of a particular phenomenon, the content and process of interviews must allow informants to respond with sufficient breadth and freedom to encompass and report the totality of their experience. When this occurs, a researcher may determine that the data collected is sufficiently “saturated” with information about the experience of the phenomenon, such that an essential structure, corroborated across narrative protocols, may be distilled from informants’ responses. The nature of the qualitative interviews in the present study, targeting as they did a set of fairly specific and predetermined areas of interest to the researchers, did not yield data that permitted analysis to the level of the “essential structure” of the experience of the phenomenon. Thus, although phenomenological analysis procedures were rigorously followed in reviewing narrative data, the ability of the data to accurately reflect the “essential structure” of informants’ experience of the phenomenon may have been compromised.

Nevertheless, emergent themes in qualitative data were presented, and a window into the ideographic experience of informants’ experiences in this study was provided. A unique aspect of the phenomenon experienced was the ethnic “mismatch” between the

principal researcher and the participants, a situation more common than not in actual clinical neuropsychological practice with Latino/a patients. There clearly is much to be said for the benefits to such a patient's comfort when the examiner appears beneficent, respectful and can fluently speak the language of preference of the examinee or patient, regardless of such a putative "ethnic" dynamic.

Implications of present study for clinical practice and professional ethics

Clinical practitioners who accept referrals of ethnocultural and linguistic minority patients can make use of results presented in this and other similar studies, in order to improve the quality of services such patients receive. In addition, in the long-term perspective of the field of clinical neuropsychology, awareness of such research, and its appropriate application to everyday clinical work, will improve the viability of such services and will help to ensure ethical practice with such a growing portion of the U.S. population. First and foremost, a clinician must decide whether to refer an ethnocultural or linguistic client to another, more qualified professional, to receive the same services in a more appropriate manner than the first clinician can ethically provide.

This decision is not simply a matter of whether the clinician speaks the primary (or only) language of the patient, or at worst, whether an interpreter (or even worse, bilingual family member) is available to assist with the evaluation. Cultural factors in neuropsychological testing do not simply reside in "language." A skilled clinician should not only speak the language(s) of the potential client in a manner appropriate for evaluation, but should also be competent in the application of empirical data regarding relevant ethnocultural factors in neuropsychological evaluation with such a client. In addition, a skilled clinician should also be trained and knowledgeable about the cultural

perspectives of the potential client, especially as they regard health care and psychological factors and conditions. Clinicians may wish to consult Harris (2002) for further discussion of ethical decision-making in such scenarios.

Based on the results of this and other previously cited research, clinical practitioners should pay explicit attention to the acculturation status of a patient. This attention should not only take the form of interview queries to elicit acculturation information about the patient, but also, utilization of formal acculturation instruments appropriate for a given patient's background, in order to reliably quantify and describe acculturation status. Reference, upon interpretation of obtained results, to appropriate and relevant literature regarding any known moderation of test performance should be made. Previous research also suggests that portion of life residing in the U.S. may function as a proxy for acculturation status and have similar relationships to test performance as formal acculturation scale variables (Artiola i Fortuny et al., 1998), but further research is needed to confirm the utility of such a proxy variable. At some future point, it may be that stratification of normative data by acculturation status, as has been conducted and presented with variables such as age, education and sex, is feasible, but at this time, the data is too scant to support such a recommendation.

Finally, clinical practitioners can address the ethnocultural characteristics of a presenting patient in a manner more appropriate than simple lip-service caveats in neuropsychological reports. That is, if ethnocultural or linguistic background is noted, at all, in a report, clinicians should do more than to simply state that such factors may have influenced test performance, and thus the psychometric reliability and/or validity of results, followed by application of obtained data to normative interpretation as if the

patient were of dominant-culture, monolingual English-speaking origin. If there is a question about the validity of obtained data, and of the accuracy of resultant data interpretation or diagnosis, such a question should be clearly stated in the report, and conclusions based primarily on test performance should be tentative, at best. Although it is true that all patients deserve equal access to neuropsychological services, it is incumbent upon members of the profession to ensure that such services are ethically and clinically appropriate and do not harm patients. There is much work yet to be done.

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Supplementary Readings

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APPENDIX A
Recruitment Script

Buenos dias. Me llamo Jeff Cory, y soy un estudiante de la Universidad del Estado de Colorado, Colorado State University, en Fort Collins. En mis estudios, he recibido mi certificado Master's, y ahora solamente me falta el doctorado.

Quiero agradecerles a XXXXX por haberme dado la oportunidad de hablarles a Uds. hoy. Ellos me han invitado a hablarles a Uds. sobre un proyecto que estoy haciendo ahora y en los meses que veinen para el cual quiero solicitar su participación. El proyecto tiene que ver con cosas como memoria y concentración en personas de origen cultural o nacional mexicano e hispano. Como participante del proyecto Ud. se reunirá conmigo en un sitio que Ud. escoja para contestar algunas preguntas sobre sus experiencias como persona de ascendencia mexicana e hispana y para hacer algunos exámenes que tienen que ver con cosas como memoria y concentración. Por ejemplo, es posible que Ud. tenga que acordarse de algunas palabras o mantener la concentración en una cosa y no en otras durante unos minutos. Son cosas iguales a lo que hacemos todos los días cuando estamos pensando. Para agradecerle a cada participante por su tiempo y esfuerzo en participar, le daremos un regalo de un equivalente de veinte dolares, como por ejemplo un certificado de compras de una tienda popular. Yo valoro muchísimo su participación y les agradezgo mucho considerar la oportunidad de ayudar a entender más de la salud de la comunidad latina.

Toda la información dado por un participante, incluso su identidad, será confidencial. Es decir, nadie puede identificar sus respuestas como que fueran suyas. Para poder participar en el proyecto, una persona tiene que ser de origen nacional o cultural mexicano e hispano, entre 18 a 75 años de edad, y tiene que poder tener una conversación sencilla y entender algunas instrucciones del proyecto en ingles y español. Por ejemplo, si Ud. usa ingles a veces para hablar, ver la television, o si Ud. habla ingles en su trabajo u otro lugar, es probable que sea suficientemente bilingüe para participar en el proyecto.

Yo espero que Uds. se beneficien por participar en este proyecto, y espero que los resultados de este proyecto puedan ayudar a mejorar los servicios de salud que recibe la comunidad latina. La salud es muy importante, ¿verdad? Sabemos que tenemos que preocuparnos por la salud. Yo quisiera no solo obtener informacion de Uds., sino tambien contribuir algo a la comunidad. De hecho, a un tiempo todavia no fijado me gustaria darles una presentacion acerca de un tema de su interes, como por ejemplo, del tratamiento de una enfermedad o del sistema de aseguranza. Quisiera que me den ideas o sugerencias de temas de interes para darles una presentacion que les beneficie. Por favor, diganme qué les interesaria despues de la misa.

Good day. My name is Jeff Cory, and I am a student at Colorado State University, in Fort Collins. In my studies, I have received my Master's degree, and only my doctoral degree remains.

I want to thank XXXXX for having given me the opportunity to speak to you all, today. They have invited me to speak to you about a project that I am doing now and in the

coming months, for which I would like to ask your participation. The project has to do with things like memory and concentration in persons of Mexican and Hispanic cultural or national origin. As a participant in the project, you will meet with me in a place of your choosing to answer some questions about your experiences as a person of Mexican and Hispanic ancestry and to do some tests that have to do with things like memory and concentration. For example, it is possible that you would have to remember some words or maintain your concentration on one thing and not others for a few minutes. These are things just like what we do in everyday life when we are thinking. To thank every participant for his or her time and effort in participating, we will give him or her a gift valued at \$20.00, for example, a gift certificate for a popular store. I value very much your participation and I thank you very much for considering this opportunity to help us understand better this aspect of the health of the Latino community.

All information a participant provides, including his or her identity, will be confidential. That is, no one may identify a participant's responses as his or her own. To be able to participate in the project, a person must be of Mexican and Hispanic cultural or national origin, between 18 and 75 years of age, and must be able to have a simple conversation and understand project instructions in English and in Spanish. For example, if you use English/Spanish sometimes in speaking, watching TV, or if you speak English/Spanish at your job or other place, it is likely that you are sufficiently bilingual to participate in the project.

I hope that you all benefit from participating in this project, and I hope that the results of this project can help to improve health services received by the Latino community. Our health is very important, right? We know that we have to concern ourselves with our health. I would like to not only gain information from you all, but also contribute something to the community here. In that vein, at a time to be decided I would like to offer you all a presentation having to do with a topic of your interest, for example, about the treatment of an illness or about the insurance system. I would love for you all to give me ideas or suggestions about topics of interest so I can offer you a presentation that will benefit you. Please tell me what is of interest to you after this Mass.

If you are interested in participating, I will be here after the Mass to speak with you and answer any questions you may have, and to see if you might be eligible for the project. If you don't have time to speak with me today, please take one of the flyers I have with me. The flyer has a toll-free telephone number that you can call if you want to participate. Thank you very much for your attention.

APPENDIX B

CSU Human Research Committee (IRB) Approved Consent Forms

COLORADO STATE UNIVERSITY
INFORMED CONSENT TO PARTICIPATE IN A RESEARCH PROJECT

TITLE OF PROJECT: Moderator variables and construct validity in neuropsychological testing with Latinos of Mexican origin.

NAME OF PRINCIPAL INVESTIGATOR: Ernest Chavez, Ph.D.

NAME OF CO-INVESTIGATOR: Jeffrey M. Cory, M.S.

CONTACT NAME AND PHONE NUMBER FOR QUESTIONS/PROBLEMS: Jeff Cory, M.S., at (970) 491-3974

SPONSOR OF PROJECT: N/A

PURPOSE OF THE RESEARCH: We want to understand how to best evaluate your thinking, for example, your memory or concentration. We will examine the ways that your cultural background, age, and other things might affect how you take certain tests. This information will be used to improve the ability of health care professionals to treat people of Latino background who may have some type of injury to their brain which may affect their thinking abilities.

PROCEDURES/METHODS TO BE USED: You will first speak by phone or in person with a bilingual researcher who will ask you a few questions about your health history; this will determine whether or not you may be included as a participant in the project. If you are included as a participant, you will meet with a researcher one time for approximately one and a half hours at a location of your choosing. You will be asked questions such as your level of education and your occupation. Following this, you will fill out two different surveys asking you about your experiences and cultural values as a person of Latino origin. Also, you will be asked to do a series of brief tests that measure things like your memory for words or your concentration. You might be asked a few questions about your experiences in completing these surveys and tasks; if so, your responses will be audio-taped to ensure that no information is lost. The audiotape will later be transcribed to a paper format. Only first names will be used in the transcript. You will receive a small gift valued at \$20.00 or a certificate to a popular retail store in the amount of \$20.00 to compensate you for your time and effort. If you are not eligible for the project, you will be thanked for your time but will not receive any monetary compensation for your time and effort. Only those who are included in the project may receive the gift for completing the project.

RISKS INHERENT IN THE PROCEDURES: There is a chance that you may experience some mild frustration or anxiousness when you are taking the tests. This is common when people take such tests. No person is expected to get all the answers correct all of the time. However, should you feel at any time that you are too uncomfortable to continue testing, you have the right to stop testing. You will still

receive the small gift should you decide to stop testing. It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks.

BENEFITS: You will learn about the ways in which health care professionals evaluate people's thinking (such as memory or concentration), as well as a little about the ways in which the brain works. Improved health care services for persons of Latino origin may also result from this research; if you or a loved one ever find yourself going to a professional for an evaluation of your thinking, it is likely that this research may help those services to be more useful to you or another person.

CONFIDENTIALITY: All information about you that is collected during this research project is confidential. Your name will only be on this consent form; none of the other materials used to mark your responses will have any information on them that could identify you. If you participate in an individual interview, only your first name will be recorded on paper materials; no other identifying information will be present. After we collect the information from you, the records will be kept in locked storage for at least 3 years and then later destroyed by the researchers. In the event that the results of this research are presented to other people in some form, there will be no information that can identify you, personally.

LIABILITY: Colorado State University is a Colorado government agency. Laws govern what the University can pay for. If you get hurt because of this study, the University may not be able to pay your doctor's costs. You might have to pay them yourself. If you get hurt, you have to take specific legal steps. The Colorado Governmental Immunity Act determines and may limit Colorado State University's legal responsibility if an injury happens because of this study. Claims against the University must be filed within 180 days of the injury. If you have questions about how fairly you are being treated, call Celia S. Walker at (970) 491-1563.

PARTICIPATION: Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled. You have the right to refuse to answer any question, if you choose. Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing 2 pages.

Participant name (printed)

Participant signature

Date

Witness to signature (project staff)

Date

COLORADO STATE UNIVERSITY: INFORMACIÓN PARA CONSENTIR A PARTICIPAR EN UN PROYECTO DE INVESTIGACIÓN

TÍTULO DEL PROYECTO: Factores moderantes y validez de conceptos en las exámenes neuropsicológicas con los(as) latinos(as) de origen mexicano.

NOMBRE DEL INVESTIGADOR PRINCIPAL: Ernest Chavez, Ph.D.

NOMBRE DEL CO-INVESTIGADOR: Jeffrey M. Cory, M.S.

NOMBRE DE LA PERSONA A CONTACTAR Y TELÉFONO PARA PREGUNTAS/PROBLEMAS: Jeff Cory, M.S., (970) 491-3974

PATROCINADOR DEL PROYECTO: N/A

PROPÓSITO DEL PROYECTO: Queremos comprender mejor cómo evaluar cosas como su memoria o concentración. Vamos a ver como su origen cultural, su edad, y otras cosas pueden afectar la manera en que Ud. toma los exámenes. Se puede utilizar esta información para mejorar las habilidades de profesionales de salud, como doctores, a tratarles a los Latinos que tengan problemas con el cerebro que resultan en dificultades con cosas como memoria o concentración.

PROCEDIMIENTOS/MÉTODOS A USAR: Primero, Ud. le hablará en persona o por teléfono a un investigador bilingüe, quien le hará algunas preguntas sobre su historia personal de salud; esto determinará si se le incluirá a Ud. como participante en el proyecto. Si Ud. es incluido como participante, Ud. se reunirá con un investigador bilingüe una vez por aproximadamente una hora y media en un lugar que Ud. escoja. El investigador le preguntará algunas cosas como su nivel de educación y su ocupación. Después de eso, Ud. llenará dos cuestionarios cortos que tratan de sus experiencias y sus valores culturales como persona de origen latina. También tomará unos exámenes para evaluar cosas como su memoria de palabras o su concentración. Es posible que el investigador le haga algunas preguntas sobre sus experiencias durante el proceso de completar los cuestionarios y exámenes; si el le hace estas preguntas, sus respuestas serán audio-grabadas para asegurar que no se pierda información. La cinta será transcrita. Sólo se va a usar su primer nombre en la transcripción. Al terminar los exámenes, para compensarle por su tiempo y esfuerzo, le daremos un pequeño regalo valorizado en \$20.00 o un certificado para una tienda popular por \$20.00. Si Ud. no es elegible como participante, le agradeceremos por su tiempo pero no recibirá compensación monetaria por su tiempo y esfuerzo. Solo los que sean incluidos como participantes en el proyecto pueden recibir el regalo por haber completado el proyecto.

RIESGOS INHERENTES EN LOS PROCEDIMIENTOS: Hay una posibilidad de que Ud. sienta un poco de frustración o ansiedad al completar los exámenes. Esto es común cuando gente toma este tipo de exámenes. No esperamos que una persona conteste correctamente en todo momento. Sin embargo, si Ud. se siente en cualquier momento demasiado incómodo(a) y no quiere continuar, tiene el derecho de dejar de

participar. Todavía recibirá el regalo aunque no continúe con los exámenes. No es posible identificar todos los riesgos potenciales en estudios de investigación, pero los investigadores han sido cuatelosos en minimizar cualquier riesgo identificado y potencial, sin identificar.

BENEFICIOS: Ud. aprenderá acerca de las maneras en que profesionales de tratamiento de salud evalúan a las habilidades de pensar, como memoria o concentración, y también un poco sobre cómo funciona el cerebro. Servicios de salud para gente latina pueden mejorar como resultado de la información obtenida en este proyecto; si Ud. u otra persona en su familia necesita visitar a un profesional para una evaluación de cosas como su memoria o concentración, es posible que este proyecto provea información que se use para mejorar los servicios que reciba.

CONFIDENCIALIDAD: Toda la información que Ud. nos da en este proyecto es confidencial. Su nombre estará puesto solamente aquí en este consentimiento a participar; ninguno de los otros materiales o papeles usados en este proyecto tendrán información personal que pueda identificarle a Ud. Si Ud. participa en una entrevista individual, sólo su primer nombre será puesto en los papeles; ninguna otra información que le puede identificar estará presente. Después de que obtengamos la información la guardaremos con llave en un lugar seguro por tres años, y luego será destruida por los investigadores. En el caso de que los resultados de este proyecto sean comunicados a otra gente, no habrá ningún dato personal que le pueda identificar a Ud.

