

A BILINEAR AND THREE-DIMENSIONAL MODEL OF ACCULTURATION FOR  
PUERTO RICANS LIVING IN CENTRAL FLORIDA

by

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(Under the Direction of Edward A. Delgado-Romero)

ABSTRACT

In breaking with past patterns of Puerto Rican immigrants to the U.S., the Central Florida Puerto Rican diaspora offers a unique opportunity for psychologists to study acculturation. Four measurement models of acculturation were examined in a sample of 484 Central Florida Puerto Ricans using of confirmatory factor analysis (CFA). The models tested varied in linearity (i.e., unilinear and bilinear) and dimensionality (i.e., cultural behaviors, values, and identity). As hypothesized, the bilinear three-dimensional model (i.e., cultural behaviors dimension, cultural values dimension, and ethnic identity dimension) resulted in the best model fit,  $\chi^2(178) = 423.23$ , CFI = .95, TLI = .93, RMSEA = .07, SRMR = .05. The results suggest that acculturation among Puerto Ricans living in Central Florida is best conceptualized as a bilinear phenomenon in which individuals simultaneously adhere to European American and Puerto Rican culture. Within both cultural orientations, there seems to be related yet distinct values, behavioral, and ethnic identity dimensions. Puerto Rican behaviors, values, and ethnic identity domains were negatively related to European American behaviors and ethnic identity.

INDEX WORDS: Acculturation, Puerto Ricans, culture, values, ethnic identity, confirmatory factor analysis

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## DEDICATION

*“Cuando entres por las puertas de la Universidad, sabes que estamos entrando contigo.”*

*Mami, hoy tú, papi, y los que vinieron antes que ustedes, reciben este doctorado junto conmigo.*

*Para papi y mami, Cándido and Elizabeth Capielo, sus sacrificios no solo sirvieron para que Melody y yo pudiéramos alcanzar nuestro potencial, pero también fueron la mayor fuente de inspiración para este proyecto.* To my father and mother, Cándido and Elizabeth Capielo, whose sacrifice in coming to the U.S. mainland was the biggest source of inspiration for this study.

This project is also dedicated to my dear husband, Steven Saul. Six years ago on our wedding day you promised to support my professional goals. Little did we know that three years later I would have to move 689 miles away from home to accomplish this. *Gracias por haberme permitido haber volado sola para alcanzar este sueño.* Thanks for your unconditional love and support. I cannot begin to express my unfailing gratitude and love. I would also like to dedicate this work to my sister Melody Capielo, my future sister-in-law Doralisse Méndez, and my mother-in-law, Toni Saul, thank you for your unwavering support and encouragement.

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## TABLE OF CONTENTS

|                                                           | Page |
|-----------------------------------------------------------|------|
| ACKNOWLEDGEMENTS .....                                    | v    |
| LIST OF TABLES .....                                      | ix   |
| LIST OF FIGURES .....                                     | x    |
| CHAPTER                                                   |      |
| 1 STATEMENT OF THE PROBLEM .....                          | 1    |
| Purpose of the Study .....                                | 5    |
| Personal Account .....                                    | 10   |
| Assumptions and Research Questions .....                  | 12   |
| Definitions.....                                          | 13   |
| Significance of the Study .....                           | 14   |
| Organization of the Study .....                           | 15   |
| 2 REVIEW OF THE LITERATURE .....                          | 16   |
| Introduction.....                                         | 16   |
| Conceptualization of Acculturation .....                  | 17   |
| Cultural Values as a Dimension of Acculturation .....     | 28   |
| Ethnic Identity as a New Dimension of Acculturation ..... | 30   |
| Acculturation and Mental Health Outcomes.....             | 32   |
| The Central Florida Puerto Rican Diaspora.....            | 34   |
| 3 METHODOLOGY .....                                       | 39   |

|                                                                            |    |
|----------------------------------------------------------------------------|----|
| Introduction.....                                                          | 39 |
| Research Design and Data Analysis Plan .....                               | 40 |
| Competing Models.....                                                      | 41 |
| Primary Hypotheses .....                                                   | 48 |
| Data Collection and Procedures.....                                        | 48 |
| Instruments.....                                                           | 50 |
| Manifest Indicators of Latent Variables .....                              | 52 |
| 4 RESULTS .....                                                            | 56 |
| Data Analysis Steps .....                                                  | 56 |
| Characteristics of Study Participants .....                                | 56 |
| Assessment of Multivariate Normality .....                                 | 58 |
| Model Admissibility .....                                                  | 59 |
| Chi-Square Model Comparisons.....                                          | 59 |
| Assessing Model Goodness-of-Fit.....                                       | 61 |
| Latent Variables Correlations in the Bilinear Three-dimensional Model..... | 67 |
| Summary .....                                                              | 68 |
| 5 DISCUSSION .....                                                         | 70 |
| Summary of Study Purpose and Results.....                                  | 70 |
| Theoretical and Research Implications.....                                 | 76 |
| Clinical Implications .....                                                | 76 |
| Limitations .....                                                          | 77 |
| Future Directions .....                                                    | 78 |
| Conclusion .....                                                           | 79 |



|                  |    |
|------------------|----|
| REFERENCES ..... | 80 |
|------------------|----|

## APPENDICES

|                                                 |     |
|-------------------------------------------------|-----|
| A English Face-to-face Recruitment Script ..... | 103 |
| B Spanish Face-to-face Recruitment Script.....  | 104 |
| C English Consent Form.....                     | 105 |
| D Spanish Consent Form .....                    | 106 |

## LIST OF TABLES

|                                                                                         | Page |
|-----------------------------------------------------------------------------------------|------|
| Table 1: Socioeconomic Profile of Puerto Ricans in New York and Florida .....           | 37   |
| Table 2: Description of Parcels, Instruments, and Items Used Per Latent Factor .....    | 55   |
| Table 3: Descriptive Statistics for Continuous Demographical Variables .....            | 57   |
| Table 4: Descriptive Statistics for Categorical Demographical Variables .....           | 58   |
| Table 5: Standardized Factor Loadings and Uniquenesses for Measurement Models .....     | 60   |
| Table 6: Model Summary of CFA .....                                                     | 63   |
| Table 7: Correlation for Latent Variables in the Bilinear Three-dimensional Model ..... | 68   |

## LIST OF FIGURES

|                                                                                                                               | Page |
|-------------------------------------------------------------------------------------------------------------------------------|------|
| Figure 1: Bilinear Three-dimensional Theoretical Model .....                                                                  | 6    |
| Figure 2: Unilinear Unidimensional Theoretical Model .....                                                                    | 7    |
| Figure 3: Bilinear Unidimensional Theoretical Model .....                                                                     | 8    |
| Figure 4: Bilinear Bidimensional Theoretical Model .....                                                                      | 9    |
| Figure 5: Unilinear Model of Acculturation .....                                                                              | 18   |
| Figure 6: Bilinear Model.....                                                                                                 | 21   |
| Figure 7: Immigrant Acculturation Orientations .....                                                                          | 23   |
| Figure 8: Host Culture Acculturation Orientations.....                                                                        | 23   |
| Figure 9: Unilinear Unidimensional Measurement Model .....                                                                    | 42   |
| Figure 10: Bilinear Unidimensional Measurement Model .....                                                                    | 44   |
| Figure 11: Bilinear Bidimensional Measurement Model.....                                                                      | 46   |
| Figure 12: Bilinear Three-dimensional Measurement Model.....                                                                  | 48   |
| Figure 13: Factor loadings, Uniquenesses and Factor Correlations of the Bilinear<br>Three-dimensional Measurement Model ..... | 66   |

## CHAPTER 1

### STATEMENT OF THE PROBLEM

After the Great Puerto Rican Migration of the 1950s, New York became home to the largest community of Puerto Ricans in the U.S. mainland. Settled in their new home, they forged a unique cultural identity often referred to as *Nuyoricans* (Duany, 2000). In the 1990s, an economic recession took a grip on the island sparking a new exodus of Puerto Ricans into the U.S. mainland. These Puerto Ricans broke with traditional settlement patterns and created a new community and identity in Central Florida. This study sought to expand the understanding of acculturation<sup>1</sup> among Puerto Ricans in Central Florida by comparing four acculturation measurement models.

On average, 1,000 Puerto Ricans relocated to the Central Florida region (i.e., Orlando-Kissimmee area, Brevard, Lake, Marion, Orange, Osceola, Polk, Seminole and Volusia counties) every ten days in 2014 (Rodríguez Ayuso, Geerman Santana, & Marazzi Santiago, 2013). This migration to Central Florida has made Florida home to the second largest concentration of U.S. mainland Puerto Ricans (Duany & Silver, 2010; U.S. Census, 2010), with estimates that the number of Puerto Ricans in Florida will soon overtake New York. Multiple factors explain why Central Florida is the new Puerto Rican epicenter (Duana & Silver, 2010): (1) poor economic outlook on the island and in the Northeast U.S.; (2) better employment opportunities in Central Florida thanks to the tourism industry; (3) relatively affordable suburban living. Different

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<sup>1</sup> Throughout this manuscript we refer to acculturation to be consistent with previous research. However when acculturation is conceptualized beyond unilinear models, we use the term to be inclusive of enculturation as well.

settling area, time periods, housing and employment opportunities suggest that the acculturation experience of Puerto Ricans in Central Florida may be distinct from previous waves of Puerto Ricans and other Latinas/os into the U.S. The growth of the Central Florida Puerto Rican population provides a fascinating opportunity for psychologists to examine how acculturation may uniquely unfold among this new Puerto Rican community.

In the field of multicultural psychology, acculturation has been described as one of its most central constructs (David, Okazaki, & Giroux, 2014). Among Latinas/os, acculturation has been associated with various factors influencing their functioning in the U.S., including utilization of mental health services (Alegría et al., 2007), mental health (Crocket et al., 2008; Cuéllar, Bastida, & Braccio, 2004; Lara, Gamboa, Kahramania, Morales, & Hayes Bautista, 2005; Torres, 2010; Turner, Lloyd, & Taylor, 2006), and physical health (Henkin et al., 2011). However, contradictory results have emerged from studies investigating the impact of acculturation on Latina/o well-being (Cintrón, Carter, & Sbrocco, 2005; Kuo et al., 2004; Marsiglia, Kulis, Perez, & Bermudez-Parsai, 2011). Moreover, despite their contribution to Latina/o psychology, these studies have not examined the underlying factors of acculturation measurement models for Latina/o populations. Other limitations include the inconsistent conceptualization and measurement of acculturation across studies (Miller, 2007), the emphasis on behavioral dimensions of acculturation over other dimensions (e.g., values, identity), and the use of aggregate Latina/o samples. The equivocal results may be a reflection of these conceptualization and measurement limitations.

The measurement of Latina/o acculturation is a major challenge in the literature (Matsudaira, 2006). Though multiple authors have provided theoretical discussions of acculturation models (Cuéllar, Arnold, & Maldonado, 1995; Jimenez, Gray, Cucciare, Kumhani,

& Gallagher-Thompson, 2010; Knight, Jacobson, Gonzalez, Roosa, & Saenz, 2009), there has been little research testing the adequacy of these models. To date, only two studies have provided empirical support for a bilinear model of acculturation for Latinas/os in the U.S. (Kim, Newhill, & López, 2013; Schwartz & Zamboanga, 2008). While these two studies offer important information about acculturation strategy clusters, their statistical procedures were not adequate to examine the appropriateness of acculturation measurement models.

Another limitation in acculturation research is the linear conceptualization of this construct. Initially, acculturation was understood as an assimilative or unilinear process in which individuals abandoned their home culture and adhered to their host culture. Although present wisdom has rejected this unilinear theory of acculturation in favor of a bilinear model of acculturation—orthogonal adherence to the home culture and the host culture—some acculturation measures (see Knight et al., 2009, for a review) still utilize unilinear definitions. Moreover, though some scales are proposed as bilinear measures, these are often scored by summing across items thus minimizing the bilinearity of the acculturation measurement instrument (Abraído-Lanza, Armbrister, Flórez, & Aguirre, 2006).

While acculturation is widely conceptualized as a bilinear construct—though not always measured as such—there is still debate about the how many dimensions are nested within acculturation (Miller, 2007; Rivera, 2010). To address dimensionality Szapocznik, Scopetta, Kurtines, and Aranalde (1978) postulated acculturation as a bidimensional process taking place along cultural behaviors and cultural values. Other suggested dimensions include attitudes, beliefs, and psychological attachment (Cuéllar et al., 1995; Padilla, 1980; Tropp, Erkut, Coll, Alarcon, & García, 1999). Ethnic identity is also believed to change as a result of the acculturative process. However, it is not yet clear if ethnic identity should be considered an

additional dimension of acculturation (Phinney, 2006). Despite these conceptual contributions measures of acculturation have traditionally been limited to unidimensional models of acculturation emphasizing on English-language proficiency, nativity, generational status, and demographical information such as time in the U.S. (Felix Ortiz, Newcomb, & Myers, 1994; Lara et al., 2005). Although some studies examining the link between behavioral and values dimensions have shown low covariation between the two (Costigan & Su, 2004; Snauwaert, Soenens, Vanbeselaere, & Boen, 2003), both dimensions are seldom measured simultaneously. The continued use of unidimensional acculturation models is problematic as it may mistakenly assume that changes in one dimension inevitably lead to changes in other dimensions (Matsudaira, 2006). Thus, new methodologies must concurrently measure multiple dimensions in order to gather empirical evidence for the identification of broad and fine dimensions of acculturation and how these domains relate to each other.

