5-27-2015

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Do cultural and perceptual factors matter?: An investigation of factors impacting intelligence test scores of Latinos/Hispanics in the United States

by

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A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

2015
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Abstract

DO CULTURAL AND PERCEPTUAL FACTORS MATTER?: AN INVESTIGATION OF FACTORS IMPACTING INTELLIGENCE TEST SCORES OF LATINOS/HISPANICS IN THE UNITED STATES

by

Mary E. Ignagni

Adviser: Dr. Charles Scherbaum

This paper examined societal and cultural explanations regarding the score differences seen between Latinos/Hispanics and Whites on intelligence tests through focusing specifically on possible explanations for the scores obtained by Latino/Hispanic test-takers. In this paper, it was argued that additional unique factors may impact the test scores of Latino/Hispanic test-takers. Specifically, racial and ethnic self-identification, ethnic centrality, acculturation, cultural distance, test perceptions, and ethnicity were explored as possible unique factors. In addition, an attempt was made to explain within group differences. A non-experimental study was utilized in which a final sample of 194 participants completed an intelligence test and measures of the variables. It was found that self-identification, generational status, and country/region of heritage were significantly related to test scores. Limited evidence was found for the other variables as well as some unexpected findings. Strengths, limitations, and implications of the findings, as well as future research directions are discussed.
Acknowledgements

I would like to thank Dr. Charles Scherbaum for being my advisor. His guidance and mentoring throughout the process of this project as well as quick turnaround of drafts kept me focused and pushing forward. I would also like to thank my committee members for their insights. Especially I would like to thank my core committee members, Drs. Karen Lyness and Harold Goldstein for their comments, which guided the process to make it better. I would also like to thank my research assistants: Liubov Phillips, Olena Marukhnyak, Joel Engelman and Kimberely Goonie. All the sessions they ran helped me collect the data in a relatively quick period. Special thanks Liubov and Olena for assisting with the data input. They helped make a tedious project go quickly and correctly.

I would like to thank all my family and friends who believed in me even when I did not. Thank you for standing by me throughout the years. In particular my parents, Frances and Anthony Ignagni, who stood by me when I decided to quit working full-time to go back to school full-time to get my masters in order to move on to my doctoral work. It was their faith in me that got me through. Also thank you to my parents for the care packages sent every month, even when I did not need them, which kept me smiling and fed. Dad, I wish you were here to see this I know you would be proud. Mom, just thank you for everything.

Finally to all my friends and peers in the program, the sense of camaraderie has been an inspiration to me. Our helping each other out and our collaborations have aided me in getting through the program. I hope to bring a sense of all of this to my future endeavors.
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Chapter 1 – Introduction

The literature within both the testing and personnel selection domains have indicated that cognitive ability tests (i.e., intelligence tests) are one of the most valid predictors of both academic and job performance (Schmidt & Hunter, 1998). However, there is a concern with using such tests in high stakes situations, namely these tests have been shown to display differential results for ethnic/racial subgroups (Sackett, Schmitt, Ellingson, & Kabin, 2001). The group differences and the adverse impact that occurs due to the use of intelligence tests have important implications for individuals, organizations, and society at large (Edwards & Arthur, 2007; Verney, Granholm, Marshall, Malcarne, & Saccuzzo, 2005).

Many explanations have been asserted as to why these differences occur including: true group differences, pervasive societal bias affecting both informal and formal education, the nature of the measurement, and cultural differences impacting scores (e.g., Neisser et al., 1996; Verney et al., 2005). However, these explanations have not been fully investigated for Latinos/Hispanics. Rather, these explanations have primarily been investigated for Blacks/African-Americans. It is the position of this paper that the research on sources of score differences for Blacks/African-Americans does not necessarily generalize to Latinos/Hispanics. The present study looked to fill this gap in the literature regarding the lack of research within this domain for Latinos/Hispanics.

The basis for focusing specifically on Latinos/Hispanics included the fact that Latinos/Hispanics are the largest, most ethnically diverse non-dominant group in the United States (U.S.). Yet, score differences on intelligence tests between Latino/Hispanic test-takers and White test-takers have received insufficient research attention. There has
been much research conducted on test score differences on intelligence tests; however, the emphasis has been on one group (i.e., Blacks/African-Americans) to the seeming exclusion of Latinos/Hispanics (Dovidio, Gluszek, John, Ditlmann, & Lagunes, 2010; Reynolds, Willson, & Ramsey, 1999; Verney et al., 2005). This focus on Blacks/African-Americans is due to the central role that Black-White relations have had in U.S. history and culture. The research on this one comparison has shaped the foundation of the theoretical understanding of both score differences between White test-takers and all racial minorities in psychological testing.

While this research may have given us an idea of why there are score differences between Latino/Hispanic and White test-takers the use of the Black-White comparison to explain differences for Latinos/Hispanics (or any other group) may be inadequate as the factors driving the differences for Black/African-American test-takers may not be the exact same factors driving the difference for Latino/Hispanic test-takers. Thus, the findings for Black/African-American test-takers may not generalize to Latino/Hispanic test-takers. Even when the factors are the same, their meaning or manifestation may be markedly different. One reason for this difference and for why the findings for Black/African-American test-takers may not apply is the notion of culture in the context of Latinos/Hispanics (i.e., for this group culture and race interact in a way that does not happen for other racial groups). Therefore, this study attempted to overcome what many consider to be the insufficient use of the Black-White comparison as an explanation for why Latino/Hispanic test-takers score as they do on intelligence tests (e.g., Alcoff, 2003; Grubb & Ollendick, 1986; Landale & Oropesa, 2002).
As alluded to above, there is a question within the literature regarding cultural differences between individuals taking an intelligence test and those on whom intelligence tests are normed and the impact these differences has on scores. Specifically the question is between the cultural knowledge that influences an individuals’ attitudes, values, beliefs, and behaviors and the use of White, Eurocentric (i.e. dominate, mainstream American culture) developed tests to assess ethnic/racial minorities (Verney et al., 2005). The issue arises whether it is appropriate to use such tests on groups other than individuals who are born within the mainstream culture when the tests contain cultural knowledge. Helms-Lorenz and van de Vijver (1995) assert that when intelligence test scores of immigrant individuals are compared to native individuals test scores, the former tend to show lower mean scores. These authors state that a reason for the score differences may be due to the cultural loading of the test (Helms-Lorenz & van de Vijver, 1995). Cultural loading is a term used to indicate either explicit or implicit references to a particular cultural context (i.e., the culture of the test creator, culture within the test, or culture of the administration of the test; Helms-Lorenz & van de Vijver, 1995). Therefore tests made by one cultural group may not be appropriate for another cultural group due to the cultural knowledge that is required to appropriately answer the questions.

This question regarding the intersection between the measurement of intelligence and culture is interesting for comparisons involving Latinos/Hispanics. In the U.S., there has been a large and steady increase of Latinos/Hispanics within the U.S. population. In addition, a large number of these individuals are immigrants (i.e., 1st generation) or 2nd generation individuals for whom mainstream cultural knowledge is new therefore they do not have the cultural knowledge and information needed to perform well on standardized
tests of intelligence. Due to this open question, the present research investigated variables that are directly related to culture (i.e., acculturation and ethnicity). These two variables are linked to cultural influences as well as cultural differences between test-takers that are not of the mainstream culture as well as those individuals who are mainly used to norm these tests (i.e., mainstream culture Americans). This project, therefore, investigated cultural influences as one explanation for test score differences between groups, specifically focusing on the effects for Latinos/Hispanics within the U.S.

As noted previously, most of the focus of the research within this domain has been conducted utilizing Black/African-American test-takers. In the cases where the research does focus on Latinos/Hispanics, the emphasis has been on either looking at Latinos/Hispanics as one large, undifferentiated group or studies investigating primarily individuals from one ethnicity (i.e., Mexican immigrants or Mexican-Americans) to the exclusion of other Latino/Hispanic groups. There is a need to refocus attention to explanations for the scores obtained by Latino/Hispanic test-takers as well as between Latino/Hispanic ethnic groups (e.g., differences between Cuban-American and Mexican-American test-takers) as there is tremendous cultural diversity within the Latino/Hispanic demographic category. Thus this study looked to explain the scores obtained by Latino/Hispanic test-takers on intelligence tests as well as within group test score differences (i.e. between one Latino/Hispanic ethnic group and another Latino/Hispanic ethnic group) where possible.

In sum, this study attempted to fill the gaps within the literature regarding the research on Latino/Hispanic test-takers and intelligence test scores obtained by individuals within this group. In order to help fill the research gaps a unique combination
of variables was utilized that may be affecting Latinos/Hispanics test scores. Specifically, this study investigated the effects of psychological identification and related processes (i.e., self-identification, ethnic centrality, acculturation, and cultural distance), individual background (i.e., ethnicity), as well as perceptions (i.e., test perceptions) on intelligence test scores for Latinos/Hispanics. While studies have investigated many of these variables separately or investigated the impact of just two or three of these variables (e.g., acculturation and cultural distance; Suanet & van de Vijver, 2009), there is no study to my knowledge that examines the interaction of all these variables and their impact on intelligence test scores and that focus specifically on Latinos/Hispanics. In addition, previous studies of Latinos/Hispanics tend to ignore the within group differences between Latinos/Hispanics from different nations, this study attempted to investigate these within group differences where possible.
Chapter 2 – Intelligence

There are many definitions of intelligence including defining it as a general ability to learn, to reason, to solve problems, and to think abstractly (Nessier et al., 1996; Peterson & Whiteman, 2007). Other definitions look at intelligence as abilities underlying an individuals’ knowledge acquisition, understanding, and learning (Demetriou, Kyriakides, & Avraamidou, 2003). However, the majority of these approaches to defining intelligence reflect the concept of general intelligence or psychometric ‘g’. When viewing intelligence as ‘g’, definitions consider intelligence as being both hierarchical and an overall, general, summative ability (Ittenbach, Esters, & Wainer, 1997). Gottfredson and Saklofske (2009) assert that ‘g’ is closely aligned with full-scale intelligence test scores and conceptually aligned with what most individuals view as “intelligence”. ‘g’ is a unitary, psychometric definition of intelligence and is considered to be the common core to all tested mental abilities (Carroll, 1993; Gottfredson & Saklofske, 2009). Other definitions describe intelligence as a cultural system (Ogbu, 2002) as well as an individual difference in cognitive abilities (Hunt & Carlson, 2007). As can be seen by reading these varying definitions, there is no fully agreed upon definition of intelligence (Neisser et al., 1996). However, there is the notion of learning and information processing that permeates these as well as most definitions of intelligence.

Despite that there is no definition that all intelligence researchers subscribe to, the Cattell-Horn-Carroll (CHC) Theory of Intelligence (McGrew, 2005) has become the most commonly accepted theoretical model of intelligence. CHC theory is considered to be a psychometric theory of intelligence as it is based on the notion that the structure of
intelligence can be discovered through the analysis of the interrelationship of scores on tests (McGrew, 2005). The CHC theory integrates two theories: the Cattell-Horn Gf-Gc theory and Carroll’s (1993) three-stratum theory (Edwards & Fuller, 2005; McGrew, 2005). The Cattell-Horn theory puts forth the notions of fluid intelligence (Gf) and crystallized intelligence (Gc). The theory states that through factor analysis, the general ability factor measured by intelligence tests is made up of two factors (i.e., Gf and Gc) rather than just one (i.e., ‘g’; Cattell, 1963; Horn & Cattell, 1966). Further work on the Gf-Gc theory identified approximately 10 broad abilities including fluid and crystallized intelligence (McGrew, 1997). Carroll’s three-stratum theory states that the total range of cognitive ability factors contains factors at three strata: first, second, and third (Carroll, 2005). The third stratum is the highest and considered to be the general factor of intelligence (i.e., ‘g’). Stratum two is composed of approximately 10 broad factors, which include fluid intelligence and crystallized intelligence. The final stratum, one, is made up of first-order factors grouped under the second order factors with some indicating mastery (i.e., demonstration of ability along a difficulty scale) while others are speed factors (i.e., scores indicating how quickly an individual can perform a task or the rate of learning and memory on a task). CHC theory integrates these two theories such that CHC theory classifies cognitive abilities into three strata: specific, broad, and general abilities (Alfonso, Flanagan, & Radwan, 2005; Edwards & Fuller, 2005; Horn & Cattell, 1966; McGrew, 2005).

Of the broad cognitive abilities that make up CHC theory, fluid intelligence and crystallized intelligence are of interest here due to the differences we see between Latino/Hispanic test-takers and White test-takers on these dimensions. However for the
purposes of this study, the focus will be on crystallized intelligence, as most intelligence measures seem to primarily capture this intelligence factor and it is the one that many have argued is the most likely contributing to score differences between racial groups (e.g., Goldstein, Scherbaum, & Yusko, 2009).

Crystallized intelligence was described by Cattell (1963) as loading on tests that require knowledge from earlier learning (e.g., achievement in geography or history). Horn and Cattell (1966) further stated that Gc results from the influence of experience, education, and acculturation. Narrow abilities that have been found under Gc include general verbal information, information about culture, foreign language proficiency and aptitude, language development, oral production and fluency, etc. (Alfonso et al., 2005; McGrew, 1997). It primarily represents language based capacities such as verbal comprehension and communication (e.g., language, reading, listening; Gottfredson & Saklofske, 2009). Many researchers consider crystallized intelligence to be school based as well as a problem solving ability reflecting the opportunities that an individual has to attain particular knowledge and skills acquired in education within a specific culture (Helms-Lorenz & van de Vijver, 1995; Hough, Oswald, & Ployhart, 2001; Hunt & Carlson, 2007; Kaufman, McLean, & Kaufman, 1995).

In contrast to experience, education, and acculturation influencing Gc, it has been asserted that fluid intelligence is influenced by the ability to adapt (Horn & Cattell, 1966). Therefore, the environment, training, nor learning influences fluid ability (Helms-Lorenz & van de Vijver, 1995; Hough et al., 2001; Kaufman et al., 1995). It represents a general ability to reason well including quantitatively (Gottfredson & Saklofske, 2009). Cattell (1963) stated that fluid ability loads on tests that require adaptation to new
situations. Thus, it is viewed as the ability to solve novel problems as well as the ability to be flexible and adaptable when working on tasks (Hough et al., 2001; Kaufman et al., 1995). Gf represents an individuals’ information processing capability facilitating both fast and accurate learning as well as reasoning in novel situations (Gottfredson & Saklofske, 2009). The abilities that underlie Gf include general sequential reasoning, induction, speed of reasoning, quantitative reasoning, etc. (Alfonso et al., 2005; McGrew, 1997).

Based on these descriptions of Gc and Gf it can be noted that Gc is more focused on learning acquired in formal settings such as school whereas Gf is more innate. Thus the notion of Gc being acquired in formal settings may impact individuals who are acculturating into the mainstream culture negatively. That is, individuals who have not gained a majority of learning within a formal setting within the mainstream culture may be at a disadvantage when taking tests that tap Gc. This may be due to the mainstream cultural knowledge and skills that the individual does not gain by being a part of the formal learning settings within the mainstream culture.

Therefore, the question arises regarding the implications of how the dimensions of intelligence manifest differentially between groups. The following will review research regarding racial/ethnic group differences on intelligence test scores in order to explicate the difference seen within these dimensions and lay the foundation for the hypotheses offered in this study.

*Group Differences in Intelligence Test Scores*

Research has indicated that there are group differences between Whites and minority groups in the U.S. on intelligence test scores (e.g., Hough et al., 2001; Roth,
Bevier, Bobko, Switzer, & Tyler, 2001). However, the research on ethnic/racial group differences has focused mainly on Black-White differences (Roth et al., 2001). Therefore the following discussion will discuss both Black-White differences and, where possible, Latino/Hispanic-White differences in order to establish an understanding of the group differences that have been found on intelligence test scores. In their meta-analysis, Roth et al. (2001) found an overall uncorrected $d$ score of 1.10 between Black and White test-takers favoring Whites in all analyses. Within an educational sample of Black test-takers versus White test-takers, the $d$ was 1.12 with the GRE (Graduate Record Examinations) having the largest influence on this score. When the GRE was removed the $d$ lowered to 1.0 (Roth et al., 2001). Looking at an industrial sample, Roth et al. (2001) found an overall $d$ of 0.99 with type of test having a differential impact. For tests of ‘g’, the $d = 0.99$ while tests of math skill and verbal skill each had a $d$ of 0.76. When the General Aptitude Test Battery (GATB) was removed, the math score remained the same but the verbal score was lowered, $d = 0.71$. There were also different scores within the educational sample, overall verbal skill scores were $d = 0.95$ while overall math skill scores were 0.96. Roth et al. (2001) also reported that differences between Black and White test-takers on measures of intelligence tended to increase as the ‘g’ saturation (i.e., Spearman Hypothesis) increased.

Within this meta-analysis, there was much less data available for Latino/Hispanic-White differences compared to Black-White differences (Roth et al., 2001). With the data that was available, Roth et al. (2001) found an overall $d$ of .72 between Latino/Hispanic and White test-takers in favor of Whites in all analyses. Within the industrial samples a $d$ of 0.83 was found while in educational samples the $d = 0.71$. The standardized group
difference within industrial samples on measures of math skill was $d = 0.28$ whereas on verbal skill the $d$ was 0.40 (Roth et al., 2001). The same trend was found within the educational samples on educational tests but was weaker. Overall the differences between Latino/Hispanic test-takers and White test-takers were smaller than those observed for the Black/White comparisons (Roth et al., 2001).

Hough et al. (2001) also conducted a meta-analysis investigating racial/ethnic group differences on standardized intelligence tests. In their meta-analysis, the authors found that Black-White score differences on standardized intelligence tests were 1.0 standard deviation (SD). This means that, on average, Black test-takers scored 15 points lower than White test-takers on standardized intelligence tests that have a mean of 100 and a standard deviation of 15. In the same meta-analysis, it was found that Latino/Hispanic test-takers, on average, scored .5 SD points lower than White test-takers. This indicates that Latino/Hispanic intelligence test scores typically lie between that of Black test-takers and White test-takers (Neisser et al., 1996). When diving deeper into the differences between groups we see a clearer picture being drawn regarding what appears to be driving the differences between Latino/Hispanic and White test-takers.

Utilizing Hough et al.’s (2001) meta-analysis we can see where the differences are occurring between Latino/Hispanic and White test-takers. Looking at the components of crystallized intelligence, the difference in verbal ability between Latino/Hispanic test-takers and White test-takers is .4 SDs while in quantitative ability the difference is .3 SDs. These findings are consistent with the Roth et al. (2001) meta-analysis. When looking at science achievement, the difference between Latino/Hispanic and White test-takers is .6 SDs. There is no difference in spatial ability or memory between
Latino/Hispanic test-takers and White test-takers but there is a difference of .4 SDs in mental processing (i.e., cognitive speed and decision speed). Thus it appears that the difference between Latino/Hispanic and White test-takers lie more in the components of crystallized intelligence as well as those components related to learning in a formal setting rather than other broad strata.

Explanations of the Racial/Ethnic Differences in Intelligence Test Scores

Generally what has been indicated through the meta-analyses reported here as well as other research is that the higher the ‘g’ saturation of a test (i.e., the proportion of observed test variance due to ‘g’) the greater the racial/ethnic differences (Reeve & Lam, 2007). This is known as the Spearman Hypothesis (Jensen, 1998). Race-blind score use indicates that when tests with a high ‘g’ saturation are used to select, place, or promote individuals, racial imbalance in outcomes occurs whenever racial/ethnic groups differ in their average level of ‘g’ (Gottfredson & Saklofske, 2009). Therefore, it is important to determine and to understand the reasons for the differences that are seen. However, understanding racial/ethnic differences in intelligence test scores is complex given the number of factors impacting scores. Scores depend on both intellectual ability as well as information provided, which can be dependent upon an individuals’ prior experiences as well as knowledge, culture, language, etc. (Fagan & Holland, 2002). In addition, research has indicated that intelligence test scores increase as individuals who are not from the U.S. take on mainstream sociocultural characteristics (Gonzales & Roll, 1985).

Theoretical explanations of the score differences on intelligence tests tend to take one of two forms focusing on either the role of genetics (i.e., race) or on environmental factors
(e.g., culture) to explain the group differences (Suzuki & Valencia, 1997). Thus, there is no agreed upon reason for the difference seen between groups.

However, two overarching explanations have come to the fore to explain the differences. One explanation states that the differences are due to individual, inherent reasons (e.g., the Spearman Hypothesis). The other explanation asserts that there is contamination in the measures contributing to the differences between groups thus there is a measurement problem. One source of contamination, for example, is differences in cultural knowledge, which lead to differences between groups in the availability of the required cultural information needed to solve the item. The following will briefly discuss the Spearman Hypothesis followed by a discussion of differences in cultural knowledge and information as a source of contamination in test scores.

The Spearman Hypothesis, which is based on Black-White differences on intelligence test scores, is one explanation of group differences (Edwards & Fuller, 2005; Hartmann, Kruuse, & Nyborg, 2007; Jensen, 1992). The hypothesis holds that the differences seen between minority groups and Whites on intelligence test scores is dependent on the ‘g’ loading or saturation of the test (Hartmann et al., 2007; Jensen, 1992; te Nijenhuis & van der Flier, 2003). It states that the higher the ‘g’ saturation the larger the difference (Hartmann et al., 2007; Helms-Lorenz, van de Vijver, & Poortinga, 2003). Therefore, according to the hypothesis, in order to understand the nature of the differences on intelligence test scores between minority groups and Whites, the nature of ‘g’ must be understood (Jensen, 1992). It has been asserted that the hypothesis has been confirmed repeatedly utilizing data from Black/African-American and White test-takers (Jensen, 1998), but others question this assertion (e.g., Scherbaum, Goldstein, Yusko,
Ryan, & Hanges, 2012). In addition, there is uncertainty regarding its generalizability to other ethnic/racial groups (Hartmann et al., 2007). Hartmann et al. (2007) investigated the generalizability of the Spearman Hypothesis to Latinos/Hispanics compared to Whites. The study investigated the differences utilizing two large databases (The Vietnam Experience Study (VES) and the 1979 National Longitudinal Study of Youth (NLSY)). The authors found that White test-takers scored approximately 0.8 SD above Latino/Hispanic test-takers with the differences on the tests correlating significantly with the ‘g’ saturation of the tests in the VES database but not as significantly correlated in the NLSY database. Hartmann et al. (2007) assert that while their study supports the generalizability of Spearman’s Hypothesis to other ethnic/racial groups, it does not do so unequivocally. Thus, it may not just be the ‘g’ saturation of intelligence tests that is the sole source of the differences in scores between Latinos/Hispanics and Whites.

An alternative explanation is that observed differences between non-dominant groups (e.g., Latinos/Hispanics) and Whites in intelligence test scores is due to contamination in the tests. Sources of contamination put forth in the present study include differences in culture between Latinos/Hispanics and Whites as well as differing cultural information and knowledge. It has been asserted in prior research that differences in cultural information and knowledge impact the assessment of cognitive ability (e.g., DeShon, Smith, Chan, & Schmitt, 1998; Fagan & Holland, 2009; Sternberg, 2004).

Latinos/Hispanics are an immigrant population with many individuals tied to their heritage culture in some manner (e.g., actively practicing heritage cultural values; speaking the heritage language). This indicates that some Latino/Hispanic individuals may be less grounded in the culture of America especially those who are first generation
immigrants thus impacting the cultural information available to these individuals. The differences in cultural information impacting intelligence test scores is exemplified by research that indicates scores increase for Latinos/Hispanics as they become integrated into mainstream White culture and take on White sociocultural characteristics (Gonzales & Roll, 1985). Thus, the more individuals within the Latino/Hispanic group understand White cultural information the higher their scores on intelligence tests.

In addition to cultural information impacting scores on intelligence tests, it has been asserted that the cultural complexity of a test may be confounded with the cognitive complexity (i.e., ‘g’ saturation) of the test (Helms-Lorenz et al., 2003). Cultural complexity is defined as being the extent of specific cultural knowledge that is required to perform well on an intelligence test (Malda, van de Vijver, & Temane, 2010). Based on this notion, individuals from and practicing different cultures may be disadvantaged when taking intelligence tests created in cultures other than their own culture. It has been asserted that many tests of intelligence measure skills that are in part acquired through growing-up in a specific culture (Sternberg, 2004). Within this explanation is the notion that different ethnic groups define intelligence differently (Sternberg & Kaufman, 1998). For example, Latinos/Hispanics tend to emphasize contextualized information within their definitions of intelligence while Asians and Whites tend to emphasize less contextualized information (Sternberg & Kaufman, 1998). Research has indicated that intelligence test scores increase for Latinos/Hispanics as a function of the number of White sociocultural characteristics they possess (Gonzales & Roll, 1985).

The question arises regarding the impact of one’s heritage culture on intelligence test scores when that culture is not Western (i.e., not U.S. based). In addition to the
impact of one's culture, the influence of sociocultural factors also comes into question. We know that school achievement outcomes, such as scores on standardized tests, are impacted by sociocultural factors such as: the social capital available, cultural origin and history, socioeconomic status, and the educational context (Nichols, White, & Price, 2006). For example, in the U.S., collaborative learning (which resembles collectivistic cultural values) improves assessed learning among Mexican-American children but not among White Americans (Westby, 2007). A reason put forth for this difference is the cultural orientation of the groups. That is, Mexican-Americans tend to be more collectivistic while White Americans tend to have a more individualistic value orientation (Westby, 2007). Thus, based on this explanation, an individual's cultural orientation may impact his or her achievement as well as his or her scores on intelligence tests. However, this explanation does not seem wholly adequate due to the sociocultural context of the U.S. (i.e., the impact of race, ethnicity, etc. on outcomes). Thus, a gap in the literature arises from not clearly understanding how factors such as cultural origin and history, race, etc. interact to impact intelligence tests scores.

The differences in intelligence test scores between groups with different sociocultural adaptations may be primarily due to cultural differences (Ogbu, 1994). For example, Mexican immigrant children are supposed to listen and understand, but not speak and are not to answer questions adults already know the answers for (i.e., what occurs in testing; Westby, 2007). Ogbu (1994) asserts that minorities in urban areas have differences in test scores from Whites due to cultural differences, differences in cognitive socialization, their minority status as well as their cultural frame of reference. Cross-cultural research indicates that differences in intelligence test scores are not caused solely
by racial differences or by “race”; the gap remains even when there is no racial difference (Ogbu, 2002). For example, there is a difference in intelligence test scores between Hasidic Jews and Yeshiva Jews in New York, but not a racial difference between the two groups (Ogbu, 2002). As a result the differences in intelligence test scores between minorities and Whites are due to the formers minority status (Ogbu, 1994).

Ogbu (2002) put forth a model of minority status in the U.S. in which he delineates two types of status: immigrant/voluntary and non-immigrant/involuntary. The distinction is not based on race but rather on history (i.e., the way the group became a minority in the U.S.). Based on this typology, voluntary/immigrant minorities include Latino/Hispanic individuals such as Mexicans from Mexico and Cubans (Ogbu, 1994). Voluntary/immigrant minorities moved voluntarily to the U.S. as a means to higher economic well being and better overall opportunities as well as greater political freedom (Oggu, 1994). Thus, these individuals chose to come to the U.S. and were not forced to come to the U.S. through conquest, slavery, or colonization. This group does not interpret being in the U.S. as being forced (Oggu, 1994). Individuals within this status have been found to do relatively well in school after mastering the language and participate in the mainstream culture without fear of losing their heritage culture (Oggu, 1994).

In contrast to voluntary minorities are non-immigrant/involuntary status minorities. Based on Obgu’s (1994) typology, these are individuals who come to the U.S. from seized territories and have historically been oppressed. This includes individuals who were initially brought into the U.S. against their will through slavery, conquest, or colonization (Oggu, 1994). Bohon, Johnson, & Gorman (2006) assert that Mexican-Americans and Puerto Ricans are examples of involuntary minorities and are excluded
groups from U.S. society. This status is maintained for these groups as Mexican-Americans in the Southwest were initially incorporated by conquest and many Puerto Ricans feel they are more or less a colonized group (Ogbu, 1994). Many Puerto Ricans feel their “country” is a colony of the U.S., consequently their status is ambiguous as Puerto Rico is not a state within U.S. policy (e.g., they cannot vote on a federal level) and it is not an independent nation. It has been found that individuals of involuntary minority status usually do not do well in school and score lower on cognitive and academic tests (Ogbu, 1994). This may be due to having an oppositional frame of reference. That is, they have no desire to overcome cultural and language differences as this would threaten cultural or language identity (Ogbu, 1994).

Another view is that adolescents from minority groups fail within the U.S. educational system due to differences in language, learning and perceptual style, as well as cultural values (Trueba, 1988). This view asserts that cultural context affects both social and cognitive development and that important differences exist between cultures (Trueba, 1988). These cultural differences lead to the development of different sets of social and cognitive behavioral repertoires (Okagaki, Frensch, & Gordan, 1995). For example, children may learn skills from their Mexican-American parents at home which do not work well in the U.S. school environment (Okagaki et al., 1995). Both Ogbu’s and Trueba’s theories emphasize the effect of cultural factors on racial/ethnic minorities’ experiences within the U.S. educational system which impact test scores (López, Ehly, & García-Vázquez, 2002).

Much research has been conducted looking to identify factors associated with racial/ethnic differences in intelligence test scores, both within and between groups
(Suzuki & Valencia, 1997). Although the research presented above explains findings based on Latino/Hispanic participants, these are the exceptions within the literature that could be found. The majority of research focusing on differences in test scores is based on differences between Black/African-American and White test-takers. Current models of Latino/Hispanic-White relations are typically derived directly from Black-White models (Alcoff, 2003). A reason for the use of the Black-White model is that historically the defining form of intergroup relations in the U.S. socially, economically, and politically has been, what is called, the Black/White binary (Alcoff, 2003; Dovidio et al., 2010). The binary can be defined as race in America consisting primarily of two racial groups: Black/African-American and White (Alcoff, 2003). The understanding is that all other racial identities and groups in the U.S. are best understood through this binary and that all racial discrimination operates exclusively through anti-Black racism (Alcoff, 2003). Due to these assumptions, Latinos are often placed in the category of “Black” or “close to Black” which creates a notion of basically one continuum of racial identity in which all others are placed (Alcoff, 2003).

In addition it could be argued that, on average, Latinos/Hispanics and Blacks/African-Americans share the same socio-cultural aspects as many live in the same or similar circumstances. Therefore, Latino/Hispanic experience should be similar to that of Blacks/African-Americans. For example, many Latinos/Hispanics live in the same urban situations as Blacks/African-Americans in which individuals from both groups live in low socio-economic conditions. However, we find that even though Latinos/Hispanics and Blacks/African-Americans share a similar socioeconomic status Latinos/Hispanics
are unique with regards to scores on intelligence tests as they score higher than Blacks/African-Americans but lower than Whites on such tests.

Therefore, it cannot be assumed that Latinos/Hispanics share similar psychological issues as other minorities in the U.S., specifically Blacks/African-Americans. Many Latino/a theorists argue the Black/White binary is not adequate or sufficient to explain the racial realities of the U.S. (Alcoff, 2003). A reason put forth for the lack of fit between the Black/White binary and views of Latinos/Hispanics is partially attributable to race relations in the countries of origin (Landale & Oropesa, 2002). That is, race in Latin America and the Spanish Caribbean is viewed as being on a multi-category spectrum with Black and White representing end points (Landale & Oropesa, 2002). Therefore, Latinos/Hispanics may view and explain experiences differently from Blacks/African-Americans. Thus, the Black/White binary may not be adequate due to the factors that drive one racial group not being the same factors driving another racial group (Grubb & Ollendick, 1986). Grubb and Ollendick (1986) state that although we may share certain intellectual tendencies, as we are all members of a mainstream culture, there are unique cognitive attributes individuals have due to membership in different subgroups. It is due to the unique experiences and attributes of Latinos/Hispanics that it is important to investigate score differences for this group and to attempt to explain them apart from Black-White explanations.