RESPONSABILIDAD: La Universidad del Estado de Colorado es una agencia gubernamental. Leyes limitan lo que la Universidad puede pagar. Es posible que la Universidad del Estado de Colorado no pueda pagar el costo de sus cuentas médicas si le causa un daño participar en este estudio. Puede que Ud. mismo tenga que pagar esas cuentas. Si Ud. tiene un daño, Ud. debe tomar pasos legales específicos. El Acta Gubernamental de Inmunidades de Colorado determina y limita a la Universidad del Estado de Colorado cualquier responsabilidad leal por cualquier daño que suceda a raíz de este estudio. Reclamos en contra de la Universidad deben de someterse no más de 180 días desde que ocurrió el daño. Preguntas acerca de los derechos de los participantes de este estudio deben de dirigirse a Celia S. Walker al (970) 491-1563.

PARTICIPACION: Su participación en este estudio es voluntaria. Si decide participar, puede retirar su consentimiento y dejar de participar en cualquier momento. No perderá ninguno de los beneficios ofrecidos si Ud. se retira. También puede rehusar a contestar cualquier pregunta. Su firma indica que Ud. ha leído esta información y está dispuesto(a) a firmar esta forma de consentimiento. Su firma también indica que ha recibido, en la fecha en que se firmó, una copia de esta forma conteniendo 2 páginas.

Nombre del (la) participante (en letra de molde)

Firma del (la) participante

Fecha

Firma del (la) testigo(a) (personal del proyecto)

Fecha

APPENDIX C
Extra-test Factors

Extra-test Factors Questionnaire

I'll need to ask you a few quick questions before we get started on the memory and concentration tasks. They're questions we ask anyone who completes these kinds of tasks so that we know if there could be anything that would make it so he or she couldn't do his or her best on the things we're going to do.

- How did you sleep last night? How many hours? Is that normal for you? Are you any more tired right now than at this time on other days?
- Do you have any pain in your body right now? If so, on a scale of 0 to 10, where 0 is no pain and 10 is the worst pain imaginable, what would your pain be?
- Have you taken any medications today? If so, what, and how much? If not, do you normally take any medications, and if so, why not today?
- How are your spirits today, that is, what is your mood like?

Now we're going to do a number of different things that might remind you a little bit of school. You might solve a few problems or remember some words for me, for example. Most people find these tasks interesting. Also, no one is expected to get all the answers right on every test; in fact, they're designed so that everyone will find that some answers are easier and others are more difficult. The important thing is to give your best effort on each item, so that we get good information from you today. If you aren't sure of the answer for a particular item, just do your best; it's okay if you just make your best guess, even if you're not sure. If you have any questions after I give you the instructions for how to do each task, make sure to ask me so I can explain better what you need to do. Thank you for doing your best; I really appreciate your effort.

Necesito hacerle a Ud. algunas preguntitas antes de que empecemos los exámenes de memoria y concentración. Son preguntas que le hacemos a cualquier persona que vaya a hacer estas actividades. Quiero saber si hay alguna razón que Ud. no pudiera completar los exámenes con todo esfuerzo posible.

- ¿Cómo durmió Ud. anoche? ¿Cuántas horas durmió? ¿Es normal para Ud. dormir por __ horas? ¿Está más cansado/a ahora que en otros días a esta hora?
- ¿Tiene algún dolor en el cuerpo en este momento? Si respondió que sí, en una escala del 0 al 10, donde 0 representa 'ningún dolor' y 10 represente 'el dolor más fuerte que se puede imaginar,' ¿a cuál número correspondería su dolor en este momento?
- ¿Ha tomado pastillas u otra medicina hoy? Si respondió que sí, ¿cuál medicina, y qué cantidad? ¿Normalmente toma pastillas durante el día, y si sí, por qué no hoy?
- ¿Cómo se siente de ánimo hoy, o sea, se siente feliz, enojado(a), molestado(a), u otra emoción? ¿Cómo se siente normalmente, o sea, durante un día normal?

Ahora vamos a hacer algunas cosas que le pueden hacer pensar en sus años de escuela. Por ejemplo, es posible que tenga que solucionar algunos problemas o recordar algunas palabras. Mucha gente piensa que estas cosas son interesantes. También, no esperamos que una persona conteste correctamente en todo momento. Se han hecho los exámenes de forma que hay algunas cosas difíciles y otras más fáciles para todo el mundo. Lo importante, sobre todo, es hacer cada uno con todo su esfuerzo para que yo obtenga buena información de las actividades para el proyecto. Si no está seguro(a) cuál es la respuesta correcta, solo tiene que contestar lo mejor que pueda. Está bien dar la respuesta de la que está más seguro(a), aún si no está completamente seguro(a). Si tiene cualquier pregunta después de oír las instrucciones de cada actividad, pregúnteme para que yo se lo pueda explicar mejor. Gracias por hacer las actividades lo mejor que pueda; le agradezco mucho su esfuerzo y su tiempo.

APPENDIX D
Debriefing Statement

For participants in Mr. Cory's project following completion of study activities
PLEASE READ, OR HAVE MR. CORY READ THIS WITH YOU

Thank you, again, for your time and effort in completing these tasks. This will let you know a little more about the project and about how the information we get from participants will be used. Upon completion of the project, scheduled tentatively for Fall, 2001, a summary of the project will be made available to you through the agency or organization through which you were originally contacted. It may be possible for someone to come speak in person about this information, as well. The information that you and other participants have provided will be used to help health professionals who care for people who have had an injury or illness that gives them trouble with some of their thinking abilities. For example, a person might have difficulty planning their daily activities, remembering new information, or keeping their concentration on only one thing for a few minutes. As people of ethnic minority backgrounds grow in number in the United States, health professionals will be assisting them with these types of difficulties more and more. The information you have provided will help us to know more about thinking abilities in people of Mexican cultural or national background, which will in turn help to improve the health care services that people such as yourself receive if they were to have some of these difficulties with memory, concentration and other thinking abilities.

You will not receive any feedback about your results on the tasks you completed today. This is because your information is confidential, identified only by a participant number, so it would be impossible to identify your results even if we wanted to do so. If you have any questions for the investigator, you may ask them now. Information will also be provided to you regarding health care resources in your area that you may contact if any health concerns have been brought up in your time completing activities for this project. You may contact Mr. Cory with any further concerns or questions at 877-283-3442.

Gracias por su tiempo y esfuerzo en completar las actividades de este proyecto. Este documento le dará información sobre el proyecto y sobre cómo va a ser utilizada la información que Ud. nos ha dado. Cuando haya acabado el proyecto, seguramente en el otoño de 2001, Ud. podrá recibir un resumen de los resultados y del proyecto de la organización que nos ayudó en ponernos en contacto con Ud. Puede ser posible que alguien viniera a discutir los resultados personalmente. La información que Ud. y otros participantes nos han dado será utilizada para ayudar a profesionales que tratan y ayudan a personas que tienen algún daño o enfermedad que les da problemas con sus habilidades de pensar. Por ejemplo, es posible que una persona así tenga dificultades en planear sus actividades diarias, en recordar información nuevo, o en mantener su concentración en una cosa y no en otros durante unos minutos. Como ahora mismo se están aumentando los numeros de personas étnico-minoridades en los EEUU, los profesionales de servicios de salud tendrán que ayudarles a ellos más y más. La información que Ud. nos ha dado nos ayudará a entender mejor las habilidades de pensar de personas de origen cultural o nacional mexicano. Ésto nos ayudará a mejorar los servicios de salud que recibe gente

como Ud. en el caso de que tenga alguna dificultad con su memoria, concentración u otro habilidad de pensar.

Ud. no recibirá información sobre sus resultados de las actividades que ha hecho hoy. Es porque su información es confidencial, identificada solamente por un numero de participante hecho al azar, así que no podríamos identificar las respuestas como que fueran suyas aún si fuera deseado. Si tiene cualquier pregunta para el investigador, se las puede hacer ahora. Le vamos a dar a Ud. información ahora, tambien, en el caso de que haya mencionado alguna preocupación de su salud durante el tiempo de completar las actividades del proyecto. Ud. puede ponerse en contacto con Mr. Cory con otras preguntas o cosas a 877-283-3442.

APPENDIX E

Health-History Screening Questionnaire

Health History Screening Questionnaire

- 1) ¿Ha tenido Ud. en su vida algún tipo de enfermedad o problema neurológica, o sea del cerebro, por ejemplo, ataques (en que el cuerpo se pone rígido y cae al suelo y a veces los ojos se muevan para arriba hasta que solamente se puede ver la parte blanca), golpes fuertes a la cabeza que resultaron en una pérdida de conocimiento, tumores de cáncer o alguna otra cosa así?
 - 2) ¿Ha usado Ud. medicaciones en algún momento de su vida para ayudarle con una enfermedad del cerebro o una enfermedad psicológica?
 - 3) ¿Ha tenido Ud. algún tipo de enfermedad o problema crónico, por ejemplo, diabetes o hipertensión, y que afectaron su habilidad de pensar, recordar o prestar atención?
 - 4) ¿En este momento, tiene Ud. algún problema con o su habilidad de pensar y recordar cosas o con su estado emocional, por ejemplo, sentimientos como tristeza o desanima, que son muy fuertes?
 - 5) ¿Ha tomado Ud. drogas o alcohol a un punto que llegó afectar negativamente una parte de su vida, por ejemplo, en forma de problemas con la policía, con su familia o con su trabajo? ¿Le han dicho otras personas en algún momento que ésto les ha afectado negativamente, o que ellos han pensado que Ud. ha tenido un problema con el alcohol o las drogas?
 - 6) ¿Tuvo Ud. dificultades al aprender a leer, escribir, o calcular números en sus años de educación? ¿Tenía que estar en clases especiales para los que tenían esa dificultad (no incluso clases para los que hablan ingles como segunda idioma)?
-

- 1) Have you ever in your life had a neurological illness or disease, that is, one that affected your brain, for example, seizures, blows to the head that resulted in a loss of consciousness, brain tumors, or such things?
- 2) Have you ever in your life taken any medications to help with a disease of the brain or with a psychological illness or problem?
- 3) Have you ever in your life had a chronic illness, such as diabetes or hypertension, that affected your thinking ability, such as your ability to remember things or to pay attention to something?
- 4) At this time, do you have any problems with your thinking ability, such as your memory or concentration, or with your emotional state?

- 5) Have you ever in your life taken drugs or alcohol in such a quantity that it affected negatively some parts of your life, such as problems with the police, with your family or with your job?
- 6) Did you have any difficulty learning to read, write or do mathematics during your years being educated in school? If so, did this require being placed in special classes for students with similar difficulties with learning?

APPENDIX F
Bilingualism Screen

Bilingualism Screen

I need to ask you some questions in your second language, to see if you are bilingual enough to participate in the study. First, how fluent do you feel you are in Spanish?

Now I'll switch to Spanish for the rest of the questions.

Le voy a hacer algunas preguntas cortas:

- ¿Qué fecha es hoy?
- ¿En qué ciudad está Ud. ahora mismo?

Quiero que repita el nombre de las 3 cosas que voy a decirle: Lápiz. Libro. Llave.
Recuerda esas cosas.

Quiero que Ud. sustraiga 2 de 10 hasta que yo diga que pare. Por ejemplo, 10 menos 2, ¿son?, y 8 menos 2, ¿son? ... muy bien. Ahora empiece con 10 otra vez y continúe sustrayendo por 2 hasta que yo diga que pare.

Quiero que Ud. repita los números que voy a decir. Solamente tiene que repetir exactamente lo que digo yo, ¿entiende?

- 1—7—3—4
- 2—9—1—3

Quiero que Ud. repita la oración que voy a decir. Solamente tiene que decir exactamente lo que digo yo. “No iré, si tu no llegas temprano.”

Ahora, dígame las tres cosas que le dije hace un rato.

Necesito hacerle algunas preguntas en su segundo idioma para ver si Ud. es bastante bilingüe para participar en el proyecto. Primero, ¿qué opina Ud. de su nivel de fluidez en inglés?

Bien, ahora voy a cambiar al inglés para las demás preguntas.

I'm going to ask you a few short questions:

- What is the date today?
- In what city are you right now?

I want you to repeat the name of the three things I am about to tell you. Key. Tree. Book. Remember those things.

Now I want you to subtract 2 from 10 and then continue subtracting 2s until I tell you to stop. For example, 10 minus 2, is?, and 8 minus 2, is? ... very good. Now begin with 10 again and continue subtracting by 2s until I tell you to stop.

I want you to repeat the numbers that I am going to tell you now. Just repeat exactly what I say. Do you understand?

- 1—7—3—4
- 2—9—1—3

I want you to repeat the sentence I'm going to say. Just say exactly what I say. "Work in the garden until you have picked all the beans."

Now tell me the three things I told you a few minutes ago.

APPENDIX G

Demographic Questionnaire

CUESTIONARIO DEMOGRÁFICO

- 1) ¿Cuál es su sexo? Masculino _____ Femenino _____
- 2) ¿Cuántos años tiene Ud.? _____
- 3) ¿Cuál es su fecha de nacimiento? _____
- 4) ¿Dónde nació? EEUU _____ México _____
- 5) ¿Por cuántos años en total ha estado Ud. en los EEUU? _____
- 6) ¿Durante cuál parte de su vida ha vivido en los EEUU? (por ejemplo, desde los 15 años hasta los 20 años, o toda su vida) _____
- 7) ¿Cómo se identifica Ud.? Latino(a) _____ Hispano(a) _____ Chicano(a) _____
Mexicano(a) _____ Mexicano(a)-Americano(a) _____ Norteamericano(a) _____
- 8) ¿Cuál es su ocupación? _____
- 9) ¿Cuál es su segundo idioma? _____
- 10) ¿A qué edad comenzó a usar su segundo idioma? _____
- 11) ¿Dónde asistió a la escuela? _____ Mexico _____ EEUU _____ Otro _____
- 12) ¿Cuántos años de escuela ha completado Ud.? (incluya solamente los años de educación formales, como el kinder, primaria, secundaria, colegio, o la universidad):

Ninguno	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	Posdoctorado
- 13) Aparte de los años de la última pregunta, ¿Ha completado Ud. otros años de educación, como por ejemplo, licencias profesionales? No _____ Sí _____
 Si contestó que sí, ¿Cuántos años? _____
 ¿Qué tipo o carrera? _____
- 14) ¿Cuántos años de escuela completó su padre/hombre que lo crió? (incluya solamente los años de educación formales, como el kinder, primaria, secundaria, colegio, o la universidad):

Ninguno	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	Posdoctorado

- 12) Aparte de los años de la última pregunta, ¿Su padre/hombre que lo crió completó otros años de educación, como por ejemplo, licencias profesionales? No ____ Sí ____
Si contestó sí, ¿Cuántos años? ____
¿Qué tipo o carrera? _____
- 13) ¿Cuántos años de escuela completó su madre/mujer que lo crió? (incluya solamente los años de educación formales, como el kinder, primaria, secundaria, colegio, o la universidad):
- | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|--------------|
| Ninguno | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | Posdoctorado |
- 14) Aparte de los años de la última pregunta, ¿Su madre/mujer que lo crió completó otros años de educación, como por ejemplo, licencias profesionales? No ____ Sí ____
Si contestó sí, ¿Cuántos años? ____
¿Qué tipo o carrera? _____
- 15) Aproximadamente, ¿Cuánto es su ingreso anual familiar, o sea, de todos los miembros de su casa en total (si le parece más fácil, me puede decirlo en forma semanal, mensual, o lo que sea) \$ _____
- 16) ¿Cuántas personas viven en su casa, incluyéndole a Ud., y comparten el ingreso de la casa de la pregunta anterior? _____
- 17) ¿Tiene Ud. problemas distinguiendo colores, como por ejemplo, rojo o verde?
Sí ____ No ____
- 18) ¿Cuál es la mano que usa principalmente, o sea, cuál mano usa para hacer cosas como escribir?
Derecha ____ Izquierda ____ Las dos manos igualmente _____

DEMOGRAPHIC QUESTIONNAIRE

- 1) What is your sex? Male _____ Female _____
- 2) How old are you? _____
- 3) What is your date of birth? _____
- 4) Where were you born? United States _____ Mexico _____
- 5) How many years (altogether) have you lived in the United States? _____
- 6) During what part of your life have you lived in the United States? (for example, from age 15 to age 20, or all your life) _____
- 7) How do you identify yourself? Latino(a) _____ Hispanic _____ Chicano(a) _____
Mexicano(a) _____ Mexican-American _____ American _____
- 8) What is your occupation? _____
- 9) What is your second language? _____
- 10) At what age did you begin to use your second language? _____
- 11) Where did you attend school? _____ Mexico _____ United States _____ Other _____
- 12) How many years of education have you completed? (include only years of formal education, such as kindergarten, elementary school, middle and high school, and university coursework/degree(s):

None	1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18					Doctoral degree
- 13) Apart from the years listed above, have you completed other years of education, such as at a technical college or in professional licensure? No _____ Yes _____
If you answered Yes, how many years? _____
Occupation? _____
- 14) How many years of education did your father/male guardian complete? (include only years of formal education, such as kindergarten, elementary school, middle and high school, and university coursework/degree(s):

None	1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18					Doctoral degree
- 15) Apart from the years listed above, did your father/male guardian complete other years of education, such as at a technical college or in professional licensure? _____

No _____ Yes _____

If you answered Yes, how many years? _____

Occupation? _____

- 16) How many years of education did your mother/female guardian complete? (include only years of formal education, such as kindergarten, elementary school, middle and high school, and university coursework/degree(s):

None	1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	Doctoral degree				

- 17) Apart from the years listed above, did your mother/female guardian complete other years of education, such as at a technical college or in professional licensure?