A further criticism of acculturation literature is its one-size fits all approach. Current models assume that the acculturation process is equal across groups regardless of the type of immigrant and country of origin (Abraído-Lanza et al., 2006; Schwartz, Unger, Zamboanga, & Szapocznic, 2010). To understand acculturation one must understand the interactional context in which it occurs (Schwartz, et al., 2010). Limits imposed by demographical and sociopolitical factors (e.g., country of origin, sociopolitical relationship with the U.S.), may influence individuals' selection of which cultural aspects they maintain, learn, or lose (Huynh, Nguyen & Benet-Martínez, 2013). For instance, Puerto Ricans' sociopolitical status and immigration history may impact their acculturation in the mainland U.S. (Abraído-Lanza et al., 2006). The continued use of aggregate or pan-ethnically identified Latina/o samples in acculturation research ignores these important contextual factors. Additionally, despite the attention

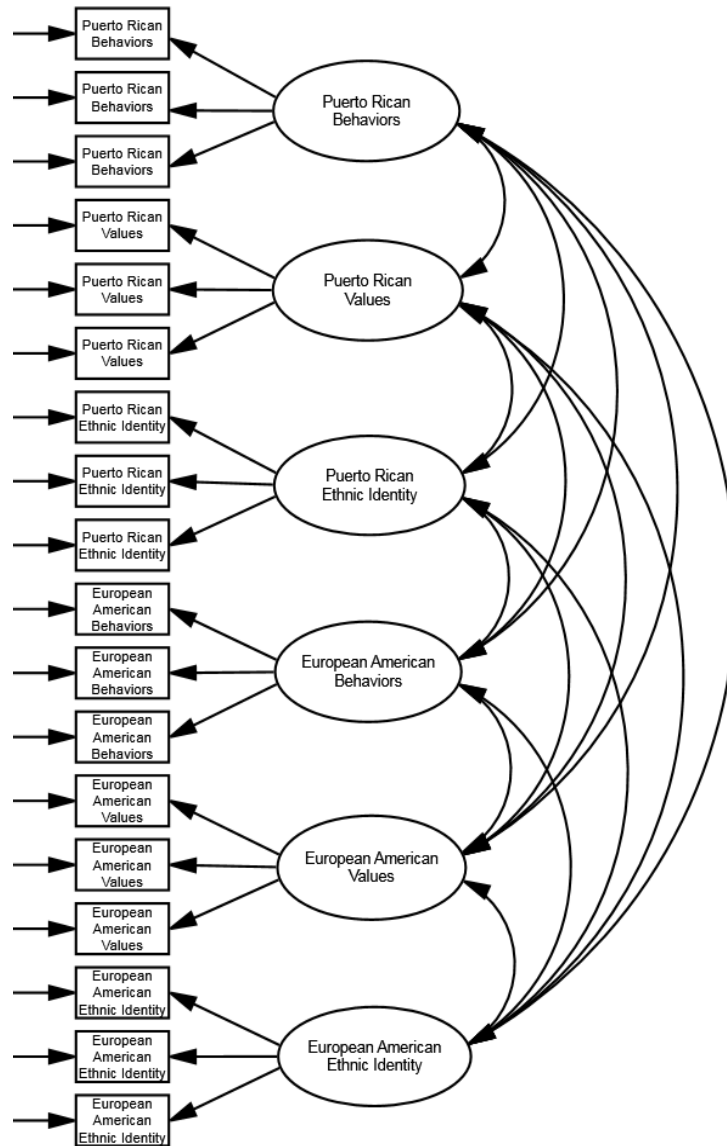
acculturation has received in Latina/o mental health research, its impact has mostly been examined among individuals of Mexican descent (Lara et al., 2005). This practice is arguably appropriate since individuals of Mexican descent are the largest Latina/o population in the United States. However, there is very limited information about the acculturation experiences of other Latina/o subgroups.

### **Purpose of the Study**

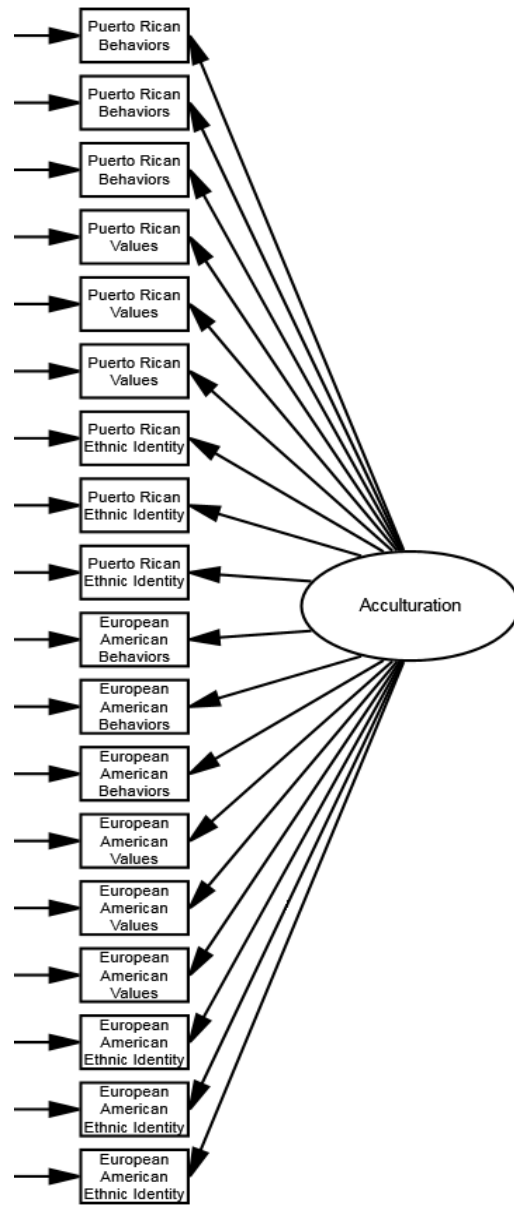
At the measurement level, little research has examined acculturation as a multidimensional construct. At a population level, there has been an inadequate representation of the Puerto Rican experience in existing empirical research. The present study addressed both gaps.

First, the proposed study sought to expand the conceptualization of acculturation by comparing four measurement models of acculturation by incorporating cultural behaviors, cultural values, and ethnic identity dimensions across Puerto Rican and European American cultures. The bilinear three-dimensional model (see Figure 1) was comprised of six latent factors: (a) Puerto Rican cultural behaviors; (b) Puerto Rican cultural values; (c) Puerto Rican ethnic identity; (d) European American cultural behaviors; (e) European American cultural values; (f) European American ethnic identity. Three competing models were compared against the bilinear three-dimensional: (a) unilinear unidimensional model (see Figure 2); (b) bilinear unidimensional model (see Figure 3); (c) bilinear bidimensional model (see Figure 4).

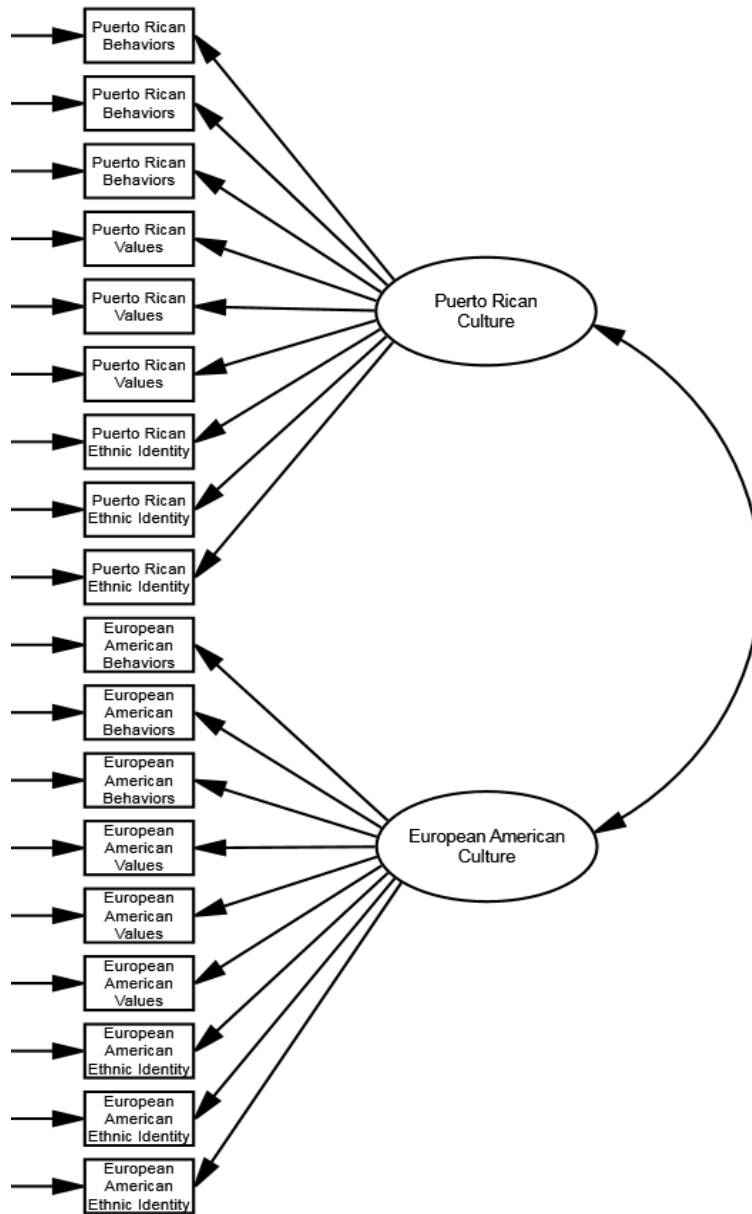




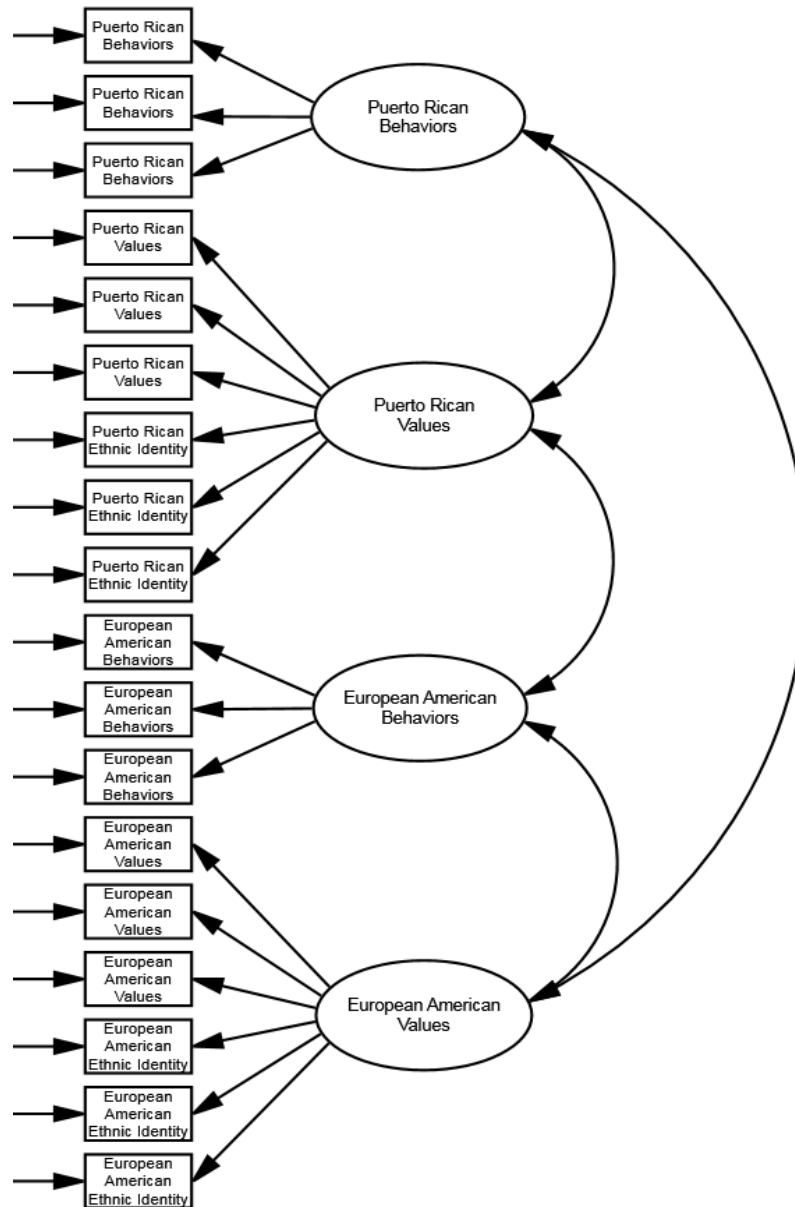
*Figure 1.* Bilinear Three-dimensional Theoretical Model. This model argued that acculturation is bilinear processes in which Puerto Ricans can simultaneous adhere to the Puerto Rican and European American cultures. Acculturation was also posited to take place along three dimensions: (a) cultural behaviors, (b) cultural values, and (c) ethnic identity.



*Figure 2.* Unilinear Unidimensional Theoretical Model. Adapted from Miller (2007). This model argued that acculturation is unilinear processes in which Puerto Ricans abandoned their home culture in favor of the European American cultures. This model theorized acculturation as a unidimensional phenomenon based on the assumption that changes in some cultural aspects are unavoidably associated with changes in other cultural aspects.



*Figure 3.* Bilinear Unidimensional Theoretical Model. Adapted from Miller (2007). This model conceptualized as a bilinear process in which Puerto Ricans can retain aspects of their home culture while also learning aspects of the host culture. This model also proposed acculturation as a unidimensional phenomenon.



*Figure 4.* Bilinear Bidimensional Theoretical Model. Adapted from Miller (2007). This model proposed acculturation is a bilinear process in which Puerto Ricans can concurrently adhere to the Puerto Rican and European American cultures. The model also conceptualized acculturation as a bidimensional process in which changes can take place across cultural behaviors and cultural values dimensions.

This study also expanded the understanding of the acculturation process among Puerto Ricans in Central Florida. Previous research on Latina/o acculturation tends to use aggregate sample of Latinas/os in which the homogeneity of the sample relative to within-group racial/ethnic differences are assumed rather than tested (Sue, 1999). Therefore, in this study the focus was on testing the unique acculturation process of Central Florida Puerto Ricans rather than assuming that acculturation measurement models were identical across other Latina/o subgroups, Northeastern Puerto Ricans, or Island Puerto Ricans.

### **Personal Account**

“We now live in the United States but this is a Puerto Rican house.” This was my mother’s constant reminder to my sister and I that we were to remain loyal to our Puerto Rican culture. Our experience illustrates new views in acculturation theory; greater involvement in a new culture does not always leads to a diminished relationship with one’s home culture. In 1998, high unemployment and crime rate in the Island of Puerto Rico prompted my parents to move our family from the island of Puerto Rico to the United States in search of better opportunities for my sister and myself. My family settled in the Orlando-Kissimmee area. I note that Puerto Ricans can freely move between the island and the mainland U.S. due to the status of Puerto Rico as a U.S. territory. Thus, our context as Puerto Ricans was immediately different than that of Cubans, Mexicans, or other Latinas/os.

Upon our arrival, we faced the difficult challenge of functioning within two different cultures. We confronted the demands of having to navigate a new language and ethnic identity. My sister and I quickly started to learn English. Within a few weeks, my sister had made new “American” friends. On the other hand, my parents were having a much more difficult time. Not knowing English kept my mother from being a classroom teacher (her profession in Puerto

Rico), and my father from getting his plumber license and expanding the plumbing business he had started in Puerto Rico. They both took food service jobs, my mother as a cashier and my dad as a dishwasher in Walt Disney World. Besides having to struggle with the loss of their trade, they were often discriminated against in their place of employment. Having a better command of the language did not keep me from directly experiencing overt and covert forms of discrimination, prejudice, and racism in high school. These experiences led my family and me to adopt what Rumbaut (2008, p. 110) called “reactive ethnicity.” Holding on strongly to our Puerto Rican culture helped my family, and I transcend the negative challenges in our environment.

When I decided to enroll in a Primarily White Institution for my undergraduate work, learning a new academic system while at the same time trying to meet family and social responsibilities was very difficult. I had to balance my new college life, which continued to challenge me with experiences of discrimination with the warnings I received from my family and pastor against “becoming too American.” My task was to embrace my Puerto Rican cultural structure mainly and only learn just enough to participate in the “American culture.”