*Importance of Investigating the Factors that many Impact Intelligence Scores of Latinos/Hispanics*

Much of the literature investigating score differences on intelligence scores centers on the differences between Blacks/African-Americans and Whites. As stated
above, this may not be adequate. The few studies investigating Latinos/Hispanics either looks at this group as one large, non-differentiated group or at Mexicans/Mexican-Americans specifically. Thus, much of the focus investigating score differences has been on Blacks/African-Americans or one specific Latino/Hispanic group to the seeming exclusion of other Latino/Hispanic groups. In addition, Latinos/Hispanics are one of the largest non-dominant groups in the U.S. as well as being the most ethnically diverse. The presence of Latinos/Hispanics in the U.S. is expected to increase in the future due to their immigration and fertility rates being higher than other minority groups (Choi, Sakamoto, & Powers, 2008). In fact, the Latino/Hispanic population grew by 43% between 2000 and 2010, four times the growth in the total U.S. population (Ennis, Rios-Vargas, & Albert, 2011). With regards to the current U.S. population of Latinos/Hispanics, based on the 2010 Census, 50.5 million (16%) of the individuals in the U.S. self-identified as being of Latino or Hispanic origin (Ennis et al., 2011). This is an increase from the year 2000 when this population made up 13% of the total population. This increase in the population of Latinos/Hispanics will have considerable societal as well as organizational implications due to differing cultural values. Thus, there needs to be a reorientation and focus of attention onto Latinos/Hispanics and the differing ethnicities within this group due to their growing presence in U.S. society.

Who are Latinos/Hispanics within the U.S.? In general, the pan-ethnic terms Latino and Hispanic are used in the U.S. to describe individuals from or with an ancestry from Central and South America as well as the Spanish Caribbean (i.e., Puerto Rico, Dominican Republic, and Cuba) and Spain. Utilizing data from the 2010 Census, it was reported that within the Latino/Hispanic population, people of Mexican origin were the
largest Latino/Hispanic group in the U.S. representing 63% of the total Latino/Hispanic population in the U.S. (Ennis et al., 2011). Puerto Rican was the second largest group being 9% of the Latino/Hispanic population while Cubans made up about 4% of the Latino/Hispanic population (Ennis et al., 2011). These three groups accounted for approximately three-quarters of the total U.S. Latino/Hispanic population.

Prior to explicating the racial and ethnic make-up of Latinos/Hispanics in the U.S., an explanation of the terms “race” and “ethnicity” must be given. Within this study the terms are used as separate and distinct constructs rather than as interchangeable notions. Race is defined based on biological characteristics (e.g. color of skin; Hunt & Carlson, 2007). Given this manner of defining race, within this study race is used to denote characteristics of an individual that are readily visible by others, such as the color of an individuals’ skin. Ethnicity, in contrast, is defined as an individual’s identity and cultural practices (Hunt & Carlson, 2007). Thus, ethnicity relates to the customs of an individuals culture such as utilization of heritage language, eating primarily heritage culture food, and practicing the values of the heritage culture. With these distinctions between race and ethnicity in place, the following will summarize the racial as well as ethnic make-up of Latinos/Hispanics in the U.S.

Summary of Latinos/Hispanic in the U.S.

Racial make-up of Latinos/Hispanics in the U.S. Beginning in the 2000 Census, the reporting of race and Hispanic origin changed from previous reporting. Individuals are now able to choose from five racial categories: American Indian or Alaskan Native, Asian or Pacific Islander, Black, White and Some Other Race as well as two ethnic categories: Hispanic origin and Not of Hispanic origin. Although Latinos/Hispanics are
known to reject census racial categories (Itzigsohn, Giorguli, & Vazquez, 2005), there is data from the 2010 Census regarding what was reported regarding race. On the 2010 Census, 94% of Hispanic respondents (47.4 million) reported being of one race (Ennis et al., 2011). Within this population, 53% of Hispanics identified as White while 37% identified as Some Other Race. Black was chosen as the race of 2% of Hispanics who identified as one race. One and a half percent chose the remaining three racial categories (Ennis et al., 2011). About 3 million Hispanics (6%) reported multiple races with a large proportion reporting race combinations involving ‘Some Other Race’. The question arises regarding how different ethnicities within the Hispanic population reported race.

Large within group differences have been noted between Latino/Hispanic ethnicities indicating that they are not a single cohesive cultural group (del Pinal & Singer, 1997; Itzigsohn et al., 2005; Suzuki & Valencia, 1997). For example, there are differences in the way race was reported on the 2010 Census between Latino/Hispanic cultural groups. Mexicans predominantly identified as White alone (53%) with 39% identifying as Some Other Race (Ennis et al., 2011). Compared to other groups, Mexicans were less likely to identify as Black alone (1%). Cubans, in contrast, were more likely than any other Hispanic group to identify as White alone (85%; Ennis et al., 2011). In addition, they were more likely than any other group to identify as Black alone (5%) and less likely to report as Some Other Race alone (6%) or as multiple races (4%; Ennis et al., 2011). Puerto Ricans were more likely than the other Hispanic groups to identify as Black alone (9%), less likely to identify as Some Other Race alone (28%), and more likely to identify as multiple races (9%; Ennis et al., 2011). Finally, Dominicans were much less likely to identify as White alone (30%) while being more likely to
identify as Black alone (13%; Ennis et al., 2011). In addition, they were more likely to identify as Some Other Race alone (46%) and more likely to identify as multiple races (46%; Ennis et al., 2011). Now that the racial make-up of the Latino/Hispanic population within the U.S. has been explicated, the ethnic make-up will be reviewed.

*Ethnic make-up of Latinos/Hispanics in the U.S.* In the 2010 Census, 50.5 million individuals self-reported as being of Latino/Hispanic origin (Ennis et al., 2011), within this group there is a great diversity of ethnicities. The following will be a discussion regarding the differing ethnicities which make-up the Latino/Hispanic group in the U.S. Individuals of Mexican origin increased by 54% in the U.S. population and had the largest number change (11.2 million), growing from 20.6 million in 2000 to 31.8 million in 2010 (Ennis et al., 2011). Mexicans accounted for about three-quarters of the increase in the Latino/Hispanic population. However, Mexican, Puerto Rican (36% increase), and Cuban (44% increase) origin individuals grew at a slower rate than any other group (Ennis et al., 2011). Individuals from Spain showed the largest percent increase (534.4%); the population of individuals from Spain in 2010 was six times larger than reported in 2000. In addition, individuals with an origin in Central and South America also showed large percent increases, increasing to more than twice their population from 2000 to 2010.

Due to the data discussed above, regarding the Latino/Hispanic population in the U.S., it is important that we refocus our attention onto this group in order to understand what is driving the intelligence test scores of Latino/Hispanic test-takers. The rapid shifts within the population (i.e., the increase in the Latino/Hispanic population) are making the cultural aspects of this group more important to study. Domestic jobs are being impacted
by these cultural shifts and there are implications not only for organizations but also for employees. Therefore a reorientation is needed, as the mechanisms driving what we see for Latinos/Hispanics may not be the same as the mechanisms for Blacks/African-Americans. For example, variables such as acculturation and ethnicity may be mechanisms that impact scores on intelligence tests for Latinos/Hispanics, but not for Blacks/African-Americans. These cultural variables are important to investigate as culture manifests itself differently for different groups. In addition, the other variables that were looked at in this study (i.e., self-identification, cultural distance, ethnic centrality, and perceptions about intelligence testing) may impact Latinos/Hispanics differently than they do for Blacks/African-Americans due to the former group’s immigration pattern and ethnic identification. The following chapters will discuss these variables in-depth, as they are believed to be impacting the scores we see for Latino/Hispanic test-takers on intelligence tests.
Chapter 3 – Self-Identification

Prior to discussing self-identification, the labels that are used by individuals need to be understood first. The reason to understand the labels that individuals use to identify themselves is that U.S. labels have significance as they place individuals into the major racial and ethnic categories used by the government as well as most social institutions (e.g., businesses and universities; Fuligni, Kiang, Witkow, & Baldeomar, 2008). In addition, by self-identifying with a label an individual will perceive and internalize differing stereotypes and behaviors based upon the label he or she uses. If the label the individual has identified with is one that is linked to poor performance on a standardized test (e.g., an intelligence test), this may impact the individuals’ outcomes negatively on such tests due to the internalization of the identification (Steele & Aronson, 1995). For example, if an individual self-identifies racially as Black/African-American and knows the stereotype that Black/African-American individuals score poorly on intelligence tests, he or she may score poorly on such a test due to the internalization and identification with this group and stereotype. Thus, it is important to understand how Latinos/Hispanics self-identify as it is believed that this variable is related to how Latinos/Hispanics score on intelligence tests.

The following is a discussion of the labels that individuals use to label themselves and that are used to label people within the U.S. The following considers the notions of race and pan-ethnic labels separately as race is distinct from ethnicity. The reason for this distinction is due to the historical and contemporary use of race within the U.S. and its relationship to power and privilege (Charmaraman & Grossman, 2010). These distinctions within the U.S. require individuals to learn the categories into which they are
placed and from which they must choose to place themselves (Fuligni, Witkow, & Garcia, 2005). Regardless of the theoretical distinction, however, elements from both race and ethnicity interact within an individual (Charmaraman & Grossman, 2010).

The ability of Latinos/Hispanics to identify not only with a racial label but also with a pan-ethnic (i.e., Latino or Hispanic) as well as ethnic (e.g., Cuban, Mexican, etc.) label differentiates them from Blacks/African-Americans due to the latter group only having racial labels available to them. In addition, Latinos/Hispanics have more options available to them racially (e.g., they can label themselves as White). Thus, the self-identification of Latinos/Hispanics is different from Blacks/African-Americans as Latinos/Hispanics have the ability to ignore racial labels if they wish and identify themselves ethnically in some manner. In addition they can label themselves racially different from what society may label them. This availability of so many different options to self-identify may be a reason Latinos/Hispanics as a group score higher than Blacks/African-Americans on tests of intelligence as they are not encumbered with stereotypes associated with being one race (i.e., Black/African-American). The number of labels available to Latinos/Hispanics makes this variable different for this group compared to how it is used when investigating Blacks/African-Americans. It is for these reasons that both racial and pan-ethnic labels are discussed as they each impact Latino/Hispanic individuals’ self-identification, which may ultimately impact scores on intelligence tests.

*Race and pan-ethnic labels.* The concept of race is often connected with culture and the social processes which comprise a society (Dobbins & Skillings, 1991). Racial classifications vary across countries impacting how others identify an individual as well
as how an individual identifies himself or herself. First, a discussion of labeling within Latin countries will be discussed followed by a discussion of labels in the U.S. Historically in many Central and South American countries as well as across the Spanish Caribbean (i.e., Cuba, Puerto Rico, and the Dominican Republic), marriage between indigenous peoples, Spanish colonizers, and African slaves produced a racially mixed population (Landale & Oropesa, 2002). Many of these Latin countries identify as nations of mestizos (i.e., “mixed” people). Thus, within Latin countries, definitions of race are more flexible and ambiguous than within the U.S. (Choi et al., 2008). In these countries, classifications tend to be based on social class, facial features, hair texture, language use, and demeanor (Choi et al., 2008; Golash-Boza & Darity, 2008; Landale & Oropesa, 2002). For example, in the Dominican Republic, many individuals identify racially with intermediate racial categories (i.e., Hispano/a) thus distancing themselves from “blackness” which is reserved for individuals from Haiti (Itzigsohn et al., 2005). Puerto Ricans also recognize an intermediate category of race and use terms such as trigueño and moreno (both terms meaning dark-skinned) to signify this category (Landale & Oropesa, 2002). Puerto Ricans living on the island often view race as equivalent to nationality, culture, or birthplace (Landale & Oropesa, 2002). Thus, it may be difficult for immigrants to the U.S. to identify as a particular race due to the differing meanings of race between their heritage culture and the mainstream U.S. culture (Choi et al., 2008).

The difficulty in labeling race for and by immigrants as well as later generations of Latino/Hispanic individuals may be in part due to race in the U.S. being based on biological characteristics (i.e., phenotype; Dobbins & Skillings, 1991). An aspect of the confusion for these individuals within the U.S. is that race labeling in this country tends
to assign individuals of a given group a set of cultural norms and values assumed to be distinct elements of a race (Dobbins & Skillings, 1991). In other words, race is often used synonymously with ethnicity in the U.S. Race is also often considered a sociocultural category within the U.S. that structures social hierarchies of power and prestige (Itzigsohn et al., 2005). Race tends to determine access to resources, organizes individuals and collective identities as well as actions (Itzigsohn et al., 2005). An individual’s choice of racial identity will depend on his or her encounters with U.S. society, his or her understanding of the social value of the different forms of identification, and the pressures to which the individual is subjected to by his or her social context (Itzigsohn et al., 2005). For many, racial identification is often associated with responses to racism and prejudice (Charmaraman & Grossman, 2010).

Once in the U.S., the difference in racial labeling between the U.S. and Latin American as well as the Spanish Caribbean countries comes to the fore for immigrants. For example, in the U.S. relatively dark-skinned Puerto Ricans are regarded as Black but are reluctant to identify as Black due to the stigma (Landale & Oropesa, 2002). Such individuals will often reject the racial dichotomy of Black/White and will instead emphasize his or her national identity as his or her “race”. That is, the individual will see his or her race as being, for example, Puerto Rican (Landale & Oropesa, 2002). Other immigrants will reject the racial identifiers of Black/White in the U.S. and instead will adopt pan-ethnic labels (i.e., Latino or Hispanic) as a racial identifier. For example, Puerto Ricans and Dominicans in the U.S. have been found to adopt Latino or Hispanic as their racial identification (Golash-Boza & Darity, 2008). In addition, Puerto Ricans seem to respond more often as “Other” on the U.S. Census as being their race due to this
category increasingly being viewed as a racialized synonym for Hispanic that fits into the U.S. racial hierarchy somewhere between White and Black (Golash-Boza & Darity, 2008). This leads to the question regarding what the pan-ethnic labels “Latino” and “Hispanic” mean in the U.S.

Latino and Hispanic are labels which are commonly used to refer to individuals of Latin origin within the U.S., but which are not used within those societies (Fuligni et al., 2008). The personal use of these terms within the U.S. stems from experiences individuals have with identity issues as well as due to regional differences and generational differences. Therefore, the use of one or the other term may be appropriate for a specific subgroup or within a certain situation (del Pinal & Singer, 1997). For example, Hispanic is more popular on the East Coast, especially among Puerto Ricans and Cubans whereas Latino is most popular in regions with concentrations of Mexican-Americans and Mexicans.

Some researchers view the term “Hispanic” as a racialized ethnic label which is used based on physical appearance rather than as a label based on an individual’s ancestry (Golash-Boza & Darity, 2008). Others view it as an ethnic group based on cultural heritage or social identity (Choi et al., 2008; del Pinal & Singer, 1997). The term Hispanic first came into the U.S. lexicon in 1973 by the U.S. Department of Health, Education, and Welfare and is considered to be a non-threatening neutral term avoiding negative associations with national/origin labels (del Pinal & Singer, 1997). In the U.S. census, Hispanic is defined as all people whose origin/ancestry is from predominantly Spanish-speaking countries such as Mexico, Puerto Rico, Cuba, Central America or South America (del Pinal & Singer, 1997; Golash-Boza & Darity, 2008; Oboler, 1998).
The result of this bringing together of individuals from many different countries, is that millions of individuals from a variety of national backgrounds are put into a single “ethnic” category making no allowances for varied racial, class, linguistic, or gender experiences (Oboler, 1998).

The term Hispanic ignores different ethnic groups within the different nationalities who have very different and often conflicting histories (e.g., indigenous populations; descendants of enslaved Africans; immigrants from Europe, Asia, etc.; Itzigsohn et al., 2005; Oboler, 1998). This indicates that within all the countries of Latin America and the Spanish Caribbean there is an exceptionally great diversity. Not all individuals from these countries will identify themselves as “Hispanic” (del Pinal & Singer, 1997). For example, Brazilians due to having a Portuguese heritage do not share the language nor the culture of Spanish speaking countries and thus rarely self-identify as “Hispanic”, however, in the U.S. Brazilians would be classified as such (Oboler, 1998).

In addition to the mix of ethnicities, there is a mix of races subsumed under the term as a Hispanic individual can be of any race according to the U.S. Census. Thus making the term “Hispanic” a racialized concept (Golash-Boza & Darity, 2008). The reason for this conceptualization is due to it being applied in the same manner as racial labels (i.e. White, Black, etc) in the U.S. (Golash-Boza & Darity, 2008). That is, the term “Hispanic” is used on the basis of physical appearance. Golash-Boza and Darity assert that individuals do not label others as Hispanic based on heritage but rather on markers such as phenotype, accent, etc therefore racializing the concept of “Hispanic”.

Many individuals who are labeled by someone else as “Hispanic” will identify as one race (i.e., White, Black, or Other) while others prefer to be known by an ethnic
national origin, or by terms denoting national origin, place of birth, or community (del Pinal & Singer, 1997). Thus the term “Hispanic” raises the question of how individuals are defined and classified in the U.S. as well as how these individuals define themselves within the mainstream cultures society (Oboler, 1998).

Many individuals who are labeled under the term Hispanic reject it as a government imposed label and as a label that is too broad (del Pinal & Singer, 1997). Instead, some of these individuals use the term “Latino”. The social construction of Latino is based on physical appearance as well as an individuals’ ethnicity, language, family, and religion (Johnson, 1998). Thus, the Latino identifier differs from racial labels in that it takes into consideration an individuals’ ethnicity and culture. The term originated in the West and Midwest and refers to individuals of Latin American descent particularly those born in the U.S. as well as individuals from Spain (del Pinal & Singer, 1997). The discussion above regarding the Hispanic label as well as the description of the Latino label points to a gap between the self-identification of people with Latin American or Spanish Caribbean heritage and the labeling created and used by others. This is due in part to the challenge presented to immigrants to the U.S. who are unaccustomed to the dominant racial/ethnic categories within the U.S. and who feel a need to acculturate into the mainstream society (Fuligni et al., 2005). In addition, the categories of Latino and Hispanic broadly encompass individuals from many countries who view themselves as being different from each other due to varying cultures. These differences as well as being unaccustomed to the use of the labels may impact how immigrants as well as later generations of Latinos/Hispanics self-identify within the U.S.
Self-identification. Self-identification can be defined as being built on an individual’s past experience of being part of a group and has both a social category and an affective component (Marks, Patton, & Coll, 2011). For example, there is being Hispanic (social category) and being proud of being Hispanic (affective component; Marks et al., 2011). Simply put self-identification is how the individual identifies himself or herself within a society based on his or her experiences. The reason for investigating how an individual self-identifies within this study is due to the choice of label being related to an individual’s perceptions of how others view him or her as well as how central his or her racial/ethnic identity is to the individual. For example, perceptions of discrimination may cause an individual to self-identify racially as Black, which then may induce the individual to accept the negative stereotypes of being Black within the U.S., which may then have a negative impact on intelligence test scores due to the stereotypes associated with being Black.

In daily life, a Latino/Hispanic individual can choose from numerous options and combinations of labels with which to label himself or herself such as pan-ethnic labels (Hispanic, Latino), specific ethnic heritage (Mexican, Dominican), or connecting with mainstream society (Mexican-American; Kiang, Perreira, & Fuligni, 2011). Based on the situation an individual may use different labels or categories to self-identify (Phinney & Ong, 2007). The label chosen will be influenced to some extent by the context of the situation and by how the individual is viewed by others (Phinney & Devich-Navarro, 1997). Therefore, self-identification is a learning process for individuals involving an understanding of the range of options available and deciding how he or she feels about the options as well as deciding to what extent the chosen option will be a part of his or
her overall self-identity (Fuligni et al., 2005). Due to this, selecting a label to characterize one self can be confusing due to the numerous options available (Kiang et al., 2011).

For many individuals, having a minority status will make his or her ethnicity more salient (Fuligni et al., 2005). Landale and Oropesa (2002) assert that individuals who encounter significant discrimination are more likely to reject the traditional U.S. conceptions of race and will adopt national or pan-ethnic identification. Thus, encountering discrimination may cause an individual to self-identify more with his or her heritage culture. This ability to self-identify with a heritage culture is more available to individuals of Latino/Hispanic heritage than to individuals who are Black/African-American. This is due to the range of self-identification choices available to Latinos/Hispanics such as an individual who is of Mexican heritage being able to self-identify as a Mexican-American or just as Mexican. This ability is partly due to the more recent immigration to the U.S. of individuals from Latin and Spanish Caribbean countries rather than the number of generations that Blacks/African-Americans have been in the U.S. In addition, an individual with Latin/Spanish Caribbean heritage can also choose to self-identify as being Latino or Hispanic thus increasing his or her choices of identification none of which is available to Blacks of African descent in the U.S.

When self-identifying, an individual can have both a racial identity and an ethnic identity, which may have implications for educational outcomes such as scores on intelligence tests due to the internalization of the meaning of the identity to the individual. Ethnic identity is a sense of belonging to a group based on similar heritage, values, traditions, and often language as such, it requires an examination of more than just the labels that are used to self-identify as it is made up of several different
dimensions (Charmaraman & Grossman, 2010; Fuligni et al., 2005). This sense of belonging to a group leads to a greater internalization of the values of the group and may ultimately have implications for an individual’s motivation as well as achievement (Fuligni et al., 2005). For example, having a strong ethnic identity may have positive implications on an individual’s achievement on intelligence tests. This is due to the sense of belonging one feels when identifying with a specific ethnic group.

Racial identity is thought to be related to an individual’s response to racism and prejudice (Charmaraman & Grossman, 2010). Landale and Oropesa (2002) assert that individuals who experience discrimination are more likely to identify as Black, Other, or Hispanic and are less likely to identify as White, thus indicating that experiences in the U.S. can affect racial choices as well as identity choices. For example, Itzigsohn et al. (2005) found that Dominicans who self-identified as Black had increased perceptions of social distance as well as beliefs about discrimination (i.e., Americans discriminate against Dominicans). These perceptions may have a negative impact on outcomes such as scores on intelligence tests due to the internalization of perceived expectations related to feelings of discrimination. If an individual perceives himself or herself as being discriminated against based on the color of his or her skin, they may internalize negative stereotypes related to being that skin color. For instance, the individual may internalize the expectation and stereotype that Black/African-American individuals do not do well on tests of intelligence thus impairing his or her performance on such tests (i.e., he or she will perform poorly on an intelligence test). Thus, it was believed that Latino/Hispanic individuals who self-identified racially as Black would lower scores on tests of intelligence than would individuals who did not racially identify as Black. The label
Hispanic was also believed to impact scores on intelligence tests negatively due to the view of it being a racialized ethnic label. It was thought that Latino/Hispanic individuals who self-identified as Latino would score higher than those who identified as Hispanic due to Latino not being viewed as a racialized label. In addition, utilizing an ethnic label over a racial label when self-identifying was thought to positively impact an individual’s score on an intelligence test due to the feelings of belonging to a group as well as the internalization of the groups’ values.

**Hypothesis 1A:** Latino/Hispanic participants who self-identify racially as Black will score lower on an intelligence test than will Latino/Hispanic participants who racially identify as White or Other.

**Hypothesis 1B:** Latino/Hispanic participants who self-identify as Hispanic will score lower on an intelligence test than will those Latino/Hispanic participants who identify as Latino.

**Hypothesis 1C:** Latino/Hispanic participants who use an ethnic identity (e.g., Mexican or Mexican-American) to label themselves will score higher on an intelligence test than will Latino/Hispanic participants who use a racial identifier.

Perceptions regarding how one believes others view them may impact self-identification as well. Itzigsohn et al. (2005) assert that racial identification by immigrants is influenced by the internalization of beliefs about how individuals within the mainstream culture perceive them. Ethnographic studies have suggested that some immigrants seek to retain their national origin label in order to avoid the negative stereotypes associated with being labeled Black, Hispanic or Latino (Fuligni et al., 2008). There tends to be a difference between the way an individual define himself or herself
and perceptions of how others perceive him or her (Itzigsohn et al., 2005). However, the perceptions of others seem to have an impact on how individuals identify over time. There is an indication of a “browning” tendency as one moves from self-definition to perceptions (Itzigsohn et al., 2005). Itzigsohn et al. (2005) found support for this tendency in their study, as a large number of Dominican immigrants understood they were perceived as Black even though they tended to reject this identity. A reason an individual may reject an identity, such as the example of Dominican immigrants, is due to the importance of race and ethnicity to an individuals identity as well as to his or her self-concept. The notion of centrality is discussed next in order to understand how the importance of race, ethnicity, and ethnic group membership impacts an individual and how this may ultimately impact scores on intelligence tests.
Chapter 4 – Centrality

Centrality is defined as the importance of race as well as ethnic group membership to the identity and self-concept of an individual (Charmaraman & Grossman, 2010; Kiang et al., 2011; Kiang, Yip, Gonzales-Backen, Witkow, & Fuligni, 2006; Rivas-Drake, Hughes, & Way, 2009; Sellers, Rowley, Chavous, Shelton, & Smith, 1997). It is the extent to which an individual defines himself or herself in terms of his or her race or ethnicity (Rivas-Drake et al., 2009). Centrality is considered to be a relatively stable perception of the significance an individual places on his or her racial or ethnic background (Charmaraman & Grossman, 2010; Rivas-Drake et al., 2009). It is believed that the more significant an individuals’ race or ethnicity is to the person the more that individual identifies with being a part of that race or ethnicity. Therefore, the higher the centrality the more an individual will internalize what it means to be a part of a particular race or ethnicity and will take on the behaviors associated with being a part of that group as well as being aware of the stereotypes that go along with being a part of that group. It was thought that this would affect scores on tests of intelligence due to the internalization of what it means to be a part of a particular race or ethnicity.

The notion of centrality comes out of a model of racial identity put forth by Sellers and his colleagues called the Multidimensional Model of Racial Identity (MMRI; Rivas-Drake et al., 2009). In order to fully understand the concept of centrality, the model will be briefly described. The model is based on the experiences of African American adults and focuses on the status of an individual’s racial identity (Sellers et al., 1997; Sellers, Smith, Shelton, Rowley, & Chavous, 1998). It looks at the significance and nature of an individuals racial identity at a certain point within the individuals life
(Sellers et al., 1998). The MMRI makes four assumptions regarding the individual and his or her racial identity (Sellers et al., 1998). First, it assumes that the identities of individuals are influenced by the situation and are stable properties of the individual. The second assumption is that an individual can have multiple identities (e.g., African American, woman, etc.) and that the identities are ordered hierarchically (e.g., an individual may identify themselves as an African American first and a woman second). Based on this hierarchy, the MMRI concentrates on the importance of race as defined by the individual. Third, the MMRI assumes that the most valid indicator of racial identity is an individual’s perception of his or her identity. While the model acknowledges the role of society in shaping an individual’s identity, the emphasis within the model is placed on the way the individual constructs his or her racial identity. Finally, the model assumes the individual defines race in his or her own manner. Thus, it does not provide a definition of what it means to be “Black” but rather emphasizes the individual’s perception of what it means (Sellers et al., 1998).

Based on the above assumptions, the MMRI puts forth four dimensions of racial identity: racial salience; the centrality of identity; the regard towards one own race or ethnicity; and identity ideology (Sellers et al., 1997; Sellers et al., 1998). These dimensions are meant to address the significance of an individuals’ racial identity as well as the qualitative meaning of a racial self-concept within an individual (Sellers et al., 1998). Racial salience is the extent to which race is a relevant part of an individuals self-concept at a particular moment or within a particular situation (Sellers et al., 1997; Sellers et al., 1998). It is dependent on both the context of a situation as well as the likelihood of an individual defining himself or herself in terms of race (i.e., centrality). Centrality,
therefore, is the extent to which an individual defines himself or herself based on his or her race or ethnicity (Charmaraman & Grossman, 2010; Rivas-Drake et al., 2009; Sellers et al., 1997; Sellers et al., 1998). It pertains to how central race or ethnicity is to an individual’s self-concept (Kiang et al., 2006). According to Sellers et al. (1998), a central aspect of this dimension is the reliance on a phenomenological perspective to determine how central race is to an individual’s identity. Therefore, centrality is analyzed with regards to the individuals race perceptions across situations (Sellers et al., 1998). Taken together, salience and centrality refer to the significance an individual places on identifying by his or her race or ethnicity (Kiang et al., 2006; Sellers et al., 1998).

In contrast, regard and ideology are about an individuals perception regarding what it means to be of a race (Sellers et al., 1998). Specifically, regard has to do with an individual’s affective and evaluative judgment of his or her race or ethnicity (Kiang et al., 2006; Sellers et al., 1997; Sellers et al., 1998). Within this dimension two types of regard are discussed: private and public. Private regard concerns the amount of personal affect towards or feelings an individual has regarding his or her group (i.e., the extent of positive or negative feelings towards one’s race or ethnicity; Rivas-Drake et al., 2009; Sellers et al., 1997; Sellers et al., 1998). Public regard has to do with perceptions of how positive or negative others view an individual’s race (Sellers et al., 1997; Sellers et al., 1998). It is an assessment by an individual regarding how others view his or her group (Sellers et al., 1998). The final dimension, ideology, has to do with an individual’s beliefs, opinions, and attitudes regarding how members of his or her race should act (Sellers et al., 1997; Sellers et al., 1998).
Although the MMRI is based on Black/African-American experiences, it has been applied to other ethnic minority groups successfully (Rivas-Drake et al., 2009). In addition, while the MMRI consists of four dimensions the dimensions have been investigated individually which is relevant to the current research due to the focus here on the centrality dimension.

Centrality has been found to be linked to behaviors that are representative of a particular identity (Sellers et al., 1998). Sellers et al. (1998) assert that race may be salient in a situation due to an individual’s tendency for race to become salient (i.e., centrality). Thus, individuals will vary in the way they behave within a situation based on how salient race is for the individual. For example, a Latino/Hispanic individual in a testing situation who identifies highly as being White may score higher on an intelligence test due to his or her race (i.e., White) being salient to them within this particular situation compared to a Latino/Hispanic individual who identifies as being Black within the same situation due to the respective stereotypes. It is not only within one particular situation that centrality can be used but also across situations (Sellers et al., 1998). Centrality aids in the understanding of the relationship between racial identity and behaviors/attitudes across situations (e.g., test performance; Sellers et al., 1998). It is for this reason that the focus was on this dimension.

As mentioned above, the MMRI is based on Blacks/African-Americans experiences however the model has been applied to other groups. Two different studies conducted by Kiang et al. in 2006 and in 2011 illustrate the use of the MMRI with groups other than Blacks/African-Americans. Kiang et al. (2006) investigated the ethnic identity of adolescents from Mexican, Chinese, and European backgrounds. The authors found
that participants who chose at least one pan-ethnic label (e.g., Hispanic) reported higher levels of centrality than did those who did not choose any pan-ethnic label (Kiang et al., 2006). Also found in this study was that participants who reported their ethnic background as being a central aspect of the self and who had a positive regard for their identity reported stronger beliefs in the utility of education and the utility of being successful in school (Kiang et al., 2006). These findings may be related to higher scores on intelligence tests as these individuals may gain more from an education due to a belief in the utility of such tests which may aid them when taking standardized tests such as intelligence tests. That is, the higher an individual's centrality regarding his or her ethnicity, the more successful he or she will be when taking standardized tests (i.e., intelligence tests). Thus, it was believed that individuals with higher centrality would have higher scores on intelligence tests than individuals with lower centrality.

**Hypothesis 2A:** Latino/Hispanic participants with high centrality will have higher scores on an intelligence test than those with low centrality.

Kiang et al. (2011) found that centrality tended to be higher for individuals who chose an ethnic heritage label rather than a pan-ethnic label. Participants in the Kiang et al. (2011) study were adolescents of both Latin American and Asian backgrounds from Los Angeles and North Carolina. For the purpose of the study, the authors adapted the measure of the MMRI, specifically the Multidimensional Inventory of Black Identity (MIBI), to fit the sample. In addition, while the MIBI contains three subscales (i.e., a centrality scale, regard scale, and ideology scale), Kiang et al. (2011) adapted only the centrality scale and the regard scale. As part of the analysis the authors found that for each unit of increase in centrality, the odds of using a heritage label increased by 1.34.
The author’s state that based on their study, centrality was a predictor of ethnic labeling. In addition, Kiang et al. (2011) assert that centrality represents a salient marker for ethnic identification as it may provide motivation as well as validation for an individual to self-identify with a group.