No _____ Yes _____

If you answered Yes, how many years? _____

Occupation? _____

- 18) Approximately, what is your annual household income, that is, the income earned by all members of your household? (if it seems easier to you, you may tell me this figure in a monthly, weekly or other form) \$ _____

- 16) How many people live in your household, including you, and depend upon the above income figure? _____

- 17) Are you color-blind, that is, do you have difficulty distinguishing colors such as red or green? Yes _____ No _____

- 18) What hand do you use mainly? In other words, what hand do you use to perform tasks such as writing? Right _____ Left _____ Both hands equally _____

APPENDIX H

Full Transcripts of Qualitative Interviews

Thank you for doing that with me, Mary.

You're welcome.

I'm going to ask you a few questions now about some things about what you just did, and what we'll do is just kind of go back and forth. I might ask you some more questions about something just to follow up on the question that I asked you, that kind of thing, okay?

Okay.

And I just want you to just answer freely, you can say whatever's on your mind, whatever comes to mind when, whenever, uh, I ask you a question, okay?

Okay.

If there's anything else that you want to add at some point, you can just do it. It's just a conversation kind of thing about what we just did.

Okay.

All right? I'm going to ask you how these things compared to what you used to do at school, if you can think back to school. Do they compare at all to the things ...

They compare back ...

... you did in school?

... to what, the testing that they did at school.

Yeah? Tell me a little bit about that.

For the testing on memory ...

Um-hum?

... if you can remember things that they taught you on how to visualize from the picture, see if you could copy from the picture.

Um-hum.

So that's a lot like it was at school.

Yeah? And how about the things we did today, how -- how did those compare, what were they like that they were like the things from school?

Um, they were things that make you think that you don't normally do *(laughs)*.

That you don't normally do?

Yeah.

Yeah, tell me what you mean by that.

Well, like the blocks, I don't normally look at a picture and try to copy it with blocks.

Uh-huh.

And, um, the reading the words over and over ...

Um-hum?

... and over again to see how fast I can read those words.

Those aren't things you would commonly do?

Not every day.

In every day. Yeah. What was it like to do some of those tasks, then, that you wouldn't ...

Um ...

... do every day?

Some of the blocks was okay, but a couple of them were so frustrating that I couldn't get it, and I wanted to get it, but I couldn't.

Um-hum.

And it was frustrating to not be able to get the end thing out of it.

I wonder if that feeling of being frustrated could have affected your performance. Did it make you work harder or work less hard, or what do you think it did to you?

It made me want to give up (*laughs*).

Made you want to give up.

Yeah (*continues laughing*).

Yeah. Why didn't you?

Because I wanted to see how it -- what it was that I was -- how to get that part. I wanted to give up, but I still wanted to know how to get the picture.

So you had some conflict, you felt like on the one hand you wanted to give up ...

Yeah.

... but on the other hand, you wanted to kind of keep going to see ...

To see how, how it was put together.

Yeah. Why do you think you wanted to keep going to see how it was put together?

Um, because I didn't want to -- I didn't want to fail (*laughs*).

You didn't want to fail.

Yeah.

Were you worried about failing in some of the things that we did today?

Uh, not really in all of them, but just in that part of the pictures with the blocks.

With the blocks?

Yeah.

Okay. I want to make sure that I understand. You know, failing could mean a lot of different things to a lot of people, and usually ...

Um-hum.

... I tell people, "Hey, the only thing you're going to do here is get an 'E' for effort," right?

Yeah (*laughs*).

That's your grade.

Yeah, that's true (*continues laughing*).

But what -- what would that mean to you to fail in some of these ...

Um ...

... things you did today?

... it would mean -- I don't know. I guess not being able to get it-- get the idea or have it come out, have it finished.

Not being able to get the idea, not being able to finish it would mean ...

Uh-huh.

... would mean failing?

Yeah.

So what would be the opposite of failing, then?

Getting it right (*laughs*).

Getting it right. Okay.

Yeah.

So you knew right when you saw these tasks ...

Um-hum.

... you know, we might call them tests ...

Um-hum.

... you knew that there was failing, not getting it right ...

Um-hum.

... and then there was getting it right?

Um-hum.

Okay. All right. I wonder if you can put yourself maybe into your parents' position, so if you think about them, you know, let's say that you had only had three years of school ...

Um-hum.

That was your dad, right?

Yes.

... what do you think it would have been like for someone like him, you know, to come in here and do these tests? You went through 13 years of school, a lot of experience taking tests and stuff.

Yeah.

What do you think it would be like for someone who is, you know, maybe from your family's background that doesn't have a lot of school?

I would, I think they would not even want to try.

Not want to try. Why?

Yeah. Because I think -- well, like my father, he doesn't know how to read, all he knows how to write is his name, and he speaks more Spanish, a little bit of English ...

Um-hum.

... and he does not -- sometimes you can't even understand what he's saying.

Um-hum.

So he gets very frustrated, especially when he can't understand or get something right ...

Um-hum.

... he gets very mad.

Um-hum.

And he just. . .gives up.

So he wouldn't want to try, he would want to give up ...

Um-hum.

... with some of these things that we did today?

Yeah.

Okay, now ...

He would say that they were worthless or they were stupid or why did he have to do that.

Why did he have to do that?

Yeah.

Now we did some things that were in English.

Um-hum.

Some of those things that we could have done we could have done in Spanish.

Um-hum.

What do you -- would that have changed things for him?

No, because he can't read Spanish, either.

Okay.

So he just can't read ...

What about the stuff ...

... either language.

... just talking back and forth, do you think if we -- like if I gave him those lists of words but I did it in Spanish, would that be any better, or worse, or ...?

Um, I think it would be better if you -- if he was to have it said to him in Spanish.

Said to him in Spanish?

Yes.

Okay. Do you think he would still have any of those same kinds of frustrations or wanting to give up if it were okay if it were in his language he could speak?

I don't know, maybe a little bit.

Yeah? Why?

Because some of the things you're doing, I mean, well, he never went to school ...

Um-hum.

... so he wouldn't even have a clue, and ...

What difference does that make? Why is it -- why is it important that someone go to school, though, to do these activities?

Because, for one, they would know how to read.

Okay.

If you don't know how to school, you -- sometimes you don't learn how to read.

Um-hum. What else?

And, um, like those tests with the blocks, I had been to school and they had given us tests like that before ...

Okay, okay.

... so I already knew what it was.

Okay.

And, um ...

So maybe being familiar with the kinds of things that ...

Uh-huh.

... that you would have been doing, but if he didn't go to school, even if it's in his language that we're doing the testing ...

Uh-huh.

... it might be kind of frustrating because it's the first time he's ever seen some of those activities, is that right?

Uh-huh.

Okay. All right. Let me ask you another question. What was it like for you, personally, to take the tests that

you did in -- in English? That was the language we just finished them in.

What was the question again?

Sure. What was the -- what was it like for you to take these things in English? You could have taken them in Spanish, but you took them in English, what was it like for you ...?

Um ...

... in that language?

I understood it better(*laughs*) .

Okay. Okay.

Because I can read some Spanish, not too much, but I comprehend a lot better reading in English ...

Okay.

... than I would reading it in Spanish.

Okay.

Because sometimes when there are stuff that is written in Spanish, um, I might not have been -- I might have not ever heard -- used that word ...

Um-hum.

... that sometimes they describe something in Spanish.

Uh-huh.

So even though I speak it, I understand it, but sometimes in print some of the words I've never ...

Okay.

... said before.

Okay. So for you, with the reading parts of it ...

Um-hum.

... it was more comfortable, it was -- you were able to understand it better ...

Um-hum.

... in English?

English.

In English. Okay, now let's turn it around, what if we just did those tests we did in Spanish, the exact same tests but the words were in Spanish, the instructions were in Spanish, you had to respond to me in Spanish ...

Um-hum.

... what do you think it would have been like for you to do that?

Well, I could have responded to you in Spanish. Reading it would have taken me a little bit longer to understand it.

Um-hum.

But if you would have asked me the questions in Spanish ...

Um-hum?

... I would have been able to answer.

Okay.

But sometimes reading it, um, I might have not understood it.

So you're talking from the perspective maybe of a person who's bilingual ...

Um-hum.

... that there's different parts of the language that you're more comfortable in. One you might be more comfortable in reading, one you might be more comfortable in talking and ...

Yes.

... listening and that kind of thing.

Um-hum.

Maybe one where you might be more comfortable in writing.

Um-hum.

But it really sort of depends, and actually, for you, it's not that you're all in English more comfortable.

Um-hum.

Is that the case?

Yes.

There's some parts of Spanish that you might even be more comfortable?

Yes. Uh-huh.

Okay.

Exactly.

Okay. How about if you came into my office, let's say I'm a doctor and I want to see how your thinking abilities are -- are right now, okay, and you're bilingual ...

Um-hum.

... would you be able to tell me which language, now that you've done some of these things, you wanted to take the test in? Like if I said, "Hey, you know, Mary, you can take these in English or you can take them in Spanish, what do you think?" what would you say?

English (*laughs*).

You would say English?

Yeah (*continues laughing*).

Okay. Why would you say that and not Spanish?

Um. I don't -- I studied everything myself in English.

So school and everything ...

I studied more ...

... in English?

Uh-huh.

Okay.

Yeah. My Spanish speaking is only because of my family ...

Um-hum.

... my friends, TV., music, and I speak with family members in Spanish and, um

-- and a lot of the Hispanic people that I do know that are friends with me ...

Um-hum?

... they -- I translate for them.

Uh-huh.

So they tell me in Spanish, I translate it in English, and then whoever answers tells me in English and I translate it to them in Spanish.

Okay. All right. Thank you. So you would choose to do it in English because maybe your schooling was in English and you're more comfortable ...

Um-hum.

... doing these kinds of things probably in English ...

In English.

... than in Spanish.

Um-hum.

Okay. I'd like to ask you, um, a question that may be a little bit difficult to answer, but just do your best and let me know if you need any clarification, okay?

Okay.

How do you think a person who is from a Mexican cultural background, Mexican or Mexican-American, how do you think that kind of person would do on these tests?

Okay, I guess.

Okay.

Uh-huh.

Same, worse, better, differently than anybody else?

I'd say about the same.

About the same?

If they had -- if there was a Mexican person that did it in Spanish, they would do good, just like a ...

Um-hum.

... person in English ...

Um-hum.

... would do good with this in English.

Is there any reason why a person who is from a Mexican background, even if they're Mexican-American, would do better or worse on some of these things than anybody else? You're shaking your head no?

I don't know (*laughs*).

You don't know? Okay.

No, I don't know.

All right. That's a hard question to answer. I'll flip it around and see if that adds anything to it, okay?

Uh-huh.

Would someone from a different cultural background, let's say someone from my cultural

background, it's more sort of a White-dominant culture kind of background ...

Uh-huh.

... sort of the normal Anglo whatever in the United States ...

Uh-huh.

... would someone like me do better or worse or anything on some of these tests than someone who's from, say, a Mexican background or a Black background or anything like that?

Um, hmm. I don't -- I don't know.

Okay. That's fine. Here's an interesting question: think back to what you were doing when you were doing these tests, okay ...

Uh-huh?

... what were you thinking about when you were doing these tests?

What was I thinking about?

Yes.

That I was back in school.

That you were back in school?

And I was nervous.

What were you nervous about?

Being graded (*laughs*).

Being graded?

Yeah (*continues laughing*).

Yeah. Was that something that I would be doing to you when I was giving you these tests?

I -- yeah.

Yeah?

Uh-huh.

Okay.

It was like, um, even though you said there was no wrong or right answers, you know ...

Um-hum?

... you still -- a test is a test.

A test is a test.

Uh-huh.

What does that mean?

That we get graded on tests (*laughs*).

And that was what you remember from school, is being ...

Yes, being ...

... graded on tests?

... graded on tests.

Okay.

Yep.

All right. What was your experience in being graded on tests when you were in school?

Um, that most of it was okay. Biology was terrible, I always drew a blank and I never passed biology.

Did anything in here today remind you of biology or any other class?

Um, the memory part, the ...

Reminded you of what?

... the list. That a lot of times, even though I knew it, I couldn't remember it.

Oh.

And I knew I -- I knew I knew it, like when biology, I would study and everything and I knew the stuff, but then when it came to the test, I would just draw a blank and everything I would want to put down on paper, I knew it up here (*indicating*), but I didn't know how to put it down here (*indicating*).

Um-hum.

So it was ...

This reminded you of those times a little bit when you would draw a blank?

Yeah. When you would say the shopping list and -- and I couldn't tell you what ...

Okay. Take a second and see if there's anything else that was going through your mind when you were taking these tests. What else?

Um. (Pause.)

Mostly just back in school?

(Inaudible.) Yep.

Being tested again, back in school?

Uh-huh.

Okay. I'm wondering, was it important for you to do your best on these things? Was it important for you to make the correct design or to remember all the words?

Yes (*laughs*).

You cared about that?

Yes, uh-huh.

Yeah? Why did you care?

Um, because, um -- I don't know. Make you feel good about yourself, you know, that you could remember this list, or that you had something in front of you and you did okay.

So that was for you?

Um-hum.

To make yourself feel good about yourself that you had remembered something that ...

Yeah.

... that you had done okay on these?

Uh-huh.

Okay. So the caring about how you did on these tests, the wanting to do well, that was something personal, it was for you.

Um-hum.

Not for me?

No (*laughs*).

Why wasn't it for me?

I don't know. I don't know, I guess it, uh -- I don't know.

Just for you? Okay. It was for you. All right. Okay. Was there anything that I did as an examiner, as a person who was giving you these tests or doing these activities with you, was there anything I did that made this comfortable for you or that made this uncomfortable for you?

Um, going through the directions and, um, having me go like step by step on the directions ...

Um-hum.

... and ...

That made you ...

Comfortable.

... comfortable?

Uh-huh.

Okay.

Because you made sure that I understood what was going to happen or what had to be done.

How would it have made you feel if I didn't, if I just started right away?

Um, like, "Okay, I still don't understand," you know (*laughs throughout utterance*).

Yeah. How else would you have felt if I had just jumped right in?

Um, I don't know, a little scared.

A little scared?

Yeah.

About what was coming up?

Uh-huh.

Yeah? Okay. So mostly what I did to make you comfortable, the first thing that comes to your mind was to go through step by step and explain the instructions ...

Um-hum.

... as well as I could.

Yeah.

Yeah.

Yeah, and you had a nice, level voice.

Okay.

And didn't sound too much like a mean teacher (*laughs*).

Okay. Okay. I wonder if it made you comfortable or uncomfortable or if you didn't care, I don't know what -- what your experience was ...

Uh-huh?

... that I am a White man who's not from ...

Uh-huh.

... a Mexican cultural background, did that make any difference to you, or were you thinking about that at all?

A little bit.

Yeah, a little bit?

Uh-huh.

Tell me about that, because I'm interested.

Um, I don't know, well, every -- I don't know, I guess it's silly, there's this picture or this thing, you know, where you don't have as much education or as much, um, ability to learn that good.

Who doesn't?

Um, Hispanics.

That Hispanics don't?

Um-hum.

And did -- was that something that was present with me being a White man?

That I felt?

Like a White non-Hispanic man ...

Uh-huh.

... that you felt, yeah, was that present a little bit?

Yeah, a little bit, yeah.

Yeah?

Yeah, like if, um, it felt a little bit like if, um -- well, if I don't get this, you know, I'll probably feel kind of stupid (*laughs*). I don't know.