The acculturation challenges an individual might face may extend beyond the individual’s ethnic and cultural identity (Zane & Mak, 2003). In our case, the presence of a large Puerto Rican community in Orlando further encouraged my family and me to retain our heritage language, values, and identity. Our friends, pastors, and neighbors became our new Puerto Rican family. My family and I became involved in an Evangelical church that mainly served the Puerto Rican community and only held services in Spanish. Our church and the local Puerto Rican community were our most accessible forms of support and the source of social interactions. To serve the growing Puerto Rican community three Spanish language radio stations all catering to the musical taste of Puerto Ricans, began operating in the area. In 2003, not only were we able

to listen to our favorite music on the radio, we were now able to buy Puerto Rico's most popular newspaper, *El Nuevo Día* [The New Day], at the newly opened Puerto Rican bakery and read it while drinking original Puerto Rican *cafecito* [coffee]. I reflected on how my acculturative experience, particularly my heritage culture retention, was heavily influenced by my settlement context (Schwartz et al., 2010). My subsequent work with Latina/o communities in Miami, another Latina/o enclave, solidified the idea for this study.

My personal connection with my Puerto Rican family, and the extent to which I honor and respect them has strongly influenced my current and future work. The inadequate representation of the Puerto Rican experience in empirical research inspired me to try to understand the variables that affect the psychological, social, and physical well-being of Puerto Ricans in the U.S. To understand these variables we must examine the Puerto Rican cultural context, particularly acculturation.

### **Assumption and Research Questions**

Two underlying assumptions provided the basis for the proposed study, (a) acculturation is a bilinear cultural process in which individuals negotiate which aspects to retain, acquire, or integrate from at least two cultural orientations; (b) acculturation takes place across distinct, yet related dimensions. That is, host culture behavior acquisition may be reflected by individuals who learn English while simultaneously retaining their home culture's ethnic identity and values of interdependence (Schwartz et al., 2010).

The study examined four research questions:

1. Will acculturation among adult Puerto Ricans living in Central Florida follow a unilinear or a bilinear process?

2. Will acculturation among this specific Puerto Rican community take place across one, two or three cultural dimensions?
3. Will the proposed bilinear three-dimensional model produce a population covariance matrix that is consistent with the sample covariance matrix?
4. Should ethnic identity be considered a separate construct from acculturation or is ethnic identity a nested factor within the acculturation together with cultural behaviors and cultural values dimensions?

### **Definitions**

The following definitions of terms as used in this study:

|                          |                                                                                                                                            |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Acculturation:           | Process of potential change across different dimensions that individuals sustain when they encounter a new culture.                        |
| Host/ Receiving Culture: | Represents the cultural practices, values, and identities of the dominant group's culture. May also represent the dominant cultural group. |
| Home/Heritage Culture:   | Represents the cultural practices, values, and identities of the incoming group's culture. May also represent the incoming cultural group. |
| Linearity:               | The number of cultural orientations included in the theoretical or measurement model.                                                      |
| Dimensionality:          | The number of dimensions proposed by the theoretical or measurement model.                                                                 |



## **Significance of the Study**

Acculturation continues to be a highly researched construct in ethnic and racial minority psychology. Specifically, Latina/o centered research linking this phenomenon to mental and physical health outcomes is extensive. However, the literature continues to reflect conflicting results on the impact of acculturation on the functioning of this community. These equivocal results are reflective of the use of unidimensional measures, unstandardized utilization of bilinear scales, and aggregate or pan-ethnic Latina/o samples.

As the U.S. Latina/o population continues to grow, concerted efforts must be made to reach a comprehensive understanding of acculturation and its varied impact across different groups (Rivera, 2010). In the last ten years, the Latina/o population has grown from 35.3 million in 2000 to nearly 50.5 million in 2010, a 43.1% increase (United States Census Bureau, 2011). Latinas/os are also the largest growing minority ethnic groups in the U.S. Among U.S. Latinas/os, 63% are of Mexican origin, 9.2% are of Puerto Rican origin, 3.5% are of Cuban origin and 24.3% are from other countries in Latin America. Despite the differences across different Latina/o subgroups, how the acculturative process varies across these groups remains mostly examined through the use of Mexican or pan-ethnic samples. Clearly the potential for subgroup differences in the acculturative process must be empirically investigated, not simply assumed to be the same for everyone. Thus, a major strength of the proposed study is that it expands the efforts to understand the acculturative process of Puerto Ricans in the mainland.

In order to advance acculturation research, the present study provided important empirical support for the multidimensionality of acculturation. A bilinear three-dimensional model of acculturation studying the interactions of these three domains yielded a fuller understanding of this multidimensional and bilinear process. Although work by Miller (2007) is

an important first step towards gathering empirical support for a bilinear (i.e., European American cultural orientation, Asian American cultural orientation) bidimensional (i.e., cultural behaviors, cultural values) model of acculturation, the inclusion of ethnic identity as a distinct factor in acculturation was a major strength of this project as it provided a more nuanced distinction of acculturation dimensions. Another strength of this study was the use of CFA which allowed for the systematic evaluation of alternative measurement models and the relationship between latent variables and their respective indicators while correcting for measurement error (Bollen, 1989; Bryant & Baxter, 1997; Tomarken & Waller, 2005) a problem often ignored in acculturation research (Miller, 2007).

### **Organization of the Study**

The present manuscript includes a review of the literature, description of research methodology, summary of the results, and discussion of the findings. The literature review in chapter two is organized into six sections: (a) explication of the terms linearity and dimensionality; (b) a summary of acculturation theories; (c) literature about the cultural values and ethnic identity; (d) literature on acculturation and mental health outcomes; (e) overview of Puerto Ricans in the mainland. Chapter Three describes the research design and hypotheses, the study's sample, the latent and observed indicators, and the data analysis plan. Chapter Four presents the sample's descriptive statistics and the model fit statistics. Chapter Five summarizes the findings in relation to the research questions. This last chapter also discusses implications for future research and study limitations.

## CHAPTER 2

### REVIEW OF THE LITERATURE

This review of the literature begins with a clarification of the terms linearity and dimensionality in acculturation research. Next, conceptual models of acculturation are discussed. Description of conceptual acculturation models includes a discussion of the theoretical and empirical limitations of these models. After this, arguments for the inclusion of cultural values and ethnic identity dimensions in acculturation model testing are presented. A review of the literature on the relationship between acculturation and mental health outcomes among Latinas/os follows this section. The last section of this chapter includes a description of the Puerto Rican diaspora.

#### **Introduction**

The literature has defined culture as the array of attitudes, values, identities, and behaviors that are common to a group (Markus & Kitayama, 1991; Matsumoto, 1999). Changes in these cultural dimensions through the process of acculturation have been a central part in racial and ethnic minority psychology (Rivera, 2010). Acculturation has traditionally been examined in two ways, first as an individual difference variable in comparative research (Zane & Mak, 2003) and second, as an outcome subsequent to cultural contact (Berry, 2003). In the history of acculturation research the classical definition of acculturation is credited to Redfield, Linton, and Herskovits (1936) who defined this concept as the phenomenon that take place when cultural groups come into continuous contact resulting in changes in the original cultural patterns of both or either of these groups.

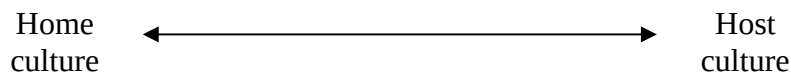
A literature review of theoretical works describing acculturation provides the terms: unidimensional, unilinear, bipolar, bidimensional, bilinear, and multidimensional. The first three are usually used interchangeably to describe how holding to one culture leads to the rejection of the other culture (Miller, 2007; Nguyen & von Eye, 2002). Similarly, the terms bidimensional, bilinear, and multidimensional are used to represent attachment to both cultures and the strategies used to negotiate living within two cultures (Berry, 2005). Although acculturation is an established and important area of study (Berry, 2006), having various terms and moreover, its interchangeable use, presents a major challenge when defining and measuring acculturation. As Miller (2007) pointed out “the problem with multiplicity of terms is the potential for miscommunication” (p. 119). That is, while some may use the label unidimensionality to depict orientation to just one culture, others may use it to describe acculturation domains (e.g., cultural behaviors, cultural values). In order to clarify this concept, this study used the terminology suggested by Kim and Abreau (2001) and Miller (2007) in which the term *linearity* reflected the proposed direction of change and the term *dimensionality* indicated the number of different acculturation dimensions a model tested. In the next section acculturation models were defined along these criteria.

## **Conceptualization of Acculturation**

### **Unilinear Model**

Acculturation was initially conceptualized as a unilinear construct (Gordon, 1964; Matsudaira, 2006; Rivera, 2010; Schwartz et al., 2010). This original model (see Figure 5) proposes that acculturation is an assimilative process in which those in the non-dominant cultural group abandons their home culture in favor of the host culture (Berry, 1997; Nguyen & von Eye, 2002). That is, the more an individual adheres to the host culture, the less involved they become

in their home culture (LaFramboise, Coleman, & Gerton, 1993). The unilinear model is based on the assumption that cultural changes occur in a linear manner (Berry, 2006; Ryder, Alden, & Paulhus, 2000) and that assimilation is the preferred outcome of acculturation (Flannery, Reise, & Yu, 2001). It also assumes that it is challenging to hold both cultures and thus both cultures are mutually exclusive (Sung, 1985). Thus, this model contends that when faced with a new culture, the individual either holds on to their home culture or becomes involved in the host culture (Nguyen & von Eye, 2002; Rivera, 2010).



*Figure 5. Unilinear Model of Acculturation. Adapted from Nguyen and von Eye (2002).*

This model has received major criticisms. The mutual cultural exclusion (Sung, 1985) assumption is problematic as it contends that individuals cannot simultaneously adhere to their home culture and their host culture. Therefore, individuals are not able to retain features of their home culture while acquiring important features of the receiving culture (Cuéllar et al., 1995). Furthermore, it assumes that negative psychological outcomes occur when an individual has to negotiate two cultures (Berry, 2006). Although untoward outcomes may be possible, adherence to both cultures has been associated with psychological well-being (Bautista de Domanico, Crawford, & Wolfe, 1994; Smokowski & Bacallao, 2007; Vuorenkoski, Kuure, Moilanen, Penninkilampi, & Myhrman, 2000). Moreover, because the model only offers two polarities, it makes it impossible to measure and distinguish between those who choose to maintain both cultures and those who do not identify with either culture (Ryder et al., 2000). Another criticism is its overemphasis on assimilation as the preferred outcome, thus this model has an inherent bias

toward the receiving culture. That is, identifying with the host culture is seen as an improvement, whereas a continued orientation towards the home culture is seen as a deficit (Nguyen & von Eye, 2002). Finally, the continued diversification of the U.S. has resulted in a more diverse receiving culture. Thus, the presence of large home culture communities (e.g., Miami, Kissimmee) may make assimilation a less desired outcome and in turn provide continued contact with the home culture.

### **Bilinear Models**

In contrast to the unilinear model, the bilinear model (see Figure 6) argues against the unidirectionality of cultural change. Berry (1970) was the first one to propose a bilinear model of acculturation. This model assumes that it is possible to simultaneously acquire aspects of the receiving culture and retain those associated with the home culture (Berry, 1980). His bilinear model represented a significant conceptualization improvement over the unilinear model (Ward & Kus, 2012). This approach to acculturation assesses individuals' cultural orientation to both their home and host cultures. That is, when individuals come in contact with a different culture they may choose to retain important parts of their home culture while at the same time learning to participate in the host culture (Laroche, Kim, Hui, & Tomiuk, 1998). The bilinear model presents acculturation as orthogonal relationships between the culture of origin and the new culture (Abraído-Lanza et al., 2006). This position contends that the individual's decision to integrate elements of their home and host culture is independent of each other (Cuéllar et al., 1995). Consequently, an individual could mainly embrace their home culture (e.g., cultural values), and only learn those cultural aspects necessary (e.g., language, social contact) to take part in the host culture (Laroche et al., 1998).

Unlike the unilinear model, the bilinear model allows for multiple acculturation outcomes. When faced with a new culture, individuals negotiate between holding on to their culture of origin and/or becoming involved in the new culture (Rivera, 2010). Four acculturation strategies result from this negotiation: assimilation, separation, marginalization, and integration. Assimilation occurs when individuals of the non-dominant cultural group do not wish to retain their culture of origin and seek to interact with the dominant culture (Berry, 1997). On the other hand, separation takes place when individuals decide to maintain their culture of origin while rejecting the dominant culture (Berry, 2006). When they want to maintain the culture of origin while at the same time showing interest for the new dominant culture, integration is the most likely outcome (Berry, 1997). Integration has also been conceptualized as biculturalism (Rivera, 2010). Finally, when individuals reject both the cultures, marginalization occurs (Berry, 1997).

Various studies have provided support for the superiority of the bilinear model of acculturation over the unilinear model. For example, Costigan and Su (2004) found that for Chinese fathers and their foreign-born children, greater involvement in Canadian culture was not associated with a diminishment of their Chinese ethnic identity or cultural values. Additionally, Portes and Rumbaut (2001) reported that Asian American youth orientation towards American cultural practices (e.g., language) did not preclude them from endorsing a strong Asian American ethnic identity. Among Latinas/os, Schwartz, Zamboanga, and Jarvis (2007) found that those who frequently used English also endorsed a strong Latina/o ethnic identity. Furthermore, language use also explained 20% of the variance in behavioral and values (Unger, Ritt-Olson, Wagner, Soto, & Baezconde-Garbanati, 2007).

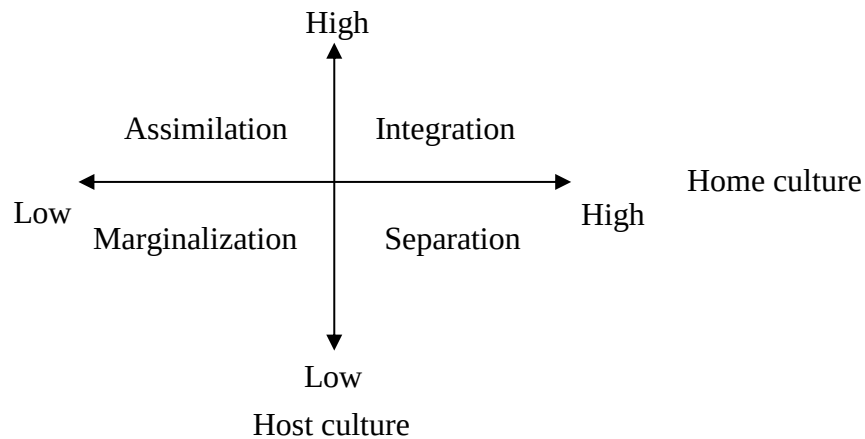


Figure 6. Bilinear Model. Adapted from Nguyen and von Eye (2002).

Despite some empirical support, the bilinear model of acculturation has been criticized on several fronts. First, Berry's bilinear model assumes that the four acculturation strategies are equally represented in the population (Schwartz, et al., 2010) and are equally valid (Rudmin, 2003). However, a study by Schwartz and Zamboanga (2008) which employed cluster analysis techniques yielded more categories than those originally offered by Berry (1980). Secondly, the validity of the marginalization strategy has been questioned. The probability that an individual may develop a sense of cultural identity without having an orientation to either culture may be impossible (Schwartz et al., 2010). For instance, Unger et al. (2002) found that although assimilation and integration factors reached adequate psychometric properties, separation, and marginalization did not. Similarly, Schwartz and Zamboanga (2008) found little evidence of a marginalization group.