Another example of a study utilizing the MMRI with participants other than Blacks/African-Americans is a study investigating the ethnic identity and academic adjustment of adolescents with Mexican, Chinese and European heritages (Fuligni et al., 2005). The authors adapted the MIBI to be more general in order for an individual from any ethnicity to be able to complete the measure. They also only utilized two subscales: centrality and private regard. Results indicated that, after controlling for ethnicity, participants reporting a national or hyphenated label as being the most important label to them also reported higher levels of centrality than those choosing a pan-ethnic or American label. Investigating the use of pan-ethnic labels further, Fuligni et al. (2005) found that participants choosing at least one pan-ethnic label reported higher levels of centrality than did those who did not choose any pan-ethnic label. Finally, it was found that participants reporting that ethnicity was a central part of their identity also reported stronger beliefs in the utility of education and a higher level of the intrinsic value of school (Fuligni et al., 2005).

Taken together, these studies (i.e., Fuligni et al., 2005; Kiang et al., 2006; Kiang et al., 2011) indicate that how an individual self-identifies impacts how important his or her ethnicity is to him or her. Thus, the motivation to self-identify with a group as well as to use an ethnic heritage label (e.g., Mexican, Cuban, etc.) combined with the findings explicated above regarding the association between ethnicity being central to an
individual’s identity and beliefs about education as well as success in school may impact scores on standardized tests such as intelligence tests. Based on these findings it was thought that Latino/Hispanic individuals with a high centrality regarding his or her ethnicity and who chose to utilize an ethnic label would score higher on intelligence tests than individuals with a high centrality of ethnicity but who chose to use a pan-ethnic label. This is due to individuals who utilize ethnic labels having higher centrality than individuals who use a pan-ethnic label as well as the finding that individuals with higher centrality also view education and success in school as having a high utility.

**Hypothesis 2B:** Label utilized to self-identify will moderate the relationship between ethnic centrality and scores on an intelligence test such that Latino/Hispanic participants with high ethnic centrality who utilize an ethnic label will have higher scores on an intelligence test compared to those with high ethnic centrality who utilize a pan-ethnic label.

In addition to centrality impacting scores on intelligence tests, it was thought that variables such as acculturation and cultural distance, would impact scores on intelligence tests. These variables (i.e., centrality, cultural distance, and acculturation) may help to account for the scores obtained on intelligence tests by Latino/Hispanic test-takers. The following chapters discuss these other variables beginning with acculturation.
Chapter 5 – Acculturation

Within this section, the notion of acculturation will be discussed and the impact of the process of acculturation on individuals will be reviewed. It is believed that acculturation will be associated with scores on an intelligence test based on the amount an individual remains tied to his or her heritage culture or the amount he or she takes on mainstream cultural characteristics. It is thought that the more an individual takes on the values, beliefs, and characteristics of the mainstream culture, the higher his or her scores will be on tests of intelligence compared to those who do not. This is due to the increase in cultural knowledge and information gained by individuals as they go through the acculturation process.

Prior to going into the details of the process of acculturation, it should be noted that while Latinos/Hispanics are the focus of this paper, the overall process of acculturation is thought to be the same for all individuals. While it could be said that since Latinos/Hispanics are collectivistic, one factor that impacts acculturation, as are East Asians the outcomes should be the same or similar for each group however they seem to not be the same. Based on both groups being collectivistic it could be thought that results on intelligence tests would be similar. This assumption would be based on the notion that both groups are collectivistic and therefore their acculturation process would be similar. However, this is not what occurs as East Asian test-takers score higher than Latino/Hispanic test-takers on standardized intelligence tests. An explanation for such differences for individuals from seemingly overarching similar cultures (i.e., collectivistic) is the different emphasis placed within the notion of collectivism for each group.
The emphasis within Latino/Hispanic collectivism is based more on familism. Familism is defined as having a strong identification and attachment to the nuclear as well as extended family with feelings of loyalty, reciprocity, and solidarity between members of the family (Marin & Gamba, 1996; Rinderle & Montoya, 2008; Rodriguez, Mira, Paez, & Myers, 2007; Villarreal, Blozis, & Widaman, 2005). Whereas East Asian collectivism tends to be based on Confucianism in which the emphasis is placed on understanding one’s role within a hierarchy and to fulfill obligations associated with these roles including family obligations (Heine et al., 2001; Li & Karakowsky, 2002). It can be stated that the notion of family is universal, however it is how family is defined and how the obligations to family are viewed which differ between cultures (Villarreal et al., 2005) and which impacts the differences seen between collectivistic groups.

For Latinos/Hispanics, the family is defined not only as the nuclear and extended family but also includes fictive family (e.g., godparents, close friends) in which loyalty to the family is nurtured and individuals are raised to depend on the family (Villarreal et al., 2005). East Asians in contrast define family more in terms of filial piety which is about one’s dutiful respect for parents and obligations to parents (Villarreal et al., 2005). Thus, Latinos/Hispanics and East Asians may differ within the collectivistic orientation as family values for East Asians is based primarily on filial piety whereas Latino/Hispanic values are founded on familism (Rinderle & Montoya, 2008; Villarreal et al., 2005). It is the emphasis within the forms of collectivism that may be impacting score differences in that East Asian orientation is about duty regarding what parents expect (filial piety) whereas Latino/Hispanic orientation is towards loyalty to family rather than obligation to family. The reason for explicating these differences is that the notion of familism may
impact how individuals from Latino/Hispanic cultures acculturate into the U.S. mainstream culture, which in turn may impact outcomes (e.g., scores on intelligence tests).

*Acculturation.* Acculturation can be defined as a process of culture change that an individual progresses through when coming into constant contact with a culture other than his or her heritage culture (Berry, 1989; López et al., 2002). It is a multidimensional and complex experience with the dimensionality and complexity taking place at various levels (Domino & Acosta, 1987). The process of acculturation is thought to impact individuals at all levels of functioning (i.e., affective, behavioral including language, and cognitive including beliefs about roles, perceptions, and fundamental values; Cuellar, Arnold, & Maldonado, 1995). Acculturation represents the extent to which an individual takes up the norms, values, and customs of the mainstream culture and is a process that can last several generations (Ghuman, 2000; van de Vijver, Helms-Lorenz, & Feltzer, 1999). Not all individuals within a group will participate in the acculturation process to the same extent (Berry, 1997). There is a suggestion within the literature that there are two dominate dimensions of acculturation: maintenance of heritage culture and maintenance of relationships within the mainstream culture (Ward & Kennedy, 1994). Research is generally supportive of the idea that acculturating to the mainstream culture or adapting certain mainstream cultural traits increases the likelihood of increased well-being as well as succeeding in school (López et al., 2002). In addition, acculturation is a process of cultural adaptation producing changes in psychosocial dimensions such as behaviors, knowledge, identification, attitudes, and values (Gonzales et al., 2008).
There are substantial individual differences regarding the strategies used as well as the outcomes from acculturating (van de Vijver et al., 1999). However, the literature indicates that most individuals will follow one of four possible strategies, which were first proposed by Berry (1989). The acculturation strategies are characterized by distinctive attitudes towards the heritage and mainstream cultures (Flores, Ojeda, Huang, Gee, & Lee, 2006; Helms-Lorenz & van de Vijver, 1995). Therefore the strategy utilized will depend on the individuals’ attitude toward or identification with his or her heritage culture as well as with the mainstream culture. The four strategies are: Integration – individuals maintain their heritage culture identification and seek to participate actively in the mainstream culture at the same time; Assimilation – individuals do not maintain their heritage culture identification but rather seek daily interactions with the mainstream culture and will ultimately identify with the mainstream culture; Marginalization – individuals reject both cultures; and Separation – individuals value holding onto their heritage culture identity and will avoid interacting with the mainstream culture (Berry, 1989). According to Ward and Rana-Deuba (1999) the integrationist approach endorses both valuing cultural maintenance and inter-group relations while the separatist position has an individual valuing cultural maintenance but not inter-group relations. The assimilation strategy is the opposite of the separatist strategy and a person who is marginalized values neither maintenance nor inter-group relations. The context of the mainstream culture may affect the strategy employed such that in explicit multicultural societies an integrationist strategy may be utilized whereas in an assimilationist society the process may be made easier through adopting an assimilation strategy (Berry, 1997). In addition, the strategies are thought to manifest across domains including educational
achievement and will be utilized based on the individuals’ expectations for the future (Flores et al., 2006; Helms-Lorenz & van de Vijver, 1995).

Berry (1997) asserts that individuals will have a preference for one strategy over the others however there can be variation based on location (i.e., home vs. work). The preference will be based on generational status (i.e., when the family immigrated to the U.S.; Aguayo, Herman, Ojeda, & Flores, 2011) and the context in which the individual finds himself or herself (Berry, 1997). The process varies along the four possible strategies and includes evaluative responses to the two dominant dimensions of acculturation (Flores et al., 2006; Ward & Kennedy, 1994). In addition, all four strategies seem to be related to other features of acculturation such as socioeconomic status, education, and language use (Ward & Kennedy, 1994; Ward & Rana-Deuba, 1999).

In addition to the strategies employed by individuals, the models of acculturation within the literature need to be understood in order to better understand the process. There are two models discussed within the literature: the one-dimensional model and the bi-dimensional or bi-linear model. The one-dimensional model views the two cultures (i.e., the heritage culture and the mainstream culture) as replacing each other without coexisting in the mind of an individual (Berry, 1989; Phinney & Devich-Navarro, 1997). Within this model, individuals are assumed to either reject the mainstream culture while remaining closely tied to his or her heritage culture (i.e., the separatist strategy) or to assimilate into the mainstream culture while rejecting his or her heritage culture (Berry, 1989; Phinney & Devich-Navarro, 1997). A reason asserted for this assumption is that individuals cannot orient themselves to more than one culture (Lee, Yoon, & Liu-Tom, 2006). The assumption within this model is that culture change occurs along a single
continuum from heritage to mainstream culture and that the identities of individuals experiencing acculturation change over a period of time (Ryder, Alden, & Paulhus, 2000; van de Vijver et al., 1999). Based on this model, assimilation is the best outcome for individuals (Lee et al., 2006). van de Vijver et al. (1999) assert that viewing acculturation as a process of development toward the mainstream culture and either maintenance or loss of the heritage culture is incorrect. Many researchers agree with this statement and have proposed the bi-dimensional or bi-linear model as a better view of the acculturation process.

The current view of acculturation is that the process is bi-dimensional or bi-linear in which the individual adapts to the mainstream culture to varying degrees (Flores et al., 2006). The model proposes that the heritage culture and the mainstream culture are relatively independent and that the attitudes toward the heritage and mainstream cultures are also separate (Ryder et al., 2000; van de Vijver et al., 1999). Thus, the individual maintains aspects of his or her identity developed in the heritage culture, as the individual integrates aspects of the mainstream culture into his or her identity and can be called bicultural (Ryder et al., 2000). Within this model an individual can be high or low on acculturation as well as high or low on enculturation (i.e., retention of the heritage culture); if the person is high on both he or she is considered to be bicultural (Aguayo et al., 2011). Therefore acculturation and enculturation are considered to be bicultural constructs which operate relatively independent of each other (Lee et al., 2006).

It is proposed that having a bicultural orientation (i.e., utilizing an integrationist strategy) allows an individual to easily combine aspects of multiple cultures (Carranza, You, Chhuon, & Hudley, 2009). For bicultural individuals, self identity is multifaceted
involving group membership and affective associations with multiple racial, ethnic, and pan-ethnic social groups (Marks et al., 2011). This orientation is considered to be the healthiest form of acculturation as it relates to positive adaptation (Carranza et al., 2009). In addition, bicultural individuals report positive outcomes due to comfort and ability in successfully navigating multiple cultural contexts (Kiang et al., 2011). For example, Gonzales et al. (2008) found that individuals of Mexican origin adhered to more traditional beliefs and exhibited higher academic engagement when they had stronger ties with and could operate effectively in both Mexican and American cultural contexts (i.e., they were bicultural).

Outcomes of the acculturation process. Ward and Kennedy (1994) assert that there are two overarching outcomes of the acculturation process: psychological adjustment and sociocultural adjustment. Psychological adjustment is related to a stress and coping framework referring to an individual's psychological well-being and satisfaction within the mainstream culture (Ward & Kennedy, 1994). Sociocultural adjustment is based on a social learning perspective and relates to the individual's ability to “fit” into the mainstream culture or negotiate aspects of the culture (Ward & Kennedy, 1994). Psychological adjustment seems to be strongly influenced by personality, life changes and social support while sociocultural adjustment is dependent upon variables such as length of residency within the mainstream culture, cultural distance, and quantity of interactions (Ward & Kennedy, 1994).

Acculturation is viewed by some as an important factor of educational outcomes as well as on aspirations and success (Aguayo et al., 2011; Carranza et al., 2009). Studies have indicated that acculturation can have a positive relationship with academic
performance for Mexican-Americans such that the higher the scores on measures of acculturation, the higher their rated educational outcomes (Carranza et al., 2009). The cultural gap theory asserts that the cultural differences between Mexican-Americans and Whites may contribute to academic difficulties displayed by Mexican-Americans (Buenning & Tollefson, 1987). However, research results specifically investigating Mexican-American students have been mixed regarding the optimal acculturation pattern (Aguayo et al., 2011). Some research indicates a link between acculturation and educational/career outcomes; other studies suggest having a strong heritage culture orientation is related to positive academic outcomes; still others indicate no relationship between ethnic identity and academic achievement (see Aguayo et al., 2011 for a review). A reason for these mixed findings is that research indicates that there are socio-cultural limitations due to differences between cultures, which may negate the academic achievement of later generations (Nichols et al., 2006).

In addition to academic achievement, the acculturation process may also impact scores on intelligence tests. Suzuki and Valencia (1997) contend that individuals less familiar with the mainstream culture may be disadvantaged on traditional measures of intelligence. This may be due to the cultural loadings (i.e., the degree of cultural specificity or culture specific knowledge in a particular test; Suzuki & Valencia, 1997) as the higher the cultural load of a test, the more cultural knowledge and information the individual needs in order to score well. It has also been asserted that the most basic problem preventing the universality of intelligence tests is the conversational convention of the test questions (Greenfield, 1997). According to Greenfield (1997), the conversational convention of an intelligence test is presupposed and underlies every such
test (i.e., it is assumed that the test taker understands the question asked and can give the information requested). This may not be true of individuals, for example, who are immigrants to the U.S. or whose first language is not English. Due to this, there may be different understandings of the meanings of words and phrases (Freedle & Kostin, 1997; Greenfield, 1997). This indicates that the culture of an individual as well as the level of acculturation may impact score differences between groups due to the different meanings individuals may have of items on a test (Hough et al., 2001).

Research indicates that individuals who possess more White sociocultural characteristics (i.e., utilizing an integrationist or assimilation strategy) have higher scores on intelligence tests than those who do not (Razani, Murcia, Tabares, & Wong, 2007). Ranzani et al. (2007) found a strong correlation between acculturation level and both vocabulary and similarities subtests on the Wechsler Abbreviated Scale of Intelligence (WASI). They also found that above and beyond demographic factors as well as reading level, acculturation accounted for a significant proportion of variability on the vocabulary subtest. Thus, it was believed that individuals who reported themselves as being bicultural or more connected to the mainstream culture would have higher scores on intelligence tests than those individuals who reported being less bicultural or being less connected to the mainstream culture.

**Hypothesis 3A:** Latino/Hispanic participants utilizing an integrationist or assimilation strategy will have higher intelligence test scores than will Latino/Hispanic participants utilizing a separatist or marginalized strategy.

With regards to immigrants and native individuals, van de Vijver et al. (1999) assert that research indicates substantial score differences on intelligence tests at the
beginning of the acculturation process between immigrants and natives. As adaptation increases, research indicates more similar scores between the two groups (van de Vijver et al., 1999). For example, research has indicated that as the degree of acculturation increases the similarity between Mexican-Americans and Whites increases on variables such as cognitive style as well as verbal and non-verbal intelligence (Domino & Acosta, 1987). Gonzales and Roll (1985) found in their study of elementary and high school students that verbal skills were important to performance on intelligence tests and that increased acculturation lead to better verbal skills however they found no difference between Mexican-American and White participants in non-verbal ability. Thus, the authors assert that when Mexican-Americans become more similar to Whites in acculturation the differences between the two groups become non-significant in tests of verbal and non-verbal intelligence. The non-significance in results may be due to the increase in mainstream cultural knowledge and information gained by the acculturated Mexican-Americans.

When controlling for generational status (i.e., when the family immigrated to the U.S.; Aguayo et al., 2011) the ethnic/racial gap on test scores widens slightly (Morales & Saenz, 2007). Morales and Saenz (2007) state that equating Mexican origin and White Americans on generational status, the gap in math test scores increases about two percent. This indicates that Mexican immigrants may lose some of the advantage they possess due to generational characteristics (i.e., the immigrant paradox). Reasons for this paradox may be due to the continuous flow of immigration causing increases in similarity between immigrants and natives to be negated, as immigrants as a group are highly dissimilar from natives. In addition, the paradox may be due to perceptions of
discrimination and stereotyping in that it is not expected that Latinos/Hispanics are as good as White Americans when taking intelligence tests. Finally, the paradox may occur due to the home environment remaining culturally Latino/Hispanic rather than becoming more American as the generations remain in the U.S. (i.e., within the household the native culture is practiced and the home language remains Spanish rather than English). Therefore, the individual does not acquire the mainstream cultural knowledge and information needed to score well on intelligence tests. Thus, it was thought that for first generation immigrants to a country the score differences on intelligence tests between them and natives would be at its largest.

Hypothesis 3B: Immigrant Latino/Hispanic participants will have lower scores on an intelligence test than will U.S. native Latino/Hispanic participants.

Length of residence within mainstream culture. Generational status is based on the time of family arrival in the U.S. (Aguayo et al., 2011). Therefore a 1st generation individual is an immigrant born in his or her heritage country while a 2nd generation individual is someone born in the U.S. with one or both parents having been born in the heritage country. In contrast, 3rd generation individuals are born in the U.S. to parents born in the U.S. and individuals who are 4th generation have grandparents who were also born in the U.S.

It is held that being 1st generation partially protects individuals from acculturative difficulties caused by discrimination and stereotypes due to their strong ethnic ties and national identity whereas 2nd generation individuals are less disposed to use their heritage country as a frame of reference (Landale & Oropesa, 2002) causing these individuals to not be protected. Kiang et al. (2011) found that 1st generation youth are more likely than
2\text{nd} or 3\text{rd} generation peers to use ethnic heritage labels as a self-identifier. In addition, 2\text{nd} and 3\text{rd} generation individuals are more likely to use pan-ethnic or hyphenated labels (e.g., Mexican-American; Kiang et al., 2011). Further, 2\text{nd} generation individuals who are less familiar with his or her Latin heritage tend to be viewed as less Latino/Hispanic, which may decrease the individuals Latino/Hispanic identity (Choi et al., 2008). Choi et al. (2008) found that 1\text{st} generation individuals are more likely to identify as Hispanic than are 2\text{nd} generation. Also, Landale and Oropesa (2002) assert that 2\text{nd} generation individuals are more disposed to interact with other minorities and may develop an adversarial attitude toward White society. In summary, regarding identification, 1\text{st} generation Latino/Hispanic individuals are more likely to utilize only ethnicity as an identification than are 2\text{nd} and above generations (i.e., to identify as Mexican rather than Mexican-American). In contrast, 2\text{nd} and 3\text{rd} generation individuals are more likely to use a pan-ethnic label or to use a hyphenated label (e.g., Mexican-American). With regards to pan-ethnic label use, however, research indicates that individuals who are 1\text{st} generation are more likely to use Hispanic than are 2\text{nd} generation individuals.

It is believed that individuals who are 3\text{rd} generation are bicultural thus preferring both his or her heritage as well as the mainstream culture and speak English with little to no heritage language ability (i.e., they do not speak Spanish or speak it very little; Chávez-Reyes, 2010b). It is also thought that 3\text{rd} generation Latino/Hispanic individuals retain the value of familism, which is the notion of strong family obligation and loyalty, thus indicating a stronger tie to the heritage culture than by 2\text{nd} generation individuals (Chávez-Reyes, 2010b). However, although these individuals are tied to their heritage culture, 3\text{rd} generation individuals are considered to be bicultural because they are also
able to function within the mainstream U.S. culture due to adopting mainstream sociocultural characteristics thus gaining mainstream cultural knowledge and information.

Chávez -Reyes (2010a) found that 3rd generation Mexican-American individuals had more access to social and economic resources than did 1st or 2nd generation individuals. They also had increased rates of high school graduation compared to the other two groups, however this did not relate to higher GPA’s, college attendance, or college completion. Models of acculturation suggest that each successive generation would have increased academic attainment (Nichols et al., 2006). This may be especially true for individuals who are 3rd generation due to English being the dominant language and the values of the mainstream culture being fully accepted (Nichols et al., 2006). Thus although 3rd generation individuals retain the notion of familism, due to being bicultural they have access to social resources, use English as their dominate language, and accept U.S. cultural values (i.e., they take on mainstream sociocultural characteristics) in comparison to 1st and 2nd generation individuals who tend to not have access to resources and tend to not take on mainstream sociocultural characteristics. Therefore, 3rd generation Latinos/Hispanics are expected to score better on tests of intelligence compared to 1st or 2nd generation Latinos/Hispanics.

Knight, Kagan, Nelson, and Gumbiner (1978) examined the acculturation process of 2nd and 3rd generation Mexican-American primary school children and found that 3rd generation students were more similar to White norms with respect to reading and math achievement than were 2nd generation students. Fuligni (1997) found that after controlling for gender and grade level in his study of 1,100 adolescents of differing backgrounds,
including Latino, that 1st generation Latino students received lower math grades than 3rd generation peers. It has also been found that compared to foreign peers, 3rd generation Mexican-Americans graduate high school at a more consistent rate than did earlier generations (Chávez-Reyes, 2010a, 2010b). Thus there is a trend of 3rd generation individuals performing better academically and socially compared to 1st or 2nd generation individuals (Gonzales et al., 2008). Due to 3rd generation and higher individuals taking on more mainstream cultural behaviors, having mainstream cultural knowledge and information, as well as being more similar to White norms in reading and math achievement, it was believed that individuals who reported themselves as being 3rd generation or higher would have higher scores on intelligence tests than those who reported themselves as being either 1st or 2nd generation.

**Hypothesis 3C:** Latino/Hispanic participants who are 3rd generation or higher will have higher scores on intelligence tests than will Latino/Hispanic participants who are 1st or 2nd generation.

A variable that is an aspect of acculturation is cultural distance. It was thought that how differently an individual views his or her heritage culture from the mainstream culture would impact not only the acculturation process but also scores on intelligence tests. The following is a discussion of cultural distance and the impact this variable is thought to have on intelligence test scores.
Chapter 6 – Cultural Distance

Cultural distance is considered to be an important aspect of the acculturation process as well as to the acculturation strategy an individual will employ (Galchenko & van de Vijver, 2007; Helms-Lorenz & van de Vijver, 1995). Cultural distance is defined as how culturally similar or different an individual believes his or her heritage culture is compared to the mainstream culture (Yijala, Lonnqvist, Jasinskaja-Lahti, & Verkasalo, 2012). The concept is based on the notion that a subculture is functioning based on principles that are not operating equally within the mainstream culture, that do not exist in the mainstream culture, or functions without the benefit of a principle operating in the mainstream culture (Grubb & Dozier, 1989; Grubb & Ollendick, 1986). In other words, an individual who perceives a large cultural distance is functioning within the mainstream culture based on the values and norms of his or her heritage culture. Therefore, it can be assumed that individuals in the subculture attend to, process, store, retrieve, and practice functional information, which is not like information within the mainstream culture (Grubb & Dozier, 1989; Grubb & Ollendick, 1986). Because of this cultural distance (i.e., functioning within the mainstream culture based on values and norms of another culture), the individual will be attending to information differently from individuals operating based on mainstream cultural values and norms. This will impact the acculturation process of the individual and is hypothesized to negatively impact outcomes on intelligence tests created within the mainstream culture due to a lack of cultural knowledge and information.

The notion of cultural distance can be conceptualized as the difference in cultural norms and values between the heritage culture and the mainstream culture (Greenland &
Brown, 2005). Consider for example, an individual from Mexico who is living in the U.S., but attending to information based on living in Mexico. This individual will have two different cultural lenses with one being based on individualism (i.e., the U.S. culture) and the other based on familism (i.e., the Mexican culture). The larger the perceived difference between the cultural norms and values of the two cultures the larger the cultural distance for the individual. This gap between cultures has been linked to less adjustment and more acculturative difficulties within the mainstream culture (Galchenko & van de Vijver, 2007; Greenland & Brown, 2005) and is thought to impact intelligence test scores negatively. This is because the individual is not operating within the mainstream culture with the same information or knowledge as someone who was born within the mainstream culture or someone who perceives a small cultural distance. It is asserted here that performance on intelligence tests requires that the information be perceived according to the mainstream culture (Helms-Lorenz et al., 2003; Malda et al., 2010). In contrast, an individual who perceives a small cultural distance between his or her heritage culture and the mainstream culture is thought to be operating with the same information and knowledge base as someone who was born within the culture thus the individual will score well on tests of intelligence that are created within the mainstream culture. The reason for this is that the individual is actively a part of the mainstream culture and has taken on that cultures values and norms.

Research indicates that the greater the perceived cultural distance, the more likely an individual will experience social difficulty within the mainstream culture (Zlobina, Basabe, Paez, & Furnham, 2006). This is due to the individual not acquiring the sociocultural knowledge necessary to function within the mainstream culture. Zlobina et
al. (2006) found that having a lower perceived cultural distance was an important predictor of acquiring culture-relevant knowledge and skills. The authors assert that individuals who perceive a small cultural distance feel able and motivated to learn about the mainstream culture whereas individuals who perceive a large cultural distance experience intercultural misunderstandings leading to a perception of an inability to deal with the mainstream culture (Zlobina et al., 2006). An individual who perceives less cultural distance therefore will take on the behaviors and norms of the mainstream culture which will then positively impact outcomes such as scores on intelligence tests as this individual is operating within the mainstream culture based on knowledge similar to individuals born within the mainstream culture. This is due to the individual adjusting to the mainstream culture (i.e., acquiring sociocultural knowledge) as well as not perceiving acculturative difficulties. This is in contrast to individuals who perceive a large distance. Such individuals are not operating within the mainstream culture with the same knowledge and skills as individuals who perceive less cultural distance, thus the former group will not score well on tests of intelligence due to the lack of mainstream cultural understanding. The lack of cultural understanding is due to a lack of adjustment within the mainstream culture as well as the individual experiencing acculturative difficulties due to the distance between cultures.

A study conducted by Suanet and van de Vijver (2009) investigated the relationship between perceived cultural distance, personality, acculturation orientation and outcomes (i.e., psychological and sociocultural adjustment) among exchange students in Russia from various countries in Asia, sub-Saharan Africa, Latin America, and the former Soviet Union. Overall, the authors found that perceived cultural distance between
the mainstream and heritage cultures was associated with less psychological and sociocultural adjustment. Specifically, perceived cultural distance was positively correlated with behavior in the heritage culture domain, homesickness and stress, but negatively correlated with behavior in the mainstream domain (Suanet & van de Vijver, 2009). That is, the perception of a large cultural distance was related to individuals remaining tied to his or her heritage culture, feeling homesick, feelings of stress, and not participating within the mainstream culture. In addition, Suanet and van de Vijver (2009) found that cultural distance had a stronger association with adjustment than did acculturation orientation as measured through items such as “I like Russian food” and “I like to have Russian friends”. Galchenko and van de Vijver (2007) found a similar pattern in a study conducted utilizing exchange students in Moscow. The authors found that participants reporting the largest perceived cultural distance also reported the highest levels of stress, the least active coping strategies, and the least adjustment to the mainstream culture compared to participants with less perceived cultural distance. Thus, an individual who perceives a large cultural distance between his or her heritage culture and the mainstream culture will remain tied to his or her heritage culture as they do not adjust to living within the mainstream culture.

It is thought that this lack of adjustment will negatively impact scores on intelligence tests, as the individual does not taken on mainstream culture behaviors therefore they feel separate from the mainstream culture. Intelligence tests require that an individual gain mainstream cultural knowledge, skills, and information as well as identification with the mainstream culture in order to maximally succeed on the test. Thus an individual who remains highly tied to his or her heritage culture, what would be called
a separation strategy within the acculturation literature, will not know how to navigate within the mainstream culture or will not want to be a part of the mainstream culture as a separatist strategy would suggest. This lack of participation will cause the individual to perceive himself or herself as separate from the culture he or she finds themself living in and will therefore not take on the norms, values, or behaviors of that culture. Because they do not accept these things they do not operate under the same knowledge base that an individual who does take on the mainstream cultures norms, values, and behaviors does thus impacting outcomes on things such as intelligence tests.

The reason it is believed that this would occur, that is a large perceived cultural distance having a negative impact on intelligence test scores, includes the lack of adjustment of the individual within the mainstream culture. In other words, the individual does not adjust to living in the new culture but rather remains highly tied to his or her heritage culture. This lack of adjustment will impact the individuals’ acculturation process in that he or she will utilize a separatist strategy staying connected to the heritage culture. This in turn will negatively impact scores on intelligence tests (i.e., he or she will score poorly) because the individual will not adopt mainstream sociocultural characteristics that are required for performance on the test. Due to this, he or she will not be operating within the mainstream culture with the same knowledge base as someone who does take on the sociocultural characteristics of the mainstream culture. It is believed that intelligence tests require acculturation and identification with the mainstream culture in order for an individual to succeed (Helms-Lorenz et al., 2003; Malda et al., 2010).

The notion of cultural distance has also been explained as the cultural gap theory (Buenning & Tollefson, 1987). This theory is described as an individual being caught
between two cultures that have different values thus experiencing value conflicts. The individual will be caught between the values of his or her heritage culture and those of the mainstream culture. A study conducted by Buenning and Tollefson (1987) investigated this theory utilizing Mexican-American students and parents. They stated that based on the cultural gap theory, Mexican-American students as well as parents would endorse traditional school values (i.e., authoritarian values) versus White American students and parents who would endorse less traditional school values. Buenning and Tollefson (1987) did find support for the difference between Mexican-American endorsement of traditional school values and that of White American endorsement. Specifically, the authors found a main effect of ethnicity on their measure of traditional school values for both students and parents. Mexican-American students and parents had higher mean scores than did White American students and parents on the measure of traditional school values. An interesting finding within this study was the difference between low- and high-achieving students. The analysis of the measure of attitudes toward traditional school values showed a main effect for achievement for students regardless of ethnicity such that low-achieving students had a significantly higher mean score on the measure than did high-achieving students. Which means that students in the low-achieving group seemed to be more aligned to authoritarian values, which was thought to be held more by Mexican-American individuals. In addition, Buenning and Tollefson (1987) found a main effect for achievement on their measure of field independent behavior (an individualistic cultural concept) regardless of ethnicity. Specifically, high-achieving students scored significantly higher than did low-achieving students on the field independent measure. Thus regardless of ethnicity, high-achieving
students described themselves as being more field independent (i.e., individualistic) than did low-achieving students who described themselves as field dependent (i.e., collectivistic; Buenning & Tollefson, 1987).