Would you ...

Something like that.

Would you have felt less that way if I were not a White man, let's say I were Hispanic?

I think so.

Less worried about that?

I think so.

Okay.

I think a person -- like when I go to these meetings sometimes, if I'm the only Hispanic person there, I feel a little bit uncomfortable, but if there's another Hispanic person or more Hispanic people ...

Um-hum?

... I feel like okay ...

Okay.

... you know. It's weird, you know, why I feel that, or that there's other Hispanic people like me that feel that, but it's -- I don't know, it's just there.

Yeah. I really appreciate you being able to share that with me because I am interested in the dynamics, what can happen ...

Uh-huh.

... when there is a White person giving tests ...

Uh-huh.

... to a person who's of Hispanic background.

Yeah.

And it sounds like -- tell me if I'm hearing this right ...

Uh-huh.

... that there's a little bit, maybe, of a stereotype that maybe a person who's Hispanic would not do as well, would be somehow more stupid or ...

Yeah.

... that kind of thing ...

Uh-huh.

... and so maybe you worry about it a little bit as a person who's of Hispanic background ...

Yeah.

... with a -- with a White researcher ...

With a White man.

... or a White man who's giving the tests.

Yeah, a little bit.

A little bit?

Uh-huh.

On a scale of 1 to 10, what do you think in terms of that worry, if 10 is more and 1 is less?

I'd say a 5.

About a 5, somewhere in the middle?

Uh-huh.

Okay. Here's a question following that, and tell me if you can -- it's okay if you don't know, again ...

Um-hum.

... but do you think that affected your ability to do some of these tests, kind of worrying about that, that feeling of about a 5, could that have affected how you did today?

No.

No?

No. I know my memory's not that good (*laughs heartily*).

Okay. That's just your own personal feeling.

(*continues laughing*) Yeah. Yeah, I don't -- I don't think I was really worried about that, you know, but, um, but sometimes that's the situation.

Okay. Thank you. Is there anything you would have wanted me to do differently as a person doing these tests with you? Is there anything you would have wanted that I didn't do?

No. You did fine.

Okay.

You know, you became like a friendly person to speak with right away.

Okay.

And made me feel comfortable, you know.

Okay. Thank you. Um, was there anything that you particularly enjoyed or did not enjoy about doing these things?

Um ...

These tasks, these activities, even the questions that you answered. It doesn't necessarily ...

Uh-huh.

... have to be just the tests, but anything we did?

Well, I did like reading the words.

You liked that?

Yeah, I liked that.

What about it?

Um, that you could just -- you know how you get tongue-tied sometimes?

Yeah.

You know? That didn't happen and I was ...

That didn't happen?

... and I was worried that I was going to get tongue-tied and not even be able to say the word right, but that was a neat thing. Um, the one that -- that was not okay or okay was the blocks. Well, I liked the blocks, the ones that I could get, but the ones that were hard (*laughs heartily*)...

You didn't like the ones you weren't able to get as easy. Okay.

Yeah, they were kind of hard.

Okay. All right. Anything that made you really uncomfortable?

No.

No?

Um-um.

Okay. How about answering some of the questions about your experiences as a person of a Mexican cultural background?

No, they were all okay questions.

Okay. Did you have any thoughts come up when you were reading some of those things?

The questions?

Yeah.

Well, a lot of the ones -- a lot of the questions, um, weren't for me because I'm not married.

Okay.

I don't have a husband, and there was quite a few questions that had to do with married people.

With married people?

The husband, the religion, the bringing up the kids and stuff.

Um-hum.

So a lot of them were ...

What was that like for you?

Um, I -- it was like, you know, if it's a single person raising their kid, a lot of those questions weren't for me, you know.

Um-hum.

So it was like no, no, no (*laughs heartily*).

No no, no? Yeah. Anything else about ...

Yeah.

... some of those questions that asked you about how much you do a certain thing or how much you associate with certain people or ...?

Um, what did I think about them?

Yeah, any -- any thoughts you have about some of those, or ...?

No. They were okay questions.

Okay. Here's an interesting question: if you were to go to a doctor ...

Um-hum.

... who examined you by having you do tasks and activities and tests like these, what do you think he might learn from your responses or from how you did on these things? He or she, what would that doctor learn about you from ...

About me?

... doing these tests, these activities? Or any person in general, what would the doctor learn?

That I would try and that if there was something that I couldn't get, I would get frustrated, or I would laugh on the funny things (*laughs*).

Um-hum. Okay, okay. How about with your thinking, if they used that information to tell them a little bit about your thinking abilities, like memory and concentration and ...

Um-hum.

... problem solving and other things like that, what would they learn?

That my memory's not that good, I have to write things down, um, and that I -- I would try to figure or find a way to make something fit.

To make something fit? Tell me what you mean by that.

Like that cube thing.

Um-hum.

I couldn't get one of those designs until I seen and I turned things around, and I'm like, "Oh, okay, I got it now."

Okay.

You know, so ...

You tried and tried until you could finally get it?

Until I finally got it, yeah.

Okay. Okay. How did you decide to participate in this study?

How did I ...

In this project, how did you decide to participate?

I read the flyer and I thought it was interesting that they were studying Hispanics.

Studying Hispanics?

Um-hum.

Okay. So it was something about studying Hispanics that interested you, that ...

Yeah.

... someone was going to want to know a little bit more about the group that ...

Um-hum.

... that you culturally come from, that you belong to?

Yeah. Uh-huh.

Okay.

I thought that was kind of neat.

Okay. What about the flyer, what -- what kinds of information was there that made you want to participate, if anything?

Okay, you're going to make me think *(laughs)*.

That's all right, anything that comes to -- anything that comes to mind.

Um, about the concentration and the health and *(inaudible)*.

Okay, okay. One more question, then, along with that. Last chance maybe to just tell me in general what your opinions might be about this project, about what you did, any other thoughts that you have or strong feelings that you have about what we've done, about what you've experienced this afternoon?

(Pause.) What do I think about this?

Sure, anything else that we haven't talked about just yet that you can tell me about your experience doing these things?

Hmm.

Participating in the study?

I think it's good that, you know, you asked for random people, you know, or just people to call in ...

Um-hum.

... want to volunteer and want to get themselves to come in and do these tests.

Yeah? What's good about that?

That if a person really wants to, they'll call you and they'll -- they'll themselves will come voluntarily to come and speak with you.

Um-hum.

It's not like something that they have to do, you know, and I think that's ...

That's good that it's voluntary?

Um-hum.

That people just come to me ...

Um-hum.

... as opposed to maybe forcing people to ...

To do something.

... participate?

Yeah. Uh-huh. So it's like that person -- that -- those people themselves have good curiosity to come and find out ...

Okay.

... and see what's going on.

Okay.

And that if people -- you tell them, "Well, you have to go and do this," and they're like, "Oh, well, what is it? And I don't want to," because right away they'll say, "Well, I don't want to," or "Do we have to?" you know, and I think people that are curious and want to find out more will come ...

Yeah, it's certainly ...

... and they'll be more interested.

Okay. It certainly is important to me to get people who want to actually do their best on these things and who don't want to ...

Yeah (*laughing*).

... I don't want to tie anybody down and pull out their fingernails and torture them on these things for sure.

Yeah. So, you know, it's a good thing that people that really want to do this.

Okay. How about the gift certificate that's -- that's something that we give you that thanks you for your time and effort?

Well, you know that I didn't even think about that.

Didn't even ...

Didn't even cross my mind. I was just wondering what you did and what the tests were and I just wanted to be a part of it (*light laughing*).

All right. Thank you.

You're welcome.

Well, I think that's all we need to do in regard to the interview and the discussion, talking about some of the things that we did.

Uh-huh.

Thank you very much for your information ...

Okay.

... today.

You're very welcome.

Okay, so I'll ask you a few questions and just kind of have a little dialogue about it, maybe follow up on -- on certain things a little bit, but take your time with any, you know, answers that you give me and say whatever you want.

All right.

If you have any questions for me, you can ask them as well. Um, how did these tasks compare to some of your experiences in school, if at all?

Some were easy to do and, uh, some were, uh, a little harder, a little more challenging. Uh, there was always a sense of accomplishment when you got 'em done.

Okay.

And at a time when you were trying to remember some things or put some things in order, there was a little bit of frustration in trying to get to that place and -- and, um, a self imposed time effort was put on me, which was not put on by you ...

Um-hum.

... but nonetheless, persevering with, uh, some, um, diligence and exercising, uh, endurance and always having a steadfast spirit enabled me to move through these, uh, in a way that it was not stressful, it was not, uh, painful, it was -- it allowed me to pursue them in a manner that allowed me to proceed, maintain my dignity but yet not be worried about time or whether I was doing this wrong or not.

And is that similar to your experiences in school at all, that sense of perseverance, sometimes some accomplishment, maintaining your dignity?

Pretty much, yeah. Uh, and then at times not having anything to do with the dignity that you lost, that was beyond your control. Know what I mean?

Okay. So you were understanding when something was beyond your control ...

Um-hum.

... and when it wasn't?

And there was another time when -- there was times that people would just be outright demeaning, you know what I mean? Their behavior or their personality or their bias or their prejudice would impact you or had an impact on the task or the interaction, but a person knew well enough, saying, "Well, you know what? I can't control that."

Um-hum.

That's you that's exhibiting that one.

Okay. Now, in your experiences, Rudy, you, uh, are a person who has achieved much in -- by way of furthering your education.

Um-hum.

And one might suppose that you then had some successes along the way that allowed you to say, "Well, I'm going to go to the next level."

Uh-huh.

Uh, how might some of these tasks, do you think, relate to your successes in school or your experiences in school, made it easier or harder or anything?

Well, it seemed -- they seem to progress in the nature of their difficulty and the challenge to your cognitive ability.

They are set up that way.

Yeah, they are set up that way. But in a way that's a real good progression, that's a good way that, through a step-by step process enables you to take the next one. I think if they would have been mixed it would have been, um -- it would have been stressful and it would have been hard and I would have lost my -- my endurance, but ...

Too many difficult ones ...

Yeah.

... at the beginning?

But I think the fact that it was predictable that I could say, "Probably the next one's going to be a little harder, more difficult, but if I can challenge this, I can meet the next one. And I know that the next one's going to be a little bit more difficult because I'm using my reasoning on this and it just means that I'm going to have to be -- prepare myself for the next task and know that it's probably going to go a little slower. But if I maintain some kind of, um, outside

exterior control on how things are going to happen, I -- and if I stay on top of it, I'll be able to, uh, finish at some point, uh, at a time that is, uh, parallel to my age and what I can do now."

Okay. Okay. One thing I want to follow up on really quickly that you mentioned was, um, that you had a self-imposed time limit, or there might have been an imposed ...

Um-hum.

... time limit on a certain task. I have been told -- and I don't want to lead you on this ...

Sure.

... so you tell me what your own experience is, but I have been told that it can be difficult in some cultures, and maybe particularly in the Latino culture, or various Latino cultures ...

Um-hum.

... to be told, "Do the best you can and do it as quickly as you can."

Yeah ...

Is there anything difficult for you about that or can you see how that might -- what's your opinion about that?

It's best, like I said, to do, uh, as best you can, uh, in the time that you want to use to get it done. It's a lot easier if you do that, and I'll probably do a better job for you than if you tell me, "Here, I want you to get this and I want to get it done as fast as possible."

Okay. Tell me more about that, what ...

Well, and speed kills. When you're in such a hurry to do something or complete a task or please somebody, there's a lot of room for error, and all of a -- all of a sudden the better -- then your best goes out the door and you compromise a good product or a good deed or a good task simply because time was imposed. However, if you would have given me time, my time -- at the end of the day, when I'm done, you can rest assured you'll have a product that's second to none, but don't give me this time stuff.

Okay.

What do you want, do you want something that's in a -- done quickly or something that's done well? It's a mod- - a matter of quality versus the quantity of time that you give me.

So you're actually, I think, supporting -- tell me if I'm right -- supporting the idea that I have heard that someone says that the instructions to a task that tells you to do your best and do it as quickly as you can is actually in some way distressful or wrong, it's not the way someone would do it. If you want me to do it my best ...

Yeah. I'll do it that way because you ask me to follow that.

Oh, okay.

But if you want me to do it well ...

Okay.

... then let me put the time in it.

Okay. There were a couple of the cube designs that you got just after the time limit ...

Um-hum.

... but I also note that, uh, on -- on my -- my notes that you got it correct at a certain time.

Um-hum.

So you certainly did your best all through this ...

Um-hum.

... and had the time limit. And of course everybody's going to find that there's a few that they either can't do within the time or ...

Um-hum.

... you know, maybe finish just after.

Um-hum.

But in your case you certainly were able to, you know, do your best and complete all of those, but not necessarily always within the time limit. So maybe if you had -- if I had said, "Take your time" ...

Um-hum. Yeah, uh, it gets back to a saying that says, "Don't worry on what time I arrived, be glad that I arrived."

Okay. Okay. Excellent. Um, what was it like to take these tests or activities in the language that you took them in? We did them in Spanish today.

What was it like?

Yeah.

It was -- it was fine. Uh, I didn't see my language taxed that much. Maybe when you gave me a letter and I had to look for words. If it would have been in English, I prob- -- I may have found more words.

Okay.

Because predominantly, on a daily basis, I use English more, so you're fresher on those words and stuff. I still have my Spanish that I grew up with and that we used to use daily ...

Um-hum.

... but it's not as even, so I was -- I was working with the lesser language, or the less developed or the less daily language versus the more daily one, so that just made it, uh, a little harder to come up with -- with, um, names or objects or items because you have to tax your thinking a little bit more.

Did you find yourself com- -- having two languages competing at all when you were trying to do that task?

No, no, I was able to stay on -- on the Spanish ...

Okay.

... piece.

Okay.

Or whatever the letters were.

Okay. How do you think it might have been doing these tasks or activities in English instead, if -- if different at all?

It would have been different. Uh, it may have been easier, once again, because on a daily basis the English language I use a good -- in the day or who I'm with, a good 80 or 90 percent of the time will be in English, and maybe somewhere 10 and 1 on a daily basis is Spanish.

Um-hum, um-hum. Okay. Let me ask you a question, then, along those lines from your perspective as a person who knows quite a bit about bilingualism. How might it be, hypothetically anyway, for someone to come in and be told to do some tests in let's say English who is bilingual but whose predominant language is actually Spanish? How can you imagine a person performing?

I would see that per- ...

Or experiencing ...

Yeah, I would see them performing basically stronger in the English language than their Spanish, but still I would see probably them feeling a sense of accomplishment in that they could do them both, and they don't -- in this kind of situation, it doesn't matter which one you use, it wasn't a matter of life and death, it wasn't a matter whether I was going to stay here in the United States or not or whether you were going to pay me more money or give me food stamps or I was going to qualify for this or I was going to step all over myself. None of those things played, it was non-threatening the stuff that I had to do. If I made a mistake or if I answered wrong

or if I couldn't think fast enough, no big deal.

But you can imagine a situation in which someone would perceive those threats or that they would ...

Yeah, they would perceive them -- I could see them perceived as a threat if you were a monolingual Spanish speaker ...

Um-hum.

... and you find yourself in an English-speaking situation ...

Um-hum.

... or a monolingual English speaker being put in a situation where you're being probed and asked in that native lang- -- in a language that's not native to you or you ...

Um-hum.

... don't use it as much. It's frustrating.

Um-hum.

It's frustrating and it gets more frustrating when the type of the information you're asking is going to impact me or my family or my life or my wallet or my health. Or my life, you know.

It's more frustrating then?

Um-hum, yeah, because now we're talking about critical stuff, you're talking about whether I'm going to get food stamps or not.

Um-hum.

You know, you're wondering whether the question that you asked me is, you know, "Do you still beat your wife?" I mean ...

Um-hum.

... how do I answer that? You know -- you know, I have to think about that one just in English.

Or how about a family member who says, "Since the car accident my husband," or spouse or partner or whatever, "is so different. Doctor, what's wrong with this person?" There's a lot riding on that. You know, do they have some brain damage that's causing this or not, and the doctor has to decide.

Is it trauma or (inaudible) brain damage.

Um-hum. Okay. Um, how do you think, if at all, a Mexican cultural background could come to bear on anything that you did today?

A Mexican cultural background would come to bear in ...

Is there anything about a Mexican cultural background that might be ...

Answer your questions in the whole process?

Yeah, that you think might influence ...

Oh, yeah, there's a lot of things ...

... completing these activities? What kinds of things, in your opinion?

One, the fluency of the language. Two, the educational background.

In what sense educational background?

If, um -- if I'm a -- if I went to school maybe 3rd grade or 4th grade versus someone who got a PhD ...