Another important criticism of bilinear models is the omission of dimensionality. For example, Berry's bilinear model only measures attitudes towards the two distinct cultures but omits other important dimensions (Nguyen & von Eye, 2002). This traditional overemphasis on unidimensional models is reflected in the use of proxies such as English-language proficiency,



nativity, generational status, and demographical information such as generation level and time in the United States to measure acculturation (Alvidrez, 1999; Brown, Consedine, & Magai, 2006; Gapstur, Lopez, & Colangelo, 2005; Folsom et al., 2007; Liu, Probst, Harun, Bennett, & Torres, 2009; Unger et al., 2000). These unidimensional measures are anchored in the assumption that changes in a dimension lead to unequivocal changes in other dimensions, however, internal (i.e., values and identity) and external (i.e., use of language) domains of acculturation show different change patterns (Matsudaira, 2007). Moreover, Marino, Stuart, and Minas (2000) showed a low correlation between behavioral and value dimensions of acculturation. Tropp et al. (1999) further argued that measures based solely on behaviors are not able to explore the individual's acceptance and understanding of values from each culture or their sense of belonging to each culture. Some studies have found that acculturation takes place across behavioral and values dimensions (Arends-Tóth & Van De Vijver, 2008; Miller, 2007) and underscored the need to gather empirical support for additional dimensions.

In response to the growing concerns about Berry's bilinear model, Bourhis, Moïse, Perreault, and Senécal (1997) proposed the Interactive Acculturation Model (IAM). The IAM model presents an expansion of Berry's bilinear model, offers a new conceptualization of marginalization, and adds cultural strategies for the host culture. The IAM model subsumes two other models, the Immigrant Acculturation Orientations (see Figure 7) and the Host Culture Orientations (see Figure 8). Within the Immigrant Acculturation Orientations model, two new acculturation strategies replace marginalization, anomie and individualism. Anomie represents those who reject both their home culture and the host culture (Bourhis et al., 1997). Individualism, on the other hand, reflects the individual's rejection of both home and host culture because they rather identify as individuals than members of a cultural group (Rivera, 2010).

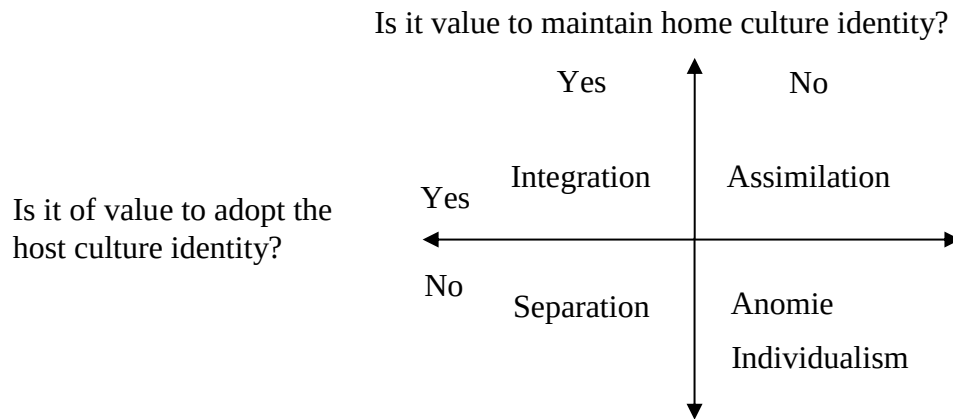


Figure 7. Immigrant Acculturation Orientations. Adapted from Bourhis et al. (1997).

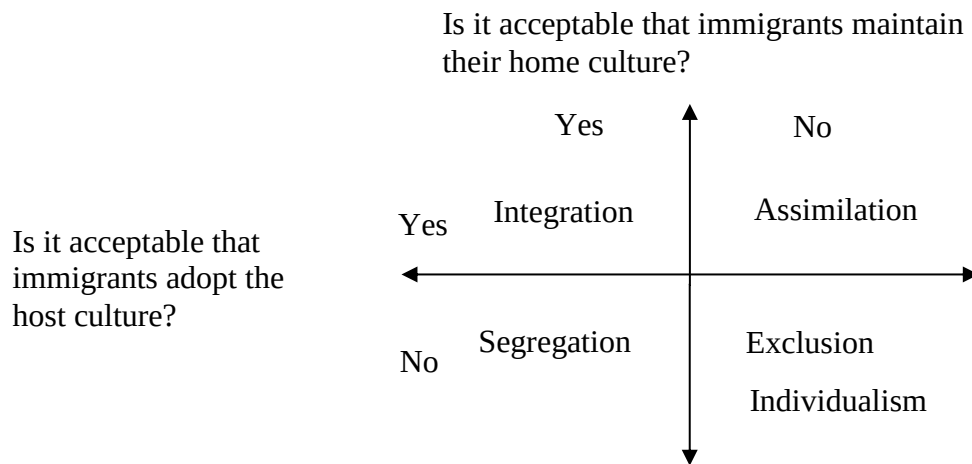


Figure 8. Host Culture Acculturation Orientations. Adapted from Bourhis et al. (1997).

The IAM model also takes into consideration the influence the host culture has on the acculturative process of the incoming group. Based on that assumption, the IAM model presents a framework in which, (a) the acculturation orientations of the host culture influences the acculturation orientations of the incoming groups, (b) which acculturation strategy is selected is best predicted by the relative fit between home culture orientation and host culture orientation (Zagefka & Brown, 2002), and that (c) this interaction leads to three potential intergroup relational outcomes (Bourhis et al., 1997). Five acculturation strategies are possible in the Host

Culture Acculturations Model: integration, assimilation, segregation, exclusion, and individualism. Assimilation reflects the host culture's desire for the incoming group to reject their home culture in favor of the host culture (Bourhis et al., 1997). Integration occurs when the host culture values the retention of home cultural identification and the adoption of cultural aspects associated with the host culture (Bourhis et al., 1997). On the other hand, segregation takes place when individuals in the host culture shun away from individuals in the home culture group and at the same time precludes them from adopting a host culture identity (Bourhis et al., 1997). Exclusion takes place when the host culture does not oppose the retention of home culture identity but at the same time does not allow the home culture group to adopt the host culture. Finally, when the host culture devalues the retention of the home culture as well as the acquisition of the host culture but favors an individual identity over a group identity, individualism occurs (Bourhis et al., 1997).

The second assumption of the IAM model is based on the hypothesis that the match or mismatch between host culture acculturation orientations and home culture acculturation orientations results on three interpersonal outcomes: consensual, problematic, and conflictual (Rivera, 2010; Komisarof, 2009). Consensual relational outcomes are the result of congruent acculturation orientations between the host and home culture groups. Conversely, problematic outcomes occur when there is partial agreement between acculturation orientations of both groups (Bourhis et al., 1997). When the acculturation orientations of the two groups do not fit, conflictual interactions occur (Bourhis et al., 1997). According to the IAM model, a consensual interaction leads to more positive outcomes than problematic and conflictual types.

This model has received partial empirical support. For example, Komisarof (2009) tested which acculturation orientation interactions between the host and the home culture groups were

most likely to produce positive relational outcomes. As hypothesized by the IAM model conflictual relational outcomes scored lower on quality of intercultural relations, acceptance of immigrant group, social interactions, and job effectiveness than those in the consensual or problematic intergroup relational outcomes. Although the IAM model proposes that consensual interactions lead to more positive acculturative outcomes, there was no significant difference between consensual and problematic interactions contradicting this model's assumption. Earlier, Zagefka and Brown (2002) found that integration orientation was the most preferred outcome by the home culture and the host culture groups. Congruency between the acculturation orientations of both groups only predicted the quality of intergroup interactions, whereas mismatch between orientations predicted ingroup bias, perceived discrimination, and intergroup relationships. More importantly, perceived mismatch and not actual mismatch between acculturation strategies was more predictive of intergroup relational outcome.

The interaction between immigrant acculturation attitudes and those held by individuals is one of the IAM model's most important contributions to acculturation literature. However, more empirical support is necessary to explore the validity of the IAM model. Rigorous data analysis procedures (e.g., latent factor analysis) may be implemented to extract the different orientations proposed by the IAM model. Second, although the model calls for an objective comparison of the acculturation orientations between the two cultural groups, subjective perception may be more valuable in predicting the selection of acculturation orientations.

### **Multidimensional Models**

Acculturation not only takes place across two or more cultures, it is also conceptualized as a multidimensional process (Jimenez et al., 2010; Cuellar et al., 1995; Miller, 2007; Zane & Mak, 2003). What is not yet clear is exactly how many dimensions exist within acculturation

(Miller, 2007) or their association between these dimensions (Zane & Mak, 2003). Szapocznik et al. (1978) argued that acculturation happened at least across two domains, behaviors, and values. Following this argument others have proposed that the acculturation process involves multiple acculturation dimensions, including language, customs, self-identification, preferences, attitudes, and values (Cuéllar et al., 1995; Felix-Ortiz et al., 1994).

More recently Navas et al., (2005) proposed the Relative Acculturation Extended Model (RAEM). This model follows a bilinear framework by examining adherence to both home and host cultures. Similar to the IAM model, the RAEM model also integrates the influence the host culture attitudes have on the acculturation strategies the home culture group chooses. The main contribution of the RAEM model is the addition of new dimensions (i.e., political, work, economic, family, social, religion, and ways of thinking; Navas et al., 2005; Rivera, 2010). According to this model, acculturation takes place along seven dimensions subsumed under two broader dimensions, public and private domains (Rivera, 2010). The RAEM model also makes an important distinction between ideal and real acculturation orientations. Ideal acculturation orientations result when individuals are allowed to select the orientation of their choice (Navas et al., 2005). Real acculturation orientations describe the actual strategies used, and the perceptions the host culture group has about the strategy selected (Navas, Rojas, García, & Pumares, 2007).

Based on these assumptions, the RAEM model presents a theoretical framework in which: (a) acculturation is relative or selective. That is, depending on the broad domains (i.e., private or public) and the more nuanced dimensions, an individual may choose different acculturation strategies (e.g., assimilation, integration). (b) Disparities between the ideal and the real acculturation options, particularly in the private dimension, will lead to negative outcomes; (c) the racial/ethnic background of the incoming group influences the acculturation options

available to them. For instance, incoming groups that are similar to the host culture group will be more likely to reach an ideal acculturation strategy than those who are different from those in the host cultural group (Navas et al., 2005).

Results of a study examining the RAEM model among African immigrants in Spain (Navas, Rojas, García, & Pumares, 2007) found that both cultural groups agreed on the acculturation strategy the new cultural group should select within the public domain in the dimensions of work and economic (i.e., assimilation) and social dimensions (i.e., integration). As hypothesized by the RAEM model, they also observed that within the private domains, the incoming group preferred the separation strategy along the family, religious, and way of thinking dimensions. In contrast, the host culture preferred assimilation. Although empirical support for the RAEM model continues to be limited, these results highlight the bilinearity and multidimensionality of acculturation.

Although models like the RAEM model present theoretical improvements, a majority of acculturation studies continue to examine acculturation using unidimensional models (e.g., cultural behaviors). English language use (e.g., Hispanic Background Scale; Martinez, Norman, & Delaney, 1984), preference (e.g., Acculturation Rating Scale for Mexican Americans-II, subscale 1; Cuéllar et al., 1995) or language proficiency (e.g., The Bidimensional Acculturation Scale for Hispanics; Marín & Gamba, 1996) are the most widely studied behavioral dimensions. Socialization (The Acculturation Scale for Vietnamese Adolescents; Nguyen & von Eye, 2002; The Acculturation, Habits, and Interests Multicultural Scale for Adolescents; Unger, et al., 2002; Suinn-Lew Asian Self-Identity Acculturation Scale; Suinn, Rickard-Figueroa, Lew, & Vigik, 1987) and contact with people from the host culture (The Biculturalism/Multiculturalism Experience Inventory; Ramirez, 1983), are other frequently studied behavioral dimensions. Other

cultural practices frequently assessed are food preference, use of media, and communication (Zane & Mak, 2003).

### **Cultural Values as a Dimension of Acculturation**

The multidimensional model of acculturation is also anchored in the hypothesis that cultural values change as a result of the acculturative process (Schwartz, Montgomery, & Briones, 2006). However, the role of acculturation in the modification of cultural values has received far less attention than the role of acculturation on cultural behaviors (Marín & Gamba, 2003). Examining cultural values is important on several fronts. First, cultural values are strongly related to the identity of a group, and the influence of acculturation on the potential change of cultural values has implications for the group's identity (Marín & Gamba, 2003). Secondly, cultural values are believed to inform an individual's decisions. That is, cultural values changes that result from the acculturative process may also yield behavioral changes in the individual. Finally, understanding how cultural values are modified or retained also carries implications for the development of culturally responsive interventions (Marín & Gamba, 2003).

Multiples cross-cultural studies have examined the effect of acculturation on relationship collectivistic and individualistic values. For example, Gomez (2003) examined whether or not acculturation predicted collectivistic and individualistic values among Latino and White American businessmen. As predicted, less acculturated Latino managers endorsed more collectivist values than either highly acculturated Latino or White American managers. On the other hand, Rosenthal and Feldman (1992) found that acculturation (measured through generational status) among 1<sup>st</sup> generation and 2<sup>nd</sup> generation Chinese youth in Australia and the U.S. was not related to an increase in individualistic values. Similarly, Rosenthal, Bell, Demetriou, and Efklides (1989) looked at the role of acculturation in the retention of

collectivistic and acquisition of individualistic values among Greek adults and adolescents living in Australia and Greece. Findings showed that the strength of adherence to collective values among Greek immigrants in Australia did not significantly differ from those still living in Greece.

While some cultural values are cross-cultural (i.e., collectivism and individualism) others are culture specific (Schwartz, et al., 2010). Among Latinas/os cultural values may influence familiar and interpersonal relationships: *familismo*, *respeto*, *simpatía*, *personalismo*, and *espiritismo* (Marín & Gamba, 2003). *Familismo* refers to the high value Latina/o families place on their family. *Respeto* stems from the interpersonal rules that allow individuals to communicate in “a personal and respectful way” particularly with those who are considered elders (García-Preto, 2005, p. 245). *Simpatía* describes the preference for agreeable personal relationships (Delgado-Romero, Nevels, Capielo, Galván, & Torres, 2013) and *personalismo* reflects the importance given to personal relationships, allowing individuals to focus on the importance of a person’s “inner qualities and not worldly success” (García-Preto, 2005, p. 245). *Espiritismo* reflects the belief in a spiritual and invisible world that influences human behavior. In times of stress, Latinas/os may rely on espiritistas or spiritual mediums to help them communicate with deceased family members and ameliorate distress (García-Preto, 2005).

Latinas/os may also share specific cultural values that influence gender roles: *marianismo*, *machismo*, and *hembrismo*. Although *machismo* has traditionally been described as male dominance, and aggression (Delgado-Romero et al., 2013), *machismo* also refers to self-respect and responsibility towards the family (Parra-Cardona, Córdova, Holtrop, Villarruel, & Wieling, 2008). Conversely, *marianismo* has been stereotypically linked with self-sacrifice and submissiveness in Latina women but it also reflects a desire to unify, care, and protect the family



(Delgado-Romero et al., 2013). Finally, *hembrismo*, is described as femaleness, endurance, and strength among Latina women (García-Preto, 2004).