In addition to being related to acculturation, cultural distance may also be related to outcomes on intelligence tests that are validated based on individuals within the mainstream culture. For example, the response pattern of an individual from a subgroup on standardized tests, such as on intelligence tests, reflects what is salient to that individual and what is not salient (Grubb & Ollendick, 1986). The larger the cultural distance the more mainstream cultural learning is required in order to fit in (Zlobina et al., 2006). This need to learn the mainstream culture will create acculturative difficulties, which will then impact outcomes such as scores on intelligence tests. This is partly due to the perception of not belonging to the mainstream culture as the difference between cultures is viewed as being large. In addition because the individual needs to learn the mainstream culture he or she is not operating with the same cultural knowledge as an individual who does not need to learn the culture. This lack of knowledge will negatively impact scores on an intelligence test for many reasons including a lack of understanding regarding certain concepts due to culturally related linguistic differences. Grubb and Ollendick (1986) assert that the distance between the subgroup culture and the mainstream culture may determine the subculture’s group mean on a test as it is related to the norm mean of the test as a whole. Thus, it was believed individuals with a larger perceived cultural distance would have lower scores on intelligence tests than would those individuals with a smaller perceived cultural distance.
Hypothesis 4A: Latino/Hispanic participants who perceive a large cultural distance between their heritage culture and the mainstream culture will have lower scores on an intelligence test than will Latino/Hispanic participants who perceive a small cultural distance.

In addition it was believed that acculturation strategy utilized by an individual would impact the relationship between perceived cultural distance and his or her scores on an intelligence test. It was thought that although an individual who perceives a large cultural distance sees many differences between his or her heritage culture and the mainstream culture, he or she could be utilizing an assimilation or integrationist strategy in order to better understand the mainstream culture and to become a part of it. Thus because he or she is gaining knowledge within the mainstream culture, this individual would have higher scores on an intelligence test compared to individuals who perceived a large cultural distance but were utilizing a separatist or marginalized strategy.

Hypothesis 4B: Acculturation strategy utilized will moderate the relationship between cultural distance and scores on an intelligence test such that Latino/Hispanic participants who perceive a large cultural distance and utilize an assimilation or integrationist acculturation strategy will have higher scores on an intelligence test compared to those who perceive a large cultural distance and utilize a separatist or marginalized strategy.
Chapter 7 – Test Perceptions

In addition to the variables discussed above, there is an indication within the literature that test perceptions may also account for variance in intelligence test performance between groups (Suzuki & Valencia, 1997). The differences that are seen may occur due to differences in cultural practices or in the acculturative process as well as due to differences in perceptions about tests (Chan, 1997; Hunt & Carlson, 2007). Within this chapter, the focus will be upon test perceptions and the impact this variable may have on intelligence test performance.

A perception is the way an individual becomes aware of a stimulus and how he or she interprets external stimuli (Carpenter & Huffman, 2010). This notion is important here due to the interpretation that is made of a stimulus once the individual becomes aware of the stimulus. It is the interpretation that is the perception. If an individual interprets a stimulus, such as an intelligence test, negatively it will mean that his or her perception of the test is negative which will ultimately impact the individual’s score on the test in a negative manner (i.e., he or she will score poorly). The opposite is also true. That is, if the interpretation is positive then the individual will perceive the intelligence test positively thus impacting his or her score in a positive manner. The importance of this includes that test perceptions may be having an impact on how Latinos/Hispanics score on intelligence tests.

Theories of academic engagement suggest an individual’s perceptions regarding performance may impact participation, interest, and persistence within a domain (Gonzales et al., 2008). Through studying test perceptions a better understanding can be gained regarding whether observed differences in intelligence test performance between
groups is associated with test-taker perceptions (Reeve & Lam, 2007). Racial/ethnic subgroup differences in test perceptions can have important organizational and sociopolitical outcomes especially when tests are used to select individuals (Chan, 1997). For example, differences in perceptions of standardized tests (e.g., intelligence tests) may result in inaccurate estimates of qualifications particularly within a high-stakes context (Reeve & Lam, 2007). Racial/ethnic differences in perceptions may also have implications for minority recruitment programs as well as adverse impact issues (Chan, Schmitt, DeShon, Clause, & Delbridge, 1997). It should be noted that much of the literature on test perceptions focuses on Blacks/African-Americans and the differences between Blacks/African-Americans and Whites to the seeming absence of Latinos/Hispanics which points to a gap in the literature.

The general conception of perceptions towards testing is that individuals differ in perceptions about whether testing is an acceptable way to select individuals within high stakes contexts (e.g., hiring for a position, selection to a university; Ryan, 2001). Perceptions towards testing is conceptualized as being stable within and across testing situations, however beliefs may vary depending on the type of test utilized (i.e., math test versus intelligence test; Ryan, 2001). Therefore, pretest perceptions about tests are important as these perceptions may reflect previous experiences or general beliefs about tests (Chan, Schmitt, Sacco, & DeShon, 1998). Evidence suggests that individuals who report more positive perceptions regarding a specific test tend to have a stronger generalized belief regarding testing and its efficacy in selecting individuals (Chan et al., 1998). Perceptions towards testing may also have an impact on performance on the test (Ryan, 2001).
It is thought that those with negative perceptions about testing will be less motivated to put forth effort and will therefore perform poorly (Ryan, 2001). Thus, perceptions of intelligence tests are important as they may influence performance on a test as negative perceptions may lead to low test-taking motivation which may lead to poor performance on a test (Chan et al., 1998). For example, a Latino/Hispanic individual whose first language is Spanish may do poorly on tests of English ability, such as grammar tests, which may lead to a negative attitude regarding English ability tests. This negative attitude may in turn lead to less motivation regarding other tests that require English verbal ability such as most intelligence tests. Therefore, the person may not put as much effort into taking the test causing him or her to have a low score on the test.

In addition, Chan et al. (1998) assert that there is evidence that perceptions (i.e. perceived predictive validity and face validity) regarding testing and test reactions are correlated, which may influence performance. Specifically, Chan et al. (1998) found that perceptions regarding testing were related indirectly to performance through perceptions (i.e., perceived predictive validity and face validity of that specific test) about the specific test the individual would be taking. For the purposes of the present study, perceptions of a test were operationalized as the perceived predictive validity and face validity individuals have regarding a test (i.e. an intelligence test)

Perceptions about test predictive validity. Predictive validity is defined as the degree to which a test predicts future outcomes (Rosenthal & Rosnow, 1991). Perceived predictive validity is defined as the individual’s belief that his or her performance on the test will be predictive of his or her future performance (Chan, 1997). It is asserted here that perceived predictive validity judgments can be made by an individual as these
judgments concern what the individual believes regarding his or her performance on a test. Thus when explicitly asked about his or her beliefs regarding the predictive ability of a test he or she is going to take, the individual is able to make the necessary judgments. These ratings have been used successfully in previous research (Chan, 1997). As such, perceptions of predictive validity may affect test performance such that negative perceptions may lower test-taking motivation (Chan, 1997). For example, an individual who is taking a test and who has a negative view of intelligence tests may view such tests as not being related to his or her performance on the job and will therefore have a lower motivation to do well on the test due to a lack of perceived predictive validity. Chan et al. (1998) found a significant positive correlation between pre-test perceptions of predictive validity of an intelligence test and test performance. Indicating that predictive validity perceptions affect test performance such that the higher the perceptions of predictive validity the higher the score on an intelligence test.

In addition, predictive validity perceptions may have important practical implications. It is asserted that predictive validity perceptions can affect, either directly or indirectly, the perceived organizational attractiveness as well as acceptance of a job offer by an applicant (Chan, 1997; Smither, Reilly, Millsap, Pearlman, & Stoffey, 1993). It is thought that perceptions of predictive validity may have this impact due to fairness perceptions of the application process. Smither et al. (1993) found that perceptions of predictive validity regarding selection tests contributed to perceptions of fairness and the willingness of an applicant to recommend an organization as an employer to other applicants. Therefore, it is important to understand how predictive validity perceptions
impact scores on high stakes tests such as intelligence tests due to the impact these perceptions have on the selection process.

*Face validity.* Regarding face validity (i.e., does the test look like it is measuring what it purports to measure), Chan et al. (1997) state that face validity is another important factor in test perceptions as it is viewed as being under the control of the test creator. Researchers have recognized it as an important dimension in test attitudes as well as reactions (Chan et al., 1997; Kluger & Rothstein, 1993; Smither et al., 1993). It has been asserted that individuals who perceive a test as having low face validity will have less desire to perform well on the test (Chan et al., 1997).

From the perspective of the test taker, if a test is not face valid then the test administrator may be using the test for purposes other than what the administrator explicitly states the test results will be used for. This will, in turn, impact how motivated the test-taker will be to take the test. For example, if an individual has a negative view of a test’s face validity, he or she may not put as much effort into taking the test as he or she may believe the test results are not going to be used in the manner to which the administrator of the test purports the results will be used. Research has indicated that face validity impacts test performance. Chan et al. (1997) found that face validity perceptions impacted test performance such that participants who had low face validity perceptions had lower scores than those participants who had high face validity perceptions. In addition as described in the previous section regarding predictive validity, Chan et al. (1998) also found pre-test face validity perceptions of an intelligence test to be positively correlated with test performance. Consequently, the impact of these two perceptions (i.e.,
face validity and predictive validity) on specific test types (i.e., intelligence tests) is of interest.

**Perceptions of intelligence tests.** In a study investigating applicant reactions to selection procedures, Smither et al. (1993) looked at reactions to simulations, interviews, intelligence tests, personality tests, and biodata inventories. The authors were interested in reactions related to face validity, perceived predictive validity, likelihood of improvement, affect, perceived knowledge of results, organizational attractiveness, distributive and procedural justice, and recommendation to others. Related directly to the present study, Smither et al. (1993) found that test-takers perceived intelligence tests to have greater predictive than face validity. The authors also found that intelligence tests with concrete item types were perceived as having high validity while items of an abstract item type were perceived as having low validity. Smither et al. (1993) assert that misperceptions about intelligence testing may be driven by how intelligence constructs (e.g., verbal, quantitative, reasoning) are framed regarding how the test will be used. In other words, whether the score will be used as an indication regarding how smart the test taker is overall or whether the test will be used to establish the test-takers ability within a domain (e.g., mathematics). If within an organizational setting, for example, an individual is given a quantitative test and is informed that the results will be used to establish his or her mathematics ability, but the individual believes the test will be used as an indicator of his or her overall intelligence, then the test will not have face validity to the individual as he or she does not see the test as measuring what it is being purported to measure. There may be many reasons for this lack of face validity including the test questions being written ambiguously, the questions on the test not being related to the
job, etc. The lack of face validity may cause the test taker to not do as well on the test due to a lack of motivation as he or she believes something else is being measured rather than what was purported to be measured.

In addition, Chan et al. (1997) found face validity perceptions assessed after completing a test affected subsequent performance on a parallel test (i.e., a test taken at another time that is similar in question type to the first test) but indirectly through test-taking motivation (Chan et al., 1997). Chan et al. (1997) state that these findings suggest test performance influences test perceptions (i.e., face validity) and that these perceptions influence scores on subsequent parallel tests. In other words, if an individual takes a quantitative ability test (e.g., a mathematics exam) but receives a low score on the test, that score may negatively affect his or her perceptions of all quantitative ability tests which in turn will negatively affect his or her scores on subsequent quantitative ability tests taken (e.g., the quantitative section of an intelligence test). In another study, Chan et al. (1998) found pretest reactions to an intelligence test affected test performance and mediated the relationship between perceptions of tests and test performance. The authors assert that pretest reactions are a function of a general belief in tests which is likely a function of an individual’s past experience with similar tests as well as anything they have learned about tests (Chan et al., 1998). Thus, an individual who does poorly on an intelligence test previously will be impacted by this experience such that he or she will perceive a future intelligence test through the lens of experience with the past test. That is to say, he or she will perceive a future intelligence test negatively due to doing poorly on the previous intelligence test.
Differences in perceptions between groups. In addition to perceptions towards testing possibly impacting performance in general it is thought that perceptions towards testing may also contribute to racial/ethnic subgroup test differences (Hough et al., 2001). There has been an indication within the research that test perceptions are related to test performance, that there is sizeable racial subgroup differences on test perceptions favoring Whites, and that perceptions may contribute to racial subgroup test differences (Ployhart, Ziegert, & McFarland, 2003). For example, Chan (1997) found that White test-takers perceived intelligence tests as more valid than Black/African-American test-takers. Ryan (2001) suggests that cultural differences in perceptions of testing as well as knowledge that adverse impact can be caused by intelligence tests leads to racial differences in general perceptions about testing. The question remains, however, regarding whether what has been found for Black/African-American test-takers within the literature regarding perceptions towards testing holds for Latino/Hispanic test-takers.

A reason for questioning the generalizability of the findings for Blacks/African-Americans to Latinos/Hispanics is that it cannot be assumed the same variables that are found to impact Blacks/African-Americans will impact Latinos/Hispanics in the same manner (Alcoff, 2003; Grubb & Ollendick, 1986; Landale & Oropesa, 2002). However, it can be argued that the concept of test perceptions impacting outcomes on a test is a universal construct that impacts all individuals regardless of his or her race or ethnicity. Therefore, based on the literature we expected that negative perceptions (i.e. low face validity and low predictive validity) of an intelligence test prior to taking the test would impact tests scores in a negative manner for Latinos/Hispanics. Specifically, participants who viewed an intelligence test as having low face validity would have lower scores on
the test than would those participants who perceived the test as having higher face validity. In addition, participants who perceived an intelligence test as having low predictive ability would have lower scores than would those participants who viewed the test as having higher predictive validity.

**Hypothesis 5A:** Latino/Hispanic participants who view an intelligence test as having low face validity will have lower scores than will Latino/Hispanic participants who perceive high face validity.

**Hypothesis 5B:** Latino/Hispanic participants who perceive an intelligence test as having low predictive validity will have lower test scores than will Latino/Hispanic participants who perceive high predictive validity.
Chapter 8 – Ethnic Diversity within Latino/Hispanic Labels

Prior to discussing the diversity within the Latino/Hispanic group, the notion of ethnicity as it is utilized within this study is reviewed. As described previously ethnicity is defined as the cultural practices of an individual thus when an individual is labeled based on his or her ethnicity it is made based on the individual’s nationality and culture (Charmaraman & Grossman, 2010).

Within the U.S. ethnicity is a meaningful, salient social category which differentiates individuals across social, economic and behavioral indicators (Fuligni et al., 2008). It is often correlated with differences that are seen between ethnicities in educational outcomes as well as a variety of psychosocial outcomes (Portes, 1999). In addition, ethnic self-identification relates to a feeling of belonging to a group connected through heritage, values, traditions, and often language (Charmaraman & Grossman, 2010). Combining Latinos/Hispanics of different ethnicities into a single group hides key disparities between the ethnicities (Carranza et al., 2009). It should be noted that the issue is not “ethnicity” per se, but rather the lack of consideration within the current research regarding the diversity of ethnicities within the Latino/Hispanic label. This is due to the fact that there is considerable variation among the groups which are subsumed under the Latino/Hispanic label in terms of country of origin, political status, economic standing, cultural characteristics, immigration experiences, history, etc. (Bohon et al, 2006; del Pinal & Singer, 1997; Diaz -Lefebvre, 2009; Oboler, 1998; Umana-Taylor & Fine, 2001). With regards to immigration experiences, for instance, many Central American and Cuban individuals migrated to the U.S. for political reasons with the experiences of civil war and oppression in their home country contributing to their experiences in the U.S.
(Umana-Taylor & Fine, 2001). Due to such variations within the ethnicities labeled as Latino/Hispanic, findings from one group may not always generalize to another group (Bohon et al., 2006; Umana-Taylor & Fine, 2001).

A reason for this possible lack of generalizability is because the differences between the groups often override cultural or linguistic similarities that may be shared (Oboler, 1998). Thus, we cannot ignore differences or assume all Latinos/Hispanics share similar psychological issues (Díaz-Lefebvre, 2009) or will have the same outcomes. This is despite the fact that within the U.S. individuals from Latin and Spanish Caribbean countries are all included under the pan-ethnic labels of Latino or Hispanic. The diverse experiences of individuals from the different Latin and Spanish Caribbean countries (as indicated by the examples above) likely influence the meaning that is attached to psychological constructs (Umana-Taylor & Fine, 2001), such as intelligence. For example, previous research has indicated that Cubans have higher levels of trust in the U.S. educational system than do Puerto Ricans or Mexican-Americans (Bohon et al., 2006). This may be due to the differences in historical modes of incorporation into mainstream society (see prior discussion regarding voluntary vs. involuntary minority status; Bohon et al., 2006; Ogbu, 1994). Thus, the trust that Cubans tend to have in the educational system may positively impact outcomes such as scores on intelligence tests whereas a lower level of trust may have a negative impact on scores.

The following is a discussion regarding psychosocial differences that have been noted within the literature between different ethnicities labeled as Latino/Hispanic. It should be noted that the literature is somewhat limited regarding the differences between ethnicities especially regarding differences in intelligence test scores. No literature or
studies could be found within the intelligence literature that looks at one Latino/Hispanic ethnicity compared to another (i.e., Cuban compared to Mexican). The majority of the literature within the intelligence domain investigates Latino/Hispanic individuals as a group compared to Whites or one particular ethnicity (i.e., Mexicans) and Whites. Because of this lack of literature regarding within group differences, the present study looked to contribute to the literature through the investigation of within group differences where possible.

A study conducted by Guarnaccia et al. (2007) utilizing data from the National Latino and Asian American Study (NLAAS) does point to some key differences between groups. The NLAAS included population-based surveys of Latinos and Asian Americans based on a stratified area probability sample design conducted by the University of Michigan’s Institute for Social Research between May 2002 and November 2003 and included only Latino and Asian American adults 18 years of age and older in the contiguous U.S. and Washington D.C. For the purposes of their research, Guarnaccia et al. (2007) utilized only the Latino sample which was made up of four groups: Mexicans, Cubans, Puerto Ricans, and Other Latinos.

While it was reported that all four groups came to the U.S. to improve the future for their children, there were some key differences reported in the study. Within their study, Guarnaccia et al. (2007) found that Mexicans were most likely to come to the U.S. for employment opportunities while Cubans and Other Latinos had strong political motivations for immigrating. With regards to language, while most of the individuals in the sample started their lives speaking Spanish, Cubans preferred Spanish for everyday language use while Puerto Ricans preferred English. Most individuals from all four
groups reported identifying closely with members of their own ethnic group and preferred spending time with co-ethnics, however Puerto Ricans reported higher levels of family culture conflict than did Cubans or Mexicans. In addition, Cubans were the highest group on measures of family pride and cohesion whereas Puerto Ricans’ scores were consistently the lowest on these scales of all four Latino groups (Guarnaccia et al., 2007). The findings regarding Puerto Ricans reporting the highest levels of family culture conflict as well as their family pride and cohesion scores being the lowest scores of all the groups may contribute to intelligence test scores for this ethnic group being low. This is due to the conflict with the collectivism notion of familism that Puerto Ricans seem to be experiencing.

With regards to acculturative stress, Mexicans reported the highest levels while Puerto Ricans reported the lowest (Guarnaccia et al., 2007). Over half of the Mexicans in the study had less than a high school education while many of the individuals from the other three groups came to the U.S. with substantial social capital particularly in regards to advanced education (Guarnaccia et al., 2007). The findings for the Mexican group, specifically the high levels of acculturative stress and the low educational level reported, may be contributing to low intelligence test scores for this group as the stress may be indicating acculturative difficulties causing these individuals to perceive a large cultural distance as well as a perception that they do not fit into the mainstream U.S. culture. The authors state that the major finding of their study was the extensive diversity among the groups which was strongly influenced by immigration and differing histories as well as processes of changing language use, family relationships, and social contexts (Guarnaccia et al., 2007).
Other differences have also been noted within the literature. There is an indication that individuals from Central and South America as well as Cuba tend to be better educated and do better in school than individuals from Mexico, Mexican-American students, or students from Puerto Rico (Carranza et al., 2009; Ogbu, 1987). For example, 50% of individuals from Mexico reported having at least a high school education versus 71% of Cuban individuals in a study conducted by Carranza et al. (2009). An explanation of why individuals from Central America tend to be better educated and do better in school is that parents from Central America place great importance on the academic success of their children and believe education to be the most significant way for children to improve their status in life (Fuligni, 1997).

However, ethnographic and survey studies have found that Mexican origin parents also place a high value on education and view a high school diploma as a means of upward mobility and a better life (Morales & Saenz, 2007; Plunkett & Bámaca-Gómez, 2003). A problem that arises and that may explain why, as indicated above, Mexican individuals do not do well in school is that Mexican immigrants tend to live in ethnic communities where adults are apt to hold low-skilled or seasonal jobs which leads to children having little contact with role models who can aid them in understanding how to achieve academic success and how school is linked to future success (Hao & Bonstead-Bruns, 1998). Some immigrant communities tend to not be backed by a strong ethnic economy thus lacking the means to support or direct school achievement and upward mobility (Hao & Bonstead-Bruns, 1998). In addition, there may be a strong intention to return to Mexico which may lead parents to be less clear and less specific regarding expectations of their child’s achievement in the mainstream culture (Hao &
Bonstead-Bruns, 1998). Thus the child is not encouraged to learn or take on mainstream cultural characteristics. This may then impede learning how to navigate the mainstream culture which in turn will have negative effects on scores on tests such as intelligence tests. In contrast to individuals from Mexico, individuals from Cuba tend to actively learn English as well as the U.S. culture and tend to be highly entrepreneurial (Hao & Bonstead-Bruns, 1998). In addition Cubans tend to maintain their ethnic culture within their families and within the larger ethnic community (Hao & Bonstead-Bruns, 1998). Thus it appears that Cuban individuals tend to become truly bicultural within the mainstream culture.

While the above review of differences based on ethnicity is limited, it allows us to see differences within the Latino/Hispanic group that have been documented. Based on what has been explicated in this chapter as well as previous chapters, it was believed that there would be differences between ethnic groups on intelligence test scores, which would account for the performance of Latinos/Hispanics on intelligence tests. It was thought that individuals who had Central American, South American and Cuban heritage would have higher scores on intelligence tests than would individuals with Puerto Rican or Mexican heritage. This was believed to be so because of the immigration history of the different groups (i.e., voluntary vs. involuntary immigrant) as well as the differences in educational support. However, as there was no direct prior research to guide a hypothesis, the following research question was put forth:

**Research Question 1**: Will Latino/Hispanic participants who have Central American, South American, and Cuban heritage score higher on an intelligence
test than Puerto Rican or Mexican heritage individuals due to differences between the ethnicities?
Chapter 9 – Exploratory Research Questions

The prime focus of the research presented here was on main effects. However, based on the above literature review there were a number of research questions that arose around the connections and interactions between these variables. When reviewing the literature intuitive links could be drawn. For example, that there may be a relationship among test perceptions, self-identification and intelligence scores, but there is no prior research that could be found to indicate what the exact relationship may be. It was believed, based on the literature review, that there would be mediation effects among the variables thus we did expect some of the variables discussed above to interact. In particular it was thought that individuals who self-identified racially as White would have the most positive test perceptions and highest intelligence test scores of all groups. In contrast, individuals who self-identified racially as Black would have the most negative test perceptions and the lowest test scores of all groups. With regards to ethnic self-labels, it was believed that individuals who utilized a hyphenated (e.g. Mexican-American) label or identified as Latino would have positive test perceptions and higher intelligence test scores than would those who identified as Black or utilized another ethnic label. Finally it was thought that individuals who self-identified as Hispanic would have more positive test perceptions and higher test scores than those who identified as Black but would have more negative test perceptions and lower test scores than the other self-identification categories. As prior research did not guide with specific hypotheses regarding these interactions between the variables, the following research questions were put forth:

**Research Question 2A:** Do test perceptions mediate the relationship between self-identification and test performance such that how an individual self-identifies
influences his or her test perceptions thus impacting how the individual scores on an intelligence test?

**Research Question 2B:** Will individuals who self-identify racially as White have the most positive test perceptions and highest intelligence test scores of all groups while those who identify racially as Black have the most negative test perceptions scores and lowest intelligence test scores of all groups?

**Research Question 2C:** Will individuals who self-identify as Latino or with a hyphenated ethnic label (e.g. Mexican-American) have positive test perceptions and higher intelligence test scores than those who identify racially as Black or use a different ethnic label?

**Research Question 2D:** Will individuals who self-identify as Hispanic have more positive test perceptions and higher intelligence test scores than those who identify as Black but lower than all other self-identification groups?

**Research Question 3:** Do test perceptions mediate the effect between acculturation and test scores such that the acculturation strategy an individual utilizes influences his or her test perceptions thus impacting how the individual scores on an intelligence test?

**Research Question 4:** Do test perceptions mediate the effect between cultural distance and test scores such that an individual’s cultural distance perception influences his or her test perceptions thus impacting how the individual scores on an intelligence test?

Finally, it seemed intuitive that acculturation and test perceptions are related in some manner to impact intelligence test scores. There seemed to be a
natural link in which an individual who is acculturating into the mainstream culture through utilizing either an assimilation or integrationist strategy would have higher test perceptions (i.e. view intelligence tests as having predictive and face validity), which would lead to better performance on an intelligence test. The reason for this link being asserted is that, as discussed in the chapters above, an individual utilizing these acculturation strategies will gain the necessary knowledge to do well on an intelligence test as he or she gains the sociocultural characteristics needed. It is thought that this will lead to more positive test perceptions due to the acquisition of mainstream sociocultural characteristics and the understanding of a link between the scores on an intelligence test and use of the test (e.g. being hired for a position within an organization). Because the individual holds these positive test perceptions this may ultimately lead to higher scores on an intelligence test. However as there was no prior research (that could be found) regarding the interaction among these variables the question arose regarding what the exact relationship was, therefore the following research question was put forth:

**Research Question 5**: Does the use of an assimilation or integrationist strategy by Latino/Hispanic participants lead to higher perceptions of predictive and face validity thus leading to higher scores on an intelligence test?
Chapter 10 – Present Study

The present study was intended to fill the gaps in the literature regarding research on Latino/Hispanic test-takers scores on intelligence tests. This was accomplished through the investigation of societal as well as cultural explanations for intelligence test performance among Latinos and Hispanics. The present study was adding to the body of knowledge by investigating one of the largest and most diverse populations in the U.S. but which has been looked at primarily as one undifferentiated group. This study, where possible, also looked at the within group differences between the ethnicities labeled as Latino/Hispanic. In addition, the study utilized a combination of variables unique to explaining why Latino/Hispanic test-takers score in the manner they do on tests of intelligence. No prior study could be found that investigated the impact of these variables on intelligence test scores within one study.

The variables investigated within this study specifically comprise those related to identification, perceptions, and individual background. Identification variables include self-identification as this variable places people into racial and ethnic categories. Self-identifying with a particular label creates a perception of oneself as well as an internalization of stereotypes and behaviors associated with that label. Another identification variable is centrality. This has to do with how important race or an ethnic group is to an individual. The higher the centrality the more an individual will internalize what it means to be a part of his or her group. A third variable is acculturation, which is a process of culture change that occurs when an individual is in constant contact with a culture other than his or her heritage culture. The more acculturated an individual becomes the more mainstream knowledge, information, and skills the individual gains.
Cultural distance is the last variable within the identification grouping. Cultural distance is the view of how similar or dissimilar an individual believes his or her heritage culture is from the mainstream culture. The more similar the two cultures, the more mainstream cultural knowledge and information an individual will attain.

An individual’s perceptions are another variable investigated within this study, specifically the notion of test perceptions (i.e. predictive and face validities). Test perceptions have to do with being aware of an intelligence test and the interpretation an individual makes regarding the test. It is believed that negative test perceptions will have negative consequences for scores on an intelligences test while positive perceptions will have a positive impact. The final variable that was investigated was ethnic diversity within the Latino/Hispanic labels. Ethnicity is related to the cultural practices of an individual. The diversity between those labeled as Latino/Hispanic in the U.S. was investigated due to differing psychosocial experiences between groups and the impact these differences may have on intelligence test scores.

Based on the discussion explicated above, the following hypotheses and research questions were set forth:

**H1A:** Latino/Hispanic participants who self-identify racially as Black will score lower on an intelligence test than will Latino/Hispanic participants who racially identify as White or Other.

**H1B:** Latino/Hispanic participants who self-identify as Hispanic will score lower on an intelligence test than will those Latino/Hispanic participants who identify as Latino.
**H1C:** Latino/Hispanic participants who use an ethnic identity (e.g., Mexican or Mexican-American) to label themselves will score higher on an intelligence test than will Latino/Hispanic participants who use a racial identifier.

**H2A:** Latino/Hispanic participants with high centrality will have higher scores on an intelligence test than those with low centrality.

**H2B:** Label utilized to self-identify will moderate the relationship between ethnic centrality and scores on an intelligence test such that Latino/Hispanic participants with high ethnic centrality who utilize an ethnic label will have higher scores on an intelligence test compared to those with high ethnic centrality who utilize a pan-ethnic label.

**H3A:** Latino/Hispanic participants utilizing an integrationist or assimilation strategy will have higher intelligence test scores than will Latino/Hispanic participants utilizing a separatist or marginalized strategy.

**H3B:** Immigrant Latino/Hispanic participants will have lower scores on an intelligence test than will U.S. native Latino/Hispanic participants.

**H3C:** Latino/Hispanic participants who are 3rd generation or higher will have higher scores on intelligence tests than will Latino/Hispanic participants who are 1st or 2nd generation.

**H4A:** Latino/Hispanic participants who perceive a large cultural distance between their heritage culture and the mainstream culture will have lower scores on an intelligence test than will Latino/Hispanic participants who perceive a small cultural distance.
H4B: Acculturation strategy utilized will moderate the relationship between cultural distance and scores on an intelligence test such that Latino/Hispanic participants who perceive a large cultural distance and utilize an assimilation or integrationist acculturation strategy will have higher scores on an intelligence test compared to those who perceive a large cultural distance and utilize a separatist or marginalized strategy.

H5A: Latino/Hispanic participants who view an intelligence test as having low face validity will have lower scores than will Latino/Hispanic participants who perceive high face validity.

H5B: Latino/Hispanic participants who perceive an intelligence test as having low predictive validity will have lower test scores than will Latino/Hispanic participants who perceive high predictive validity.

RQ1: Will Latino/Hispanic participants who have Central American, South American, and Cuban heritage score higher on an intelligence test than Puerto Rican or Mexican heritage individuals due to differences between the ethnicities?

RQ2A: Do test perceptions mediate the relationship between self-identification and test performance such that how an individual self-identifies influences his or her test perceptions thus impacting how the individual scores on an intelligence test?

RQ2B: Will individuals who self-identify racially as White have the most positive test perceptions and highest intelligence test scores of all groups while those who identify racially as Black have the most negative test perceptions scores and lowest intelligence test scores of all groups?
**RQ2C:** Will individuals who self-identify as Latino or with a hyphenated ethnic label (e.g. Mexican-American) have positive test perceptions and higher intelligence test scores than those who identify racially as Black or use a different ethnic label?

**RQ2D:** Will individuals who self-identify as Hispanic have more positive test perceptions and higher intelligence test scores than those who identify as Black but lower than all other self-identification groups?

**RQ3:** Do test perceptions mediate the effect between acculturation and test scores such that the acculturation strategy an individual utilizes influences his or her test perceptions thus impacting how the individual scores on an intelligence test?

**RQ4:** Do test perceptions mediate the effect between cultural distance and test scores such that an individual’s cultural distance perception influences his or her test perceptions thus impacting how the individual scores on an intelligence test?

**RQ5:** Does the use of an assimilation or integrationist strategy by Latino/Hispanic participants lead to higher perceptions of predictive and face validity thus leading to higher scores on an intelligence test?
Chapter 11 - Method

Participants

Participants were students enrolled in Introductory Psychology and Management courses at a large Northeastern university who volunteered to participate in the study through the department of psychology and department of management participant pools and received course credit in exchange for their participation. Data was collected from a total of 263 participants; the final sample total was 194. The sample size was determined a priori through a power analysis utilizing G*Power 3 software. The size of the sample was determined based on employing a t-test analysis for two groups with an effect size of $d = 0.4$ at an alpha level of .05 (Faul, Erdfelder, Buchner, & Lang, 2009; Faul, Erdfelder, Lang & Buchner, 2007). There were six participants that identified as an ethnicity other than Latino/Hispanic, Latino-/Hispanic-American or White (i.e. Asian-American, Asian, East Indian, Black not Hispanic). These six participants were excluded. In addition, 63 participants were excluded due to missing data. With regards to the excluded participants due to missing data, 24 were excluded due to not fully completing the Ability Profiler and 15 were removed due to issues such as the computer crashing while taking the measures or for completing the measures too quickly to have been fully paying attention. Of the remaining 24 participants which were excluded, these participants were removed from the data as they did not complete measures of the independent variables (i.e. 10 did not complete the acculturation measure, eight did not complete the cultural distance measure, and four did not complete the centrality measure). There were two participants who were removed due to not indicating their ethnicity within any of the questions asking for this
information. As a result, 112 participants were in the final Latino/Hispanic sample and 82 where in the final U.S. born non-Hispanic White sample.