Um-hum.

... that's going to influence, you know.

Right.

Yeah. The -- the other thing that would influence would be where I am in my state right now in terms of am I legal, am I not legal, I'm in the process of getting legal.

How would that influence it?

Well, uh, that would influence because that's overriding in my mind, that's pretty -- you know, it's -- that takes all of my time, that takes all of my effort, and it puts me in a situation where I'm not sure where I am from now to tomorrow. And in that sense I'm not doing better or my best because I'm being weighed down by that thing of, you know, am I legal?

So you're distracted by it?

Well, I'm not distracted, it's in the back of my mind, and it doesn't matter if I'm talking to you or if I'm going shopping or I'm working, it continues to take -- you know, it's -- it's a little stressful, you know ...

Okay.

... and because I don't know, I'm uncertain about what will happen to me tomorrow.

Okay.

So that would be another one.

How about just food preferences or something, you know, put bits and pieces of culture that we -- you know, that sort of identify someone, "I listen to this kind of music," or "I eat this kind of food," or "I attend this church," or whatever ...

Um-hum.

... could any of that have any influence on these tasks, or on what you did today?

I couldn't see probably where food would. Uh, maybe music, some -- this group may be listening to more music than other people might listen to music and how music will soothe you and make it easier for you to move with some of the exercises as opposed to high stressed American who works, you know, on 16th and Bannock, you know, who doesn't even listen to music or ...

Yeah.

... like that, and this other guy, you know, he just works out here laying brick, but for him it's very easy, you know, because he -- he's more relaxed, he doesn't have a lot of baggage that your mainstream Anglo person might have.

Sounds like this is a little bit of a stretch, though, when I throw in the idea of some of those things that are a

part of culture, but those weren't the immediate things that jump to your mind, you know, food preferences or music preferences or ...

No ...

... religious affiliation or -- at least in terms of the things we did today?

Yeah, I don't think so.

Okay. What were you thinking about when you completed these tests, when you did these activities?

Uh, what was I thinking about? Um, doing the best that I could, and then also, um, doing them as fast as I could because I knew there was a time factor and so I wanted to beat the time, or come within the time.

You were thinking about your performance?

Yeah, my performance.

What made that important to you?

We're performance based in this -- in our society. Your pay, your school, your grades, your language, your reading ability, your intellectual ability, you being able to socialize, is all based on a performance, you know. Are you an introvert or an extrovert, you know?

Um-hum.

Can you move quickly, can you manage something at a bank real quick, you know, can you pass the, uh, Colorado State Standards, or you did not pass them, you know. On the standards of relationship are you basically 'I' oriented

or are you more like relationship with everybody else. But every item, everything that we interact with, the quality of the food, whether you make it real quick just to eat it or it's a nice fluffy omelet all goes -- it's based on the performance. Everything by and large is performance based.

So the nature of these tasks was actually consistent with ...

With Life 101.

Okay.

Yeah, yeah. You know, do good, do well, do better than your best, and -- and depending on how well you do is depending on how I'll think of you or what kind of reward I'm going to give you ...

Um-hum.

... you know, because it's going to be merit pay ...

Um-hum.

... or I'm going to think a lot higher -- more highly of you because of what you did or how fast you did it.

Okay.

And the opposite of that, if you don't do it fast enough, or you don't do well, then I devalue you, or, you know, you lose your -- a little bit of your self-concept because you didn't do that well.

Were you thinking at all about how I was potentially valuing you as you were completing these things or what I

was thinking about what you were doing?

A little bit. I sometimes was thinking, "I wonder how he sees me compared to other ones, you know, other people that he's done," kind of thing. (Inaudible.) Once again, the performance standard.

Okay.

Am I average? and, you know ...

Okay.

Yeah. That -- that was kind of my thinking.

And I wonder whether maybe people who might be from a culture where a performance standard is less present ...

Um-hum.

... or important might not feel that as much ...

It could be.

... and have someone who doesn't care to do their best and isn't worried about their performance so much ...

Yeah. And it's not that they don't care about doing their best, it's that's their nature and their personality says, "What do you have for me to do? I'll do it in whatever way I can and I'm not really thinking about what you think of me, how I'm going to do." Does that make sense?

Explain it to me a little bit more.

I'm going to do what I'm doing because of my cultural background and I'm not doing it to please you, I'm not doing it to do right, I'm not doing it to set any standards, I'm just doing what you told me and there's nothing in my mind competing for my time or putting pressure or telling me that I have value or not because I'm just doing it, you asked me to do it. I'm not going to -- whatever factors you bring into it, those are yours. I'm just doing whatever I can.

It's al- -- it almost sounds situational or having to do maybe with roles or status, you know, "The doctor says to do it, so I do it ..."

Um-hum.

"... and that's that."

Or I get up in the morning and I look at one day at a time and I just do whatever I need to do, and if I complete a task, I do, and if I don't, I don't, and tomorrow is going to be another day.

Okay. Was there anything that I did as, uh, an examiner that made this comfortable for you or uncomfortable? Think about the things that I did.

Not uncomfortable, for sure. I think you had that, um, everything you asked you gave examples, you made me comfortable, you know, and you weren't threatening at all, you know.

Okay.

So it was extremely comfortable. You know, like you say a doctor has a bedside manner, as an interviewer, you

have a good bedside manner, you're able to, at least with me feel real comfortable.

Okay.

I didn't feel like you were judging me, you know, or ...

Okay.

And that's another people would be different, too, imagine, you know, they look at you and here comes this guero, you know, who's whiter than snow, and here I am, you know, and so they may perhaps think of themselves a little lower ...

That's where my thoughts were going, too ...

Yeah.

... so tell me more about that.

Well, I'm one of these guys that lives over here (indicating), and first ...

Oh, meaning?

There's a lot of mexicanos here.

Okay.

You're an American.

Um-hum.

You're a gringo, you're gavacho, you're white ...

Right, guero.

You're guero, your skin is white, you look to be educated, I mean ...

Right.

... you are from here. You -- you are a typical example of a Yank.

Okay. And this is very interesting to me, so tell me more about this because this is part of what I wonder about.

So with that, then, how I interact with you is, uh, depending what my experience has been interacting with other people like you at work or somewhere else, or the driving license place. But more than not, probably I'm a little guarded because I'm seeing, one, that we're in your country, not mine ...

Oh, okay.

... and two, you have a lot more experience here, uh, and you match everything else more that's here than me, so you're at an advantage. And so all of a sudden I see you here and I see myself in a different place in terms of because where I came from, the language I speak, and where I work.

And how would those things -- how would those dynamics and that situation you just described potentially impact whatever we did, from the perspective of the ...

Um-hum. Well ...

... of the Mexicano?

... it could be -- it could be impacted in that "I'm going to show you in terms of I'll do my best, I'm really going to put on the best shoe (inaudible)." The other opposite would be, "Gosh, I'm -- I really feel already less than this guy coming in,

and now doing this stuff and him looking at it, now I really feel bad."

Um-hum.

Because I'm basically, uh -- what I think about him and what I think about me now because he's putting me to the test is going to have you maybe thinking less of me or you think that I don't know as much as you.

Um-hum. There's an idea that one researcher has put out called "Stereotype Threat," and the idea being that if the stereotype is that, let's say ethnic minorities are more stupid somehow, that's some stereotype right there, that if you bring that stereotype now into the dynamics of the situation ...

Um-hum.

... a person might actually do poorer on cognitive ability tests or other tasks simply because they're under the threat of that stereotype somehow being held true.

It's -- it's a perception, perception of reality, they perceive you behaving -- if you perceive yourself in that way and you start behaving that way, and then you kind of become that person. I don't know if that was Carl Rogers or Maslow in terms of perceiving behavior.

Okay. Yeah, I don't know either. Can you see, then, it being different in any way if I were not a gringo examiner, if I were someone who maybe matched a little bit better with the cultural background or ...

If the match is a little bit more of cultural background, with a lot of people it would, um -- it would prob- -- it couldn't serve but to help more ...

Okay.

... to ease more.

Okay. What do you think a person would like to see or experience in this type of situation with me being the gringo examiner ...

They ...

... and the person being, in this case, a person of Mexican or Mexican-American background?

They'd probably like to see that the reason you're doing it is ultimately is to help other people like me.

Okay.

If I see that, that's good.

Okay.

Then I forget about the other stuff. Know what I mean?

Okay.

I say, "You know, this gringito's being pretty good. He's finally doing some stuff for us that we don't know about, but it would probably impact it somewhere down the road because it's pretty good stuff."

Okay. Okay. Thank you. Was there anything that you particularly enjoyed or didn't enjoy about doing these things, these tasks or activities?

Mmm, I kind of enjoyed recalling the words. The memory was the pits, the letter words. The squares was good, I enjoyed that. Touching those figamajigs (sic) was not as fun as the other ones. Putting together squares and stuff was the most enjoyable one. Using the colors by just saying the name was a quick one, easy, because you just had to read, you just had to read and that was real good, you were able to move fast ...

Um-hum.

... and then when you had to go by color versus the name, uh, that wasn't enjoyable because it taxed me a little more ...

Okay.

... and so I didn't go as far as I had gone when it was easier.

Now, when things weren't as enjoyable, in those cases, did that impact your performance or your -- your --

No, I ...

... your actions at all?

No, no, in fact it challenged me because I said, "I've got to do my best, I've got to go as far as I can, you know, I'm going to show you, I'm going to -- I'm going to go as fast as -- still maintaining that quality and making sure I make no mistake ..."

Um-hum.

"... and then speed after." Instead of speed first, you know, making sure you

make no mistake, and then speed is the secondary one.

Okay. That definitely did come up for you in these things, didn't it, was the issue of speed ...

Yeah.

... along with accuracy?

Yeah.

That -- that thing that I brought up.

It was a quality versus quantity. I tried to maintain the -- the standard for myself of quality and downplaying the quantity of time that it took.

Okay.

But still knowing that it was there, but it wasn't that bad or threatening because I mean I'm going to get thrown to jail because of it or get accepted to medical school or not being given food stamps. There was no pressure on this one and so the speed, I was able to say, "Hey, I can sacrifice the speed."

All right.

I can sacrifice the speed on this one because there's really nothing -- well, there's not pressure or threat on this one, no one's grading me, no one's going to tell me this or no one was going to kick me in or out on this one.

Okay. Just two other quick questions. Um, Rudy, how did you decide to participate in this study?

Well, in fact I heard you in church, uh, and I happen to be an educator, and so,

uh, I know people like you need help all the time.

Sure.

I know it's hard for you to find people.

Sure.

So that was -- the fact that, um ...

From a professional or academic perspective ...

Yeah. And then the second one was probably from the heart, from the fact that you went to a place where I go practice, mass, religion, spiritually be there with a lot of people ...

Um-hum.

... and so if you ask for something and I could have helped, I had to help. If not, I shouldn't be in mass in the first place.

So there was a religious component to it, too?

Well, I'm not -- I wouldn't say it was religious, it was that we happened to be in a Catholic church, which is a religion.

Okay.

But from a spiritual standpoint, the bottom line is you have to love people, and love people means you have to help people.

Okay.

And so if you're not willing to do that, I don't care if you're a Mormon, a Presbyterian, or a whatever you are, the religion didn't have anything to do with

it, it had more, 'Where is your belief in terms of how you interact with people or assist them?'

And you said "spiritual".

Um-hum.

More spiritually?

Well, you know, just in that where I am right now, uh, spiritually it's not as self-centered as I used to be or other people are, and more how do I help you ...

Okay.

... or me.

Okay. And just to follow up on that, um, what are your opinions about this project or study now that you've completed it, now that you've done all the things, the hour and a half or so that you've spent with me?

Well, my opinions are I could -- I could see, I was thinking earlier, the information that you gather from this will go beyond you getting a degree and these two guys over there coaching you or writing stuff up in a paper, or whatever you're going to do.

That's a good point.

But the other one, the bottom line that I saw is some -- I read here is at some point, with the increasing amount of the Mexican population in Denver and Colorado, and if something happens to these folks as a result of this, then it was worth it. Then that's where the value is right there.

Okay.

You getting your degree and putting 48 pages and a bibliography, and you lecture and these two professors sign and you go like this, that's -- that's the hoops that we have to go through in society for doing what we do. But the important thing, you know, it's now the year 2010 and there's a fellow here who came from Mexico and had an accident and he's in a trauma situation and you really tried to help him, enable him and empower him, and we say, "You know what? There's this study that was done by CSU, by this fellow, and ..."

Right.

"... he looked at the -- and this is how he -- this is the kind of prescription, the thinking and interaction therapy we need for this guy." If that happens because of this -- I hope it does -- then that's well. Secondary is you getting your degree and somebody getting an "A" and reading the thesis, that comes secondary. Those are the hoops.

So from a ...

They might be impor- ...

... professional standpoint, you know, uh, that obviously it's important to do the project to get the degree, but your primary focus thinking of -- thinking about the project now is there's practical value in it.

Yeah.

There's value to the community.

And that's probably because of me being a professor myself ...

Uh-huh.

... and stuff. But yeah, I know you have to do this, and that's fine, and it's measured and it's controlled real well, and that's what's going to make sure that the findings are going to have applicability ...

Right.

... perhaps for people who are increasingly coming to this country who could -- are doctors at our hospitals and universities and medical centers. If they know this stuff, they're better able to treat the Mexicano than in the absence of it.

That's right. Okay. And Rudy, anything else that you would want to let me know, any other comments that you would have or ...

No, just other than good luck! And it will be interesting to see your finding.

Great.

And I remain hopeful that they will be useful in the manner that we just discussed as opposed to being put in a -- bound and put in a library at CSU in Boulder and then they check off something that was done.

That's right.

So my hopes is that it will really be useful. Because then two things are accomplished: one, an academic rigor and a research ...

Um-hum.

... knowledge base was carried on, and that's good and it has its own value, but also there was practicability to it.

Um-hum.

There was -- uh, there was a part of this that ultimately would impact somebody or make somebody's life better.

Okay. Thank you.

You're welcome.

Dolores, ¿Qué opina Ud. sobre lo que hemos. . .hemos hecho? ¿Qué opiniones tiene?

Bueno, primero es interesante. Agradece que se interese en la cultura latina, y siento que de esta manera tratarían, o intentan ayudar nuestra, la. . .la población mexicana (unintelligible) que se encuentra aquí.

¿Eso es importante para Ud.?

Um-hmm. Sí. (Chuckles).

Okay.

Y todo lo que hicimos, pues, son sencillos y divertido.

Uh-huh. ¿Sencillos en qué manera? ¿En que sentido?

Bueno, no, no son. . . son tan manera de juego.

Um-hmm. . .

Y eso los hace divertido, y que no sean tan complicados. (Chuckles).

Así que son semejantes a juegos que Ud. ha visto o ha jugado o algo.

Bueno, no, no. . .en México no se utilizan mucho. (Chuckles).

Uh-huh.

(Unintelligible). . .son divertidos.

Okay. Son, ¿son divertidos?

Um-hmm.

Okay. ¿Cómo comparan, o como son, de. . .? ¿Son semejantes esas cosas a cosas que haría una persona en la escuela en México, o son muy diferentes, o. . .? ¿En qué maneras son semejantes y en qué maneras diferentes?

Ahorita la educación ha cambiado. Tal vez en la (unintelligible) que a mi me tocó estudiar. Para mí fue muy diferente, en la forma de enseñanza que yo tuve. Supongo que ahorita ya se está aplicando. . .

Um-hmm. . .

Si te puedo. . . por ejemplo, no me tocó ir a la, lo que es el, para primaria. . .los dos años de 4 a 6 años, para entrar a la primaria.

Um-hmm.

No, no fui hasta el primer año de la primaria, ya pues, para aprender a leer, y eso lo aprendimos en, hace 2, 3 meses, porque era de llegar y, “¡Ya!, A, B, C, D. . .” Y solamente, no me tocó hacer juegos en la escuela.

Um-hmm.

(Unintelligible). Ahora, ahora, pues, supongo que ya los tienen. No, estehh. . .mis sobrinos, que están aquí, y ya no tengo mucho contacto allá con, con niños, para ver cómo la educación ahorita. . .(chuckles).

Okay.

Pero supongo que ya se está aplicando de esa manera.

Si le comprendo bien, Ud. me, me está diciendo que las actividades que hemos hecho hoy son semejantes a juegos, pero no es, no necesariamente es el caso de que en México, en las escuelas, hacen juegos, necesariamente, y no. . . así que no, las actividades, de esa manera, no son semejantes a la escuela.

Em. . . a lo que, a lo que allí me tocó, no.

Um-hmm.

No, de la Escuela Federal, no. No se aplicaba mucho esta técnica de aprendizaje donde, estehh, a manera de juego, vivencias, es más fácil memorizar, otra tarde analizar las cosas, de. . . aplicarlo a la vida diaria. De esa forma se lo memorizan más fácil.