The role of cultural values on cultural behaviors and behavioral changes has also been examined. Szapocnik et al. (1978) was one of the first researchers to find an association between cultural values and behavioral changes. Their results indicated that changes in cultural values among Cuban Americans living in Miami were associated with changes in the preferred problem-solving strategies participants used. More recently, Rosales Meza (2010) explored the relationship between Latina/o cultural values, the decision to remain in school, and the psychological functioning of Mexican American college students. Meza (2010) found a positive relationship between endorsement of Latina/o cultural, the decision to remain in school and positive psychological well-being. A relationship between cultural values, risky behaviors, health outcomes, and health beliefs has also been observed. For instance, Le and Kato (2006) found that higher individualism was linked to higher prevalence of unprotected sex among Asian Americans. Having higher collectivistic value on the other hand served as a protective factor against marijuana use for African American women (Nasim, Corona, Belgrave, Utsey, and Fallah, 2007). Among Latinas, Oetzel, De Vargas, Ginossar, and Sanchez (2007) found that higher interdependence was linked to breast health help seeking behaviors. In regards to specific Latina/o values, Lawton, Gerdes, Haack, and Schneider (2012) reported that although behavioral indicators of acculturation did not influence cause of illness beliefs, cultural values (i.e., *familismo* and traditional gender roles) were positively related to spiritual beliefs about the illness etiology.

Bilinear and bidimensional models are a theoretical and empirical advancement in acculturation literature, however methodological, measurement, and conceptual problems

continue to plague acculturation research. Ignoring measurement error is another challenge in previous acculturation research. Unreliable acculturation measures may negatively impact the explanatory and predictive power in correlational studies (Miller, 2007). Finally, an overemphasis on behavioral indicators of acculturation over other dimensions (e.g., values and ethnic identity) may provide a limited view of the acculturative process among Latinas/os.

### **Ethnic Identity as a New Dimension of Acculturation**

Ethnic identity, like acculturation, is an important construct in ethnic minority psychology. Phinney (1990) conceptualized ethnic identity as a dynamic phenomenon that reflects a person's identity or sense of self as a member of an ethnic group. Ethnic identity is consist of self-identification, sense of belonging, shared values, and the individual's attitudes towards their ethnic community (Liebkind, 2006). Ethnic identity can be further described as a subjective sense of belonging (Liebkind, 2006; Phinney, 2003).

Similar to cultural values, ethnic identity is also believed to change as a result of the acculturative process (Liebkind, 2006; Phinney, 2003). Furthermore, like to acculturation, ethnic identity is also based on a bilinear assumption in which, (a) there can be identification with the home culture and (b) identification with the host culture (Phinney, 2003). Although ethnic identity is believed to change on both fronts, far less attention has been given to changes in the host culture ethnic identity (Liebkind, 2006; Schwartz et al., 2010). Using generational status as a proxy of acculturation, Cameron and Lalonde (1994) tested this bilinear assumption among Italian Canadians. Results indicated that second generation Italian Canadians were more likely than first generation participants to identify as both Italian and Canadian. It is important to note that this study examined the associations between ethnic identity and acculturation using generational status as a measure of acculturation, however, various researchers (Cuéllar, Nyberg,

Maldonado, & Roberts, 1997; Rosenthal & Feldman, 1992) have pointed out that generational status is not a good indicator of ethnic identity.

Although acculturation and ethnic identity are closely related (Phinney, 2003), the nature of this relationship is not well understood. The overlap in operationalization and measurement of these constructs only adds to this confusion. Therefore, examining the link between ethnic identity and various dimensions of acculturation may be necessary to elucidate the relationship between ethnic identity and acculturation (Phinney, 2003). It has also been argued that due to the strong relationship between ethnic identity and acculturation, ethnic identity could be “thought of as a part of the acculturative process” (Phinney, 2003 p. 65). Acculturation could then be conceptualized as (a) a broad construct comprised of (b) more nuanced and related but orthogonal dimensions (Unger, Zamboanga, & Szapocznik, 2010), that is, cultural behaviors, cultural values, and ethnic identity as “subjective sense of belonging” (Liebkind, 2006, p. 83).

### **Acculturation and Mental Health Outcomes**

The attention given to acculturation theory and measurement is fueled by the long established relationship between acculturation and human functioning, particularly of those belonging to racial and ethnic minority groups. Hence, having an understanding of this construct has real implications in the areas of counseling and mental health (Rivera, 2010). As a result acculturation has received much attention in mental health research (Koneru, Weisman de Mamani, Flynn, & Betancourt, 2007). Though acculturation has been linked to mental health, physical health, and health care utilization among ethnic minority groups (Alegría et al., 2007), contradictory results have emerged from studies investigating the relationship between acculturation and health.

Among Latinas/os, some research has supported the association between acculturation and mental health outcomes. For example, Torres (2010) found that Latinas/os who endorsed a U.S. culture orientation had higher levels of depression than those who endorsed a Latina/o cultural orientation. This association has also been observed among women of Mexican descent, with those who had longer exposure to the U.S. culture having a significantly higher risk for depression than those women who had less contact with the U.S. (Heilemann, Frutos, Lee, & Kury, 2004). This relationship also extends to substance abuse disorders. Higher acculturation levels have also been associated with a higher prevalence of alcohol consumption among Mexican, Cuban, and Puerto Rican women (Lara et al., 2005; Turner, Lloyd, and Taylor, 2006)., Henkin et al. (2011) investigated the relationship between acculturation, depression, stress, and physical outcomes (i.e., body mass index, physical activity, and respiratory disease) among Puerto Rican adults in metro Massachusetts. Results indicated that higher acculturation was linked to higher levels of depression, stress, and respiratory disease. Also using a sample of Puerto Ricans in the Northeast, Ramos (2005) found that acculturated adult men were more likely to have a depressive affect and somatic symptoms.

Other studies do not bear the same results. For example, Marsiglia et al. (2011) found no association between acculturation and depression among Mexican-American mothers in the Southwest. Similarly, a study of Latinas in Miami, New York City, and San Francisco did not show a link between levels of acculturation and reported depressive symptoms (Kuo et al., 2004). Among Central Florida Puerto Ricans, while acculturative stress was a predictor of depression symptoms, acculturation was not (Capielo, Delgado-Romero, Stewart, in press). Unlike studies pointing to the adverse effects of high acculturation on psychological health (Acevedo, 2000; Cano & Castillo, 2010; Torres, 2010), Cintrón et al. (2005) found that in a

sample of island Puerto Ricans, lower acculturation was associated with higher anxiety symptoms. In regards to physical health, numerous studies have not find a relationship between acculturation and health care utilization or preventive care among Latinas (Abraído-Lanza, Chao, & Gates, 2005; Bundek, Marks, & Richardson, 1993; Longman, Saint-Germain, & Modiano, 1992; Regan & Durvasula, 2008).

The conflicting nature of these results might be partly due to the persistent utilization of unilinear and unidimensional scales and models of acculturation. This is a major limitation because, these models make it unclear to determine whether or not mental and physical health outcomes are associated with acquisition of the host culture, loss of home culture, or to both (Schwartz et al., 2010). Though there is some empirical support for the effect of acculturation on Latina/o health (Lara et al., 2005; Koneru et al., 2007) a majority of studies continue to use aggregate Latina/o samples compounding the problem by overlooking how contextual factors (e.g., reason for migration, sociopolitical relationship with the U.S.) might influence the acculturative process of different Latina/o subgroups.

### **The Central Florida Puerto Rican Diáspora**

The Puerto Rican community is one of the largest ethnic groups in the U.S. mainland (Collazo, Ryan, & Bauman, 2010). Despite the large presence of Puerto Ricans in the mainland few attempts have been made to understand the acculturative process of this group. The Puerto Rican population is characterized by a high rate of mobility between the island and the mainland U.S., a distinct political status, and a long-standing socio-political relationship with the U.S. Therefore, it is very important to understand the particular cultural experience on Puerto Ricans in the U.S. mainland.

Although Puerto Rico, Cuba, and Mexico were all Spanish colonies, the treaty agreement between Spain and the U.S. at the end of the Spanish-American War helped shaped Puerto Ricans distinct political status and migration patterns to the U.S. (Whalen, 2005). The treaty gave the U.S. possession of Cuba and Puerto Rico (Vazquez-Hernández & Whalen, 2008; Baker, 2002). Although Cubans obtained their independence, the U.S. kept Puerto Rico. Puerto Ricans were granted U.S. citizenship in 1917; however this did not guarantee equal rights (Whalen & Vazquez-Hernández, 2005). Soon after the U.S.'s entrance to Puerto Rico in 1898 a diversified economy was turned into a single crop industry—sugar cane (Baker, 2002). Decline in sugar demand during the 1920s, increases in population, and severe weather events lead to high unemployment and poverty in the island (Baker, 2002). These hardships drove Puerto Ricans to seek better opportunities in the U.S. mainland.

During the Great Puerto Rican migration between 1945 and early 1970s, Puerto Ricans mostly concentrated on the Northeast U.S. (Baker, 2002). Motivated by high unemployment and overpopulation in the island, Puerto Ricans moved mostly to New York City and other northeastern cities in search of a better life. Upon their arrival, however, many were faced with racial, housing, and employment discrimination; these limiting dynamics led to the overrepresentation of Puerto Ricans in low-wage and light manufacturing jobs creating a cycle of unemployment and poverty (Baker, 2002; Duany, 2010; Vazquez-Hernández & Whale 2008). While Puerto Ricans in the U.S. were facing dire living and economic condition in the 1970s, the island of Puerto Rico was undergoing reforming economic policies that sought to increase investments and employment in the island. In 1976 the U.S. Congress approved Section 936 of the Internal Revenue System, which provided tax incentives to U.S. companies that relocated to Puerto Rico and reinvested some of their gains back on the island (Oliveras, & Francisco, 1998).

Section 936 also known as *Industrias 936* led to an increase in the Puerto Rican banking, construction, and pharmaceutical sectors and indirectly led to the creation of managerial, exporting, and clerical jobs needed to sustain this new economy (Corrales, 2001). These factors had important consequences for Puerto Ricans migration to the U.S. and by the mid-1970s Puerto Rico experienced a decrease in migration to the U.S. (Baker, 2002; Vázquez & Whalen, 2008). By the 1980s, however, this policy received much opposition by the U.S. congress; consequently, job creation decelerated and migration to the U.S. once again intensified. Disenchanted with poor economic and living conditions in the north, Puerto Ricans saw in Central Florida better housing and employment opportunities, and lower cost of living. Although the northeast area of the U.S. had historically been the main hub for Puerto Ricans on the mainland, in 1990 a new geographical pattern emerged and Florida surpassed New Jersey with the second largest concentration of mainland Puerto Ricans, following only New York (Duany & Silver, 2010). By 1999, all efforts to renew Section 936 had failed and with most tax incentives ending by 2005 (Collins & Bosworth, 2005). The end of *Industrias 936* sent the Puerto Rican economy once again into recession and Puerto Ricans to continue their migration towards the U.S. (Meléndez, 2011), particularly Central Florida (Duany, 2012). From 2000 to 2009 Central Florida (e.g., Orlando-Kissimmee, Lake, Orange, Osceola, Polk, Marion and Seminole counties) experienced a 64.56% increase in the Puerto Rican population. Between 2012 and 2013 around 1,000 Puerto Ricans moved from the island to the Central Florida area (Barceló Jiménez, 2014). It is estimated that by 2020, Florida will replace New York as having the largest concentration of Puerto Rican in the U.S. (Velázquez et al., 2012).

Besides differences in the settlement area, Puerto Ricans in Florida also present a different socioeconomic profile than Puerto Ricans in New York (see Table 1). For instance,

Puerto Ricans in Florida differ in median household income, poverty rates, educational attainment, and English language proficiency when compared to Puerto Ricans in other U.S. regions. Median household income for Puerto Ricans in Florida is \$38,807 per year, compared to their national average of \$36,558 (U.S. Census Bureau, 2010). Nationwide, 24.2% of Puerto Rican families live below the poverty line; in contrast the percentage for Florida is 18.7% (U.S. Census Bureau, 2010). Another interesting characteristic of Central Florida Puerto Ricans is that while they have higher educational attainment, English language proficiency is lower than other Puerto Ricans across the mainland (U.S. Census Bureau, 2010).

Table 1

*Socioeconomic Profile of Puerto Ricans in New York and Florida*

| Subject                                      | State    |         |
|----------------------------------------------|----------|---------|
|                                              | New York | Florida |
| Income (past 12 months)                      |          |         |
| Median household income                      | 32,751   | 41,892  |
| Poverty Level                                |          |         |
| Percent below poverty level                  | 27.5     | 17.5    |
| Employment Status (16 years or older)        |          |         |
| Percent unemployed                           | 10.0     | 9.3     |
| Percent employed                             | 60       | 53      |
| Educational Attainment (25 years or older)   |          |         |
| Percent high school graduate or higher       | 68.5     | 78.3    |
| Percent bachelor's degree or higher          | 13.9     | 17.5    |
| Ability to Speak English (5 years or older)  |          |         |
| Percent speaks English less than "very well" | 79.6     | 77.3    |

*Note.* 2008 American Community Survey

Although demographical data point out to economic and educational advantages for Puerto Ricans in Central Florida, little is known about the acculturative process and the mental health needs of this community (Rivera & Burgos, 2010). Several nationwide studies have



shown that Puerto Ricans report higher rates of mental health disorders than Mexican and Cubans (Ai, Appel, Huang, & Lee, 2012; Alegría, Canino, Stinson, & Grant, 2006; Alegría et al., 2007; González, Tarraf, Whitfield, & Vega, 2010; Guarnaccia, Angel, & Worobey, 1989; Sanchez, et al., 2014). Though, the unique acculturation experience of Puerto Ricans has been hypothesized as one of the factors impacting this health disparity (Alegría, Canino, et al., 2008; Sánchez, et al., 2014) the relationship between acculturation and Puerto Rican mental health remains understudied.

An important first step to understand the role of acculturation on Puerto Rican mental health is to identify adequate acculturation measurement models for this population. This study advanced the acculturation literature by comparing different conceptual model of acculturation anchored in the distinct sociopolitical and cultural experiences of Puerto Ricans in Central Florida.

## CHAPTER 3

### METHODOLOGY

This chapter describes the research design employed for this study and the data analysis proposed. An explanation of the four competing models tested in this study follows the description of the study design. The chapter continues with a discussion of the study hypotheses, the procedures followed to obtain the sample for this study and the instruments selected. Following these discussions, this chapter explains the development of the manifest indicators via domain representative item parceling and complete disaggregation. This chapter also includes a discussion of the benefits and limitations of item parceling.