As the purpose of this study was to investigate Latino/Hispanic participants the data analysis focused on this group. The Latino/Hispanic sample was 49.1% female and 50.9% male with a mean age of 22.57 (SD = 4.26). Fifty percent were 1st generation, 43.8% 2nd generation, 4.5% 3rd generation and 1.8% 4th generation. The primary language spoken at home was Spanish (67.6%) while at school (98.2%) and with friends (81.1%) the primary language spoken was English. With regards to race 87.7% reported themselves as Hispanic/Latino, 4.5% White, 4.5% Multiracial, 1.8% Other, 0.9% Black, and 0.9% American Indian or Alaska Native. Participants were also asked their ethnicity in an open-ended question with 55% identifying as Hispanic, 29.7% Latino/a, 11.7% utilized an ethnic label (e.g. Mexican, Mexican-American), 2.7% utilized a racial label other than White/American, and 0.9% identified as White.

As a comparison group in post-hoc tests, a sample of U.S. born non-Hispanic Whites was also pulled from the final 194 participants. This sample consisted of 82 participants, 67.1% female and 32.9% male. The mean age was 20.41 (SD = 2.62). Generational status included 1.2% reporting as 1st generation, 39.0% 2nd generation, 17.1% 3rd generation, 32.9% 4th generation, and 9.8% 5th generation. The primary language spoken at home (86.6%), at school (98.8%), and with friends (98.8%) was English.

*Design*

The study used a non-experimental design. However, the order of the sections of the intelligence test was counter-balanced between sessions. The order of the remaining
measures was given such that the two measures of test perceptions were given to all participants before the intelligence tests. The two measures of tests perceptions were also counter-balanced between sessions. The remaining measures (i.e. ethnic identity, centrality, acculturation, and cultural distance) were given in a random order between sessions. The demographic measures were always given as the last measures in all sessions.

Measures

For all of the statistics reported in this section, the sample of the 112 Latino/Hispanic participants was used.

*O*Net Ability Profiler. Intelligence was assessed utilizing the O*Net Ability Profiler. The Ability Profiler is an assessment designed for career purposes however a majority of the subtests are cognitive ability tests, which are directly related to the purpose of the present study. The Ability Profiler contains six basic ability subtests: Arithmetic Reasoning, Verbal Ability, Spatial Ability, Computation, Clerical Perception, and Form Perception. For the purposes of the current study the Arithmetic Reasoning, Verbal Ability, Spatial Ability and Clerical Perception subtests were given. The reason for choosing only these four subtests is that the content is typical of what is included in the majority of standardized intelligence exams. The highest total score possible for the four subtests combined was 147 points; the mean score was 87.69 (SD = 18.47) and the range of scores was 135; minimum = 6, maximum = 141).

With regards to the subtests chosen, the arithmetic reasoning subtest had a total of 18 questions and participants were given 20 minutes to complete the test. This section contained word problems requiring the participant to add, subtract, multiply, or divide
whole numbers, fractions, or percentages. The highest total score possible for arithmetic reasoning was 18 with no deduction for incorrect answers. The mean score was 11.54 ($SD = 3.21$) and the range of scores was 17; minimum = 1, maximum = 18. The estimate of the internal consistency of the scores on this section was KR-20 = 0.78.

The verbal ability subtest contained 19 items with a test time of eight minutes. Within this section, participants were given four words and instructed to choose the two words that had either nearly the same or nearly the opposite meanings. The highest total score possible for verbal ability was 19 with no deduction for incorrect answers. The mean score was 12.05 ($SD = 2.53$) and the range of scores was 15; minimum = 4; maximum = 19. The estimate of the internal consistency of the scores on this section was KR-20 = 0.73.

The spatial ability subtest consisted of 20 items with a test time of eight minutes. Participants were shown a picture of a flat, two-dimensional form and were instructed to choose which of four three-dimensional objects could be made by bending and/or rolling the form. The highest total score possible for spatial ability was 20 with no deduction for incorrect answers. The mean score was 13.90 ($SD = 3.50$) and the range of scores was 16; minimum = 4, maximum = 20. The estimate of the internal consistency of the scores on this section was KR-20 = 0.82.

The clerical perception subtest had 90 items with a test time of six minutes. Within this subtest, participants were asked to identify whether pairs of names were the same or different. The highest total score possible for clerical perception was 90 with a one-point deduction for incorrect answers. The mean score was 50.20 ($SD = 13.94$). Due to this subtest being a speeded, power test there were many missing data points. Thus
when estimating the reliability coefficient, these missing data were taken into consideration. To estimate the internal consistency of the scores only the first 64 questions were utilized, however, 31 of these items were excluded from the analysis due to having zero variance. The range of scores was 112; minimum = -22, maximum = 90. To calculate the scores for this subtest a formula score was utilized. That is, the number of incorrect answers was subtracted from the correct answers to determine each participant’s final score. This is different from the other subtest scores calculated for the Ability Profiler as those where sum scores (i.e. the number correct were simply added together to determine the final score). The estimate of the internal consistency of the scores on this section was KR-20 = 0.40. See Appendix A for the complete measure.

*Ethnic identity.* The level of participants’ ethnic identity was measured utilizing the Multigroup Ethnic Identity Measure – Revised (MEIM-R; Phinney & Ong, 2007). This measure captures the strength of participants’ ethnic identity (Phinney & Ong, 2007). The MEIM-R consists of six items and has two sub-scales: exploration (3 items) and commitment (3 items). The exploration sub-scale measures an individual’s information seeking about his or her ethnicity as well as his or her experiences relevant to his or her ethnicity (Phinney & Ong, 2007). The commitment sub-scale measures an individual’s sense of belonging to his or her ethnicity (Phinney & Ong, 2007). Participants answered the questions using a 5-point Likert-type rating scale with anchors at strongly disagree and strongly agree. There were no reverse scored items. Each participant was assigned a mean score for each subscale as well as a combined mean score. Higher scores indicated a greater degree of ethnic identity. Example items include “I have often done things that will help me understand my ethnic background better” and
“I feel a strong attachment towards my own ethnic group”. The overall internal consistency of the scores in the current study was $\alpha = .85$ and in previous research was $\alpha = .81$ (Phinney & Ong, 2007). For the sub-scales, the internal consistency in the current study was $\alpha = .75$ for exploration and $\alpha = .86$ for commitment while in previous research it was; $\alpha = .76$ for exploration and $\alpha = .78$ for commitment (Phinney & Ong, 2007). See Appendix B for the complete measure.

In addition to the MEIM-R, the following questions were asked as further measures of participant’s ethnic identity: “To what extent do you identify with American culture?”; “To what extent do you identify with your heritage culture?”; “To what extent do you prefer American culture?”; and “To what extent do you prefer your heritage culture?”. These questions were adapted from research conducted by Devos (2006) and were used in the present study as direct measures of participants’ ethnic identity. The reason for utilizing these four questions in addition to the MEIM-R is that these questions were also directly related to the present research as we were interested in not only the participants’ commitment and exploration as related to ethnic identity, but also his or her explicit identification with and preference for both American culture and their heritage culture.

Centrality. The level of centrality was measured by adapting the centrality subscale from the Multidimensional Inventory of Black Identity (Sellers et al., 1997). By using this measure, we were able to assess the level of participant centrality. The measure contains eight items and measures how important an individuals’ ethnicity is to his or her identity (Sellers et al., 1997). There were three reverse scored items. Participants answered the questions using a 5-point Likert-type rating scale with anchors at strongly disagree
and strongly agree. The measure was adapted for the present study by changing the term “Black” to “my ethnicity” or “my ethnic group” as appropriate to the statement. The modifying of this measure in the manner specified has been done in previous research with adequate results. For example, in a study conducted by Rivas-Drake (2011) utilizing Latino college students the researcher found acceptable internal consistency using the modified scale ($\alpha = .90$). In the present study, each participant was assigned a mean score with higher scores indicating a greater degree of centrality. Example items include “I have a strong sense of belonging my ethnic group” and “My ethnicity is important in how I see myself”. The internal consistency of the scores on this scale in the current study was $\alpha = .79$ and from the original measure in previous research was $\alpha = .77$ (Sellers et al., 1997). See Appendix C for the complete measure.

**Acculturation.** Acculturation was measured using the Short Acculturation Scale for Hispanics (SASH; Marín, Sabogal, Marin, Otero-Sabogal, & Perez-Stable, 1987). This measure allowed us to measure behavioral factors that have been found to be related to the acculturation process (Ellison, Jandorf, & Duhamel, 2011). The SASH consists of 12 items and measures the acculturation level of participants. It consists of three subscales: language use (5 items), ethnic social relations (4 items), and media (3 items). Participants answered the questions using a 5-point Likert-type rating scale with anchors at only Spanish or all Latinos/Hispanics and only English or all American. There were no reverse scored items. Each participant was assigned a mean score for each subscale as well as an overall mean score. Higher scores indicated a greater degree of assimilation while lower scores indicated a greater degree of separation. Middle scores indicated an integrationist approach to acculturation. When interpreting the scores for this measure an
average score of 3.00 is considered as being higher in acculturation, i.e. more acculturated within the mainstream culture (Marín et al., 1987). Due to this interpretation of scores, a median split is common within this literature when calculating scores on this measure (e.g. Ellison et al., 2011; Marin et al., 1987). Thus a median split was utilized in the present research, as the median score for participants was 3.21. Example items include “What language(s) do you usually speak with your friends?” and “Your close friends are”. The overall internal consistency of the scores in the current study was $\alpha = .87$ and in previous research was $\alpha = .92$ (Marin et al., 1987). For the sub-scales the internal consistency of scores was $\alpha = .83$ for language use, $\alpha = .80$ for ethnic social relations, and $\alpha = .70$ for media preference. In previous research the internal consistence of scores for the sub-scales was $\alpha = .90$ for language use, $\alpha = .78$ for ethnic social relations, and $\alpha = .86$ for media preference (Marín et al., 1987).

In addition, the SASH has been utilized successfully with participants of different ethnicities within the Latino/Hispanic group. For example, Ellison et al. (2011) utilized this measure with participants who self-identified as being from Puerto Rico, the Dominican Republic, Cuba as well as Central and South America. In this study, Ellison et al. (2011) found acceptable internal consistency of the scores on the modified version (language use $\alpha = .89$; ethnic social relations $\alpha = .71$; media preference $\alpha = .88$; overall $\alpha = .89$).

In the original study used to develop the SASH, Marín et al. (1987) utilized participants who self-identified as Mexican-American, Cuban-American, Puerto Rican and other Hispanic (the majority of whom were Central American). The use of individuals with differing ethnicities within the Latino/Hispanic group was important to
note as the present study attempted to look at within group differences. See Appendix D for the complete measure.

*Cultural distance.* The level of cultural distance was measured using the Sociocultural Adaptation Scale (SCAS; Ward & Kennedy, 1999). By utilizing this measure we were able to assess the level of cultural distance perceived by participants between their heritage culture and the mainstream culture. The SCAS contains 29 items and measures perceptions when facing difficulties understanding American values and culture (Ward & Kennedy, 1999). It consists of two sub-scales: behavioral-adaptation difficulty (22 items) and cognitive-adaptation difficulty (7 items). Participants answered the questions using a 5-point Likert-type rating scale with anchors at no difficulty and extreme difficulty. There were no reverse scored items. Each participant was assigned a mean score for each subscale. Higher scores indicated a greater degree of difficulty understanding American values and culture. Example items include “Understanding jokes and humor” and “Dealing with people staring at you”. The overall internal consistency of the scores in the current study was $\alpha = .88$ and in previous research was $\alpha = .86$ (Ward & Kennedy, 1999). In addition, in a study investigating the role of immigrant Brazilian sociocultural adaptation in the United Kingdom Sochos and Diniz (2012) found an internal consistency of the scores overall of $\alpha = .95$. The authors also found the internal consistency of the scores on behavioral-adaptation subscale to be $\alpha = .86$ and $\alpha = .93$ for the scores on the cognitive-adaptation subscale. In the current study the internal consistency of the scores on the behavioral-adaptation subscale was $\alpha = .84$ and on the cognitive-adaptation subscale it was $\alpha = .81$. See Appendix E for the complete measure.
*Perceived predictive validity.* Predictive validity perceptions were measured utilizing a measure adapted from research conducted by Smither et al. (1993). The utilization of this measure allowed us to assess the perceptions of participants regarding how predictive the intelligence test was of future performance. The predictive validity measure consists of five questions and measures perceptions of predictive validity. Participants answered the questions using a 5-point Likert-type rating scale with anchors at strongly disagree and strongly agree. There were no reverse scored items. Each participant was assigned an overall mean score with a higher score indicating more positive perceptions about the predictive validity of the test. Example items include “Failing to pass the examination clearly indicates that you can’t do a managerial job” and “I am confident that the examination can predict how well an applicant will perform on a managerial job”. The internal consistency of the scores in the current research was $\alpha = .78$ and in previous research was $\alpha = .83$ (Smither et al., 1993). See Appendix F for the complete measure.

*Perceived Face validity.* To measure perceptions of face validity, the measure utilized by Smither et al. (1993) was adapted for the present study. Through using this measure we were able assess participant perceptions regarding whether the test would measure what it purported to measure. The face validity measure consists of five questions and measures participant perceptions of face validity. Participants answered the questions using a 5-point Likert-type rating scale with anchors at strongly disagree and strongly agree. There were three reverse scored items. Each participant was assigned an overall mean score with a higher score indicating perceptions of high face validity. Example items include “I do not understand what the examination have to do with a
managerial job” and “It would be obvious to anyone that the examination is related to a managerial job”. The internal consistency of the scores in the current study was $\alpha = .71$ in previous research it was $\alpha = .86$ (Smither et al., 1993). See Appendix G for the complete measure.

Demographic characteristics. Demographic information was collected from the participants including age, gender, ethnicity, country of origin, number of years living in the United States, age at which they came to the United States, socio-economic status, primary language spoken at home, and other languages spoken. Generational status was also directly asked as was when the first relative within the immediate family from the heritage culture came to the U.S. and when the first relative within the immediate family was born in the U.S. The demographic questions were asked in this study as an indication of generational status as well as indicators of cultural self-identification. See Appendix H for full demographic questionnaire.

Control measures. Three control measures were also used within the analysis. These measures included an open-ended question regarding what the participant perceived the O*Net Ability Profiler as measuring. The question asked the participants to indicated what they thought the timed measures (i.e. the Ability Profiler) was measuring. An analysis of the answers to the question found that only 0.61% (2 participants) of the answers indicated the true reason for the Ability Profiler, i.e. linking an intelligence test to Latinos/Hispanics. The majority of answers, 15.15%, indicated that the test was about speed of problem solving. The next largest group of answers, 12.42%, stated that it was about ethnicity while 11.52% said it was about basic knowledge such as math ability, vocabulary, or reading ability. Due to the analysis of the answers to the open ended
question only finding 0.61% of the answers indicating the true meaning of the experiment, it was not used as a control variable in the analysis. The full content coding can be found in Table 1.

Another control measure was a measure of stigma consciousness. Stigma consciousness was measured utilizing the Stigma Consciousness Questionnaire - Revised (SCQ-R) which was adapted from Pinel, Warner, and Chua (2005). This measure assessed the degree to which participants anticipate being stereotyped and subsequently discriminated against (Pinel, 1999). This measure was to be used as a control variable as it was thought that participants beliefs about stereotyping and discrimination would have an impact on test scores. The SCQ-R contains 10 items. Participants answered the questions using a 7-point Likert-type scale with anchors at strongly disagree to strongly agree. Example items include "Stereotypes about people of my ethnicity/race have not affected me personally" and "Most people have a lot more racist thoughts than they actually express". The internal consistency of the scores in the current study was $\alpha = .59$. The measure of stigma consciousness was not correlated with the outcome variable or with the independent variables therefore it was not used in the analysis as a control variable.

The final control measure was a measure of social desirability. This measure was to be used as a control variable as a way to ensure participants were not utilizing impression management in their answering of the questions on the measures of the variables of interest. Impression management was measured utilizing the impression management subscale of the Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1991). This subscale allowed assessment of the tendency of a participant to
overreport his or her performance on a range of desirable behaviors and to underreport undesirable behaviors (Paulhus, 1991). The impression management subscale contains 20 items measuring participants impression management tendency (Paulhus, 1991). Participants answered the questions using a 7-point Likert-type scale with anchors at not true to very true. Example items include "I never take things that don't belong to me" and "I have some pretty awful habits". The internal consistency of the scores in the current study was $\alpha = .28$. The measure of impression management was not correlated with the outcome variable or with the independent variables therefore it was not used in the analysis as a control variable. See Appendix I for the complete measures of all three control measures.

**Procedure**

Participants signed up for 90-minute time slots via the psychology and management department participant pool systems. There was a maximum of 16 participants per session. Participants entered a university computer lab and asked to sit at a computer. The Ability Profiler was taken via scantron sheet while the remaining measures were taken on a computer using the Qualtrics survey software. The sessions began with the informed consent procedure. The researcher then informed the participants they were engaging in a study, which was part of a project developing an employment assessment battery for selection to entry-level management positions in a large U.S.-based banking organization. This cover story was based on the procedure utilized by Chan et al. (1997) and was designed to minimize the chance of unintentionally evoking stereotype threat related to taking an intelligence test. After being informed of the purpose of the study, participants completed the measures of face validity and
predictive validity. Participants then completed the Ability Profiler on scantron sheet and were given scratch paper provided by the researcher. Participants then completed the measures of acculturation, cultural distance, ethnic identity, and centrality. Upon completion of these measures the demographic measure was completed. Participants were then debriefed regarding the actual purpose of the study and thanked for their participation.
Chapter 12 – Results

Descriptive Statistics

Descriptive statistics were computed before testing the hypotheses. Total scores and mean scores were computed for each scale as appropriate. The data were also assessed for outliers. As all participants were within two standard deviations of the mean, no participants were excluded based on being an outlier. Descriptive statistics, including means, standard deviations, skewness and kurtosis values (see Table 2) for each of the independent variables were calculated prior to testing the hypotheses. An examination of the means of the independent variables indicated that participants were, on average, in the middle of the scales for many of the variables. This indicates that participants were average on the measures of these independent variables rather than being high or low on the measures. As will be discussed in more detail in the tests of the hypotheses, the nature of the distribution does have some implications for the tests of the hypotheses.

After examining the distributions for each of the variables, four (ethnic identity, ethnic centrality, predictive validity, and face validity) of the six independent variables had slightly negatively skewed distributions. The scores on the predictive and face validity measures had the most negatively skewed distributions. The scores for acculturation and cultural distance measures had positively skewed distributions. The most positively skewed distribution was for cultural distance indicating that there were a greater number of lower than higher values in this distribution.

With regards to kurtosis, all the variables had positive kurtosis indicating leptokurtic distributions. This indicates that the distributions have sharp peaks around the mean or that the values are concentrated around the mean. The highest kurtosis values
were for predictive validity and cultural distance measures, indicating that most of values were concentrated around the mean.

Median scores were also calculated prior to hypothesis testing for the centrality scale, acculturation scale, face validity scale, and predictive validity scale. Based on the median score, a median split was done for each scale to determine low and high scores. Median scores were not calculated for the cultural distance scale due to the mean being 1.52 and the median 1.48 indicating that participants perceived a small cultural distance between their heritage culture and the mainstream culture. Thus, participants viewed both cultures as being similar.

The number of participants within each group utilized for the hypothesis testing is presented in Table 3. The smallest sample was for those participants who identified racially as black, \( n = 1 \). Those who self-identified utilizing a racial identification was also small, \( n = 3 \), as were those who were 3\(^{rd}\) generation or higher (\( n = 7 \)). There were 12 participants who self-identified as White or Other and 13 participants who utilized an ethnic label. Given the small sample sizes, some of the hypotheses could not be adequately tested thus the interpretations involving these groups will be limited.

A correlation matrix presenting the correlations between the study variables is given in Table 4. The Ability Profiler was not related to any of the measures of the independent variables. With regards to the correlations between the independent variables there were five significant correlations. Ethnic centrality was moderately positively related to ethnic identity but moderately negatively correlated with acculturation. This indicates that those with higher ethnic centrality also had higher ethnic identity however, those with higher ethnic centrality had low acculturation. Ethnic identity and
acculturation were moderately negatively correlated indicating those who were higher in ethnic identity were low in acculturation. Face validity and predictive validity were moderately positively related thus participants higher on face validity were also higher on predictive validity. Finally, face validity and cultural distance were negatively correlated. This indicates that those higher on face validity had lower cultural distance. No other correlations existed between the independent variables.

Also in Table 4, the correlations between the total Ability Profiler Scores and the subtest scores are presented. The scores between each of the subtests (i.e. Arithmetic Reasoning, Verbal Ability, Spatial Ability, and Clerical Perception) and the total score on the Ability Profiler were positively correlated. The correlations were moderate to strong with the strongest correlation being between the total score on the Ability Profiler and the Clerical Perception score. This indicates that as participants scored higher on the subtests their overall score on the Ability Profiler was also higher. In addition, the scores on each subtest were weakly to moderately positively correlated with each other with the highest correlation being between Spatial Ability and Arithmetic Reasoning. All these positive correlations indicate that a participant who scored higher on one subtest also scored higher on the other subtests.

*Test of Hypotheses 1A, 1B and 1C: Self-Identification*

Hypothesis 1A (Racial Self-Identification) predicted that Latino/Hispanic participants who self-identified racially as Black would score lower on an intelligence test compared to Latino/Hispanic participants who identified racially as White or Other. Given that there was only one participant who self-identified as Black, statistical tests were not performed as they could not produce interpretable results. An investigation of
the means indicated that the mean for the White/Other participants \((M = 85.08)\) was higher than the score for the Black participant \((M = 80.00)\), but again this difference cannot be meaningfully interpreted. Thus, Hypothesis 1A was not supported. However, the results are in the predicted direction.

Hypothesis 1B (Pan-ethnic Self-Identification) predicted that Latino/Hispanic participants who self-identified as Hispanic would score lower on an intelligence test compared to Latino/Hispanic participants who identified racially as Latino. In order to test hypothesis 1B, an independent samples t-test was conducted. There were no statistically significant differences in Ability Profiler scores between the two groups, \(t(92) = .076, p = .939, d = 0.02\). Thus, hypothesis 1B was not supported. The mean for the Hispanic participants \((M = 89.66)\) was slightly higher than the mean for the Latino participants \((M = 89.39)\), which was opposite from what was predicted.

Hypothesis 1C (Racial vs. Ethnic Self-Identification) predicted that Latino/Hispanic participants who utilized an ethnic identity would have higher intelligence test scores compared to Latino/Hispanic participants who utilized a racial identifier. In order to test hypothesis 1C, an independent samples t-test was conducted. Participants who utilized an ethnic identity \((M = 87.28)\) scored statistically significantly higher on the Ability Profiler than did participants who utilized a racial identifier \((M = 60.33)\), \(t(62) = -2.461, p = .017, d = 1.46\). However, there were only three individual in the group using a racial label, so this finding should be interpreted cautiously. Therefore, hypothesis 1C was tentatively supported. Participants who utilized an ethnic identity scored higher on the Ability Profiler compared to participants who utilized a racial label.

*Test of Hypotheses 2A and 2B: Ethnic Centrality*
Hypothesis 2A (Low vs. High Ethnic Centrality) predicted that Latino/Hispanic participants with high ethnic centrality would score higher on an intelligence test compared to Latino/Hispanic participants with low ethnic centrality. In order to test hypothesis 2A, an independent samples t-test was conducted. There were no statistically significant differences in Ability Profiler scores across the two groups, $t(110) = .540, p = .591, d = 0.10$. An investigation of the means indicated that the mean for participants with high centrality ($M = 86.78$) was lower than the mean for participants with low centrality ($M = 88.67$). Hypothesis 2A was not supported. Furthermore, the results are in the opposite direction from what was predicted. Participants with low ethnic centrality scored higher on the Ability Profiler compared to those with high ethnic centrality.

Hypothesis 2B (Self-Identification Moderation of Ethnic Centrality) predicted that self-identification would moderate the relationship between ethnic centrality and scores on an intelligence test such that Latino/Hispanic participants with high ethnic centrality who utilized an ethnic label would have higher scores on an intelligence test compared to Latino/Hispanic participants with high centrality who utilized a pan-ethnic label. In order to test hypothesis 2B, a univariate analysis of variance was conducted. The ANOVA revealed that there was a statistically significant main effect of label $F(1,103) = 4.212, p = .043, \eta^2 = .039$. However, there was no statistically significant main effect of ethnic centrality $F(1,103) = .542, p = .463, \eta^2 = .005$ and no statistically significant interaction $F(1,103) = 1.140, p = .288, \eta^2 = .011$. Thus, hypothesis 2B was not supported, as self-identification did not moderate the relationship between ethnic centrality and scores on the Ability Profiler. However, the mean Ability Profiler scores indicated that participants
who had high ethnic centrality and utilized a pan-ethnic label ($M = 88.70$) scored higher than those participants high on ethnic centrality utilizing an ethnic label ($M = 83.57$).

*Test of Hypotheses 3A, 3B and 3C: Acculturation*

Hypothesis 3A (Low vs. High Acculturation) predicted that Latino/Hispanic participants who utilized an integrationist or assimilation acculturation strategy would score higher on an intelligence test compared to Latino/Hispanic participants who utilized a separatist or marginalized strategy. In order to test hypothesis 3A, an independent samples t-test was conducted. There were no statistically significant differences in Ability Profiler scores across the two groups, $t(110) = -1.68, p = .086, d = 0.03$. Thus, hypothesis 3A was not supported.

Hypothesis 3B (Immigrant vs. Native) predicted that immigrant Latino/Hispanic participants would score lower on an intelligence test compared to U.S. native Latino/Hispanic participants. In order to test hypothesis 3B, an independent samples t-test was conducted. There were no statistically significant differences in Ability Profiler scores across the two groups, $t(110) = -1.92, p = .048, d = 0.16$. Thus, hypothesis 3B was not supported. As a supplemental analysis a linear regression was conducted for hypothesis 3B. As was found in the t-test, acculturation did not significantly predict Ability Profiler scores, $b = 2.80, t(110) = .948, p = .345$. However, acculturation explained 9% of the variance in Ability Profiler scores, $R^2 = .090, F(1, 110) = .899, p = .345$.

Hypothesis 3C ($1^{st}/2^{nd}$ vs. $3^{rd}$/Higher Generation) predicted that Latino/Hispanic participants who were $3^{rd}$ generation or higher would score higher on an intelligence test compared to Latino/Hispanic participants who were $1^{st}$ or $2^{nd}$ generation. In order to test
hypothesis 3C, an independent samples t-test was conducted. There were no statistically significant differences in Ability Profiler scores across the two conditions, $t(110) = 1.462$, $p = .147$, $d = 2.46$. Thus, hypothesis 3C was not supported. The means indicated that the mean for 3rd generation or higher participants ($M = 77.86$) was lower than the mean for the 1st and 2nd generation participants ($M = 88.34$), which is the opposite pattern of what was predicted.

**Test of Hypotheses 4A and 4B: Cultural Distance**

Hypothesis 4A (Low vs. High Cultural Distance) predicted that Latino/Hispanic participants who perceived a large cultural distance between their heritage culture and the mainstream culture would score lower on an intelligence test compared to Latino/Hispanic participants who perceived a small cultural distance. Furthermore, hypothesis 4B (Acculturation Moderation of Cultural Distance) predicted that acculturation strategy would moderate the relationship between cultural distance and scores on an intelligence test such that Latino/Hispanic participants who perceived a large cultural distance and utilized an assimilation or integrationist acculturation strategy would have higher scores on an intelligence test compared to Latino/Hispanic participants who perceived a large cultural distance and utilized a separatist or marginalized strategy.

The analyses for hypotheses 4A and 4B could not be conducted. Analysis of the cultural distance measure indicated that the mean score was 1.527 with a median of 1.48. The variance was .133 and standard deviation was .370 indicating that the scores were tightly clustered around the mean. Thus, the majority of participants perceived a small cultural distance between their heritage culture and the mainstream culture indicating
they saw no or very little difference between the two cultures. There was a floor effect in scores, which prohibited an analysis of the two hypotheses predicting cultural distance would have an effect on Ability Profiler scores.

*Test of Hypotheses 5A and 5B: Test Perceptions*

Hypothesis 5A (Face Validity) predicted that Latino/Hispanic participants who perceived an intelligence test has having low face validity would score lower on an intelligence test compared to Latino/Hispanic participants who perceived high face validity. In order to test hypothesis 5A, an independent samples t-test was conducted. There were no statistically significant differences in Ability Profiler scores across the two groups, \( t(110) = 1.034, p = .304, d = 0.86 \). Thus, hypothesis 5A was not supported. However, the mean for the participants who perceived low face validity (\( M = 89.85 \)) was higher than the mean for participants who perceived high face validity (\( M = 86.18 \)). As a supplemental analysis a linear regression was conducted for hypothesis 5A. As was found in the t-test, face validity did not significantly predict Ability Profiler scores, \( b = -5.25, t(110) = -1.88, p = .063 \). However face validity explained 17.6% of the variance in Ability Profiler scores, \( R^2 = .176, F(1, 110) = 3.527, p = .063 \).

Hypothesis 5B (Predictive Validity) predicted that Latino/Hispanic participants who perceived an intelligence test has having low predictive validity would score lower on an intelligence test compared to Latino/Hispanic participants who perceived high predictive validity. In order to test hypothesis 5B, an independent samples t-test was conducted. There were no statistically significant differences in Ability Profiler scores across the two groups, \( t(110) = .412, p = .681, d = 0.34 \). Thus, hypothesis 5B was not supported. The pattern of the means is in the opposite direction from what was predicted.
Participants who perceived a low predictive validity regarding the Ability Profiler scored higher than those who perceived a high predictive validity. As a supplemental analysis a linear regression was conducted for hypothesis 5B. As was found in the t-test, acculturation did not significantly predict Ability Profiler scores, $b = .488$, $t(110) = .195$, $p = .846$. In addition, acculturation did not explain a significant proportion of variance in Ability Profiler scores, $R^2 = .019$, $F(1, 110) = .038$, $p = .846$.

*Test of Research Question 1: Ethnicity*

Research question 1 asked whether Latino/Hispanic participants with heritage from Central America, South America and Cuba would score higher on an intelligence test compared to participants with heritage form Puerto Rico or Mexico. There were no participants who indicated their heritage as being Cuban thus only those participants who indicated Central America, South America, Puerto Rico and Mexico as their heritage culture were included in the analysis. In order to test research question 1, an independent samples t-test was conducted. Participants who indicated Central America and South America has their heritage culture ($M = 93.48$) did score significantly higher on the Ability Profiler than did participants who identified Puerto Rico or Mexico as their heritage culture ($M = 57.67$), $t(33) = -4.682$, $p = .000$, $d = 2.10$. This difference should be viewed with the knowledge that there were 29 participants in the Central America/South America group and only six participants in the Puerto Rico/Mexican group. Further, there were 27 participants who indicated their heritage culture as a country from South America while two participants indicated a country from Central America.

*Test of Research Questions 2A, 2B, 2C and 2D: Self-Identification and Test Perceptions*
Research question 2A (Test Perceptions Mediation of Self-Identification) examined whether test perceptions mediated the relationship between self-identification and test performance such that self-identification would influence test perceptions thus impacting how the individual scored on an intelligence test. There was no evidence of mediation due to test perceptions not being related to either self-identification or scores on the Ability Profiler.