Um-hmm.

Que cuando yo fui, era mas el método tradicional, lo del maestro decir que. . . dar toda la clase, y yo lo estoy escuchando, está repitiendo, ¿no? “A, B, C, D. . .” (Chuckles).

Okay. Um, ¿Cómo le fue para Ud. hacer las actividades que hemos hecho, en español, y no en inglés?

Oh, mejor. (Chuckles).

Mejor. Cuéntame un poco sobre eso.

Oh. Bueno, porque. . . cuando vine aquí a estudiar inglés, vine con la idea de que todo el mundo me iba a hablar inglés. Pero toda mi familia habla español, y empecé a trabajar con ellos y hablar

español diario, entonces me ha sido difícil aprender el inglés. Más que nada porque. . .

Por falta de practica. . .

Porque no lo he practicado mucho. Y bueno, también, da mucho miedo hablar con la gente, con una persona americana, pero no se le merece porque. . . el acento se nota desde luego, o desde que los dicen, le dicen a uno, “Que no te entiendo.” Y hace como quiere decir, “Oy, bueno. . . pues no, pues nada.” (Laughs).

Um-hmm.

Dando la vuelta, ¿no? O simplemente no hablamos. . . es la pena. . .

Asi que por sentirse más cómoda con el español, le resultó más fácil hacer las actividades en español.

Uh-huh.

Okay. Pero Ud. habla inglés bastante bien para hacer este proyecto, y fue una posibilidad que tendría que hacer las actividades en inglés.

Um-hmm.

**¿Qué opina sobre esa posibilidad?
¿Cómo. . . Cómo le iría en inglés?
¿Cómo sería diferente para Ud.?**

Bueno, ya viendo las actividades como fue. . . creo que no hubiera sido difícil.

**¿Que no hubiera sido difícil?
¿Entender las instrucciones,
responder en inglés, memorizar
algunas palabras en inglés?**

(Shakes head, no).

Okay. Que no hubiera sido tan difícil.

Um-mm.

Okay. Um, esta es una pregunta bastante complicada, o difícil. Pero estabamos discutiendo un poco sobre eso antes de que empecemos hoy. Uh, ¿Es posible que la cultura de una persona, por ejemplo de. . . en su experiencia, de Ud., es posible que tendría que ver algo la cultura con la manera de hacer estas actividades? En su opinion.

Sí, tiene que ver mucho.

¿Tiene que ver mucho?

Um-hmm.

Cuéntame un poco sobre eso.

Em. . .Bueno, primero la educación. Él que vaya a la escuela, se habitua a uno. . .a esas ciertas practices de memorización, o el simple hecho de que su tarea se está ejercitando el cerebro, ¿no?

Um-hmm.

Sería muy diferente a una persona que no se habitua a hacer. . . (pause)

Um-hmm. . .

La cultura en México, las formas de enseñanza, siento que están muy atrasados, ¿no? También, comprendiéndolo un poquito con los que han tenido oportunidad de vivir aquí.

Um-hmm.

Hay escuelas muy buenas, hay estehh, maestros muy destacados también. Pero, muchas veces parece que se necesita tener mas dinero. . .

Um-hmm.

. . .en la situación económica en México.

¿Para tener una educación mejor?

Uh-huh.

Um-hmm.

Sí, porque influye a muchas cosas, ¿no? Desde el hecho de la alimentación, ehh, si no tiene uno una buena alimentación no hay ninguna posibilidad de tener un buen, una retención.

Um-hmm. Poder desarrollarse como ser humano a un punto que, que llegan otros.

Uh-huh. Entonces. . .pues, son muchas cosas que influye, ¿no? El simple hecho de que no hay una motivación para que la gente siga y siga. Porque la gente, los niños de edades muy tempranas tienen que empezar a trabajar.

Um-hmm.

Por la necesidad de tener que comer, ¿no? O sea, aunque muchos de los papas prefieren que sus niños vayan a la escuela, es que simplemente no tienen el dinero.

Um-hmm. Asi que Ud. puede ver que en su caso, como Ud. ha tenido muchos años de escuela, de educación en México, y que sigue también en los Estados Unidos, su experiencia de

hacer estas actividades es diferente que sería la experiencia de otra persona. . .

Sí. Alguién que no tenga un nivel de escuela, pues, para mi esto no fue tan complicado que para otra persona.

¿Qué opina Ud. sobre cómo sería una experiencia, hacer actividades así, para una evaluación de sus habilidades de pensar, para una persona de México que no tenga una buena educación, que no está acostumbrada a la cultura americana? ¿Cómo sería su experiencia, en su opinion, una experiencia así?

?Sobre esta?

Uh-huh. Para una persona así.

Uh. Pues, resultaría mas difícil. Resolver las problemas, o. . .

Um-hmm.

Uh-huh.

Tendría una experiencia diferente, entonces. Ir a una oficina para una evaluación con estas actividades, su experiencia, la experiencia de una persona así sería diferente que. . .

Bueno. . .

. . .que su experiencia hoy.

. . .tal vez otra persona diría que esta evaluación fue muy difícil, ¿no? La diferencia fue. . .para mi fue como un juego, ¿no? Tal vez para otra persona, diría, “Eso fue muy difícil tener que leer, a lo mejor tendré que estudiar mas para ir al doctor (laughs).”

Um-hmm. Um-hmm. Claro. Okay, ¿Qué opina Ud. sobre lo que nos diría la información que recibimos, en la comunidad médica, de estas actividades? O sea, ¿cuando una persona hace una evaluación así con estas actividades, qué nos nos diría esa información?

Bueno, hay muchas cosas que. . .una, pues, (unintelligible). . .desde el hecho de poder leer. Hay gente que no pueda leer, y otras, sí.

Okay.

Identificar colores, (unintelligible). . .educación, ver la capacidad de retención que tenga cada persona que (unintelligible). . .la nutrición, la forma en que se ha ejercitado. . .

¿Y qué nos diría sobre las habilidades de pensar de una persona, o de cómo se está funcionando el cerebro?

Um, pues, pues en esto. . .(pause) diría así (chuckles)

¿Algo de la memoria, o. . .nos diría algo sobre eso?

Sí, bueno, por allí influyen muchas cosas, ¿no?

Claro.

(Laughs). (Unintelligible).

Okay. Um, ¿Sobre qué estaba pensando Ud. cuando estaba haciendo estas actividades? ¿Cuáles pensamientos tuvo Ud.. . .mientras estaba haciendo las actividades?

Bueno, ya durante las pruebas de la memoria, solamente estaba concentrando en esa. . .

Okay.

. . .pero, cuando estuve leyendo el cuestionario, sí, me llamó mucho la atención las preguntas que se hacen allí. Sobre todo, la influencia que tiene la cultura en la familia.

En la familia.

En la religión, en las relaciones, en todas las relaciones familiares, las relaciones con los hijos, con la pareja, con la religión, con la gente que está para afuera.

Um-hmm.

Sí, eso me llamó la atención porque hay mucha influencia. . .(unintelligible) yo no tengo esposo, pero bueno con mis hermanos y (pause). . .aunque mucha de la gente que está aquí, se. . . bueno, cuando yo vine por aquí, yo esperaba cosas muy diferentes, ¿no? En primero, no encontrar a tantas personas mexicanas aquí (laughs).

Okay. (chuckling along).

Y me sorprende que siguen manteniendo, intentan, asociar hasta el punto. . .pues, muchas cosas las dejan mientras otras las siguen manteniendo, como es por ejemplo, la forma de decir. Eso lo me entienden, manteniendo muchos costumbres de México, tratan de seguir la misma alimentación. . .

Así que Ud. tenía la esperanza de que serían diferentes las cosas.

(Laughs) Sí, de encontrar menos mexicanos aquí (laughs more).

Son unos 30 por ciento de Denver. . .se identifican como latinos e hispanos.

Alguien me contaba que eran 60 por ciento.

Gran por ciento, de cualquier forma.

Tantos mexicanos.

Sí.

Y, bueno. . .

Así que estaba pensando en eso mientras estaba llenando esas dos.

Sí, porque a mi me interesa mucho, por ejemplo, en la cultura que se mantenga la familia, en México se ha perdido bastante eso. Pero (unintelligible). . .muy bonito (unintelligible) en una familia con una mamá y papá, y algo diferente que aquí, que los hijos se tienen que determinar, y en México no será. . .(very unintelligible portion, a few seconds, too far from microphone, apparently).

. . .costumbres bonitos, como comer todos juntos, ir a la iglesia. . .

Um-hmm.

Cositas que. . .algo de aquí, por ejemplo, que no me gusta es de que los divorcios se dan tan fácilmente, que los hijos tienen problemas de drogadicción, casi. Por lo mismo creo (unintelligible) . . .la familia. Y, aunque en México es diferente por la situación económica. Aquí es como que lo contrario, ¿no? Porque si tiene el dinero, tiene las

drogas. En México, se (unintelligible) . .
.barato porque no se tiene el dinero para
comer, o para tener un hogar, ¿no? Yo
estaba pensando en todo eso mientras
que estuve leyendo.

**Okay. Um, ¿Había algo que yo hice
que. . . le hacía a Ud. sentirse más
comoda, o algo, durante el tiempo que
hicimos esas actividades?**

Bueno, me dio mucha confianza,
tranquilidad, eh, que hablara español
(laughs).

Okay.

Que me diera todas las instrucciones,
explicara en que consistía, por ejemplo.

**Así que fue importante para Ud.
sentirse cómoda con, ehh, el español, y
con las instrucciones, saber lo que
tiene que hacer, y todo eso.**

(Nods head, yes).

**Okay. Dos preguntas mas. Primero,
¿cómo decidió Ud. participar en el
proyecto?**

Uh. . .

¿Por qué decidió eso?

Bueno, uno porque me interesa mucho.
Me interesó cuando se anunció en la

iglesia, porque era, dijeron que era para
poblacion. . .para mexicanos.

Um-hmm.

Y, bueno, porque la (unintelligible) me
interesa en todo. (chuckles).

**Okay. Um, y ahora, ya que ha
completado el, todo el proyecto
conmigo, ¿tiene otras opiniones sobre
el proyecto? ¿algo mas que me quiere
decir?**

Estehh, no, bueno, yo le iba a comentar
que es interesante ver que se interesan
por la población que está viviendo aquí,
¿no?, que no es por, únicamente por la
comunidad ameri-, americana. . .
(unintelligible) americanos. Que se
interesan por toda la gente que está
viviendo aquí. De repente, se siente uno,
casi (unintelligible) por los problemas
que hay, y (unintelligible) que no es de
aquí. . .(unintelligible), pero. . .y por otro
lado, se siente, bueno, hasta ahorita yo
no he tenido problemas de
discriminación. Tal vez el idioma. Sí,
hay gente, como en todo, ¿no?, igual en
México, hay gente que es amable, y que
no, pero. . .en lo que ha sido la escuela,
la gente que me ha tocado convivir,
pues, tengo la impresión de la gente de
aquí que es amable, que trata de ser
sociable. . .

**Okay. Bueno, muchas gracias por
participar.**

Okay, Nenete, thank you. What would you like to tell me about -- about what you did, about any thoughts that you have or anything you want to tell me about these activities you did with me?

I just thought it was going to be more -- some of them were easy and some of them were difficult, but it was fine.

Um-hum. Okay. What opinions do you have about what you did?

I think I don't have such memory
(laughs).

You think you don't have such a memory, like a good memory?

Because I don't remember a lot of things
(laughs).

Okay.

Yes.

So that -- you noticed that, that it was hard ...

Yes.

... to remember all the words?

Yes, but now I know how much I depend on other people.

Okay. Okay.

Okay.

What else do you think about some of these things, any other opinions or thoughts that you have?

No.

Okay. Well, let me ask you spec- -- some specific questions.

Sure.

How did some of these activities compare to things that you have done in school when you were growing up, things you did in school? Were they the same or different or ...

They were about the same from when I was going to school.

In school you did things like this?

Yes, we ...

Okay. So this reminded you something of school?

Yes.

Okay.

But I'm always in school still, though, because I have my kids (laughs).

Tell me more about that.

Because I have to participate in activities sometimes and I go and help in the school.

Okay.

Because having, you know, the kind of kids that I have is just like different levels, so one day I can be in high school, the next day I can be in elementary (laughs).

Um-hum. Yeah, lots of ...

Still a lot of students. Yeah.

You were just telling me a moment ago that you sometimes when someone says "Test," then you feel a certain way. Can you tell me more about that?

Oh, very nervous. Very nervous, especially -- I know how to do it, how to perform, it's just the word "test" scares me. I get very nervous.

Is it different if I call it "an activity"?

I think it is. It makes a lot of difference.

What is it that happens when I say "test"?

I don't know, it's just I get nervous, it blocks me out, blocks my memory out. You know, it's just like can't think and can't do it right and -- but if you say, you know, "I would like to work on some activity," it's different.

Um-hum.

But the word "test" just makes me panic.

From your experience, is that something that you think is just something that's special to you or is it something from Mexican culture or Mexican school?

It's maybe -- no, it's maybe the way I was raised because my mom was so strict.

Okay.

I think that's what it is.

Tell me about that.

Well, she was just -- she was just very strict and, uh, she always told us, "If you do something wrong, you will know about it and you will pay the consequences of it." But the word "test" used to scare me.

Do you think there might be consequences of doing something wrong on these things?

Well, no, but if -- you know, the word "test" blocks my mind, like my brain freezes it (*laughs*).

Maybe that's where that has its roots for you, is in your mom being very strict ...

Maybe.

... and telling you, "You must always get the test right, you have to do it right because it's not okay to do it wrong" ...

It's not acceptable.

Maybe ...

Yeah, maybe that's it.

Okay. The other thing you were telling me earlier was a little bit about some of your experiences filling out some of those surveys ...

Yes.

... and you were thinking about your mom and some of the cultural things.

Can you tell me some more about your thoughts?

Sure. Well, you know, I, uh -- because our cultures are very strict, they've been banishing little by little, and, uh ...

When you say "our cultures," you mean ...

Our culture, Mexicans.

Mexican culture.

Yes, our traditions are very, you know, like our beliefs are very strong and like, um, to start with you have to stay virgin until you get married ...

Um-hum.

... and here in the United States it's very liberal, you ...

Um-hum.

... concentrate more on birth control than staying virgin (*laughs*).

Right.

And, um, transmitting diseases ...

Um-hum.

... instead of staying virgin. To my mom that's no-no. For us it's a very strict tradition.

Okay.

And ...

And you're in between a little bit, you are saying, because your mom was more strict, your children are living

now in Denver and you have to be in between?

Yes, I have to accept a lot of those liberal ideas, or work with them, and to make them not so liberal but not so strict.

Okay. What do you think some of those questions that I -- that were on those surveys, what do you think that has to do with thinking, with memory or concentration? Does it have anything to do with that?

Oh, it has a lot to do with it.

It has a lot to do with it? Tell me ...

Yes!

... tell me how.

Because you really have to think about like accepting other Mexican cul- -- you know, like the Mexican people around you with their cultures, their ideas. It really gives you a lot to think about.

Um-hum.

Because there's different ideas everywhere.

Okay.

And the more -- and the older age you go to, the different you have to respect it.

Um-hum.

I mean you don't have to agree with it, but you have to respect it.

Um-hum.

That gives you a lot to think about.

Yeah. Okay.

It puts you back at the burner (*laughs*).

What about with, uh, someone having a good memory or a bad memory and then taking some tests to show a doctor how good their memory is or how bad their memory is, do any of those things about culture have anything to do with that?

I think it does.

How?

I think it does. Because you're -- I think there's a lot of people you have to, uh, remember, even though you don't want to, because you have to retain with you.

Tell me what you ...

Retain.

... mean, a little more about that?

Retain. Well, you know, first of all, I mean you have to -- like I -- I am Mexican, so I have to still respect, you know, the customs and traditions and like all of our beliefs were very strict and like we were not allowed to go out by ourselves.

Um-hum.

Now, I do allow my kids to go out, but as long as it's one with the other.

Um-hum.

You know, I have to -- (inaudible), but they're having, you know, companion, in case that something happens.

Okay.

And I'm not making it the way the old tradition was, like you chaperone someone ...

Um-hum.

... you be with them so they don't do nothing wrong.

Um-hum.

I'm making it more fun for them.

Okay.

I think it's -- I'm still following, you know, some type tradition there but it's still kind of a little loop and a little -- at the end.

Okay. You also said that your father and mother, neither of them had formal education.

That's right.

What if they came in to this room ...

Uh-huh?

... and did the same activities that you just did, what would it be like for them having not gone to school?