#### **Introduction**

Although multiple studies have made important contributions to bilinear acculturation models and their influence on the mental health of Latinos/as, (Cavazos-Rehg & DeLucia-Waack, 2009; Moradi & Risco, 2006; Quintana, Vogel, Ybarra, 1991; Schwartz et al., 2007; Torres, 2010; Torres & Rollock, 2007) these studies do not provide information about the potential factor structure of acculturation in this population. Additionally, little is known about the impact of measurement error in previous Latina/o acculturation research. Moreover, most acculturation research ignores the role of other acculturation dimensions such as values and identities, resulting in conceptual limitations. Finally, the continued emphasis on aggregated Latina/o samples in acculturation research further limits an accurate understanding of acculturation among Latinas/os as this fails to address how acculturation may unfold differently across Latina/o subgroups, or differently for members of the same subgroup in a different

settlement context. The conflicting results that have emerged from previous research evaluating the relationship between acculturation and mental health in Latinas/os (Cintrón et al., 2005; Kuo et al., 2004; Marsiglia et al., 2011) are a function of measurement error, omission of other acculturation dimensions (e.g., values, ethnic identity), and aggregate Latina/o samples.

### **Research Design and Data Analysis Plan**

This study used a cross-sectional design to examine a bilinear and three-dimensional model of acculturation for mainland Puerto Ricans living in Central Florida. The present study examined four competing acculturation measurement models using CFA. This statistical procedure can be used to test reflective indicator models where manifest variables are believed to be an expression of the influence of a common latent factor (Edwards, 2011). CFA examines the usefulness of an *a priori* theoretical model in terms of its ability to account for the interrelationship among observed variables (manifest indicators) and their corresponding latent variables (common factors) when compared against the sample data (Lance & Vandenberg, 2002). This statistical procedure answers the questions of whether or not the matrix covariances among the manifest variables inferred by the proposed measurement model are consistent with the sample covariance matrix. When the proposed models' reproduced covariance matrix is consistent with the data covariance matrix, the models are then confirmed (Lance & Vandenberg, 2002). Additionally, the use of several manifest indicators per latent variable in CFA leads to a more valid definition of the construct as this helps reduce measurement error (Keith, 2008). In the area of acculturation research, the use of CFA is an innovative method to analyze this bilinear and multidimensional construct as this statistical analysis procedure has not been universally applied to develop frequently used acculturation scales. Although a few studies have used structural modeling procedures to look at the relationship between acculturation and mental

health outcomes (Miller, Yang, Farrell, & Lin, 2011; Miller, Yang, Hui, Choi, & Lim, 2011) this data analysis methodology has rarely been utilized to test acculturation measurement models.

This study used the parameters suggested in Kim and Abreau (2001) and Miller (2007), *linearity* and *dimensionality*, to develop the competing measurement models tested. Although it has been suggested that acculturation studies should assess additional cultural orientations (Abraído-Lanza et al., 2006) —as opposed to only examining European American and Latina/o cultural orientations—because European Americans are the dominant cultural group in Central Florida, the unilinear and bilinear measurement models only included a European American and a Puerto Rican cultural orientation. The present study represented a more refined examination of the dimensionality of acculturation by identifying three dimensions of acculturation: (a) behaviors, (b) values, and (c) ethnic identity. Based on the previous parameters, four *a priori* measurement models were identified.

## **Competing Models**

### **Unilinear Unidimensional Model**

The first model proposed acculturation as a unilinear unidimensional construct. Based on the assumption of assimilation, this model suggested that Puerto Rican cultural orientation was abandoned in favor of the European American cultural orientation (see Figure 9). This model also assumed that acculturation was unidimensional and, therefore, there were no distinctions between acculturation dimensions.

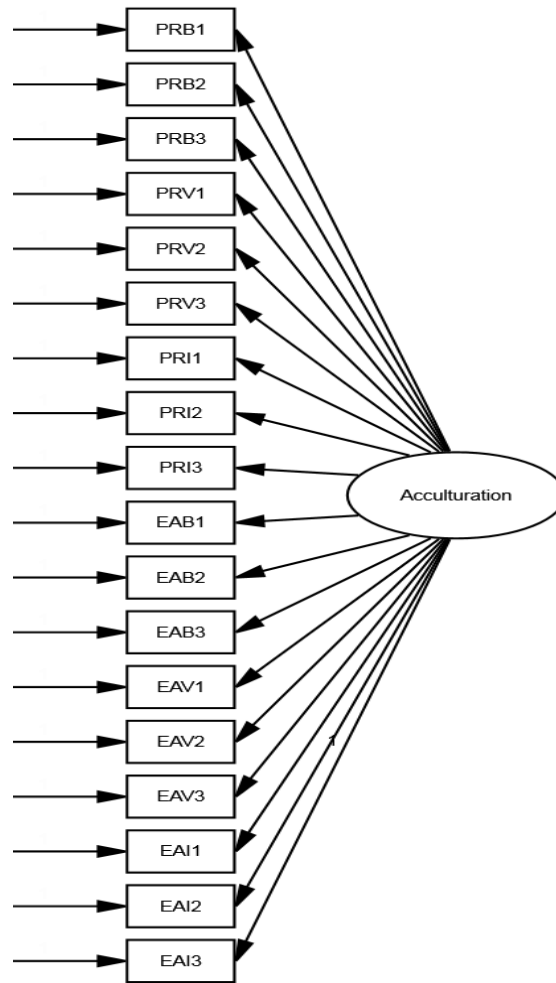


Figure 9. Unilinear Unidimensional Measurement Model. Adapted from Miller (2007).

Rectangles represent manifest variables (i.e., via item parceling and item disaggregation) and the oval the latent acculturation factor (i.e., acculturation). Arrows connecting the latent variable to the manifest variables represent factor loadings. Arrows pointing to the manifest variables represent uniquenesses linked to systematic and random measurement error. PRB = Puerto Rican cultural behaviors indicators; PRV = Puerto Rican cultural values indicators; PRI = Puerto Rican ethnic identity indicators; EAB = European American cultural behaviors indicators; EAV = European American cultural values indicators; EAI = European American ethnic identity indicators.

### **Bilinear Unidimensional Model**

The second model delineated acculturation as a bilinear (i.e., European American cultural orientation, Puerto Rican cultural orientation) unidimensional model (see Figure 10). Like the unilinear unidimensional model, this second model argued that dimensionality was irrelevant. Unlike the previous model, the bilinear unidimensional model asserted that simultaneous adherence to both cultures was possible. According to this model, there was a distinct Puerto Rican culture factor that accounted for variance in Puerto Rican behaviors, values, and ethnic identity. A separate European American cultural factor accounted for adherence to European American behaviors, values, and ethnic identity.

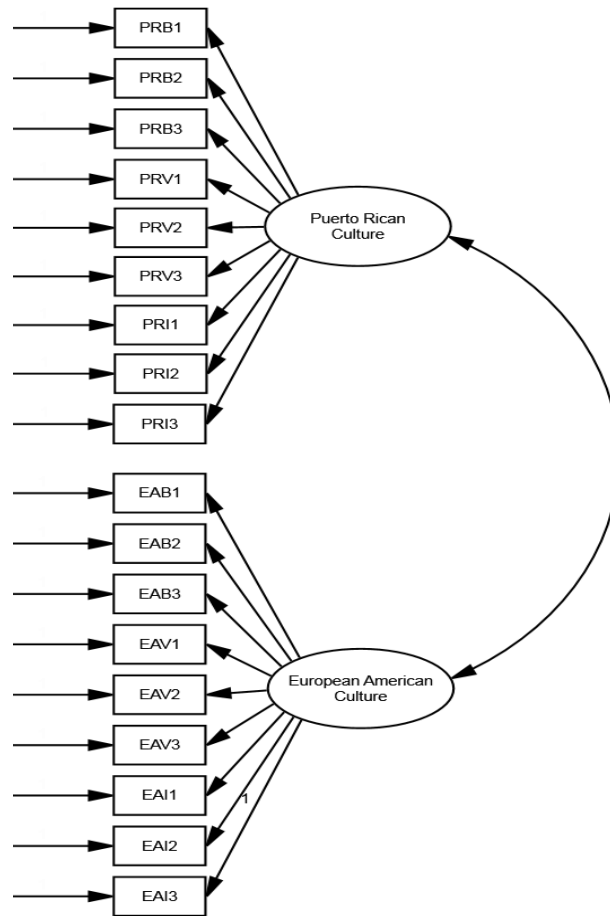


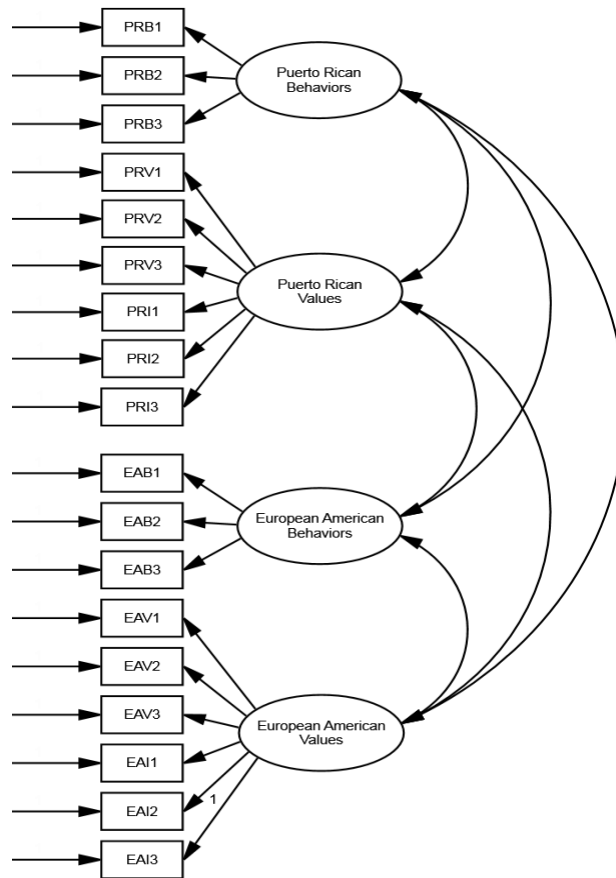
Figure 10. Bilinear Unidimensional Measurement Model. Adapted from Miller (2007).

Rectangles represent manifest variables (i.e., via item parceling and item disaggregation). Ovals represent two latent factors (i.e., Puerto Rican cultural orientation, European American cultural orientation). The double arrow-headed curved line represents the interrelationship between the two latent factors. Arrows connecting the latent variable to the manifest variables represent factor loadings. Arrows pointing to the manifest variables represent uniquenesses linked to systematic and random measurement error. PRB = Puerto Rican cultural behaviors indicators; PRV = Puerto Rican cultural values indicators; PRI = Puerto Rican ethnic identity indicators; EAB = European American cultural behaviors indicators; EAV = European American cultural values indicators; EAI = European American ethnic identity indicators.

### **Bilinear Bidimensional Model**

The third model conceptualized acculturation as a bilinear bidimensional process (see Figure 11) with four distinct yet related latent factors: (a) Puerto Rican cultural behaviors, (b) Puerto Rican cultural values, (c) European American cultural behaviors, and (d) European American cultural values. Similar to the previous model, the bilinear bidimensional model proposed that Puerto Ricans could concurrently adhere to two distinct cultural orientations. According to this model, there were two distinct cultural dimensions (i.e., cultural behaviors and cultural values).

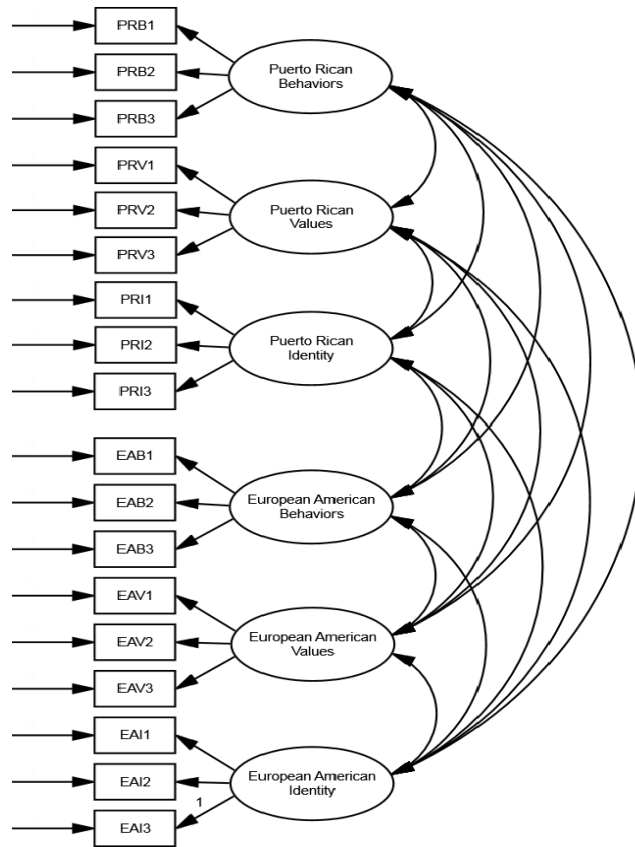




*Figure 11.* Bilinear Bidimensional Measurement Model. Adapted from Miller (2007). Rectangles represent manifest variables (i.e., via item parceling and item disaggregation). Ovals represent four latent factors (i.e., Puerto Rican behaviors, Puerto Rican values, European American behaviors and European American values). The double arrow-headed curved lines represent the interrelationship between the four latent factors. Arrows connecting the latent variable to the manifest variables represent factor loadings. Arrows pointing to the manifest variables represent unique variance linked to systematic and random measurement error. PRB = Puerto Rican behavior indicators; PRV = Puerto Rican values indicators; PRI = Puerto Rican identity indicators; EAB = European American behavior indicators; EAV = European American values indicators; EAI = European American identity.

### **Bilinear Three-dimensional Model**

The last model tested asserted that acculturation was bilinear and three-dimensional. Compared to the bilinear unidimensional and the bilinear bidimensional models, the bilinear three-dimensional model also asserted that Puerto Ricans could simultaneously adhere to two cultural orientations. It differed from these previous two models in that the acculturative process among Puerto Rican living in Central Florida took place along three distinct dimensions, and six factors (see Figure 12).



*Figure 12.* Bilinear Three-dimensional Measurement Model. Rectangles represent manifest variables (i.e., via item parceling and item disaggregation). Ovals represent six latent factors (i.e., Puerto Rican behaviors, Puerto Rican values, Puerto Rican identity, European American behaviors, European American values, European American identity). The double arrow-headed curved lines represent the interrelationship between the four latent factors. Arrows connecting the latent variable to the manifest variables represent factor loadings. Arrows pointing to the manifest variables represent unique variance linked to systematic and random measurement error. PRB = Puerto Rican cultural behavior indicators; PRV = Puerto Rican cultural values indicators; PRI = Puerto Rican ethnic identity indicators; EAB = European American cultural behavior indicators; EAV = European American cultural values indicators; EAI = European American ethnic identity indicators.

## **Primary Hypotheses**

Using CFA, this study compared four competing measurement models addressing three hypotheses: (a) a bilinear unidimensional model would result in a better fit than a unilinear unidimensional model; (b) a bilinear bidimensional model (i.e., cultural behaviors, cultural values) would yield in a better fit for the data than the bilinear unidimensional model. (c) A bilinear three-dimensional model (i.e., cultural behaviors, cultural values, and ethnic identity) would result in a better fit for the data than the bilinear bidimensional model.