Research question 2B (Racial Self-Identification Impact on Test Perceptions) examined if Latino/Hispanic participants who self-identified as White would have the most positive test perceptions and highest intelligence test scores of all groups and if participants who self-identified racially as Black would have the most negative test perceptions and lowest test scores. It should be noted that there was only one participant who identified racially as Black, thus the results should be viewed with this knowledge. A univariate ANOVA analysis was conducted and revealed no statistically significant differences in Ability Profiler scores, $F(3, 104) = .195, p = .900, \eta^2 = .006$; test perceptions $F(3, 104) = .492, p = .689, \eta^2 = .014$. An investigation of the mean scores indicated that participants who identified their race as White scored the highest on the Ability Profiler. Participants who identified as Hispanic or Latino scored second highest and those who used Other as their racial identification scored third highest. The participant who utilized Black as their racial identifier scored the lowest on the test of intelligence. The same pattern emerged for test perceptions with White participants having the most positive test perceptions and the Black participant having the most negative. Latino/Hispanic participants had the second most positive test perceptions.
while those who indicated Other as their racial identifier had the third most positive test perceptions.

Research question 2C (Self-Identification Impact on Test Perceptions) examined whether participants who identified as Latino or with a hyphenated ethnic label would have positive test perceptions and higher intelligence test scores than participants who identified racially as Black or who used a different ethnic label. Research question 2D (Self-Identification Impact on Test Perceptions) examined if participants who identified as Hispanic would have more positive test perceptions and higher intelligence test scores than those who identified as Black but lower than all other groups. The analysis for these two questions was combined for ease of interpretation. A MANOVA was conducted. Results indicated there was a statistically significant difference in Ability Profiler scores between self-identification labels, $F(5, 106) = 2.643, p = .027, \eta^2 = .111$. A post hoc Tukey test could not be conducted due to having only one participant in the Black group. However, an investigation of the mean scores indicated that participants who utilized Latino as their self-identifier scored the highest ($M = 90.77$). Those that utilized Hispanic scored second highest ($M = 89.55$) followed by participants who used a different ethnic label from a hyphenated label ($M = 88.25$) and then the participant who utilized Black ($M = 78.00$). Participants who utilized a hyphenated label scored the second lowest ($M = 76.78$) with participants who utilized Other scoring the lowest ($M = 62.50$). There was no significant difference for tests perceptions, $F(5, 106) = 1.626, p = .159, \eta^2 = .071$.

*Test of Research Question 3: Test Perception Mediation of Acculturation*

Research question 3 asked whether test perceptions mediated the relationship between acculturation and test performance such that acculturation strategy utilized
would influence test perceptions thus impacting how the individual scored on an Ability Profiler. There was no evidence of mediation due to test perceptions not being related to either acculturation strategy or scores on the Ability Profiler.

*Test of Research Question 4: Test Perceptions Mediation of Cultural Distance*

Research question 4 examined whether test perceptions would mediate the relationship between cultural distance and test performance such that cultural distance perceptions would influence test perceptions thus impacting how the individual scored on an intelligence test. The analyses for research question 4 could not be conducted due to the reason given above for hypotheses 4A and 4B. There was a floor effect in scores on the cultural distance measure, which prohibited an analysis of the research question.

*Test of Research Question 5: High Acculturation Mediation of Test Perceptions*

Research question 5 examined whether the use of an assimilation or integrationist strategy by Latino/Hispanic participants would lead to higher test perceptions, which would lead to higher scores on the Ability Profiler. There was no evidence of mediation due to test perceptions not being related to either acculturation strategy or scores on the Ability Profiler.

*Post Hoc Tests*

The Ability Profiler score difference between the Latino/Hispanic participants and U.S. born White participants was tested post hoc as there was no hypothesis asserted regarding this difference. The reason for testing this difference was to see whether Latinos/Hispanics scored lower than Whites on the test of intelligence as has been shown in previous research.
To test the difference the Latino/Hispanic sample utilized in the hypothesis testing above was compared to U.S. born White participants as described above. Utilizing an independent samples t-test it was found that White participants \((M = 97.82)\) scored statistically significantly higher on the ability profiler than Latino/Hispanic participants \((M = 87.77)\), \(t(186) = -3.995, p = .000, d = .59\). In addition, White participants scored significantly higher on all the subtests except for spatial ability in which White participants scored higher \((M = 14.49)\) than Latino/Hispanic participants \((M = 13.86)\) but not significantly. Again, utilizing independent samples t-tests for the subtests that were significantly different, the following results were found. For the arithmetic reasoning subtest, White participants had a mean of 13.51 and Latino/Hispanic participants had a mean of 11.55, \(t(186) = -4.132, p = .000, d = .61\). On the verbal ability subtest, the mean for White participants was 12.95 and for Latino/Hispanic participants it was 12.11, \(t(186) = -2.289, p = .023, d = .34\). Finally on the clerical perception subtest, White participants had a mean of 56.87 and Latino/Hispanic participants had a mean of 50.25, \(t(186) = -3.406, p = .001, d = .51\).

Language use of the Latino/Hispanic participants was also investigated post hoc as a control variable in order to see whether it had an effect on test scores. It was found that language was not correlated with scores on the Ability Profiler, therefore, it was not utilized as a control variable. Interestingly, it was found that primary language spoken at home was significantly correlated with primary language spoken at school \((r = .236, p < .05)\). Further, primary language spoken at school was significantly correlated with primary language spoken with friends \((r = .309, p < .01)\). However, primary language spoken at home was not correlated with primary language spoken with friends.
As a quality check of the measures to ensure participants were attentive while taking the measures, the data was investigated for inconsistent answers and the variance on measures for participants. The participants appeared to be answering the measures consistently. In addition, for participants, there was variance within the measures indicating they were not just answering high on a measure or low on a measure in order to quickly answer the questions without reading the questions. Finally, the BIDR was given as a check for a measure of impression management. The participants in the present research did not appear to be utilizing impression management as indicated by the mean for the BIDR being 3.73 (min = 2.25, max = 4.75). Based on the above, the participants appeared to be attentive in their answering of the measures and they were not answering based on impression management desires.

*Subtest post hoc tests per hypothesis.* Although all but one hypothesis was not supported, the scores on the subtests (arithmetic reasoning, verbal ability, spatial ability, and clerical perception) were investigated in order to explore any patterns that may have emerged. Independent samples t-tests were conducted for the following post hoc tests. None of the differences reported were significant except as noted below. The Latino/Hispanic sample utilized in the hypothesis testing above was utilized for the post hoc tests described below. Statistical tests for each subtest per hypothesis are reported in Table 5.

With regards to the Black participant compared to the White participants (hypothesis 1A), the White participants scored higher on all the subtests except for vocabulary ability in which the Black participant scored higher. Hispanics scored higher than Latinos (hypothesis 1B) on all the subtests except for spatial ability in which Latino
participants scored higher. Participants utilizing an ethnic identity scored higher on all the subtests compared to participants who utilized a racial identity (hypothesis 1C). The difference between those that utilized an ethnic identity and those that used a racial identity was significant for two of subtests: spatial ability, $t(62) = -2.409, p = .019, d = 1.42$; clerical perceptions, $t(62) = -2.163, p = .034, d = 1.28$. However, this finding should be viewed with the knowledge that there were only three participants who utilized a racial identifier while 61 participants utilized an ethnic identifier.

Participants who were high in ethnic centrality scored higher than those low in ethnic centrality (hypothesis 2A) on only one subtest, spatial ability. Those low in centrality scored higher on all the other subtests. Those participants who utilized an integrationist or assimilation acculturation strategy scored higher than those who utilized a separatist or marginalized strategy (hypothesis 3A) on all the subtests expect for clerical perception. Regarding immigrants scoring lower than U.S. native participants (hypothesis 3B), this was true for only the arithmetic reasoning subtest; this difference was just above the traditional threshold for statistical significance, $t(110) = -1.933, p = .056, d = .37$. On the other three subtests, immigrant participants scored slightly higher than U.S. native participants. With regards to generational status (hypothesis 3C), 3rd generation and higher participants did not score higher than 1st or 2nd generation participants on any of the subtests. 1st generation or 2nd generation participants scored higher on all the subtests than did 3rd generation or higher. The difference between the groups on the verbal ability was significantly different, $t(110) = 2.099, p = .038, d = .82$. However, this difference should be viewed with the knowledge that 105 participants identified as being 1st or 2nd generation while only seven identified as being 3rd generation or higher.
Due to the larger sample size of 1st and 2nd generation participants, a post hoc investigation of these participants was conducted. An independent samples t-test was conducted and found that 2nd generation participants ($M = 89.57$) scored higher on the Ability Profiler compared to 1st generation participants ($M = 87.27$) however this difference was not statistically significant. An analysis of the difference in subtests showed that 2nd generation participants scored higher on three of the subtests compared to 1st generation participants. 1st and 2nd generation participants scored approximately the same on spatial ability ($1^{\text{st}}$ generation $M = 14.09$; $2^{\text{nd}}$ generation $M = 14.02$). 2nd generation scored higher on verbal ability, arithmetic reasoning, and clerical perception. Only the difference in arithmetic reasoning was significant, $t(103) = -2.182, p = .031, d = .43$. The score differences on the verbal ability and clerical perception subtests were not significantly different.

Participants who viewed the Ability Profiler as having low face validity did not score lower than those who viewed it as having high validity (hypothesis 5A). Those who viewed the test as having low face validity scored higher on all four subtests compared to those who viewed the test as having high face validity. As for the impact of predictive validity, participants who viewed the Ability Profiler as having low predictive validity scored lower on the test compared to those who perceived high predictive validity (hypothesis 5B) on three out of the four subtests. They scored lower on spatial ability, verbal ability, and arithmetic reasoning. However, those who perceived low predictive ability scored higher on clerical perception.
Participants with a heritage culture in Central American or South America scored higher on all four subtests compared to participants whose heritage culture was Puerto Rico or Mexico. Utilizing an independent samples t-test it was found that three of the subtest differences were significant: spatial ability, \( t(33) = -3.516, p = .001, d = 1.58 \); arithmetic reasoning, \( t(33) = -3.36, p = .002, d = 1.51 \); clerical perception, \( t(33) = -3.914, p = .000, d = 1.76 \). The difference between groups on the verbal ability, while in the expected direction, was not significant. However, these differences should be viewed with the knowledge that only two participants identified as having a heritage culture in Central America, 27 identified South America, two identified Puerto Rico and four identified Mexico has their heritage culture.
Chapter 13 – Discussion

While the research on cognitive ability tests indicates that they are one of the most valid predictors of academic as well as job performance (Schmidt & Hunter, 1998), there remain concerns regarding using such tests in high stakes situations. These tests have been shown to exhibit subgroup differences in results between ethnic/racial groups (Sackett et al., 2001). The explanations put forth for why the differences occur have been primarily investigated for Blacks/African-Americans while not fully investigated for Latinos/Hispanics.

Due to the lack of research for Latinos/Hispanics within the domain of cognitive ability testing, the current study focused on this group. This group was the focus due to the inadequate attention given to intelligence test scores of Latino/Hispanic test-takers. Most of the research conducted in this area has focused on Black/African-American test-takers compared to White test-takers with the results of this research being generalized to Latino/Hispanic test-takers. This generalization may not be appropriate due to the factors driving the differences for Black/African-American test-takers may not be the same factors driving the differences for Latino/Hispanic test-takers.

The goal of this study was to attempt to overcome what many consider the inadequate use of the Black-White comparison in explaining why Latino/Hispanic test-takers score as they do on intelligence tests (Alcoff, 2003; Grubb & Ollendick, 1986; Landale & Oropesa, 2002). The present study attempted to fill the gaps in the literature regarding research conducted on Latino/Hispanic test-takers and the scores obtained on intelligence tests by individuals within this group. A unique combination of variables was utilized which were thought to be affecting Latino/Hispanic test-takers. The effects on
test scores of self-identification, ethnic centrality, acculturation, cultural distance, ethnicity, and test perceptions were investigated. Further, due to within group differences between Latinos/Hispanics from different nations tending to be ignored within the literature, this study attempted to investigate these differences where possible through a non-experimental design.

Summary of Main Findings

The major contribution of this study was the investigation of societal and cultural explanations for intelligence test scores within a Latino/Hispanic sample utilizing a unique combination of variables. While causal explanations cannot be drawn from the present research due to the non-experimental design, some relationships were found which might aid in our understanding of scores obtained by Latinos/Hispanics.

The first variable investigated was self-identification. Self-identification seems to be related to intelligence test scores when individuals are using a racial identifier. It was found that those participants who utilized an ethnic identifier scored higher than those who self-identified using a racial label. In addition the effect was substantive indicating the magnitude of the relationship was large. The sense of belonging to a group, i.e. belonging to an ethnic group, seems to have positive implications for individuals (Fuligni et al., 2005). When investigating the subtests regarding those participants who identified utilizing an ethnic label versus a racial label, we see that the spatial ability and clerical perception subtests seem to be related to the difference with the arithmetic reasoning subtest also appearing to be a factor in the difference. The subtests that seem to be associated in the differences seen here could be said to be aligned closely with crystallized intelligence (Horn & Cattell, 1966). Thus, perhaps these types of tests trigger
a negative reaction for individuals utilizing a racial label linked to the stereotypes of racial minorities not doing well in these areas. Whereas the verbal ability subtest does not seem to be related to the difference, which makes sense here as language ability does not seem to be playing a role in the present research. However, these comparisons involved small sample sizes and will need to be replicated in future research. In addition, while not statistically significant, it was found that those Latino/Hispanic participants who identified as White scored higher on the Ability Profiler than those who identified as Black.

An interesting finding within self-identification was the finding for those participants who identified as Hispanic versus Latino. The results were in the opposite direction from what was predicted. Participants who self-identified as Hispanic scored slightly higher on the Ability Profiler than did participants who self-identified as Latino, although this finding was neither statistically significant nor substantively significant. Although some view the term Hispanic to be racialized, the participants in the present sample may not have held a negative view of the term. It was believed that the sample utilized in this study would view “Hispanic” as a negative term while viewing “Latino” as more positive due to it not having a racial tone. However, the use of Hispanic and the view of the term may be similar to Latino for this group. Thus the participants who utilized Hispanic in this study may have scored higher than those who used Latino simply due to a benign view of the word. Further research should look into the specific views of Latinos/Hispanics regarding the differing labels available to them and the impact these labels have on scores on intelligence tests.
The next variable investigated was centrality. This variable has to do with how much an individual defines himself or herself by his or her race or ethnicity (Rivas-Drake et al., 2009). It was believed that individuals with a high ethnic centrality would score higher on the Ability Profiler compared to those with a low ethnic centrality. However, the opposite was found in this study. Participants who had a low ethnic centrality scored higher compared to those with a high ethnic centrality, although this finding was not statistically significant or substantively significant. This opposite finding may be due to the fluid nature of Latinos/Hispanics identities. The identities of Latinos/Hispanics can shift based on context and from moment-to-moment (Itzigsohn et al., 2005), thus the ethnic centrality of the individuals may differ based on the situation. Although it was not measured in this study, this fluidity of identity may have played a role in those individuals with low centrality to not be impacted by stereotypes regarding Latinos/Hispanics as they may shift their identity when taking tests such as the one taken here. Future research should investigate this shifting of identity explicitly in such situations. When investigating the moderating effect of self-identification on ethnic centrality and test scores, it was found that self-identification did not moderate the relationship. However, participants who had a high ethnic centrality and self-identified utilizing a pan-ethnic (i.e., Latino or Hispanic) label scored higher on the Ability Profiler compared to those with a high ethnic centrality and self-identified with an ethnic label (i.e., Mexican). However this relationship was of small/medium magnitude.

Acculturation was the next variable investigated. This is the process an individual progresses through when coming into constant contact with a culture other than his or her heritage culture (Berry, 1989; López et al., 2002). Overall, it was believed that
individuals who where utilizing an integrationist or assimilation acculturation strategy would have higher scores on the Ability Profiler than those who utilized a separatist or marginalized strategy. When looking at the mean scores, the two groups scored almost equivalently on the Ability Profiler and the relationship was of a small magnitude. Investigating the subtests, the verbal ability subtest had the largest difference based on the analysis, however not statistically significant. This would be expected since individuals who utilize a separatist or marginalized strategy do not take part fully in the mainstream culture thus they may not be as comfortable with their verbal ability on such tests as would an individual utilizing an integrationist or assimilation strategy. Also as acculturation is believed to influence crystallized intelligence (Horn & Cattell, 1966), this finding would be expected.

It was also believed that immigrant participants would score lower on the test than U.S. born participants. Again the results were not statistically significant and of a small magnitude however the results were in the direction predicted. The mean score for immigrant participants was slightly lower than the mean score for the U.S. native participants. With regards to the subtests, the arithmetic reasoning subtest seemed to be related to the difference seen with this comparison. The immigrants scoring lower than natives in the present study may be due to the cultural loading of the test. It has been indicated in previous research that immigrants tend to have lower mean scores than native participants on intelligence tests (Gonzales & Roll, 1985; Helms-Lorenz & van de Vijver, 1995; Malda et al. 2010). Thus the immigrant participants in the present research may not have had the cultural information available to them compared to the native participants. Future research should investigate this explanation more fully by looking at
the test at the item level. By doing so, the research could reveal if there are items that are culturally loaded which may be driving the lower scores of immigrants.

With regards to generation status, it was hypothesized that participants who were 3rd generation or higher would score higher on the Ability Profiler than those who were 1st or 2nd generation. Surprisingly, the opposite was actually found. 1st and 2nd generation participants scored higher on the Ability Profiler compared to 3rd generation and higher participants and the effect was of a large magnitude. An investigation of the subtest analysis indicated that the verbal ability and spatial ability subtests seem to be driving the difference found. The difference in verbal ability associated with this finding is surprising. Especially with the knowledge that verbal ability did not seem to be associated with any other difference found within the subtest analyses except with acculturation strategy. In addition, when looking at the difference between 1st generation and 2nd generation participants, as was done in the post hoc analysis, a strong effect of verbal ability on the difference was not seen. However, the 2nd generation participants did score higher on the verbal ability subtest than did the 1st generation. Further investigation of why the verbal ability subtest was associated with the difference in the original hypothesis should be done in order to understand the relationship of verbal ability to generational status. The spatial ability finding is not as surprising due to there not being a need for language ability on this subtest. In addition, research has indicated that utilizing tests that lessen cultural differences (such as tests of spatial ability) between groups creates smaller differences (Fagan & Holland, 2002). However, these findings need to be viewed with the understanding that there were only seven participants who identified as being 3rd generation or higher while there were 105 who identified as being 1st or 2nd
generation. The low power in the 3rd generation or higher group may be impacting the findings reported here.

Another variable investigated was cultural distance, which is how similar or different an individual sees his or her heritage culture and the mainstream culture (Yijala, et al., 2012). The larger the difference is perceived to be, the larger the perceived cultural distance. Thus it was believed that participants who perceived a large cultural distance would not have the knowledge required to do well on a test of intelligence due to not adopting mainstream sociocultural characteristics, which are required to do well on such tests. In contrast, individuals who perceived a small cultural distance would do well on a test of intelligence, as they would be operating with a knowledge base required to succeed on these tests. The participants in the sample investigated in the present study all indicated a perceived small cultural distance. They did not see a difference between their heritage cultures and the mainstream U.S. culture. Thus, this variable could not be investigated in the way proposed.

The last variables investigated had to do with test perceptions, specifically face and predictive validity. Perceived face validity has to do with whether the test-taker believes the test is measuring what it claims to measure while perceived predictive validity is the belief that the test will predict the test-takers future performance (Chan, 1997). It was believed that those participants who perceived the Ability Profiler as having high face validity would score higher than those who perceived low face validity. Results indicated the opposite such that participants who perceived the Ability Profiler as having low face validity scored higher than participants who perceived the test as having high face validity. In addition, the effect was of substantive significance indicating the
relationship was of a large magnitude and a regression analysis indicted that face validity explained 17.6% of the variance. While the initial analysis was not statistically significant the magnitude of the relationship was large indicating that face validity is related to intelligence test scores. This effect also indicates that there appears to be a consistent difference between individuals who perceived low face validity versus those who perceived high face validity. Future research should investigate this effect further due to the limitations noted below regarding this measure in the present research.

With regards to predictive validity it was asserted that those who perceived the test as having high predictive validity would score higher than those who perceived a low predictive validity, the opposite was found. Participants with a perceived low predictive validity regarding the Ability Profiler scored higher than those with a high perceived predictive validity, however this relationship was of a small magnitude. The findings for both face validity and predictive validity may be due to the fact that these measures were taken prior to the participants taking the intelligence test in this study and the explanation of the test given to participants not being a full enough explanation. Anecdotally, it was not clear to all participants regarding how they could rate the face and predictive validity of the test of intelligence prior to taking the test. Future research should overcome this by having a fuller explanation of the test for the pre-test measure of these variables.

A set of research questions was also investigated within the present research. The first research question had to do with participants from differing countries and regions within the Latino/Hispanic population. This research question was another major goal of the present research, to investigate the within group differences of scores as this had not been done in prior research. Differences based on region and country were found with
participants indicating Central and South America as their heritage country scoring statistically significantly higher on the Ability Profiler than those indicating Puerto Rico or Mexico as their heritage culture. In addition there was a large effect indicating the relationship was of a large magnitude. The present research was unable to fully investigate the question asserted originally as there were no Cuban participants, thus future research should recruit specifically for this group. In addition, in order to fully understand the within group differences future research should investigate the differences between participants from different countries rather than regions. In this way, we can gain a more nuanced understanding of where any differences in intelligence test scores are coming from and have more accurate knowledge regarding these differences.

There were also four research questions that had to do with the effects of self-identification on scores. While there were no mediation effects of test perceptions on self-identification and scores on the Ability Profiler found, there were some interesting results regarding the main effects of self-identification. While not statistically significant or substantively significant, it was found that Latino/Hispanic participants that identified as White scored the highest on the Ability Profiler and had the highest test perceptions. The participants who utilized a pan-ethnic label scored the second highest with the next highest test perceptions while those who identified using the “Other” category scored next highest on both measures. The individual who self-identified as Black scored the lowest on the Ability Profiler and had the lowest test perceptions. Self-labeling was further questioned here in order to explicate the effect of this variable by investigating a more precise use of labels (e.g. Latino, Hispanic, hyphenated, etc). A statistically significant difference in Ability Profiler scores emerged when looking at self-labels more
precisely however this difference was of small magnitude. In particular, Latino/Hispanic participants who utilized Latino as their self-label scored the highest on the Ability Profiler while those who labeled themselves Hispanic scored the next highest. Individuals who utilized a different ethnic label, such as Mexican, scored third highest and participants who self-labeled with a hyphenated label (e.g. Mexican-American) scored fourth highest. The participant who identified as Black was the next with participants who chose “Other” as their label scoring the lowest on the Ability Profiler. There is a limitation to these findings, namely that there was only one participant who self-identified as Black.

The final three research questions were regarding mediation effects. There were no mediation effects found for test perceptions. Analysis indicated that test perceptions were not related to acculturation strategy or to the Ability Profiler. With regards to cultural distance, due to the floor effect found in the results of the cultural distance measure the research question pertaining to this variable could not be analyzed.

*Summary of Post Hoc Findings*

It was found that language did not correlate with the Ability Profiler, thus in the present study language did not appear to impact the scores of the Latino/Hispanic test-takers. In addition, as has been found in prior research (e.g. Hough et al., 2001; Roth et al., 2001), non-Latino/Hispanic White test-takers in the present study scored higher on the test of intelligence than did Latino/Hispanic test-takers. This difference was found to be statistically significant with a medium effect size indicating an intermediate magnitude relationship. Non-Latino/Hispanic White test-takers not only scored higher overall on the
test but they also scored higher on all the subtests. An analysis was also done on each sub-test for the Latino/Hispanic sample used in the main analysis.

*Verbal Ability.* On the verbal ability sub-test there was only one significant difference found between the groups tested; 1st and 2nd generation participants scored higher than 3rd generation and higher participants. As noted above, the 1st/2nd generation group was much larger than the 3rd generation and higher group therefore the former group was analyzed to investigate differences. As would be expected, 2nd generation participants scored higher than 1st generation. This is expected due to 2nd generation participants having been born in the U.S. therefore being a part of the mainstream culture and utilizing English from an early age.

The remaining group differences were not significant, however some interesting results were found as well as some expected trends. As would be expected, those participants who used an integrationist or assimilation acculturation strategy scored higher than those that used a separatist or marginalized strategy. This would be expected due to those using the former strategies obtaining the language skills necessary to operate within the mainstream culture. Another expected finding was that those who identified using an ethnic identity scored higher than those using a racial identity due to the sense of belonging associated with utilizing an ethnic identity (Charmaraman & Grossman, 2010; Fuligni et al., 2005). Finally, those participants from Central America and South America scored higher than those participants from Puerto Rico and Mexico, which is expected due to previous research finding that individuals from the former group tend to perform better in school than individuals from the later group (Carranza et al., 2009; Ogbu, 1987).
An interesting finding is that participants who identified as Hispanic scored higher than those that identified as Latino. This may be due to the reason given above. That is “Hispanic” may not have been viewed as a racialized term by the participants in this study. Therefore there was not a negative connotation linked to the term. In addition as the term Hispanic is popular on the East coast and this study took place in that part of the country, the participants may use Hispanic regularly over other terms due to their familiarity with the term.

Finally, immigrant participants scored nearly the same as U.S. native participants on this sub-test (i.e. immigrant $M = 12.07$; U.S. native $M = 12.04$). A reason for this finding may be that primary language spoke at school (98.2%) by the Latino/Hispanic participants and with friends (81.1%) was English. This may have allowed the immigrant participants to be comfortable utilizing their English verbal ability on this test and resulting in a score that was nearly the same as the U.S. native participants. In addition, prior research has indicated that when English is the primary language utilized by individuals, there is a positive effect on test scores (Morales & Saenz, 2007). Thus, utilizing English as their primary language in school and with friends may have had a positive effect on immigrant participants’ scores.

*Arithmetic Reasoning.* There were three statistically significant differences on the arithmetic reasoning sub-test: 1) U.S. native participants scored higher than immigrant participants; 2) 2nd generation participants scored higher than 1st generation participants; and 3) participants from Central America and South America scored higher than participants from Puerto Rico and Mexico. The first two findings were expected while the last finding was questioned regarding whether it would occur or not. The first two
comparisons were expected as research has shown that natives tend to score higher than immigrant participants on cognitive ability tests (Gonzales & Roll, 1985; Helms-Lorenz & van de Vijver, 1995; Malda et al. 2010; te Nijenhuis, de Jong, Evers, & van der Flier, 2004). The final comparison was part of a research question that was questioned regarding whether it would occur due to the literature indicating that individuals from these regions tend to score better than individuals from Puerto Rico or Mexico.

Although not statistically significant, there were other expected findings. Those participants that utilized an ethnic identifier scored higher than participants who used a racial identity. Also, participants using an integrationist or assimilation acculturation strategy scored higher than those participants who used a separatist or marginalized strategy. This is expected as participants who used an integrationist or assimilation acculturation strategy have gained the knowledge necessary to succeed in the mainstream culture.

Unexpected findings include those participants who identified as Hispanic scored higher than those who identified as Latino and 1st/2nd generation participants scored higher than 3rd generation participants. A reason for the Hispanic identification finding may be the same as explicated above for these groups on the verbal ability sub-test. That is “Hispanic” may not have been viewed as a racialized term by the participants in this study. Therefore there was not a negative connotation linked to the term, which may have impacted scores in a negative manner. The generational difference finding may be due to the small sample size in the 3rd generation sample, thus future research should investigate this finding further by having a larger sample of individuals who are 3rd generation.
**Spatial Reasoning.** The results for the spatial reasoning sub-test mirrored the findings for the verbal ability sub-test, described above. However on this sub-test the difference found between those participants who identified with an ethnic identity scored statistically significantly higher than those who identified utilizing a racial identifier. This finding should be viewed with the knowledge that there were a small number of participants who utilized a racial identifier. Also the participants with a heritage culture from Central America or South America scored statistically significantly higher than those individuals with a Puerto Rican or Mexican heritage culture. Another difference on the spatial reasoning was that 1<sup>st</sup> and 2<sup>nd</sup> generation participants scored nearly the same on this sub-test. A possible reason for why the similarity in scoring on the spatial reasoning sub-test may be due to spatial reasoning not being affected by culture. The spatial reasoning test may have lessened cultural differences between the 1<sup>st</sup> generation and 2<sup>nd</sup> generation participants, thus lessening the differences in scores. Prior research indicates tests such as spatial ability seem to lessen cultural differences between groups therefore creating smaller group differences (Fagan & Holland, 2002). Further, studies have indicated that Latinos/Hispanics seem to be strong in visual reasoning (Suzuki & Valencia, 1997; Taylor & Richards, 1991).

**Clerical Perception.** The results of the clerical perception sub-test also mirrored the results of the verbal ability sub-test. Also, the same statistically significant findings found in the spatial reasoning sub-test were the same in this sub-test. Participants who utilized an ethnic identifier scored significantly higher than those who used a racial identifier. In addition, participants with a heritage culture from Central America and South America scored significantly higher than participants from Puerto Rico or Mexico.
One difference on this sub-test from the other sub-tests was that participants who utilized a separatist or marginalized acculturation strategy scored higher than participants who used an integrationist or assimilation strategy. This difference, however, was not statistically significant. Although most of the findings were not as expected and were not statistically significant, there are some theoretical and practical implications.

Theoretical Implications

This paper has a number of theoretical implications for future research and theory on understanding differences between Latino/Hispanics and other groups on important outcomes. One theoretical implication relates to the conceptualization of what Latino/Hispanic means. Country/region of heritage seems to matter, as it appears that not all Latinos/Hispanics are the same. As has been asserted in the literature, combining Latinos/Hispanics into one large group may hide important differences between ethnicities (Carranza et al., 2009). While Latinos/Hispanics share a common linguistic tradition as well as many values, there are many cultural differences due to coming from different countries (Neisser et al., 1996; Oboler, 1998). The present study indicates that this heterogeneity matters.

It was found in this research that there appears to be a difference between participants’ from different countries of heritage within the Latino/Hispanic region and scores on an intelligence test. Specifically with those participants indicating Mexican and Puerto Rican cultural heritage scoring lower than those participants indicating Central or South America. Although the present research was non-experimental and there can be no casual explanations drawn regarding the impact of country/region of heritage and scores on an intelligence test, there does seem to be a relationship. In addition, the present
findings support the notion that lower scores for Latinos/Hispanics on intelligence tests found in previous research may be inconsistent due to a reliance on Mexican and Mexican-Americans in the research. Therefore, score differences between Latino/Hispanics and Whites may be impacted depending on the target population. A portion of the difference between Latinos/Hispanics and Whites may be accounted for by country/region of heritage.

Due to this impact of country/region of heritage the operationalization of ethnicity may need to be rethought, as it seems regional differences may be tied to the notion of ethnicity. This has implications for the meta-analyses that have been conducted regarding scores obtained by Latinos/Hispanics on standardized tests of intelligence. The interpretations and theories regarding race and ethnicity of Latinos/Hispanics may be more nuanced than how currently utilized. The predictions may not be the same for individuals from different countries/regions of heritage within the Latino/Hispanic population. For example, individuals from Central America may score higher than individuals from Mexico. In addition, the explanations that are currently put forth (i.e. ethnic/racial explanations) may not apply to specific groups within the larger group. Therefore, the meta-analyses that have been conducted may need to be re-analyzed taking country/region of origin into account as the notion of Latino/Hispanic may be a more regional issue rather than an ethnic/racial issue as currently conceptualized.