I think they'll do great.

They would do great?

They will do great because you would not know they don't know how to read or

write. I mean probably my mom would tell you, "Well, this printing is too small. Can you read it for me?"

Um-hum.

But you wouldn't know that she doesn't have any education (*laughs*).

That's an interesting point. So she might try and cover it up a little bit?

Oh, yes.

You might not know that it -- that she doesn't have very much education?

That's right.

Would she be able to do well on these tests?

She would.

She would? Even though she doesn't have very much education?

Uh-huh.

So remembering a list of shopping items?

Oh, my mom was the greatest.

She could remember those words?

She is the greatest at remembering everything you tell her. I can tell my mom right now one thing, and two weeks later I go and she says, "What happened with that? Remember you were telling me that you were going to do this, or that we were supposed to do this?"

Um-hum.

I mean she has very good memory.

What about making designs with blocks or touching the blocks in a certain order, she'd do okay with that, too?

She would do very good.

Okay. So her education really ...

Like I said ...

Even though she doesn't have very much education, she'd still do okay?

Oh, my mom could count you your paycheck from one penny to the end.

Okay.

That's why, you know, it was hard for me to believe that she didn't have no education, because my mom knew math very good.

So it's actually she can't read and she can't write very well, or almost at all, but apart from that, if you tell her something just by saying it to her, not showing it in writing ...

I guess she has the extra thoughts that we -- when we go to school, we come -- have tendency of losing. Like the cats, they say they have seven lives ...

Um-hum?

... well, my mom has that really good -- she's a good listener.

Um-hum.

She listens to you, and if you tell her, "Well, I like tacos," and then she sees you a year later ...

She'll remember?

... "Hey, you want to come over for a taco? Come on, we're having tacos tonight."

Uh-huh.

You know, she remembers ...

Uh-huh.

... things you tell her that you -- you don't think that she's paying attention.

Okay.

So, you know, that's why it was hard for me to believe that my mom would ...

Tell me if this sounds right. I've been told in the past that some people who have less education, they don't do so well on tests like this because the tests are a lot like what people do at school, so if you didn't go to school ...

Um-hum.

... you may not be able to do the tests very well.

Certainly not ...

But you're saying something different.

But remember what I told you, I feel like I'm going through school because I have kids and I go to school with the tests.

Um-hum.

My mom had a lot of kids and she helped me go through all these tests without ...

Ohhhhh.

And so she is not as smart like a person that sits -- sit in the classroom for six hours, but yeah, those times that she spent with us were quality times.

Okay.

And she kept everything. I mean -- and I'm not lying to you, but my mom knows how to make clothes. She doesn't know how to read a measurement tape ...

Um-hum.

... but she measures with her fingers.

Um-hum.

She says, "Okay, well, have to go two like this and then three fingers."

Um-hum.

That's your waist size. And you walk away, next time when you go she'll say, "Okay, your pants are ready."

So she did it right?

She fixed them right.

But she didn't write down anything?

She didn't write anything down.

Yeah.

But she knew how.

Yeah.

Like she will make you a shirt, she will measure your back, and when you come and you try that shirt on, that was a perfect size.

Yeah. Okay.

And, you know, that's why I couldn't believe it.

Okay.

You know, maybe she has that extra sense that we don't have ...

Um-hum.

... of being in the classroom and, you know, listen to teacher or listening to the other students, or even struggle, you know, trying to learn something.

But knowing her and having completed these activities, you think that she and maybe even your father, they would do fine?

That's right. Definitely. . .

Okay.

... just fine.

Okay. All right, that's good to know. Uh, what was it like for you to complete these activities in English? You use English a lot, but it is your second language.

Yes.

What was it like to complete them in English?

What would it be?

What was it -- what was it like, how was it for you ...

It wasn't bad.

... to do them in English?

Um-um, it wasn't bad.

Okay.

I guess I'm used to both of them, but I feel more comfortable in Spanish.

What would it have been like to do the tests in Spanish, would it have been different, do you think?

No.

The same tests, remember a list of words, tell me ...

No, the same.

... as many words as you can think of.

I think it's the same. I guess you learn to -- to live and deal with it. Like my job is only English.

Um-hum.

My house life is in Spanish (*laughs*).

Um-hum.

Well, it's actually bilingual because my kids, you know, talk ...

(Inaudible)?

... a lot of English. Yes. And like when I get into the computer, it's only English.

Um-hum.

So I turn my radio on and it's only Spanish. I turn my TV on, it could be English, **could be Spanish.**

So for you, le da igual?

It's the same.

Well, it's the same -- it's the same thing?

Yes.

Okay, okay. What were you thinking about when you completed these tests, these activities? What kind of thoughts were in your head?

Coming into my mind (*laughs*)?

Yeah.

Well, I guess the ideas about -- because it asked a lot about getting along with, uh, you know, like how would you, you know, get along with other, you know, races, all that kind of stuff.

Um-hum.

It really tells -- you know, gives you a chance to think about a lot of things that you really do on a daily basis and don't - - don't admit to yourself.

Um-hum.

Like I, myself, I didn't, you know, realize that I spend a lot of time with English-speaking people.

Um-hum.

Not realizing that my job does require a lot of English ...

Right.

... because that's all I do.

Right.

But, you know, to me it's natural. It's just. . . And, you know, talking to my kids.

Okay.

Sometimes I'm calling them home and I say, "Well, did you already do this?" and they say to me half in English, half in Spanish, which if I had someone calling them, they say, "What?"

Right.

But, you know...

What about some of the other activities, like the tests where you had to put together blocks or remember words or read as fast as you can, what thoughts were in your head during those tests?

(*laughs*) Test!

Test, just ...

Scared! (*laughs*)

Being scared?

Yes.

Okay.

The word, 'test.'

Okay. So mostly ...

It makes me ...

... some anxiety ...

... it makes me more nervous ...

... some nervousness?

... there we go. Um-hum.

Okay. Okay. Um, just a couple more questions. If you were to go to a doctor ...

Um-hum.

... because let's say you were in a car accident and you were having problems with some of your thinking, what kinds of things could these tests, do you think, tell a doctor about your thinking?

Well, if they check these -- if they check these tests how I was doing before and they check me how I'm doing then ...

Um-hum?

... then they can see the difference.

The difference in what?

In how I was, you know, really comprehending everything, and then probably after an accident you probably don't comprehend everything as well.

Okay.

Or you're not able to communicate as well.

Okay. All right. Um. . . (pause) okay, just one more question. How did you decide to participate in the study?

Because I believe I'm losing my memory.

Is that real? Is that why?

No (*laughs*).

No, you're joking?

No, because I believe that as we get old we have tendency of forgetting things ...

Um-hum.

... more things than when we were younger.

Um-hum.

And -- and I told my husband about it, you know, "I'm going to go for these tests." He goes, "I do believe they want, you know, study at a certain age, like you're blocking a lot of things." Like on the grocery thing, you know, for me it's easy not to remember everything, but then I tell my kids, "Remember when we're going to the store we're going to get this and this and this," and so they help me. I don't have to really memorize everything.

So you wanted to do some things to get an idea how you would do on those ...

Yes.

... to see how you would do?

Yes. Because sometimes I -- I believe we will lose my memory. Sometimes

it's like a block is there, even though we may not see it or feel it, but it's there, we're not as good as we used to be, because before we used to be very good about remembering phone numbers, addresses.

Okay.

Names, places. And now we (inaudible) remember the places (*laughs*).

Okay. I'm going to tell you a little bit more about -- about -- to follow up on that in just a second, but let me ask you one last question.

Sure.

What would you tell somebody about this acti- -- about this project or this -- this study? If you were to tell another person who's a bilingual Mexican/Mexican-American person, what would you say?

I'll say take it, because, you know, sometimes we don't know-- I mean even though we feel that we're still capable of remembering everything, we realize that we're not. I mean maybe it's just the test -- the word "test" that scared me, but I'm sure there's a lot of people that are not so afraid of the word "test" ...

Um-hum.

... that are losing it, too.

Okay.

I say that because they have a lot of other things in mind or a lot of more important things to do or ...

So you would encourage them to -- to do this to find something out?

To at least to get a -- to get the understanding that something is happening to their brain.

Okay.

It's not functioning as well.

Okay.

I mean it's just not functioning like a 18-year-old.

Okay.

(Inaudible.)

That would probably be right, most people as they get older their brains don't -- don't work the same way ...

Don't function as well, no.

... as they did when they were younger.

Because when I first, uh, got married, I remembered my husband's Social Security Number because that was our insurance ID.

Um-hum.

So every time I took the kids to ...

Right.

... a doctor, I had to show that number.

Right.

That hasn't been not even ten years ago. I don't even remember it anymore.

Um-hum.

And I had it stuck into my brain.

Um-hum.

You know, every time when they asked me for the ID, I -- boom.

So you're noticing forgetting things?

Yes.

Yeah.

So age is getting to me (*laughs*).

Okay. Anything else you want to tell me about this before I turn off the tape recorder?

No.

Okay. Well, thank you for participating.

You're welcome.

Okay, Jose, thank you for doing that with me.

Pleasure.

Um, tell me really generally, what do you think, what are your opinions about what we just did, what kind of thoughts do you have about it?

Interesting, to say the least.

Okay.

Very interesting.

Interesting how?

Interesting in the aspect of, uh, how could something so simple, under the circumstances, can be difficult, like coming up with words that start with a certain letter. I mean I use them every day, people use them every day, but when you put this to pressure, it's kind of difficult to come up with the words.

So it has to -- seems like it's pretty simple, when you put it into this context of like testing ...

Um-hum.

... then there's some pressure and it's more difficult than you think?

Yeah, absolutely, because you want to do your best, you want to, you know, do well.

Yeah. Why did you want to do your best?

Why? Because that's what I agreed upon at the beginning of this test, this project.

Uh-huh. You felt like when you were doing these things you wanted to be doing your best ...

Right.

... you were already trying your hardest?

Yes, I was.

Yeah, I could tell that. I could tell.

So my hands are all sweaty and stuff and that's probably -- but when I tend to relax a little bit, I was doing a little better.

Um-hum.

I could feel myself relax. But then I was getting -- I was like, "Oh, my god, this is a test," so I started to get nervous.

Was there anything that I did, do you think, that made you feel a certain way?

No, no, you were relaxing and stuff, it's just, uh, that's just me, my nature, I get nervous.

Um-hum. Just you personally ...

Comes to tests I ...

... kind of ...

Yeah.

Like a test?

Right.

Did it remind you of things that you did in school?

Yeah, for sure (*laughs*). Um-hum.

Tell me about some of your experiences in school. You know, like in comparison with this.

In comparison? Well, in comparison, I always try to do my best, you know, to set myself in front of others and stuff when it came to academics, so. . .

Uh-huh.

So that's why. And unfortunately I didn't study. Instead of doing the right thing and study, I would hang out with my friends, but yet when it came down to the test, I wanted to do the best, which didn't make no sense. I didn't want to be average just like everybody else ...

Um-hum.

... so I would like study the night before versus study two days prior, and then all the pressure and stress, you know, just came on.

So you had some experiences with testing when you were back in school ...

Um-hum.

... and actually this kind of brought that back a little bit, is that right?

Stress, um-hum. The stress of taking that test, or that final. For sure.

Okay. And you found yourself when you were relaxing a little bit you did -- you felt like you did a little better?

Um-hum. Yeah, for sure.

Okay. Any other thoughts that you have, just general things about what we did that you want to let me know?

No. I thought it was kind of fun, as a matter of fact.

Kind of fun? All right.

Well, now it is (*laughs*).

All right. Now we did this in the context of a -- of a project. I'm trying to get some information into like research, but mostly people will do these things when a doctor wants to know if they have any kind of damage to their brain and thinking difficulties, mental ability problems. What do you think it would be like for you to take these kinds of things, do these kinds of tests and everything, if there was that riding on it?

If that was riding on it?

Um-hum.

Of course you're going to try to do your best so they won't think you're crazy, or nothing, but I think it would be better. I think the stress that it put me in today ...

Um-hum.

... it was to show that, you know -- yeah, because obviously it's a community they're targeting right now is the Hispanic community ...

Um-hum.

... and I don't want you to think that, oh, you know, they don't have the thinking ability that other people do.

Okay.

And that's what appeared to me that that's what it was.

Was there -- can you feel that as you're sitting here with -- I'm a -- I'm a White non-Hispanic researcher?

No, not just because you're White or anything ...

Um-hum.

... it's just research that has to be done, it's been done over many, many years, you know. People do that, segregate certain people, not segregate but put a group of people together with similarities, like backgrounds or religion, whatever the case may be, and study that group. I mean it's been done through history, so ...

Okay.

... it's not a problem for me.

Okay.

But still, I want to do my best, you know.

Tell me more about that. You said that you want to do your best so that someone, me or somebody else ...

Um-hum.

... wouldn't think that ...

Hispanic -- this certain community, being that it's all Hispanic, we want to, you know, do well just for that reason so you don't think, 'Oh, they're dummies or they're slow, they don't have the same thinking ability,' or anything like that.

Okay, so I targeted the Latino/Hispanic community ...

Well, your study, I'm not saying you personally ...

No, no, right, right ...

... but your study.

Right, right, right, but I -- this is the group that I chose to target for this ...

Right.

... for this project, and when you, as a member of that group, come in maybe to do these activities ...

Yeah.

... you feel some pressure to show that.
..

Right. . .

...the community is not somehow stupid or ...

Right. Well, no, I mean probably you guys wouldn't ever think about it because ...

(Inaudible)?

Uh, there are ignorant people that do, you know, just because they're not the same religion or color of skin or sex, or

all men are smarter than women. There are people that. To me, it's stupid.

Okay.

And they are, they're (inaudible). Do some people think that? I'm sure. But, um, I don't know.

Okay. You were saying, 'What's the definition of? ...

Intelligence, you know. To me, intelligence is not, "Oh, he didn't remember or recall certain words or whatever," intelligence is -- because I could take a doctor or a lawyer up to a little town in Mexico and they probably wouldn't be able to survive ...

Right.

... because it takes a certain intelligence to live off the land, to work with what you got, you know.

Right.

Some people are going to be like, "Oh, my god, how am I going to grow corn on this ground?" you know.

Yeah. So you're looking at the definition of intelligence, it's sort of relative, it's different in different places?

Exactly. That's what I think. The ability to adapt to certain environments ...

Uh-huh.

... that's the intelligence, because, um, Amazons, take someone out there, for example, between the Amazon, can be— achieve, a doctor or something with a

college degree and everything, he might have died out there ...

Yeah.

... because he don't know how to survive off the land.

Yeah.

Now you take somebody, an Indian that lives there, or an Amazon, and he will survive, you know.

Yeah. Now this is great ...

Is he actually more intelligent or less intelligent? What's intelligence?

Think about that, what you just told me and this line that we're on right now. Now think about the tests that people design to decide if someone -- maybe if they're intelligent or not or if there memory is good or not ...

Um-hum.

... do you need to do something different? I mean how do you -- how do you decide if someone has some memory problems if they're a farmer in Mexico ...

Right.

... as opposed to if they're a doctor?

As opposed to be ... Uh ...

Do the tests need to be different?

No, they should be measured their skill that their -- grew up on. Like, I don't know, my dad tells me a story about how they used to grow corn, and he'd tell me

how they used to throw like two grams of -- two grams of corn ...

Um-hum.

... and one of beans or whatever, and you have to do that mathematically in order, you know, back and forth.

That's right.

And, um, well, if that person's just used to doing that, never went to college, he doesn't know how to add 6 plus 4, I mean we can't expect to give him a test that's "Here, write these numbers down," you know? We can't expect him to do that. But if he can go back to his environment and perform those tasks that he was before, then obviously he doesn't have brain damage or any kind of difficulty.

That's a good point.

That's what I think.

So the skills that are important to him ...

Right.

... that he grew up with ...

Right.

... that he learned, not the ones that are important in somebody's university somewhere else?

Right, or different environment -- because he might -- like I say, he might not know, you know, because he never went to school.

Okay.

So do we say that a person's got, uh, brain damage or inadequate thinking ability because he can't add 6 plus 4? No. Even though most people can, but that doesn't mean that that individual can.

Great. Let me just ask you a couple more really quick questions. What were you thinking about when you completed these tests and activities, what type of things were coming to your mind?

What was I thinking? I was like, "Oh, my god, I got to do my best," and, uh, I was just "Please help me."

"Please help ..."

"Help me, God." (*laughs*)

"Help me God," you were asking God to help you?

Absolutely.

Okay. All right. Any other thoughts that were -- you know, that you had when you were doing these, even some of the surveys or anything?

Uh. No. I felt, honestly, a bit distracted. No excuses on my performance, of course.

Um-hum.