## **Data Collection and Procedures**

An important issue in CFA statistics is how large a sample should be in order to obtain appropriate parameter estimations (Lance & Vandenberg, 2002). CFA estimation is based on asymptotic theory; therefore large samples are required. However, there is a lack of consensus on what constitutes a large sample size. While Bentler and Chou (1987) suggested obtaining 5 to 10 participants per estimated parameter, MacCallum, Widaman, Zhang, and Hong (1999) recommended a sample size of around two hundred as generally acceptable to reach appropriate model solutions. The investigator determined that recruiting 10 participants per estimated parameter would be adequate after calculating the number of parameters that would be estimated by the most complex model (i.e., the bilinear three-dimensional model).

The sample for study was recruited between August and November 2013 from Latino-serving community centers, organizations, churches, and businesses in Orange, Osceola, Polk, Seminole, and Lake Counties. Participants were contacted face-to-face (see Appendices A and B for examples of the English and Spanish face-to-face recruitment scripts). The collection of data for this study took place after receiving approval from The University of Georgia's Internal Review Board. After obtaining appropriate consent, (see Appendices C and C for examples of

the English and Spanish consent forms) each participant was asked to complete four questionnaires. Consent forms and study instruments were made available in English and Spanish. The consent and demographic forms and two study instruments (i.e., LVS, EAVS-AA) were translated into Spanish by a native Spanish speaker and back-translated into English by a second Spanish speaker. To increase the readability of the measures the Spanish version of the consent and demographic forms used terms familiar to Puerto Ricans. The acculturation and ethnic identity scales had Spanish versions available; therefore translations were not needed. Participation in the study took on average around 30 minutes to complete the questionnaires, and each participant received a \$10 gift card for their time.

### **Instruments**

**Demographic questionnaire.** Using a self-report demographic questionnaire, study participants answered questions regarding their age, sex, nativity, generational status, years in the US, civil status, annual family income, and educational attainment.

**Behavioral Acculturation.** The Acculturation Rating Scale for Mexican Americans-II (ARSMA-II; Cuéllar et al., 1995) is a bilinear scale containing items to measure European American behavior orientations and Latina/o behavior orientation. Although the ARSMA-II was originally developed for Mexican Americans, this instrument has demonstrated strong psychometric properties with other Latino/a subgroups (Lorenzo-Blanco et al., 2012; Torres, 2010; Zamboanga, Schwartz, Jarvis, & Van Tyne, 2009). Because the ARSMA-II is an orthogonal measure, it allows for the two subscales to be used separately. Six items were modified to reflect Puerto Rican cultural behaviors. An example of the items include, “My family cooks Puerto Rican foods” and “My friends now are of Puerto Rican origin.” Each item is scored on a Likert-type scale from 1 (*not at all*) to 5 (*extremely often or almost always*).

Reported internal consistency coefficients, with alpha coefficients for the Latino/a orientation and the European American orientation have been .88 and .93 respectively (Cuellar et al., 1995). Reliability for the current sample was  $\alpha = .81$  for Puerto Rican cultural orientation and  $\alpha = .89$  for the European American cultural orientation.

**Latina/o Values.** The Latino/a Values Scale (LVS; Kim, Soliz, Orellana, & Alamilla, 2009) is a 35-item scale designed to measure common Latino/a values, *simpatía* (e.g., “One does not need to always be cordial to others”), *familismo* (e.g., “One’s family is the main source of one’s identity.”), and *espiritismo* (e.g., “One does not need to have faith in premonitions”). Each item on the LVS is measured using a Likert-type scale from 1 (strongly disagree) to 4 (strongly agree). The LVS can be administered with behavior-based measures of acculturation (e.g., ARSMA-II) to provide a complete measure of this construct (Kim, et al., 2009). Reported total scores on the LVS yielded coefficient alpha of .88. In the present investigation produced alpha coefficient was  $\alpha = .84$ .

**European American Values.** The European American Values Scale for Asian Americans (EAVS-AA; Wolfe, Yang, Wong, & Atkinson, 2007) is a 25-item scale originally designed to measure the degree to which Asian Americans have acculturated to European American values. Each item on the EAVS-AA is measured using a Likert-type scale from 1 (*strongly disagree*) to 4 (*strongly agree*). Content representativeness evidence for construct validity was provided by creating items based on a comprehensive theoretical and empirical literature review of European American values (Wolfe et al., 2007). Examples of EAVS-AA items are “You can do anything you put your mind to” and “The world would be a better place if each individual could maximize his or her development.” Previous studies have yielded

coefficient alpha ranging from .63 to .70 (Kim & Omizo, 2005; Miller, 2007). The reliability for the current sample was  $\alpha = .56$ .

**Ethnic Identity.** The Multi-Ethnic Identity Measure (MEIM; Phinney, 1992) is a general ethnic identity scale. The MEIM assesses belonging (e.g., “I am happy that I am a member of the group I belong to”) and ethnic identity search (e.g., “I have spent time trying to find out more about my ethnic group”) with each item scored using a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). A total score for the MEIM is created by reversing negative items and summing all items. Reported alpha coefficient for a Puerto Rican sample yielded a .84 (López, 2008). In the current study, the yielded alpha coefficient was  $\alpha = .88$ .

### **Manifest Indicators of Latent Variables**

Study instruments were later used to create three manifest indicators to represent each latent factor. An important consideration when identifying manifest indicators for latent constructs in the level of aggregation (Lance & Vandenberg, 2002). Using single items as indicators of latent variables follows a total disaggregation method for representing a latent variable (Bagozzi & Heatherton, 1994). On the other hand, total aggregation procedures utilize a single composite or aggregate score consisting of the sum of scale items (Bollen, 1989). Mallard and Lance (1998) also suggested the use of intermediate aggregation procedure to create composite manifest indicator item parcels for each latent variable. Total disaggregation procedures were utilized to create the manifest indicators for the European American ethnic identity latent variable. Intermediate aggregation was applied to create manifest indicators for the Puerto Rican cultural behaviors, cultural values, and ethnic identity and the European American cultural behaviors and cultural values latent factors.

Item parceling is commonly used in CFA and other structural equation modeling analysis procedures. Kishton and Widaman (1994) defined item parcels as the sum of several items believed to evaluate the same construct. Item parceling has multiple advantages in the study of the underlying structure of the latent variables (Little, Cunningham, Shahar, & Widaman, 2002). First, item parceling can help decrease the likelihood that the analysis will be negatively influenced by idiosyncratic characteristics of individual items. Item parcels are also more likely than individual items to represent the construct of interest. Additionally, because fewer parameters are needed to define the construct, models using parcels are more parsimonious (Little et al., 2002).

Despite its utilities, the use of item parceling is also polemical (Bandalos & Finney, 2001; Hagtvet & Nasser, 2004; Little et al., 2002). For instance, when the purpose of the analysis is scale development or refinement item parceling is not recommended. According to Hagtvet & Nasser (2004) item parceling should only be used after the item parcel has satisfied the assumption of unidimensionality. That is, the construct of interest or measure is unidimensional (Bandalos & Finner, 2001). However, it is important to note that the definition of construct unidimensionality is not unanimously accepted (Bandalos, 2002; Hagvet & Nasser, 2004; Landis, Beal & Tesluk, 2000). Despite the noted controversy, the use of item parceling was determined to be appropriate for the current study, as its main purpose was to examine the factor structure of acculturation and not the development or refinement of acculturation instruments. Furthermore, domain-representative item parceling procedures were employed to address construct multidimensionality (e.g., ARSMA-II, LVS, MEIM).

To create domain-representative item parceling, using exploratory factor analysis, each scale or subscale was first fitted to a one-factor solution. Then, item factor loadings were ranked



order from highest to lowest. The three items with the highest factor loadings became the anchors for each parcel. The next three parcels with highest loadings were assigned to each parcel in reverse order, this was repeated until all items were assigned (see Little et al., 2002; Miller 2007). When building the Puerto Rican behaviors, two items from the MEIM that were purported to assess behaviors were added. Six items from the ARSMA-II that assessed ethnic identity were omitted when constructing Puerto Rican and European American cultural behaviors parcels. As previously mentioned, total disaggregation was used to identify three single-item indicators for the European American ethnic identity factor. Three items from the ARSMA-II purported to measure European American ethnic identity were used. At the end of these procedures, each latent factor had three indicators composed of three items parcels or single items (see Table 2). Manifest indicators were then used to test the four *a priori* measurement models.

Table 2

*Description of Parcels, Instruments, and Items Used Per Latent Factor*

| Latent Factor                        | Parcels          | Instrument | Items                                            |
|--------------------------------------|------------------|------------|--------------------------------------------------|
| Puerto Rican Cultural Behaviors      | PRB1, PRB2, PRB3 | ARSMA-II   | 1, 3, 5, 6, 11,<br>12, 14, 17, 18,<br>22, 24, 26 |
|                                      |                  | MEIM       | 2, 10                                            |
| Puerto Rican Cultural Values         | PRV1, PRV2, PRV3 | LVS        | 1-35                                             |
| Puerto Rican Ethnic Identity         | PRI1, PRI2, PRI3 | MEIM       | 1, 3, 4, 5, 6, 7,<br>8, 9, 11, 12                |
| European American Cultural Behaviors | EAB1, EAB2, EAB3 | ARSMA-II   | 2, 4, 7, 9, 10,<br>13, 15, 16, 19,<br>23, 25     |
| European American Cultural Values    | EAV1, EAV2, EAV3 | EAVS-AA    | 1-25                                             |
| European American Ethnic Identity    | EAV1, EAV2, EAV3 | ARSMA-II   | 27, 28, 30                                       |

*Note.* ARSMA-II = Acculturation Rating Scale for Mexican Americans-II; MEIM = Multi-Ethnic Identity Measure; LVS = Latino/a Values Scale; EAVS-AA = European American Values Scale for Asian Americans. All items were used from the LVS to create the Puerto Rican Cultural Values latent factor. All items were used from the EAVS-AA to create the European American Cultural Values latent factor.

## CHAPTER 4

### RESULTS

The purpose of the present study was to test the adequacy of four measurement models and identify the factor structure of acculturation among Puerto Ricans living in Central Florida by testing four measurement models via CFA. This chapter begins with a description of the data analysis steps followed in the study. This section is followed by a detailed description of the sample in this study. Study results are then presented. The chapter concludes with a summary of the results.

#### **Data Analysis Steps**

Data analysis took place in five steps. First, using IBM SPSS, Version 21, descriptive statistics were analyzed for categorical and continuous demographic variables. This step was followed by univariate and multivariate normality assessments via PRELIS 2.53 (Jöreskog & Sörbom, 1996). After establishing multivariate normality was established, CFA models were tested using LISREL 8.80 (Jöreskog & Sörbom 2006). After evaluating model admissibility,  $\chi^2$  difference tests were performed to compare the four models. The following analysis involved assessing model goodness-of-fit indexes. The final step in the analysis examined the correlations between the latent factors.

#### **Characteristics of Study Participants**

Participants for this study ( $N = 508$ ) consisted of self-identified Puerto Rican adults living in Central Florida. Twenty-four participants were excluded as they did not meet the inclusion criterion of residence in Central Florida; this resulted in a final sample size of 484. Given the

present study parameters estimated, a sample size of 484 provided stable and interpretable model solutions.

Participants were recruited from five Central Florida Counties: Orange, Osceola, Polk, Seminole, and Lake. All study participants reported being able to read English or Spanish. Most participants, 58.90% chose to answer study questionnaires in Spanish. The ages of participants ranged from 18-75 years. Of the total sample, 66.7% ( $n = 323$ ) were women. A majority of the participants (80%) were born on the island of Puerto Rico ( $n = 387$ ). The average time lived on the U.S. mainland was 17.06 years ( $SD = 13.39$ ). Most of the participants were married, 52.5%. Socioeconomic status was based on the family's median annual income, ( $M = \text{US\$}36,022.92$ ,  $SD = \text{US\$}25,337.45$ ). See Tables 3 and 4 for descriptive statistics for continuous and categorical demographical variables.

Table 3

*Descriptive Statistics for Continuous Demographical Variables*

| Variable             | Range       | Mean ( <i>SD</i> )  |
|----------------------|-------------|---------------------|
| Age                  | 18 – 75     | 45.99 (14.89)       |
| Years in the U.S.    | 0 – 60      | 17.06 (13.39)       |
| Annual Median Income | 0 – 150,000 | 30,000* (25,337.45) |

*Note.* \* Median was used as the centrality statistic.

Table 4

*Descriptive Statistics for Categorical Demographical Variables*

| Variable                      | N   | Percentage |
|-------------------------------|-----|------------|
| <u>Gender</u>                 |     |            |
| Male                          | 159 | 33.0       |
| Female                        | 323 | 67.0       |
| <u>Nativity</u>               |     |            |
| Puerto Rico                   | 387 | 80.3       |
| Contiguous US                 | 95  | 19.7       |
| <u>Generation Status</u>      |     |            |
| First Generation              | 383 | 79.1       |
| Second Generation             | 86  | 17.8       |
| Third Generation              | 9   | 1.9        |
| Fourth Generation             | 2   | .4         |
| Fifth Generation              | 0   | 0          |
| <u>Civil Status</u>           |     |            |
| Single                        | 116 | 24.0       |
| Married                       | 254 | 52.5       |
| Divorced                      | 65  | 13.4       |
| Separated                     | 21  | 4.3        |
| Widow/Widower                 | 15  | 3.1        |
| Civil union                   | 3   | .6         |
| Common-law union              | 6   | 1.2        |
| <u>Education Level</u>        |     |            |
| High School or less           | 154 | 31.8       |
| Associate or Technical Degree | 124 | 25.6       |
| Some College                  | 70  | 14.5       |
| Bachelor's Degree             | 96  | 19.8       |
| Master's Degree               | 24  | 5.0        |
| Professional Degree           | 7   | 1.4        |
| Doctorate Degree              | 6   | 1.2        |

**Assessing Multivariate Normality**

This study contained continuous manifest variables therefore all measurement models were estimated using maximum likelihood (ML). Multivariate normality is an important distribution assumption when using ML. When the data meets this normality assumption, ML uses means and variances to yield reliable parameter estimates and standard errors (Bollen,

1989). For each manifest variable, skewness and kurtosis values were evaluated and normality tests were within the accepted range. PRELIS 2.53 (Jöreskog & Sörbom, 1996) was then used to assess multivariate normality. The normality assumptions was not violated,  $\chi^2 (N=484) = 5.80$ ,  $p = 0.55$ .

### **Model Admissibility**

An important step before assessing model goodness-of-fit and comparing across models is to evaluate the admissibility of model solutions. Improper model solutions can result whenever negative uniquenesses are present. Factor loadings and factor correlations greater than 1.0 can also cause a model to be inadmissible (Marsh, 1989). A review of the four tested models indicated that all solutions were admissible (see Table 5).

### **Chi-square test model comparisons**

Chi-square difference ( $\chi^2_{\text{difference}}$ ) tests were conducted to evaluate the appropriateness of estimating additional model parameters. For  $\chi^2_{\text{difference}}$  tests to be carried out, models need to be nested. Nested models are models that could be obtained by fixing or eliminating parameters. Therefore, a competing model with higher complexity may contain additional paths, loadings, or correlation between latent variables not parametrized by a more parsimonious model (Bollen, 1989). If the  $\chi^2_{\text{difference}}$  value turns out to be non-significant, the additional parameters estimations proposed by the more complex model are not warranted, and a decision should be made in favor of the more parsimonious model. On the other hand, when the  $\chi^2_{\text{difference}}$  results in a significant value, it is assumed that estimating additional parameters is appropriate. Thus, the more complex model is preferred.