Another aspect of this re-conceptualization of Latino/Hispanic is the self-label utilized by individuals. Self-labeling by Latinos/Hispanics appears to be more complicated than as currently viewed. It seems that there is a relationship between label utilized in self-identification and scores on an intelligence test. Specifically there seems
to be a relationship such that utilizing a racial self-label is related to lower scores on an intelligence test whereas utilizing an ethnic label is related to higher scores. However, a pan-ethnic label (i.e. Latino or Hispanic) seems more beneficial to scores on an intelligence test compared to utilizing an ethnic label (i.e. Mexican). Thus within the larger Latino/Hispanic group self-labeling may be contributing to differences on test scores with pan-ethnic labels being the most beneficial and ethnic labels being the next beneficial for scores. This indicates that a part of the differences between Latinos/Hispanics and Whites may be due to self-identification and may need to be taken into consideration when formulating theories regarding Latinos/Hispanics.

The present study also moves beyond the current lexicon used for identification and indicates that self-identification is important to take into consideration. The variety of identifications available to Latinos/Hispanics may be empowering to this group and may be impacting scores on tests of intelligence. The variety of identifications along with the fluidity of identification for Latinos/Hispanics indicates that a portion of the scores on intelligence tests for Latinos/Hispanics may be situationally determined as well as ability based. Therefore it may be important to look at self-labeling in context. For example, there may be differences across the United States regarding the labels used, which may be needed to be taken into account. Self-label differences may appear between individuals in New York versus those in Miami due to general integration patterns or labels used within the communities (i.e. a label may be used in one community while not being used in another). In addition, although Latinos/Hispanics may be viewed as being of the same race, the individual may see him/herself differently such as being from a particular country or region rather than of a particular race. Thus, race cannot be used as
the sole label offered for self-identification when attempting to understand scores obtained by Latinos/Hispanics. This notion regarding self-identification may also have implications for other groups such as Asians and Asian-Americans. Thus future research may need to reconceptualize the way self-identification information is gathered. It may be more appropriate to gather this information taking into account the area and the situation within which the research is being conducted. Future research needs to be more thoughtful regarding how it gathers identification information for Latinos/Hispanics and not rely on the current conceptualization of identification, i.e. the current ethnic/racial identification utilized.

Another theoretical implication has to do with immigrant status as this seems to be a dynamic phenomenon. The impact of immigrant status is important to understand due to the expected, continued immigration of individuals from Latin countries to the U.S. Theoretically, there seems to be a relationship between immigrant status and scores on an intelligence test (see Helms-Lorenz & Van de Vijver, 1995 for a review). Prior research has indicated that immigrant individuals consistently score lower on tests of cognitive ability than native individuals (Helms-Lorenz & Van de Vijver, 1995; Malda et al., 2010; te Nijenhuis et al., 2004). The present research also found this relationship as the immigrant participants (i.e. 1st generation) scored lower than those individuals born in the U.S (i.e. 2nd generation).

The present study found that being a 1st generation Latino/Hispanic is related to not scoring as well as on an intelligence test as 2nd generation Latinos/Hispanics. This relationship has been found in other cultures as well. For example, te Nijenhuis (2001) found that 1st generation individuals who immigrated to the Netherlands scored about one
standard deviation lower than individuals born in the country. An explanation for this finding may be the language difference between immigrant and native Dutch. In the present study, however, language was not found to be a factor as indicated in the results section. Rather, in the present study the finding may be due to U.S. born Latino/Hispanics having a better understanding of the U.S. culture than 1st generation individuals. It has been asserted that individuals familiar with a culture in which a test has been developed have a deeper understanding regarding the content of the test and can more quickly make associations between the content and their knowledge (Helms-Lorenz et al., 2003; Malda et al., 2010). This knowledge may favor one group over another when taking intelligence tests not developed within their own culture. For example, Malda et al. (2010) found that individuals scored better on tests, which were designed to be consistent with their culture. Therefore when investigating differences in scores on intelligence tests between Latinos/Hispanics and Whites a potential in accounting for these differences may be immigration/generational status. The present study indicates that when researching score differences immigration/generational status should be taken into account in order to better understand these differences. By taking this status into account the scores obtained may be more interpretable as 1st generation/immigrant Latino/Hispanic test-takers tend to score lower than 2nd generation/native Latino/Hispanic test-takers. Thus, the notion of culture may need to be reconceptualized when investigating Latinos/Hispanics in that generational status may need to be accounted for.

Finally, this study points to the psychological dynamics that overtime can impact scores on tests of intelligence. Prior research has investigated psychological dynamics however they have used proxies such as socio-economic status and educational
opportunity. This study attempted to move beyond what prior research has studied by investigating the psychological dynamics within the individual. Variables such as acculturation and self-identification seem to be individual dynamic phenomena impacting how Latinos/Hispanics score on tests of intelligence. In order to better understand why Latino/Hispanic test-takers score as they do, the variables used may need to be operationalized to the context in order to be inline with socialization variables and longer-term experiences that may lead to stereotypes. For example, testing environments may exasperate score differences between groups. Therefore in high stakes testing situations consisting of Latinos/Hispanics, it may be important to minimize racial identifications in order to not prime this aspect of self-identity by decreasing racial salience within the testing environment in order to lessen the impact of stereotypes. Also, promoting the idea of an ethnic group identity and the notion of collectivism may help in high stakes situations due to Latinos/Hispanics, regardless of ethnicity, tending to share the same values (Guerrero & Posthume, 2013). Future research should look at the racial self-identity relationship with intelligence test scores further due to the small racial sample in the present research. In addition, future research could possibly experimentally test this relationship by manipulating how Latino/Hispanic participants self-identify by forcing them to identify in a particular way (i.e. either Latino or Hispanic) and then investigating the impact of the identification on intelligence test scores. Theoretically it is important to consider how these socialization variables, such as acculturation and self-identification, are defined when applying them to score differences.

Practical Implications
Although there is limited data available with regards to the practical implications of intelligence testing on Latinos/Hispanics, this study does reveal some practical implications. Below the following two implications will be discussed: legal structures, and recruitment.

The legal structure based around race is the first practical implication to be discussed. A finding from the present research suggests that race may be a less important variable for Latinos/Hispanics than, for example, country/region of origin or immigrant/generational status. The issue arises as the anti-discrimination laws are defined in terms of race. Thus, there appears to be a complication for Latino/Hispanics as their self-identification moves beyond simply race and the current view with regards to how to approach mitigating adverse impact within organizations. In order to avoid adverse impact when giving high stakes tests demographic factors such as country/region of heritage and immigrant/generational status may be needed to be taken into account more prominently when interpreting scores and examining adverse impact. Selection systems may have adverse impact occurring if country/region of heritage and other characteristics such as generational status are ignored.

For example, organizations may need to think about the country/region of heritage of individuals as certain country/regional groups may have adverse impact occurring. In the present research, it was found that participants who identified as Puerto Rican scored lower on the intelligence test given than did those who identified as being from a Central American country. This may have practical implications such that individuals with a Puerto Rican heritage may be selected less often than individuals who have a Central American heritage when utilizing cognitive ability tests as part of a selection system.
However, when the group is analyzed as a whole, the impact may wash out. Thus, organizations may need to take country/region of heritage into consideration as well as the actual cognitive ability test and the items in the test when creating selection systems in order to ensure adverse impact does not occur.

Although the current research suggests these variables (i.e. immigrant/generational status and country/region of heritage) are impacting intelligence test scores there is no direct evidence on the impact of these variables on the selection of Latinos/Hispanics into organizations. Future research should examine the occurrence of adverse impact for the groups utilized in the present research. In this way, a better understanding of the impact of immigrant/generational status and country/region of heritage on selection decisions can be gained. Future research should also widen the ethnic groups (e.g. investigate individuals with Dominican Republic heritage) as well as to investigate participants specifically from the countries within Central American and South America rather than bringing them together in one large group (i.e. Central American and South American). This type of research should produce additional insights into differences between ethnicities and the relationship between countries/regions of heritage not investigated within the present study and scores on intelligence tests.

The next practical implication has to do with recruitment of Latino and Hispanic applicants. The strategies utilized in recruitment for Latinos/Hispanics may need to rely on cultural variables rather than simply on racial variables. The present research indicates that country/region of heritage may be a more relevant variable to Latinos/Hispanics than race. Thus, in order to ensure truly diverse applicant pools, the recruitment process may need to incorporate these additional variables.
With regards to the specific issue within the confines of the research presented here, the recruitment process needs to target qualified applicants within the Latino/Hispanic population while at the same taking country/region of heritage into consideration. The reason for this has to do with creating an applicant pool that is diverse while not relying on one or two particular Latino/Hispanic groups, which may be groups that do not score well on cognitive ability tests. If the recruitment strategy currently in place mainly recruits Mexicans and Puerto Ricans, for example, (which in the present research were shown to score lowest), then the result is possible adverse impact for Latinos/Hispanics. Thus, the recruitment strategies of organizations may need to be re-evaluated in order to account for cultural variables such as country/region of heritage rather than just racial or pan-ethnic variables such as Latino or Hispanic. These strategies may need to be rethought in order to take country/region of heritage into account as the current strategies may be limiting the diversity of the applicant pool with regards to the Latino/Hispanic group. For example, organizations may currently target geographical areas for recruitment that are traditionally Latino/Hispanic (e.g. Southern California which is highly Mexican) but this may not be enough if the area that is consistently targeted only represents one country/region of heritage causing other groups to be under-represented in the applicant pool. As part of the recruitment strategy, examining data on geographic trends for under-represented groups may be important for reaching these groups to ensure the diversity of Latinos/Hispanics within the applicant pool.

Another reconceptualization of a current recruitment strategy has to do with targeting Latino/Hispanic publications. While current recruitment processes may target certain regional publications known to be read by Latinos/Hispanics, this may not be
enough. Organizations may need to think about which groups (i.e. Cubans, Mexicans, etc) read the publication in order to target specific individuals from certain countries/regions of heritage. For example, La Opinión is a Spanish-language newspaper published in Los Angeles and covers news from Mexico, Central America, South America, Cuba and Puerto Rico thus if qualified applicants are needed from these groups this would be a good publication to target as part of the recruitment strategy. By targeting publications with readership of individuals from the countries/regions of heritage of interest organizations would also be recruiting in a strategic manner.

Future research on these suggestions is needed, however, in order to ascertain the efficacy of each strategy in recruiting a diverse and qualified Latino/Hispanic applicant pool. Through researching recruitment strategies, the best strategies or combination of strategies to be utilized can be determined in order to create the best applicant pool possible and to ensure a diversity of Latinos/Hispanics.

Potential Limitations

This study, like all studies, has some potential limitations. One potential limitation in this study was the small samples in some of the comparisons. For example, there was only one participant who identified him/herself as Black. Other groups that had small sample sizes were those participants who utilized a racial identifier and participants who were 3rd generation or higher. The lack of participants within these groups made drawing conclusions difficult due to the low power within these groups. A reason for the small samples and thus the low power was due in part to the difficulty in data collection. Data was collected from participants over the course of an entire academic year however sessions were never completely full due to lack of individuals signing-up or participants
not showing up as scheduled. In addition, although we recruited specifically for Latino/Hispanic participants we could not target specific races within the larger group as we did not want to trigger stereotype threat within the sessions. Future research should try to target the recruitment of these groups by specifically requesting them within the recruitment process. There may be an issue, however, with regards to attempting to recruit Latinos/Hispanics who utilize the label Black as an identifier. The latest research suggests that Latino/Hispanic individuals are less likely to identify as Black due to how they conceptualize race (Dawson, 2014). They are more likely to identify themselves as White or to utilize intermediate brown racial categories or a national identity (Dawson, 2014).

With regards to stereotype threat, (i.e. the fear of confirming a negative stereotype regarding one’s group; Steele & Aronson, 1995) the research protocol attempted to ensure stereotype threat was not activated within the procedure. This was accomplished through specifically not recruiting a particular race or races and through not using the words “test” or “exam” in the recruitment material or in communications with participants once they were in the laboratory taking the measures. At all times, participants were informed they would be aiding in the development of an assessment battery for selection of individuals into entry-level management positions within a banking organization. However, even with these safeguards stereotype threat may have been unintentionally invoked simply by recruiting Latinos/Hispanics in the initial recruitment advertisement potential participants read when deciding to participate or not. It is the belief that if it was invoked in the present research it was minimal nonetheless.
future research can attempt to ensure the complete lack of stereotype threat by not specifically recruiting Latinos/Hispanics but rather recruiting all races and ethnicities.

A second potential limitation was the sample itself. It was expected that the participants would be culturally separate and aware as well as racially conscious. In addition it was expected that psychological identification and processes would have a large impact on participants. However, surprisingly the sample did not display these expected characteristics. While it was understood that the sample would be made up of students from the New York City area, a very diverse city culturally, it was believed that cultural and racial issues would be salient. It appears though that the students’ exposure to different cultures may have had an impact on how they viewed their own culture and its relation to the mainstream U.S. culture. That is, cultural differences may not have been viewed as something negative but, unpredictably, rather something to be embraced and utilized in a positive manner. Therefore, the participants who were a part of this study may not have viewed culture differences as something to overcome. Future research should utilize the same combination of variables used in the present study but with a sample from an area that is not as culturally diverse.

A manifestation of the limitation discussed above may be due to the lack of variability within the measures. The scores on the measures of the independent variables, except for cultural distance, which were below the mean, were clustered around the mean. Participants tended to be in the middle of the range of possible scores. Therefore there was limited variance due to this clustering which may have caused a restriction of range in scores. The limited variance in this study may have led the correlations to be smaller than they would have been had there been larger variability within the measures.
This could explain why most of the tests of the hypotheses were not statistically significant.

Another limitation has to do with the lack of a detailed comparison between Latino/Hispanic and White participants. An analysis of differences between the generations between these two groups (i.e. scores of 1st generation Latinos/Hispanics compared to 1st generation Whites) as well as between ethnicities (i.e. Polish compared to Puerto Rican) would have been an interesting post-test to conduct. These types of analyses would have given more information regarding scores on intelligence tests for Latinos/Hispanics in direct comparison to Whites. However these analyses were unable to be conducted within the present research as the sample sizes were not large enough to meaningfully interpret the results. Future research should investigate these comparisons in an effort to further explain differences between Latino/Hispanic and White test takers.

Finally, there is a potential limitation with regards to the findings of both face and predictive validity. It is believed that the limited explanation given prior to the participants taking the measures of validity did not give enough information regarding what the Ability Profiler tested. Many participants questioned how they could be asked about what the test was about when they had not taken the test prior to taking the validity measures. This indicates that perhaps participants were unable to accurately report their perceptions in the present study. Future research should give a more detailed explanation of what the test is purported to be measuring in order for participants to better accurately report their perceptions when measuring these perceptions prior to participants taking the intelligence test.

Conclusion
This study set out to explain scores on standardized tests of intelligence as obtained by Latino/Hispanic test-takers and should be viewed as a first step in exploring explanations of why Latinos/Hispanics score the way they do. The study attempted to explain the scores obtained by this group through the investigation of the psychological processes of Latino/Hispanic test-takers (i.e. acculturation, self-identity, test perceptions, etc.). While there was only limited evidence found to establish that the variables investigated here impact intelligence test scores there were findings from this study, which may aid in understanding the scores obtained by Latino/Hispanic test-takers. The present study demonstrates the importance of investigating the many complex factors impacting the scores on standardized tests of intelligence for Latinos/Hispanics.
Appendix A
O*Net Ability Profiler

GENERAL INSTRUCTIONS

On the next three parts work CAREFULLY. You should have enough time to answer each question. It is to your advantage to ANSWER EVERY QUESTION. Even if you’re not sure of an answer, make your BEST GUESS, fill in your answer, then go to the next question. Your score for each part will be the number of questions you answer correctly. There is no penalty for answering incorrectly.

Part 1 - ARITHMETIC REASONING
Instructions
On this page are some arithmetic questions.

Read Practice Question 1:
1. It takes 1/2 hour to fill 1 tank. How many tanks can be filled in 6 hours?
A. 3
B. 9
C. 12
D. 15
E. none of these

In Practice Question 1, the correct answer is 12. In the answer column, the letter next to 12 is C. On your answer sheet find the shaded box labeled PART 1 PRACTICE. Notice that for Practice Question 1, the oval under letter C has been filled in.

Now read Practice Question 2:
2. Harry spends 1/3 of his monthly income on rent. He earns $1,560 per month. How much does he pay for rent?
A. $460
B. $490
C. $530
D. $560
E. none of these

In Practice Question 2, the correct answer is $520. However, $520 does not appear in the answer column. Therefore, E or "none of these" is the correct answer. For Practice Question 2, the oval under letter E has been filled in because none of the other answers given was correct.

Now do Practice Questions 3 and 4 on the next page in the same way. Follow the directions and then in the practice box fill in the ovals under the letters of your answers.

Do not write in this booklet. Do your work on the scratch paper provided. When you finish these practice questions, stop and wait for further instructions.
Practice Questions

3. Candy bars cost $0.65 each. How much will 6 candy bars cost?
   A. $2.50
   B. $2.80
   C. $3.60
   D. $3.90
   E. none of these

4. Jim has used 2-1/2 feet of fencing from a piece that was 9-1/2 feet long. How many feet are left?
   A. 6
   B. 6-1/2
   C. 7
   D. 7-1/2
   E. none of these

On the next pages are more questions like the ones you’ve just answered. For each question, fill in the oval under the letter of your answer.

Work CAREFULLY. You should have enough time to answer each question. It is to your advantage to ANSWER EVERY QUESTION. Even if you’re not sure of an answer, make your BEST GUESS, then mark your choice on the answer sheet. You’ll receive one point for each correct answer. Points will not be subtracted for questions you answer incorrectly.

Do not write in this booklet. Do your work on the scratch paper provided. When answering the questions in this part, be sure to work down the page and not across. If you finish before time is called, go back and check your work in THIS PART only. If you want to change an answer, erase the first answer completely, then fill in your new choice.

You will have 20 minutes to complete this part.

Do not turn this page until told to do so.

Do all of your work on the scratch paper provided. Do not write in this book.
1. Charles works regularly 45 hours a week. Last week he worked 17 hours overtime. How many hours did he work?
   A. 28 hours  
   B. 38 hours  
   C. 52 hours  
   D. 61 hours  
   E. none of these

2. It usually takes 45 minutes to get to work. This morning it took 1 hour and 5 minutes. How much longer did it take this morning?
   A. 5 minutes  
   B. 10 minutes  
   C. 20 minutes  
   D. 30 minutes  
   E. none of these

3. Howie usually runs 75 miles each month. Last month he ran an extra 16 miles. How many miles did he run last month?
   A. 59  
   B. 81  
   C. 134  
   D. 166  
   E. none of these

4. A hair stylist can do 16 haircuts in 1 day. How many haircuts can he do in 13 days?
   A. 29  
   B. 64  
   C. 91  
   D. 208  
   E. none of these

5. A boy earned $12.50 doing errands. He owes his mother $5.75. How much will he have left after he pays his mother?
   A. $6.85  
   B. $7.75  
   C. $7.85  
   D. $8.75  
   E. none of these

6. A group of 12 friends bought a boat costing $5,424. Each of the friends paid an equal share of the cost. How much did each person pay?
   A. $442  
   B. $462  
   C. $542  
   D. $562  
   E. none of these
7. A doctor sees each of her patients for 15 minutes. How many patients can she see in 4-1/2 hours?
A. 18
B. 19
C. 20
D. 30
E. none of these

8. A motorcycle was bought for $4,375.00. Later it was sold for $452.25 less than the buying price. What was the selling price?
A. $3,822.75
B. $3,823.75
C. $3,922.75
D. $3,923.75
E. none of these

9. A baker can decorate 5 cakes in 3 hours. How many cakes can he decorate in 4 days if he works 9 hours each day?
A. 20
B. 60
C. 180
D. 540
E. none of these

10. A table measures 3.5 feet long and 2.745 feet wide. How many feet longer is it than wide?
A. 0.745
B. 0.755
C. 1.275
D. 6.245
E. none of these

11. An ice cream store sold 1,545 ice cream cones in June. Of these, 60% were vanilla. How many vanilla ice cream cones were sold?
A. 600
B. 618
C. 927
D. 945
E. none of these
12. A carpenter is building a gate that will be 3-1/4 feet wide. The gate will be made of boards 3 inches wide. How many pieces of board will it take to fit across the front of the gate?
   A. 9-3/4
   B. 11
   C. 12
   D. 13
   E. none of these

13. A classroom will seat 80 people. If 56 seats are filled, what percentage of the seats are filled?
   A. 24
   B. 30
   C. 36
   D. 70
   E. none of these

14. Michi put $7.50 worth of gas in her car. Two co-workers who were riding to work with her offered to share the cost of the gas. One paid 1/2 of the total amount and the other paid 1/3 of the total amount. How much of the total amount was left for Michi to pay?
   A. $1.25
   B. $2.25
   C. $5.25
   D. $6.25
   E. none of these

15. A bookshelf is 4-3/4 feet wide. How many 3-inch-wide books will fit on the shelf?
   A. 14-1/4
   B. 17
   C. 18
   D. 19
   E. none of these

16. It takes a woman 12 minutes to drive one way to work. She goes home for lunch 3 days each week. How much time does she spend driving to and from work each 5-day work week?
   A. 2 hours, 36 minutes
   B. 3 hours
   C. 3 hours, 12 minutes
   D. 3 hours, 20 minutes
   E. none of these
17. A business buys invoice forms at a cost of $4.45 a box for the first 20 boxes, $4.00 a box for the next 25 boxes, and $3.75 a box for any additional boxes. How many boxes of invoice forms can be bought for $234.00?
A. 47
B. 57
C. 67
D. 81
E. none of these

18. A student returned 4 overdue books to the library. The fine for each overdue book is $0.35 for the first day, $0.40 for each of the next 3 days, and $0.45 for each day after that. The total fine was $13.40. How many days overdue were the books?
A. 6
B. 8
C. 18
D. 20
E. none of these

Part 2 - VOCABULARY

Instructions
On this page are some questions in which you are asked to pick the two words that are either most nearly the same in meaning or most nearly the opposite in meaning.

Read Practice Question 1:
1. A. big
B. large
C. dry
D. slow

BIG and LARGE have the same meaning. The letter for BIG is A and the letter for LARGE is B.

On your answer sheet find the shaded box labeled PART 2 PRACTICE.
Notice that for Practice Question 1, the oval under letters A-B has been filled in.

Now read Practice Question 2:

2. A. witty
B. sad
C. tired
D. happy

SAD and HAPPY have opposite meanings. The letter for SAD is B and the letter for HAPPY is D. Therefore, on your answer sheet for Practice Question 2, the oval under letters B-D has been filled in.
Now do the next three practice questions on the next page in the same way. For each question, choose the two words that are either most nearly the same in meaning or most nearly the opposite in meaning.

Consider all of the choices before selecting an answer to be sure you haven’t overlooked a choice that is better. Then, in the practice box, fill in the oval under the letter combination of your answer.

When you finish these practice questions, stop and wait for further instructions.

Practice Questions
3. A. smart
   B. false
   C. true
   D. good

4. A. help
   B. strike
   C. begin
   D. end

5. A. frighten
   B. accept
   C. bother
   D. scare

On the next pages are more questions like the ones you’ve just answered. For each question, fill in the oval under the letter combination of your answer.

Work CAREFULLY. You should have enough time to answer each question. It is to your advantage to ANSWER EVERY QUESTION. Even if you’re not sure of an answer, make your BEST GUESS, then mark your choice on the answer sheet. You’ll receive one point for each correct answer. Points will not be subtracted for questions you answer incorrectly.

Do not write in this booklet.

When answering the questions in this part, be sure to work down the page and not across.

If you finish before time is called, go back and check your work in THIS PART only. If you want to change an answer, erase the first answer completely, then fill in your new choice.

You will have 8 minutes to complete this part.

Do not turn this page until told to do so.
1. A. push  
   B. dine  
   C. nap  
   D. eat

2. A. easy  
   B. fast  
   C. difficult  
   D. free

3. A. prompt  
   B. plush  
   C. happy  
   D. tardy

4. A. junction  
   B. induction  
   C. intersection  
   D. attention

5. A. ripe  
   B. humble  
   C. arrogant  
   D. autumnal

6. A. decompose  
   B. adjust  
   C. decay  
   D. replenish

7. A. digestive  
   B. conclusive  
   C. decisive  
   D. heroic

8. A. thirst  
   B. turmoil  
   C. petroleum  
   D. chaos

9. A. scrub  
   B. scorch  
   C. scald  
   D. sprung
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</table>
| 10. | A. wallow  
    | B. darken  
    | C. produce  
    | D. illuminate |
| 11. | A. reasonable  
    | B. irrational  
    | C. shifty  
    | D. humorous |
| 12. | A. animosity  
    | B. restitution  
    | C. resentment  
    | D. intuition |
| 13. | A. recognition  
    | B. descendant  
    | C. opponent  
    | D. antagonist |
| 14. | A. prudent  
    | B. mirthful  
    | C. helpless  
    | D. sullen |
| 15. | A. oviparous  
    | B. eulogistic  
    | C. carnivorous  
    | D. laudatory |
| 16. | A. commodious  
    | B. unwavering  
    | C. cowardly  
    | D. oscillatory |
| 17. | A. regret  
    | B. respect  
    | C. deference  
    | D. poverty |
| 18. | A. sequestrate  
    | B. segregate  
    | C. delegate  
    | D. dehydrate |
Part 3 - THREE-DIMENSIONAL SPACE

Instructions

On this page are some problems in which flat shapes have been folded or rolled or both to make three-dimensional objects.

Look at Practice Problem 1:

At the left is a drawing of a flat shape. The dotted lines show where the shape must be folded. At the right are four different drawings of three-dimensional objects. Notice that only Object D can be made by folding the flat shape shown in Figure I.

On your answer sheet find the shaded box labeled PART 3 PRACTICE. Notice that for Practice Problem 1, the oval under letter D has been filled in.

Now look at Practice Problem 2:

At the left is another drawing of a flat shape. There are no indications on the flat shape to show where it’s to be rolled. There are dotted lines where the circles meet the rectangle to show where it’s to be folded. Notice that of the four different drawings on the right, only Object C can be made by both rolling and folding the flat shape. Therefore, on your answer sheet for Practice Problem 2, the oval under letter C has been filled in.

Now do the next three practice problems on the next page in the same way. In the practice box, fill in the ovals under the letters of your answers. When you finish these practice problems, stop and wait for further instructions.
Practice Problems

3. [Diagram of a shape with dashed lines]
   - A
   - B
   - C
   - D

4. [Diagram of a star with dashed lines]
   - A
   - B
   - C
   - D

5. [Diagram of a rectangle with dashed lines]
   - A
   - B
   - C
   - D

On the next pages are more problems like the ones you've just answered. Only one object can be made from the flat shape by folding or rolling or both. For each problem, fill in the oval under the letter of your answer.

Work CAREFULLY. You should have enough time to answer each problem. It is to your advantage to ANSWER EVERY PROBLEM. Even if you're not sure of an answer, make your BEST GUESS, then mark your choice on the answer sheet. You'll receive one point for each correct answer. Points will not be subtracted for problems you answer incorrectly.

Do not write in this booklet. If you finish before time is called, go back and check your work in THIS PART only. If you want to change an answer, erase the first answer completely, then fill in your new choice.

You will have 8 minutes to complete this part.

Do not turn this page until told to do so.
16. A B C D

17. A B C D

18. A B C D

19. A B C D

20. A B C D

STOP DO NOT TURN THE PAGE UNTIL TOLD TO DO SO. STOP
Part 4 - NAME COMPARISON

GENERAL INSTRUCTIONS

The next part is different from the parts you’ve already taken. On this part, SPEED is VERY IMPORTANT. You won’t have time to answer every question. You must work as FAST as you can but don’t be careless.

If you have even the slightest idea of the answer, it is to your advantage to make your BEST GUESS. If you can eliminate one or more wrong choices to the question, then make your BEST GUESS from the remaining choices. However, if you have no idea of the correct answer, don’t spend time guessing; go to the next question.

You’ll receive one point for each correct answer. You’ll be penalized for wrong answers. Points will not be subtracted for questions you don’t answer.

Instructions

On this page are some questions in comparing names.

Read Practice Question 1:

1. C. K. Duncan — C. K. Duncan
   The two names are exactly the same.

On your answer sheet find the shaded box labeled PART 4PRACTICE.

Notice that for Practice Question 1, the oval under S, for same, has been filled in.

Now read Practice Question 2:
2. Debbie Bailey — Debbie Baily

   These two names are different. So for Practice Question 2, the oval under D, for different, has been filled in.

Now do the next six practice questions in the same way. If the names are exactly the same, fill in the oval under S. If they are different in any way, fill in the oval under D. When you finish these practice questions, stop and wait for further instructions.

3. Brimms Co. — Brimms Company
4. Wesson & Wyle — Wesson & Wyle
6. Linda Small — Lynda Small
7. Strong Ltd. — Strong Inc.
8. James Reagon — James Reagon
On the next pages are more questions like the ones you’ve just answered. For each question, fill in the oval under the letter of your answer.

Remember, on this part SPEED is very important. Work as FAST as you can, but don’t be careless. If you have even the slightest idea of the answer but are not sure, then it is to your advantage to make your BEST GUESS. However, if you have no idea of the correct answer, don’t spend time guessing; go to the next question. You’ll receive one point for each correct answer. You’ll lose one point for each wrong answer. Points will not be subtracted for questions you don’t answer.

Do not write in this booklet.

If you finish before time is called, go back and check your work in THIS PART only. If you want to change an answer, erase the first answer completely, then fill in your new choice.

You will have 6 minutes to complete this part.

Do not turn this page until told to do so.

2. Bimler — Binler
3. E-Z Neon — E-Z Neon
4. Blackstone — Blackstone
5. Chris Brasch — Chris Grasch

8. Endospace — Endospace
9. Fran Barber — Fran Barber
10. T.S. Mankus — T.S. Mankos

12. Marine Salvage — Marine Salvage
13. R.V. Knoll — R.V. Knoell
14. Cue Comic — Cue Comic
15. T.A. Bowles — T.A. Bowls

16. Abbey Dwayne — Abbey Dwaayne
17. Sunbeam Lamps — Sunbeam Lamps
18. Waylan R. Massell — Waybin R. Massell
19. Rolon Rodes — Rolon Rodes

21. Anawuye Inc. — Anawuyye Inc.
22. Sungold Stencils — Sungold Stencils
23. Western Steel Wagon — Western Steel Wagon
25. Carlos Catering — Carlos Catering

27. Rashid P.T. — Rashed P.T.
28. J.B. Midori — J.B. Midori
29. Commerce Dr. — Commerce Dr.
30. Ida Muni — Ida Muni

31. Joe T. Bara — Jo T. Bara
33. Champlain Ave. — Champaign Ave.
34. Berlin-Soonam-Fiske — Berlin-Soonam-Fiske
35. I.M. Bonregime — I.M. Bonregme

36. Fairway Golf Course — Fareway Golf Course
37. C.F. Tool & Die — C.F. Tool & Die
38. Donna Brendan — Donna Brendon
39. Village Pizza Place — Village Pizza Place
40. Ardis Deckert — Ardis Deckeart

41. W. Ulfilas — W. Ulfilas
42. Arcway Machine — Arcway Machine
43. Gundel s Gages — Gundel s Gages
44. Conte Verde Academy — Conte Verde Academy

47. Eve Moemu — Eve Moemu
48. Bo Serna s Supply — Bo Sirna s Supply
49. Arimoto & Cook, Inc. — Arinoto & Cook, Inc.
50. B.K. Bajamonte Sr. — B.K. Bajamonte Sr.

51. Bryn Mawr Food Mart — Bryn Mawyr Food Mart
52. Lake Shore Day Care — Lake Shore Bay Care
53. Sunland Cement Co. — Sunlund Cement Co.
54. Builders Exchange — Builders Exchange
55. T.R. Humphrey Stores — T.R. Humphry Stores

56. College Cycle Center — College Cycle Centre
57. Kin Flagg — Kin Flagg
58. Phoenix Foundry — Phoenix Foundry
59. Mika Langings — Miki Langings
60. Breeze V.N. & Co. — Breeze V.N. & Co.
61. Mei Jean Wholesaler — Mei Jeen Wholesaler
62. Teeterboard — Teeterbooard
64. C.G. Munguia — C.G. Munguia
65. Q & Q Quaint Bazaar — Q & Q Quaint Bazar

66. Bradley Gillberston — Bradley Gillbertsen
67. Hanglas Bakery — Hanglas Bakery
68. Franklin Rd. — Franklin Rd.
69. D.O. Etumu & Sons — D.O. Etumu & Sons
70. Ben Spark — Ben Sprak

71. I.K. Season Corp. — I.K. Season Corp.
72. Cole s Heat Systems — Cole s Heat Systens
73. Ridgwood Writers — Ridgwood Writers
75. Cai Cheung Wax Co. — Cai Cheung Wax Co.