But, uh, just because yesterday I went to the settlement court ...

Yeah.

... with my wife, our lawyers were involved ...

Yeah.

... and personally I'm still thinking about it.

Yeah.

So ...

I can understand that.

... I can't get my mind off of that.

Right.

Yeah. That's where I was when you called, as a matter of fact.

Oh, okay.

With the lawyer.

Okay.

With the lawyers. So, and I didn't get home until 3:00. I'm doing okay, you know, but ...

Well ...

... that's in my mind. I mean my wife, my kids ...

Yeah.

... our divorce is going to be the 15th of next month.

So you were weighed down by memory problems.

To concentrate, you know, it's -- I guess deep in my mind I guess it is because I caught myself thinking, I'm like, "Wait a minute, I'm doing this right now."

Right. Okay.

(Inaudible.)

Well, I really appreciate you coming in even amidst all of that kind of thing.

Oh, it's not a problem.

Thank you. One more -- one more question. How did you decide to participate in the study?

Why? Because, uh, I think, uh, this study will do good for society, you know. Not just for Hispanic people or anything but for society as a whole. It will give you a chance to value as people get, got a disorder of thinking ability or if, like you say, get into a car accident and how we can better their memory like the way it used to be at least.

Um-hum.

So it's going to be good. I mean I think it's a good study.

So you wanted to help, is that right?

Um-hum, absolutely.

Yeah? Okay.

I like to help out, whenever I can.

How about the way that I presented it, did anything about the way that I presented it do you think made you want to participate, or can you imagine that anything I did would make somebody not want to participate? If you remember back to me announcing it at church.

Right. Well, the first thing that came to my mind is like, well, this guy is really smart and he's trying to better himself, because obviously you're bettering yourself, going to college, you're a student ...

Um-hum.

... and his study makes a lot of sense, what he's trying to accomplish, so why not help him out just by volunteering for a few hours or whatever. You know, why not?

Okay. Did you have any apprehensions or anything that, you know, "Well, I'd like to do this, but I wonder ..."

It was mostly my work schedule -- work schedule.

Okay.

I wonder if, you know, he would have the time when I have the time. But ...

Not fears about anything ...

No, not fears.

... or ...

No, I didn't have any. Not fears.

Okay. Can you imagine some people who, if you put yourself in somebody else's shoes who's Mexican or Mexican-American background may be saying, "No, that's really not something I want to do"? Can you think of any reason that someone might not want to participate?

Just someone? Because it was like -- I think everybody feels pressure when it comes to a test. No matter how much you prepare yourself, you obviously have that pressure. And some people just don't like to put themselves through that.

Um-hum.

I mean I did it because, you know, it helps you out, helps you study, it helps society.

Your desire to help overcame your ...

Yeah.

... anxiety in not doing the test?

Of course (*laughs*).

All right. Well, thank you Jose, thank you so much. Anything else that you want to tell me, anything else to add now that we've talked a little bit?

Well, some of those questions ...

Yeah?

... they're pretty short, it's like one sentence. Maybe they should be ...

On the surveys you mean?

They were a little hard for me to understand.

On the survey?

Right. Yeah.

Can you think of an example?

If I could see the one. . .

Yeah.

We talked about it earlier.

Not this one (indicating) but the other one?

Right.

Yeah, sure.

Towards the very back. (Pause.) I think it was -- maybe this one up here, too. Okay, let's take this one for example.

You have to say it clearly so that ...

Okay.

... the recorder can hear it.

Scale 2, Number 9 ...

Uh-huh?

... "I have difficulty accepting some behavior exhibited by Mexicans." That all Mexicans behave this way. I mean like they dress differently, they come from different parts of the country. I mean like right now, when I ...

(Side A of tape ended.)

So let's say -- you were saying you got like in a leisure suit ...

Right.

... and Mexicans are different ...

Yeah. Mexicans are different. I mean they -- like it says here, I mean they behave differently.

So you had a hard time with that question?

Right.

And that type of question?

Right. Now maybe if it was like -- if you enclose ten people and they all behave the same way, same ideals, then I can tell you a little bit more about that. Mexicans in general is a large, large population.

Okay. Okay. So what was it specifically about this kind of question that gave you trouble?

Um, just, uh ...

Or that -- you know, that brought up your thoughts?

The word -- I have difficulty accepting some behaviors exhibited by Mexicans. Like I say, Mexicans are a large population ...

Oh, you had difficulty you meant about the whole group?

Yeah. (Inaudible) just stereotypes the whole Mexican issue, you know, because there's just too many and too many behaviors.

Okay.

It's not -- I'm not sure, you know, how to explain it, but they behave differently.

And so for you, you actually answered a lot of these questions that you have "Not at all," the lowest amount of difficulty accepting some of these

ideas and behaviors exhibited by these groups ...

Right.

... because as a whole group you don't have that problem?

Right.

Maybe with a certain person ...

Right, exactly, certain people.

Okay. That's good feedback about that, thank you very much.

No problem.

Thank you.

Ramon, thank you for doing those things with me.

You're welcome.

Thank you very much. I'll ask you just to speak clearly so that the microphone can pick you up and I can ...

Okay.

... understand what you say, okay?

Okay.

Let me ask you just a few questions if I can. I'm going to ask you really generally first, what do you think about what we just did? Tell me some of your thoughts.

Well, I -- I think it's -- maybe not me but somebody else might benefit from it, you know, in the long run. I don't think it would help me, but I'm too far gone anyway (*laughs*).

So you don't think of it in terms of something that gives you any help personally but you think ...

Well ...

... it might benefit somebody else?

Yeah. I think -- that's exactly my point, yes.

How would this benefit somebody else, do you think?

Well, when the study is taken, you come to a conclusion, that somebody might be able to benefit from it, you know.

Um-hum.

I, myself, I don't think that it's going to help me in any way. But for the benefit of others, I don't see why not help do these things?, you know. I don't think, uh -- I, myself, I don't think I'm that far gone, I have ...

When you say "far gone", tell me what you mean so I understand.

I mean my mind, my mind I don't think is that -- that bad, really.

No, of course, you did just fine on those things for someone ...

And ...

... who's your age.

And -- but somebody else might, you know, in a long way you might be, uh, working on some medicine or something that might help somebody, you know, and these things will help them to make that, I think is good, I think it's very good.

Okay.

It looks simple, but -- but then sometimes you became my age, you know, you become a baby, too, you know, so ...

Tell me a little more about that, what do you mean?

(laughs) Well, just this morning I was saying -- I was talking to my wife and saying, 'It is incredible that us, from a baby, just before we die we become babies again.

Interesting. And how do you become a baby, how do you mean that? How does a person become a baby again?

You get -- you get to the point where you can't clean yourself, you have to be cleaned, you have to wipe the mouth, you've got to be bathed, and you -- exactly what you do with a baby.

So you come full circle.

Full circle around.

Full circle around? Yeah. Okay. All right. Well, some of these things that we're learning right now are hopefully going to be able to help people who might be, you know, some people would say losing their minds a little bit.

Yeah.

People who have trouble ...

Well, and that's what I'm ...

... remembering things and concentrating ...

Maybe I didn't explain myself, but that's what I was getting at.

That's what you were getting at, people ...

Yeah.

... who can't take care of themselves ...

Yeah.

... so much because their mind is kind of gone?

That's right.

Okay.

Yeah.

Yeah, that's part of the folks who are going to maybe be helped ...

Yeah.

... by this.

Well, that's -- that's what I was getting at, yeah.

Okay.

I didn't explain myself very well, but ...

No, you just -- you explained yourself just fine, just fine. You could see I understood what you meant. Did you have any thoughts going through your head when you were doing these activities that you want to tell me about ...

Yeah.

... anything that came to mind?

Yeah. Well, just when I was playing with the cubes, you know.

Okay.

Well, it's incredible, but small things like that, you know, in a study mean -- they mean a lot. Where a person like myself,

you get to playing with that and "What's he trying to do?"

Um-hum.

"Make a fool out of myself or something?" *(laughs)*

Um-hum, um-hum.

And, uh, but that-- I understand the purpose of it, though, myself, but -- maybe a lot of people don't, but I, myself, I understand the purpose of it, so it's okay with me to do it, you know.

Were you ...

Don't think nothing of it.

Were you surprised by anything that we did or was anything unexpected?

Yes. The names. I can't remember them. And ...

The words that we did?

Yes.

That list of words?

Yeah, that -- that kind of threw me off because I us- -- I usually hear something and I don't forget it, but I don't know why, it just went out of my mind. It's funny, but in the beginning I started counting them and I can get so far, but then when I got to the end, I forgot the first ones.

Okay.

See?

By the time you got to the end of the list ...

Yeah ...

... you forgot the first ...

Yeah, because I'm concentrating on the others, see?

Uh-huh.

And that -- your mind goes bye, bye *(laughs)*.

Were you trying your hardest on these things that we did?

Yes.

Yeah? Why?

Yeah.

Just so I understand, why were you trying your hardest?

Well, like I say, it's interesting, it's interesting, you know, and at the same time I thought, "Well, maybe my mind is going a little bit, and I'll find out for sure."

"I'll try my hardest ..."

Yeah, yeah.

"... to see what happens."

See how I'm doing, yeah.

Okay.

And I can see, you know, that it -- it throws you off a little bit, especially those words. I don't know why, but

usually -- usually I can -- I can keep them in my mind a little longer than I did.

The other activities didn't throw you off so much?

No. Except that cube.

Making the designs with the cubes ...

Yeah.

... or touching the cubes? Which one?

Not the last one.

The blue cubes or the red and white cubes?

The red and white.

The red and white.

Yeah. Yeah, those are the ones that -- there was one that I couldn't do it.

Um-hum.

And that threw me off a little bit. But ... I expected that, though.

Okay. What do you think, if you went into a doctor's office and someone said, "Okay, Ramon, we're going to evaluate some of your thinking abilities. Here, take this test"?

Well, I, myself, I would let them.

Yeah?

Yes.

You would let them?

I would let them, yeah.

Would you be surprised by any of the activities, or what kinds of thoughts would you have if a doctor put all these things in front of you and said, "This is going to show me..."

No, I -- usually I don't-- I don't say anything for things like that because I know they're done for a purpose. I know they're done for a purpose.

You know they're done for a purpose?

Yeah.

What purpose would that be in a doctor's office?

My benefit, of course.

Your ...

Well, sure. He's taking care of me to begin with.

Of course.

So I'm not going to question him on what he does.

You're just going to do whatever he puts in front of you because it's going to benefit you?

That guy went to school more than I did to begin with.

Okay. Okay. That's interesting. So he went to school more, he maybe knows ...

He knows a little more -- maybe a couple words more than I do (*laughs*).

Okay, okay. You trust him?

Of course I do.

Trust the doctor?

Yes.

Okay.

Not all doctors, though.

Not all doctors?

No.

Yeah? What kind of doctors don't you trust, do you think?

Well, you can tell right away sometimes that they're not interested in you.

Yeah? That's important ...

There're doctors and there're doctors. They're human beings to begin with.

Um-hum.

And they're different.

You said you can tell when they're not interested?

Oh -- oh, yeah.

So it's important for you that the doctor be interested?

Interested in you, they listen to you.

Listen to you?

Yeah, and listen to what you have to say.

Okay.

And answer your questions and things like that.

Okay.

Doctors, some of them aren't -- they don't -- they don't care.

Okay.

There're doctors and there're doctors.

There's doc- -- there's different kinds?

There's different kinds. They're human beings.

Okay. Well, let me ask you a couple more specific questions before we wrap this up.

Okay.

You took these tests in Spanish; how was that for you?

Well, like I say, some of it -- if you throw me a few more words, you know, I -- there's some of them I can't -- I don't quite understand it.

In Spanish?

In Spanish, yeah.

You don't use them so much probably?

I don't use them, no.

How about the other tests ...

I ...

... the other activities?

I get it in front of the television. They go away, I -- if they got something on the Spanish, the minute they go away, I just turn it over to English because I -- that's what I understand.

That's what you prefer?

Yeah. Yeah, yeah, that's -- I do that all the time.

How do you think these activities would have been for you if you did them in English instead?

I think they would have been the same. I think the understanding is there, you know.

For you it would have been the same?

Yeah, I think so. Some of them, some part, somebody else maybe not. And I'll have to tell you one thing.

Yeah?

About four years ago, I used to try to speak Spanish and I couldn't do it.

Um-hum.

It was a lot of words but I -- I remembered a lot of them, but a lot of them that I -- I just, knew almost what I wanted to say but it just wouldn't come out.

Um-hum.

Because I was just keeping up in my English.

Things have changed since then?

Yeah. Oh, yeah, because I got the family and they're all-- they speak Spanish, they don't speak a word of English ...

Um-hum.

... and I have -- in four years I've built up my Spanish again that I can talk to them. But four years ago I was -- my wife, that's when I met her ...

Um-hum.

... it was hard for her to understand me.

Hard for her to understand you in Spanish?

In Spanish.

Yeah. All right.

Yeah.

Well, let me ask you another question. You have about four years of education in -- of formal education in ...

That's about it.

... in Mexico. Did any of this remind you of anything from school, or do you think that -- you know, what do you think that your educational background has to do with completing some of these activities?

Uh, well, these activities, they kind of helped me a little bit on it. But I just -- I just don't think in those terms, you know.

Don't think in what ...

I don't ...

... terms?

In terms of how long I went to school.

Um-hum.

I really don't -- don't look at that like really an education.

Um-hum.

Because it was a traumatic time for me in those years.

When you were young you mean?

Yeah, when I was young, yeah. I had a grandma that was a tyrant and she was, I mean, uh, (inaudible), no, because they turned me over to my grandmother ...

Uh-huh.

... when I -- when I was born.

Um-hum.

And my grandma was raising me.

Um-hum.

And she was one of those people that for the -- for anything would just beat us up.

Oh ...

Yeah.

... a tyrant like you said.

And that -- yes. I mean it was traumatic years for me, so I don't -- I don't think I learned that much from it.

Okay.

I did ...

You're -- you're saying, if I'm understanding you, that your education is not -- your educational background you don't put too much stock in with regards to these activities or whatever?

That's right, yeah. No. Uh, what I learned by myself -- we'd all gone to school in United States. I put that way ahead of what I learned in school.

Okay. All right. Learning through life.

Through life, yeah.

Yeah.

The hard way.

Yeah, yeah. One other question, how did you decide to participate in this?

I don't know ...

What made you make that phone call?

... I was looking at that -- that paper, I get the paper three days a week ...

Uh-huh.

... and I was looking at it and, as a matter of fact, it's there, the ad was still there, in that one there (pointing) ...

Yeah, that's right, the ad was still there.

Yeah. I was looking at it and I read it and then I -- I thought, "Well, maybe that would be good for me."

Good for you?

Yeah. And that -- that's when I got it.

All right. What were you -- when you say "good for me," what was the -- good in what way?

Well, because when you get to my age you do a lot of things and forget a lot of things, you know. (Inaudible) a lot of times I bring an appointment and I get that thing -- see, if I don't put it in my wallet, I put it someplace else.

Um-hum.

And I know I can remember at that time.

Um-hum.

But two days later they ask me where I was and -- yeah, I have trouble and don't remember sometimes.

So you thought good for you because sometimes you're noticing ...

No.

... forgetting?

No. I thought maybe my mind is not as good as I think it is.

Okay.

And I'm -- it's a good way to find out how bad it is (*laughs*).

All right. Well, I can tell you what, you -- you performed just normally,

just like you should for a man of your age ...

Oh, thank you.

... on these -- on these tests. Uh, you know, this is not a clinical evaluation ...

No, no, no, no.

... which means that a doctor doesn't really ...

Absolutely.

... review the records, I'm not a doctor, but, you know, you don't have any risks in your history, in your medical history or anything, to really have any more cognitive problems -- that means problems with your thinking -- than a man of your age would. As people get older, their thinking gets a little bit worse, you know, bit by bit. That's what you were saying, you know. I mean obviously someone who has really bad thinking abilities, you know, might become more like a baby, but, uh -- and really not be able to take care of themselves, but you're not even close. You just notice some things bit by bit as you get older, don't you?

But that's -- that's one of the big problems with a lot of people when they get old and they get to a retiring age ...

Uh-huh.

... if they had a job in younger years, and then they get up to a retirement moment.

What's that problem?

They go sit down, they don't practice.
They don't get up and move around, they
don't exercise at all.

They just stop.

Yes, they stop completely.

Um-hum.

And then all the things you have in the
body die completely.

Yeah.

And that's the biggest problem.

Right. Okay.

That's a big problem. You have to keep
active. If you don't, you're dead.

**That's the way to manage your
diabetes for sure.**

That's right.

**All right, well thank you, Ramon,
thank you very much.**

Yeah. Thank you.