76. Wraner Olukayode — Warner Olukayode
77. Capital Press Center — Capitol Press Center
78. Chesmu Cross C. — Chesmu Cross C.
79. Edwin J. Rotzoll — Edwin J. Rotzoll
80. Harkenville, Jerome — Harkenville, Jerome

82. Juana N. Parks — Juana N. Park
83. Pobgee Dr. — Pogbee Dr.
84. Anastasia Cowan — Anastasia Cowan
85. Jonina Jannini — Jonina Jannini

86. Velocity Rwys. — Velocity Rwys.
87. Corona Stefan — Corona Stefan
88. Co-op Plumbers Ass n — Co-op Plumber Ass n
89. Big Sky Balloons Co. — Big Sky Baloons Co.
90. Henderson St. Ctr. — Henderson St. Ctr.
Appendix B
Measure of Ethnic Identity

In this country, people come from a lot of different cultures and there are many different words to describe the different backgrounds or ethnic groups that people come from. Some examples of the names of ethnic groups are Mexican-American, Hispanic, Latino, Black, Asian-American, Native-American, White, European White, and Caucasian. Every person is born into an ethnic group, or sometimes two groups, but people differ on how important their ethnicity is to them, how they feel about it, and how much their behavior is affected by it. These questions are about your ethnicity or your ethnic group and how you feel about it or react to it.

Please fill in:

In terms of ethnic group, I consider myself to be: ________________________________

Use the answers given below to indicate your answer for each statement.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

1. I have spent time trying to find out more about my ethnic group, such as its history, traditions, and customs.

2. I have a strong sense of belonging to my own ethnic group.

3. I understand pretty well what my ethnic group membership means to me.

4. I have often done things that will help me understand my ethnic background better.

5. I have often talked to other people in order to learn more about my ethnic group.

6. I feel a strong attachment towards my own ethnic group.
Appendix C
Centrality Measure

Use the answers given below to indicate your answer for each statement.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

1. Overall, being of my ethnicity has very little to do with how I feel about myself. (R)

2. In general, being of my ethnicity is an important part of my self-image.

3. My destiny is tied to the destiny of other people of my ethnicity.

4. Being of my ethnicity is unimportant to my sense of what kind of person I am. (R)

5. I have a strong sense of belonging to people of my ethnicity.

6. I have a strong attachment to other people of my ethnicity.

7. Being of my ethnicity is an important reflection of who I am.

8. Being of my ethnicity is not a major factor in my social relationships. (R)
Appendix D
Acculturation Measure

Use the answers given below to indicate your answer for each statement.

<table>
<thead>
<tr>
<th>Only</th>
<th>Spanish better than English</th>
<th>Both</th>
<th>Equally better than Spanish</th>
<th>Only English</th>
</tr>
</thead>
</table>

1. In general, what language(s) do you speak?

2. What was the language(s) you used as a child?

3. What language(s) do you usually speak at home?

4. In which language(s) do you usually think?

5. What language(s) do you usually speak with your friends?

6. In what language(s) are the T.V. programs you usually watch?

7. In what language(s) is the music you usually listen to?

8. In general, in what language(s) are the movies, T.V., and music you prefer to watch and listen to?

Use the answers given below to indicate your answer for each statement.

<table>
<thead>
<tr>
<th>All Latinos/More Latinos/About Half &amp; Half</th>
<th>More Americans/Than Latinos/Than Americans</th>
<th>All Americans</th>
</tr>
</thead>
</table>

9. Your close friends are:

10. You prefer going to social gatherings/parties at which the people are:

11. The persons you visit or who visit you are:

12. If you could choose your children’s friends, you would want them to be:
Appendix E
Measure of Cultural Distance

Indicate how much difficulty you experience in the United States in each of the areas stated. Use the following scale:

<table>
<thead>
<tr>
<th>No Difficulty</th>
<th>Slight Difficulty</th>
<th>Moderate Difficulty</th>
<th>Great Difficulty</th>
<th>Extreme Difficulty</th>
</tr>
</thead>
</table>

1. Making friends.

2. Finding food that you enjoy.

3. Following rules and regulations.

4. Dealing with people in authority.

5. Taking an American perspective on the culture.

6. Using the transportation system.

7. Dealing with bureaucracy.

8. Understanding the United States value system.


10. Seeing things from an American’s point of view.


12. Dealing with someone who is unpleasant.

13. Understanding jokes and humor.


15. Going to social gatherings.

16. Dealing with people staring at you.

17. Communicating with people of a different ethnic group.

18. Understanding ethnic or cultural differences.

19. Dealing with unsatisfactory service.
20. Worshipping.

21. Relating to members of the opposite sex.

22. Finding your way around.

23. Understanding the United States political system.

24. Talking about yourself with others.

25. Dealing with the climate.


27. Family relationships.

28. The pace of life.

29. Being able to see two sides of an inter-cultural issue.
Appendix F
Predictive Validity Measure

Use the answers given below to indicate your answer for each statement.

Strongly Disagree 
Neither Agree nor Disagree 
Agree 
Strongly Agree

1. Failing to pass the examination clearly indicates that you can’t do an entry-level managerial job.

2. I am confident that the examination can predict how well an applicant will perform on an entry-level managerial job.

3. My performance on the examination would be a good indicator of my ability to do an entry-level managerial job.

4. Applicants who perform well on this type of examination are more likely to perform well on an entry-level managerial job than applicants who perform poorly.

5. The employer can tell a lot about the applicant’s ability to do an entry-level managerial job from the results of the examination.
Appendix G

Face Validity Measure

Use the answers given below to indicate your answer for each statement.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

1. I do not understand what the examination has to do with an entry-level managerial job. (R)

2. I cannot see any relationship between the examination and what is required on an entry-level managerial job. (R)

3. It would be obvious to anyone that the examination is related to an entry-level managerial job.

4. The actual content of the examination was clearly related to an entry-level managerial job.

5. There is no real connection between the examination and an entry-level managerial job. (R)
Appendix H
Demographic Measure

What is your sex?
   a. Male
   b. Female

What is your age? ___________________

Were you born in the United States?
   a. Yes
   b. No

If no, where were you born? (Please Specify)__________________________________

At what age did you move to the United States if not born in U.S.? ____________

Number of years living in the United States (if you were born in the United States please use your age): ___

Who was the first person in your immediate family to move to the United States?
   a. You
   b. Mother/Father
   c. Grandparent
   d. Great Grandparent
   e. Great-Great Grandparent

What was the reason the person you indicated in the above question moved to the United States? (Please specify): ___________________________________________________

What is your generational status?
   a. 1\textsuperscript{st} generation – you are an immigrant born in a country other than the United States
   b. 2\textsuperscript{nd} generation – you were born in the United States to one or both parents who were born in another country
   c. 3\textsuperscript{rd} generation – you and your parents were born in the United States
   d. 4\textsuperscript{th} generation – you, your parents, and your grandparents were born in the United States
   e. 5\textsuperscript{th} generation – you, your parents, your grandparents, your great-grandparents were born in the United States

What is your country of citizenship? (Please Specify): ________________________

What is your mothers’ country of origin?
   How many years has your mother lived in the United States (if she was born in the United States please use her age)?
What is your mothers’ country of birth?

What is your fathers’ country of origin?
   How many years has your father lived in the United States (if he was born in the United States please use his age)?

   What is your fathers’ country of birth?

What is your race?
   a. White
   b. Black or African American
   c. Hispanic or Latino
   d. American Indian or Alaska Native
   e. Asian
   f. Native Hawaiian or other Pacific Islander
   g. Multiracial (more than one race)
   h. Other (Please Specify) __________________________________________

What is your ethnicity? (Please Specify): ________________________________

Do you belong to any clubs or networks associated with your country of origin or ethnicity? Yes/No
   Please specify what the clubs or networks are

Primary language spoken at home:
   a. Spanish
   b. English
   c. Other (Please Specify): __________________

Primary language spoken at school (Please Specify):
   a. Spanish
   b. English
   c. Other (Please Specify): ______________

Primary language spoken with friends:
   a. Spanish
   b. English
   c. Other (Please Specify): ______________

Rate your ability to speak Spanish: very little ability – very high ability

Rate your ability to speak English: very little ability – very high ability

Do you speak any other language(s)?
   a. Yes
   b. No
If yes, please name: ____________________________

Rate your ability to speak this language: very little ability – very high ability

Are you currently employed?
  a. Yes, full-time
  b. Yes, part-time
  c. No

Have you ever taken a test or assessment as part of applying for a job?
  a. Yes
  b. No
  c. Not sure

For the following questions: If you have taken a test or assessment for more than one job, think of the last job for which you had to take a test or assessment as part of the selection process.

What type(s) of test or assessment did you take?
  a. Personality test/assessment
  b. Mathematical ability test/assessment
  c. English ability test/assessment
  d. Physical ability test/assessment
  e. Intelligence test/assessment
  f. Grammar/Spelling test/assessment
  g. Biodata test/assessment
  h. Reading comprehension test/assessment
  i. Integrity test/assessment
  j. Accounting principles test/assessment
  k. Computer programming test/assessment
  l. Typing test/assessment
  m. Computer skills test/assessment
  n. Other (Please Specify): _______________________________

For the test/assessment(s) you took: Did you believe the test/assessment(s) would be able to predict your performance on the job?
  Personality test/assessment
    a. Yes
    b. No
    c. Not sure

  Mathematical ability test/assessment
    a. Yes
    b. No
    c. Not sure
English ability test/assessment
a. Yes
b. No
c. Not sure

Physical ability test/assessment
a. Yes
b. No
c. Not sure

Intelligence test/assessment
a. Yes
b. No
c. Not sure

Grammar/Spelling test/assessment
a. Yes
b. No
c. Not sure

Biodata test/assessment
a. Yes
b. No
c. Not sure

Reading comprehension test/assessment
a. Yes
b. No
c. Not sure

Integrity test/assessment
a. Yes
b. No
c. Not sure

Accounting principles test/assessment
a. Yes
b. No
c. Not sure

Computer programming test/assessment
a. Yes
b. No
c. Not sure
Typing test/assessment
  a. Yes
  b. No
  c. Not sure

Computer skills test/assessment
  a. Yes
  b. No
  c. Not sure

Other test/assessment
  a. Yes
  b. No
  c. Not sure

For the test/assessment(s) you took: Did you believe that the test/assessment(s) was measuring what you were told it would be measuring?
  Personality test/assessment
  a. Yes
  b. No
  c. Not sure

Mathematical ability test/assessment
  a. Yes
  b. No
  c. Not sure

English ability test/assessment
  a. Yes
  b. No
  c. Not sure

Physical ability test/assessment
  a. Yes
  b. No
  c. Not sure

Intelligence test/assessment
  a. Yes
  b. No
  c. Not sure

Grammar/Spelling test/assessment
  a. Yes
  b. No
  c. Not sure
Biodata test/assessment
a. Yes
b. No
c. Not sure

Reading comprehension test/assessment
a. Yes
b. No
c. Not sure

Integrity test/assessment
a. Yes
b. No
c. Not sure

Accounting principles test/assessment
a. Yes
b. No
c. Not sure

Computer programming test/assessment
a. Yes
b. No
c. Not sure

Typing test/assessment
a. Yes
b. No
c. Not sure

Computer skills test/assessment
a. Yes
b. No
c. Not sure

Other test/assessment
a. Yes
b. No
c. Not sure

Thinking of the last job for which you took a test/assessment(s) as part of the selection process, did you get the job?
a. Yes
b. No
If yes, what is your annual income?
   a. $1 - $9,999
   b. $10,000 - $24,999
   c. $25,000 - $49,999
   d. $50,000 - $74,999
   e. $75,000 - $99,999
   f. $100,000 or more

What is your family’s annual income?
   a. $1 - $9,999
   b. $10,000 - $24,999
   c. $25,000 - $49,999
   d. $50,000 - $74,999
   e. $75,000 - $99,999
   f. $100,000 - $149,999
   g. $150,000 - $199,999
   h. $200,000 or more

How many bedrooms are in your household?
   a. 0 (Studio)
   b. 1
   c. 2
   d. 3
   e. 4
   f. 5
   g. 6 or more

How many people live in your household?
   a. 1
   b. 2
   c. 3
   d. 4
   e. 5
   f. 6
   g. 7 or more

Does you own or rent a home (or apartment)?
   a. Own
   b. Rent

Does your family own or rent a home (or apartment)?
   a. Own
   b. Rent
Did you attend a public or private high school?
   a. Public
   b. Private

Are you the first generation in your family to attend college?
   a. Yes
   b. No

What is your year in school?
   a. Freshman
   b. Sophomore
   c. Junior
   d. Senior
   e. Other
      If other, please specify: ____________________________

What is your major? ______________________________

How long is your commute to campus (in minutes)? _______________________

Mark an “X” in the appropriate box for your Mother’s, your Father’s, and your Spouse/Partner’s level of school completed. If you grew up in a single parent home, only indicate level of school completed for that one parent. If you are neither married nor partnered leave that column blank.

<table>
<thead>
<tr>
<th>Level of School Completed</th>
<th>Mother</th>
<th>Father</th>
<th>Spouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 7th grade</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior high/Middle School (9th grade)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partial high school (10th or 11th grade)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school graduate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partial college (at least one year)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College graduate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do not know</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mark an “X” in the appropriate box for your Mother’s, your Father’s, and your Spouse/Partner’s occupation. If you grew up in a single parent home, only indicate the occupation for your one parent. If your parent(s) is retired mark his or her most recent occupation. If you are neither married nor partnered leave that column blank.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Mother</th>
<th>Father</th>
<th>Spouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day laborer, janitor, house cleaner, farm worker, food counter sales, food preparation worker, busboy.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garbage collector, short-order cook, cab driver, shoe sales, assembly line workers, masons, baggage porter.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Painter, skilled construction trade, sales clerk, truck driver, cook, sales counter or general office clerk.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automobile mechanic, typist, locksmith, farmer, carpenter, receptionist, construction laborer, hairdresser.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machinist, musician, bookkeeper, secretary, insurance sales, cabinet maker, personnel specialist, welder.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisor, librarian, aircraft mechanic, artist and artisan, electrician, administrator, military enlisted personnel, buyer.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse, skilled technician, medical technician, counselor, manager, police and fire personnel, financial manager, physical, occupational, speech therapist.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical, nuclear, and electrical engineer, educational administrator, veterinarian, military officer, elementary, high school and special education teacher.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician, attorney, professor, chemical and aerospace engineer, judge, CEO, senior manager, public official, psychologist, pharmacist, accountant.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed and currently looking for work.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed and <strong>not</strong> currently looking for work.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stay-at-home parent.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do not know.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix I
Control Measures

Intelligence Test Check

Thinking of the timed measures you took during this experiment, what do you think they were measuring? Please be as specific as possible in your answer.

Stigma Consciousness Measure

The following statements refer to the manner in which you think about your experiences in light of your ethnic/racial group. What ethnic or racial group do you identify with most, please specify: ____________________

Thinking about this group please indicate the extent to which you agree or disagree with each statement listed below.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Moderately disagree</th>
<th>Slightly disagree</th>
<th>Neutral</th>
<th>Slightly agree</th>
<th>Moderately agree</th>
<th>Strongly agree</th>
</tr>
</thead>
</table>

1) Stereotypes about people of my ethnicity/race have not affected me personally. (R)

2) I never worry that my behavior will be viewed as based on the stereotypes of my ethnicity/race. (R)

3) When interacting with people, I feel like they interpret all my behaviors in terms of my ethnicity/race.

4) Most people do not judge people of my group on the basis of their ethnicity/race. (R)

5) My ethnicity/race does not influence how people act with me. (R)

6) I almost never think about the fact that I am of my ethnicity/race when I interact with people. (R)

7) My being of my ethnicity/race does not influence how people act with me. (R)

8) Most people have a lot more racist thoughts than they actually express.

9) I often think that people are unfairly accused of being racist. (R)

10) Most people have a problem seeing people of my ethnicity/race as equals.
Using the scale below as a guide, mark the number for each statement to indicate how much you agree with it.

<table>
<thead>
<tr>
<th>Not True</th>
<th>Somewhat True</th>
<th>Very True</th>
</tr>
</thead>
</table>

1. I sometimes tell lies if I have to.
2. I never cover up my mistakes.
3. There have been occasions when I have taken advantage of someone.
4. I never swear.
5. I sometimes try to get even rather than forgive and forget.
6. I always obey laws, even if I’m unlikely to get caught.
7. I have said something bad about a friend behind his or her back.
8. When I hear people talking privately, I avoid listening.
9. I have received too much change from a salesperson without telling him or her.
10. I always declare everything at customs.
11. When I was young I sometimes stole things.
12. I have never dropped litter on the street.
13. I sometimes drive faster than the speed limit.
14. I never read sexy books or magazines.
15. I have done things that I don't tell other people about.
16. I never take things that don't belong to me.
17. I have taken sick-leave from work or school even though I wasn't really sick.
18. I have never damaged a library book or store merchandise without reporting it.
19. I have some pretty awful habits.
20. I don't gossip about other people's business
References


Scherbaum, C. A., Goldstein, H. W., Yusko, K. P., Ryan, R., & Hanges, P. J. (2012). Intelligence 2.0: Reestablishing a research program on g in I-O psychology.


Table 1

*Content Coded Percentage of Answers to Open-Ended Control Variable Question*

<table>
<thead>
<tr>
<th>Content Coding</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed of problem solving</td>
<td>15.15%</td>
</tr>
<tr>
<td>Something to do with just ethnicity or culture</td>
<td>12.42%</td>
</tr>
<tr>
<td>Basic knowledge</td>
<td>11.52%</td>
</tr>
<tr>
<td>Accuracy/Paying attention to detail</td>
<td>9.39%</td>
</tr>
<tr>
<td>Problem solving/critical thinking</td>
<td>7.88%</td>
</tr>
<tr>
<td>Measuring intelligence/cognitive ability</td>
<td>6.97%</td>
</tr>
<tr>
<td>Working under pressure</td>
<td>6.36%</td>
</tr>
<tr>
<td>Miscellaneous answer</td>
<td>6.06%</td>
</tr>
<tr>
<td>Something to do with workplace</td>
<td>4.24%</td>
</tr>
<tr>
<td>Logic</td>
<td>3.33%</td>
</tr>
<tr>
<td>Comparing groups</td>
<td>3.03%</td>
</tr>
<tr>
<td>No idea</td>
<td>2.73%</td>
</tr>
<tr>
<td>Honesty/Ethics/Morals</td>
<td>2.73%</td>
</tr>
<tr>
<td>Cover story</td>
<td>1.52%</td>
</tr>
<tr>
<td>Coping/stress management</td>
<td>1.21%</td>
</tr>
<tr>
<td>Decision making</td>
<td>1.21%</td>
</tr>
<tr>
<td>Looking at how ethnicity/culture impacts test taking</td>
<td>0.91%</td>
</tr>
<tr>
<td>Language/Language ability</td>
<td>0.91%</td>
</tr>
<tr>
<td>Perceptions of culture/other people</td>
<td>0.91%</td>
</tr>
<tr>
<td>Ability to follow directions</td>
<td>0.91%</td>
</tr>
<tr>
<td>Looking at how Latinos/Hispanics score on IQ tests</td>
<td>0.61%</td>
</tr>
</tbody>
</table>
Table 2

*Descriptive Statistics for All Variables*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>Skewness</th>
<th>SE</th>
<th>Kurtosis</th>
<th>Min</th>
<th>Max</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Ability Profiler</td>
<td>112</td>
<td>87.69</td>
<td>18.47</td>
<td>-1.54</td>
<td>0.23</td>
<td>4.16</td>
<td>6</td>
<td>141</td>
<td>0.45</td>
</tr>
<tr>
<td>Arithmetic Reasoning</td>
<td>112</td>
<td>11.54</td>
<td>3.21</td>
<td>-0.82</td>
<td>0.23</td>
<td>0.43</td>
<td>1</td>
<td>18</td>
<td>0.45</td>
</tr>
<tr>
<td>Verbal Ability</td>
<td>112</td>
<td>12.05</td>
<td>2.53</td>
<td>-0.48</td>
<td>0.23</td>
<td>0.93</td>
<td>4</td>
<td>19</td>
<td>0.45</td>
</tr>
<tr>
<td>Spatial Ability</td>
<td>112</td>
<td>13.90</td>
<td>3.50</td>
<td>-0.54</td>
<td>0.23</td>
<td>-0.06</td>
<td>4</td>
<td>20</td>
<td>0.45</td>
</tr>
<tr>
<td>Clerical Perception</td>
<td>112</td>
<td>50.20</td>
<td>13.94</td>
<td>-2.17</td>
<td>0.23</td>
<td>8.32</td>
<td>-22</td>
<td>90</td>
<td>0.45</td>
</tr>
<tr>
<td>Ethnic Identity</td>
<td>112</td>
<td>3.65</td>
<td>0.56</td>
<td>-0.05</td>
<td>0.23</td>
<td>0.19</td>
<td>2.10</td>
<td>5.00</td>
<td>0.45</td>
</tr>
<tr>
<td>Ethnic Centrality</td>
<td>112</td>
<td>3.06</td>
<td>0.65</td>
<td>-0.14</td>
<td>0.23</td>
<td>0.16</td>
<td>1.00</td>
<td>4.75</td>
<td>0.45</td>
</tr>
<tr>
<td>Acculturation</td>
<td>112</td>
<td>3.28</td>
<td>0.59</td>
<td>0.45</td>
<td>0.23</td>
<td>0.14</td>
<td>1.92</td>
<td>5.00</td>
<td>0.45</td>
</tr>
<tr>
<td>Cultural Distance</td>
<td>112</td>
<td>1.52</td>
<td>0.37</td>
<td>1.24</td>
<td>0.23</td>
<td>2.07</td>
<td>1.00</td>
<td>2.86</td>
<td>0.45</td>
</tr>
<tr>
<td>Predictive Validity</td>
<td>112</td>
<td>2.97</td>
<td>0.70</td>
<td>-0.67</td>
<td>0.23</td>
<td>1.32</td>
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<td>5.00</td>
<td>0.45</td>
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<tr>
<td>Face Validity</td>
<td>112</td>
<td>3.39</td>
<td>0.62</td>
<td>-0.31</td>
<td>0.23</td>
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<td>1.80</td>
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</table>
Table 3

*Sample Size in Each Group per Hypothesis*

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Group 1</th>
<th>N</th>
<th>Group 2</th>
<th>N</th>
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</thead>
<tbody>
<tr>
<td>1A: Racial Self-Identification</td>
<td>Black</td>
<td>1</td>
<td>White/Other</td>
<td>12</td>
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<tr>
<td>1B: Pan-Ethnic Self-Identification</td>
<td>Hispanic</td>
<td>61</td>
<td>Latino</td>
<td>33</td>
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<tr>
<td>1C: Racial vs. Ethnic Self-Identification</td>
<td>Racial Identification</td>
<td>3</td>
<td>Ethnic Identification</td>
<td>61</td>
</tr>
<tr>
<td>2A: Low vs. High Ethnic Centrality</td>
<td>Low Centrality</td>
<td>54</td>
<td>High Centrality</td>
<td>58</td>
</tr>
<tr>
<td>2B: Self-Identification Moderation of Ethnic Centrality</td>
<td>Hispanic/Latino</td>
<td>94</td>
<td>Ethnic Label</td>
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</tr>
<tr>
<td>3A: Low vs. High Acculturation</td>
<td>Separatist/Marginalized</td>
<td>56</td>
<td>Integrationist/Assimilation</td>
<td>56</td>
</tr>
<tr>
<td>3B: Immigrant vs. Native</td>
<td>Immigrant</td>
<td>55</td>
<td>U.S. Born</td>
<td>57</td>
</tr>
<tr>
<td>3C: 3rd/Higher vs. 1st/2nd Generation</td>
<td>1st/2nd Generation</td>
<td>105</td>
<td>3rd Generation/Higher</td>
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<tr>
<td>5A: Face Validity</td>
<td>Low Face Validity</td>
<td>46</td>
<td>High Face Validity</td>
<td>66</td>
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<tr>
<td>5B: Predictive Validity</td>
<td>Low Predictive Validity</td>
<td>48</td>
<td>High Predictive Validity</td>
<td>64</td>
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Table 4

Correlations Between Study Variables

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<th>Variables</th>
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<th>3</th>
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<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
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<tbody>
<tr>
<td>1. Ethnic Identity</td>
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<td>2. Centrality</td>
<td>.49**</td>
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<tr>
<td>3. Acculturation</td>
<td>-.30**</td>
<td>-.33**</td>
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<td>4. Predictive Validity</td>
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<td>.05</td>
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<tr>
<td>5. Face Validity</td>
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<td>-.00</td>
<td>-.03</td>
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<td>6. Cultural Distance</td>
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<td>.06</td>
<td>-.07</td>
<td>-.05</td>
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<tr>
<td>7. Total Ability Profiler Score</td>
<td>-.03</td>
<td>-.10</td>
<td>.09</td>
<td>.02</td>
<td>-.18</td>
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<td>1.00</td>
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<tr>
<td>8. Arithmetic Reasoning Score</td>
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<td>-.06</td>
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<td>.07</td>
<td>-.07</td>
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<td>.64**</td>
<td>1.00</td>
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<td>9. Verbal Ability Score</td>
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<td>-.18</td>
<td>.20*</td>
<td>-.03</td>
<td>-.09</td>
<td>-.04</td>
<td>.46**</td>
<td>.30**</td>
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<tr>
<td>10. Spatial Ability Score</td>
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<td>.10</td>
<td>.02</td>
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<td>-.06</td>
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<td>11. Clerical Perception Score</td>
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<td>.03</td>
<td>.01</td>
<td>-.17</td>
<td>-.00</td>
<td>.94**</td>
<td>.46**</td>
<td>.28**</td>
<td>.38**</td>
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<td>12. SES</td>
<td>.08</td>
<td>.08</td>
<td>-.12</td>
<td>-.22*</td>
<td>.05</td>
<td>-.02</td>
<td>-.03</td>
<td>.01</td>
<td>.01</td>
<td>-.04</td>
<td>-.04</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Note: * p < .05, **p < .01.
Table 5

Subtest Statistical Tests per Hypothesis

**Hypothesis 1A: Racial Self-Identification**

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Statistical Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arithmetic Reasoning</td>
<td>Test could not be performed</td>
</tr>
<tr>
<td>Verbal Ability</td>
<td>Test could not be performed</td>
</tr>
<tr>
<td>Spatial Ability</td>
<td>Test could not be performed</td>
</tr>
<tr>
<td>Clerical Perception</td>
<td>Test could not be performed</td>
</tr>
</tbody>
</table>

**Hypothesis 1B: Pan-Ethnic Self-Identification**

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Statistical Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arithmetic Reasoning</td>
<td>$t(92) = 0.067, p = .947, d = 0.02$</td>
</tr>
<tr>
<td>Verbal Ability</td>
<td>$t(92) = 0.433, p = .666, d = 0.09$</td>
</tr>
<tr>
<td>Spatial Ability</td>
<td>$t(92) = -0.616, p = .539, d = 0.13$</td>
</tr>
<tr>
<td>Clerical Perception</td>
<td>$t(92) = 0.178, p = .859, d = 0.04$</td>
</tr>
</tbody>
</table>

**Hypothesis 1C: Racial vs. Ethnic Self-Identification**

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Statistical Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arithmetic Reasoning</td>
<td>$t(62) = -1.737, p = .087, d = 1.03$</td>
</tr>
<tr>
<td>Verbal Ability</td>
<td>$t(62) = -0.557, p = .579, d = 0.33$</td>
</tr>
<tr>
<td>Spatial Ability</td>
<td>$t(62) = -2.409, p = .019, d = 1.42$</td>
</tr>
<tr>
<td>Clerical Perception</td>
<td>$t(62) = -2.163, p = .034, d = 1.28$</td>
</tr>
</tbody>
</table>

**Hypothesis 2A: Low vs. High Ethnic Centrality**

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Statistical Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arithmetic Reasoning</td>
<td>$t(110) = 0.004, p = .997, d = 0.00$</td>
</tr>
<tr>
<td>Verbal Ability</td>
<td>$t(110) = 0.306, p = .760, d = 0.06$</td>
</tr>
<tr>
<td>Spatial Ability</td>
<td>$t(110) = -0.091, p = .927, d = 0.02$</td>
</tr>
<tr>
<td>Clerical Perception</td>
<td>$t(110) = 0.682, p = .497, d = 0.13$</td>
</tr>
</tbody>
</table>

**Hypothesis 3A: Low vs. High Acculturation**

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Statistical Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arithmetic Reasoning</td>
<td>$t(110) = -0.469, p = .640, d = 0.09$</td>
</tr>
<tr>
<td>Verbal Ability</td>
<td>$t(110) = -1.429, p = .156, d = 0.27$</td>
</tr>
<tr>
<td>Spatial Ability</td>
<td>$t(110) = -0.512, p = .610, d = 0.10$</td>
</tr>
<tr>
<td>Clerical Perception</td>
<td>$t(110) = 0.270, p = .788, d = 0.05$</td>
</tr>
</tbody>
</table>
**Hypothesis 3B: Immigrant vs. Native**

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Statistical Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arithmetic Reasoning</td>
<td>$t(110) = -1.933, p = .056, d = 0.37$</td>
</tr>
<tr>
<td>Verbal Ability</td>
<td>$t(110) = 0.079, p = .938, d = 0.01$</td>
</tr>
<tr>
<td>Spatial Ability</td>
<td>$t(110) = 0.614, p = .540, d = 0.12$</td>
</tr>
<tr>
<td>Clerical Perception</td>
<td>$t(110) = 0.016, p = .987, d = 0.00$</td>
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</table>

**Hypothesis 3C: 1st/2nd vs. 3rd/Higher Generation**

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Statistical Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arithmetic Reasoning</td>
<td>$t(110) = 0.697, p = .487, d = 0.27$</td>
</tr>
<tr>
<td>Verbal Ability</td>
<td>$t(110) = 2.099, p = .038, d = 0.82$</td>
</tr>
<tr>
<td>Spatial Ability</td>
<td>$t(110) = 1.840, p = .068, d = 0.72$</td>
</tr>
<tr>
<td>Clerical Perception</td>
<td>$t(110) = 0.934, p = .352, d = 0.36$</td>
</tr>
</tbody>
</table>

**Hypothesis 5A: Face Validity**

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Statistical Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arithmetic Reasoning</td>
<td>$t(110) = 0.140, p = .889, d = 0.03$</td>
</tr>
<tr>
<td>Verbal Ability</td>
<td>$t(110) = 0.495, p = .621, d = 0.10$</td>
</tr>
<tr>
<td>Spatial Ability</td>
<td>$t(110) = 0.796, p = .428, d = 0.15$</td>
</tr>
<tr>
<td>Clerical Perception</td>
<td>$t(110) = 1.046, p = .297, d = 0.20$</td>
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</table>

**Hypothesis 5B: Predictive Validity**

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Statistical Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arithmetic Reasoning</td>
<td>$t(110) = -0.754, p = .452, d = 0.14$</td>
</tr>
<tr>
<td>Verbal Ability</td>
<td>$t(110) = -0.571, p = .569, d = 0.11$</td>
</tr>
<tr>
<td>Spatial Ability</td>
<td>$t(110) = -0.070, p = .944, d = 0.01$</td>
</tr>
<tr>
<td>Clerical Perception</td>
<td>$t(110) = 0.843, p = .401, d = 0.16$</td>
</tr>
</tbody>
</table>