Table 5

*Standardized Factor Loadings and Uniquenesses for Measurement Models*

| Manifest Variable | Measurement Model        |                         |                         |                            |
|-------------------|--------------------------|-------------------------|-------------------------|----------------------------|
|                   | Unilinear Unidimensional | Bilinear Unidimensional | Bilinear Bidimensional  | Bilinear Three-dimensional |
| PRV1              | 0.54 (.71)               | 0.51 (.74)              | 0.83 (.31)              | 0.83 (.30)                 |
| PRV2              | 0.47 (.78)               | 0.45 (.80)              | 0.81 (.34)              | 0.81 (.35)                 |
| PRV3              | 0.55 (.70)               | 0.53 (.72)              | 0.80 (.36)              | 0.80 (.37)                 |
| PRB1              | 0.43 (.81)               | 0.43 (.81)              | 0.40 (.84)              | 0.79 (.38)                 |
| PRB2              | 0.57 (.67)               | 0.56 (.68)              | 0.53 (.72)              | 0.89 (.20)                 |
| PRB3              | 0.33 (.89)               | 0.31 (.90)              | 0.28 (.92)              | 0.81 (.34)                 |
| PRI1              | 0.81 (.35)               | 0.82 (.33)              | 0.84 (.29)              | 0.85 (.28)                 |
| PRI2              | 0.82 (.33)               | 0.82 (.32)              | 0.85 (.28)              | 0.87 (.25)                 |
| PRI3              | 0.84 (.29)               | 0.86 (.27)              | 0.87 (.24)              | 0.87 (.24)                 |
| EAV1              | -0.06 (1.00)             | 0.07 (.99)              | <sup>†</sup> 0.29 (.92) | <sup>†</sup> 0.27 (.92)    |
| EAV2              | 0.21 (.95)               | 0.06 (.99)              | <sup>†</sup> 0.51 (.74) | <sup>†</sup> 0.57 (.68)    |
| EAV3              | 0.17 (.97)               | 0.11 (.98)              | <sup>†</sup> 0.75 (.44) | <sup>†</sup> 0.68 (.54)    |
| EAB1              | -0.08 (.99)              | 0.70 (.21)              | 0.89 (.21)              | 0.89 (.21)                 |
| EAB2              | -0.09 (.99)              | 0.73 (.15)              | 0.92 (.15)              | 0.92 (.15)                 |
| EAB3              | -.06 (1.00)              | 0.68 (.24)              | 0.87 (.25)              | 0.87 (.24)                 |
| EAI1              | -0.17 (.97)              | 0.32 (.84)              | 0.40 (.84)              | 0.63 (.60)                 |
| EAI2              | -0.13 (.98)              | 0.26 (.89)              | 0.33 (.89)              | 0.61 (.63)                 |
| EAI3              | -0.17 (.97)              | 0.25 (.90)              | 0.32 (.90)              | 0.49 (.76)                 |

*Note.* Uniquenesses are presented in parenthesis. PRV = Puerto Rican Cultural Values; PRB = Puerto Rican Cultural Behaviors; PRI = Puerto Rican Ethnic Identity; EAV = European American Cultural Values; EAB = European American Cultural Behaviors; EAI = European American Ethnic Identity. <sup>†</sup> Indicates significant factor loading at a ( $p < .10$ ).

After comparing across the four measurement models, results from the  $\chi^2_{\text{difference}}$  tests showed that as hypothesized, increasing model complexity by estimating additional parameters was warranted (see Table 6).

### **Assessing Model Goodness-of-Fit**

An important issue in CFA modeling is determining how to best assess model fit. When performing CFA tests, an ML  $\chi^2$  value is calculated to determine if the proposed model's reproduced covariance matrix is significantly different from the produced data covariance matrix. Unlike other inferential statistics for which a significant  $p$ -value indicates better model fit or model prediction, significant  $p$ -values in CFA suggests that the proposed measurement model was unable to reproduce the data covariance matrix (Bryant & Baxter, 1997). Though  $\chi^2$  is a commonly used model fit indicator, this statistic is not independent of sample size and therefore not a reliable statistic to determine model fit, particularly in samples larger than 400 (Bandalos, 1993; Bentler, 1990; Lance & Vandenberg, 2002; Van Prooijen & Van Der Kloot, 2001). Due to its sensitivity to large sample sizes  $\chi^2$  is likely to be statistically significant “even with reasonable models” (Bryant & Baxter, 1997 p. 235). Therefore,  $\chi^2$  was only used to conduct  $\chi^2_{\text{difference}}$  tests and not as a goodness-of-fit indicator (Bryant & Baxter, 1997). To determine model fit the present study used four goodness-of-fit indicators: (a) the comparative fit index (CFI; Bentler, 1990), (b) the Tucker–Lewis index (TLI), (c) the standardized root mean squared error (SRMSR), and (d) the root mean squared error of approximation (RMSEA). These fit indicators were selected a priori to examine the data-model fit. This model fit indicators were selected for this study because these are sensitive to model mis-specification and insensitive to sample size, data distribution, and model type (Bentler, 1990; Byrne, 1998). These indices are also suggested



in the literature for one-time data analyzes, as it was the case in this study (Schreiber, Stage, King, Nora, & Barlow, 2006).

Cutoff values differ from indicator to indicator. Though Bentler (1990) initially suggested that CFI values greater or equal to 0.90 indicated good model fit, Hu and Bentler (1999) later argued that CFI values greater than 0.90 were necessary to prevent mis-specified models from converging. Currently, the literature suggests that CFI values greater or equal to 0.95 are indicative of good model fit (Hooper, Coughlan & Muller, 2008; Hu and Bentler, 1999). For TLI values greater than 0.95 represent good model fit. Values for the SRMR can range from 0 to 1.0, with well-fitting models obtaining values less than 0.08 (Hu & Bentler, 1998). The RMSEA has become regarded as “one of the most informative fit indices” (Diamantopoulos & Siguaw, 2000, p. 85) because RMSEA favors parsimony by selecting models with the least number of estimated parameters (Hooper et al., 2008). Recommended RMSEA cut-off points have been reduced considerably in the last fifteen years. Hu and Bentler (1999) suggested a cut-off value close to 0.06.

Table 6

*Model Summary of CFA*

| Competing Model               | $R^2$ | $\chi^2$ | $df$ | $\Delta \chi^2$ | $\Delta df$ | SRMSR | RMSEA | TLI | CFI |
|-------------------------------|-------|----------|------|-----------------|-------------|-------|-------|-----|-----|
| a. Unilinear Unidimensional   | .20   | 3023.42* | 135  | --              | --          | .18   | .23   | .41 | .48 |
| a vs. b                       | --    | --       |      | 1219.08*        | 2           | --    | --    | --  | --  |
| b. Bilinear Unidimensional    | .35   | 1804.34* | 133  | --              | --          | .14   | .18   | .65 | .70 |
| b vs. c                       | --    | --       | --   | 596*            | 4           | --    | --    | --  | --  |
| c. Bilinear Bidimensional     | .46   | 1208.34* | 129  | --              | --          | .12   | .14   | .77 | .81 |
| c vs. d                       | --    | --       | --   | 785.33*         | 9           | --    | --    | --  | --  |
| d. Bilinear Three-dimensional | .59   | 423.01*  | 120  | --              | --          | .05   | .07   | .93 | .95 |

*Note.* \* $p < .05$ .  $df$  = model degrees of freedom, SRMSR = standardized root mean squared error, RMSEA = root mean squared error of approximation, TLI = Tucker–Lewis index, CFI = comparative fit index.

The unilinear unidimensional model (see Figure 9) which proposed a one-factor solution resulted in very poor fit to the data (see Table 6). This model had a mean multiple correlation coefficient ( $R^2$ ) of .20 and a mean variance explained of 27%, 21%, 67%, 3%, 0.7%, and 3% in the PRV, PRB, PRI, EAV, EAB, and EAI indicators respectively. These results showed that unique errors accounted for most of the variance on a majority of these manifest indicators. In summary, the unilinear unidimensional model showed that a sole cultural factor accounted for little variance in the manifest variables and had poor fit statistics; thus it does not appear to be a good model given the data.

The bilinear unidimensional model (see Figure 10) fixed manifest indicators into two cultural latent factors (i.e., Puerto Rican culture, European American culture). This model had a mean multiple correlation coefficient ( $R^2$ ) of .35 and accounted for 24%, 20%, 69 %, 1%, 8%, and 12% of variance in PRV, PRB, PRI, EAV, EAB, EAI indicators respectively. This two latent factor solution model accounted for more variance on their manifest indicators. Despite the increased variance, model fit indices indicated that this model was not a good fit to the data and, therefore, its adequacy was disconfirmed.

The third model tested (i.e., bilinear bidimensional) a four-factor acculturation model (see Figure 11) in which PRB indicators were fixed into the Puerto Rican cultural behaviors factor, and the PRV and PRI item parcels were fixed to the Puerto Rican cultural values factor. On the other hand, EAB indicators were fixed to the European American cultural behaviors factor, and the EAV and EAI item parcels were loaded into the European American cultural values factor. This model tested ethnic identity as part of a broad cultural values factor. This model resulted in a mean multiple correlation coefficient ( $R^2$ ) of .46 and accounted for and accounted for 66%, 17%, 73 %, 30%, 80%, and 12% of variance in PRV, PRB, PRI, EAV, EAB, and EAI indicators respectively. Similar to the first two models, an examination of the goodness-of-fit indexes revealed that this model did not yield an adequate model fit and thus it is rejected.

Based on the fit statistics explained earlier, only the bilinear three-dimensional model (see Figure 13) presented a good model fit,  $\chi^2 (178) = 423.23$ , CFI = .95, TLI = .93, RMSEA = .07, SRMR = .05 (see Table 5). This model fixed manifest indicators into six distinct acculturation factors. This final model yielded a mean multiple correlation coefficient ( $R^2$ ) of .59. The Puerto Rican cultural values factor accounted for 66% of the variance on PRV indicators. On the other hand, the Puerto Rican cultural behaviors factor accounted for a significant portion

of the variance, 69%, on PRB indicators. The Puerto Rican ethnic identity factor accounted for 74% of the variance on PRI item parcels. European American cultural values and cultural behaviors accounted for 29% and 80% of the variance in its respective indicators. Finally, the European American ethnic identity factor explained 33% of the variance on EAI manifests indicators. All of the variances in the bilinear three-dimensional model fell within the large effect size category (Cohen, 1988).

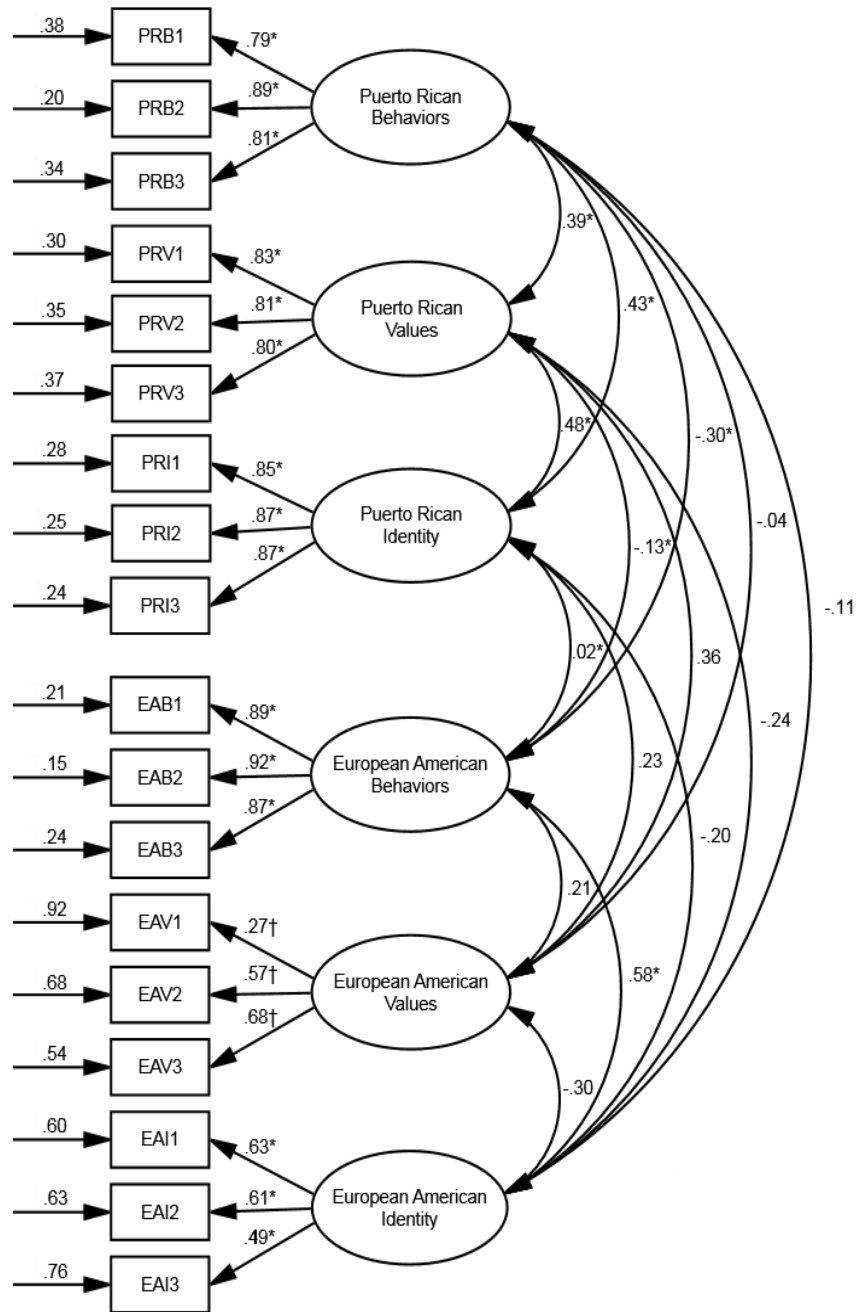


Figure 13. Factor loadings, uniquenesses and factor correlations of the Bilinear Three-dimensional Measurement Model.

### **Latent Variables Correlations in the Bilinear Three-dimensional Model**

Overall, seven relationships between the six latent variables were statistically significant (see Table 7, Figure 13). The relationship between the European American Cultural Behaviors factor and the European American Ethnic Identity factor ( $r = .58, t = 12.25, p = .05$ ) was the strongest relationship observed. The model also yielded a moderate size positive relationships along the three Puerto Rican cultural factors, the Puerto Rican Cultural Values and the Puerto Rican Cultural Behaviors factors ( $r = .39, t = 8.65, p = .05$ ), the Puerto Rican Cultural Values factor and the Puerto Rican Ethnic Identity factor ( $r = .48, t = 11.48, p = .04$ ), and the Puerto Rican Cultural Behaviors and the Puerto Rican Ethnic Identity factors ( $r = .43, t = 9.89, p = .04$ ). Results also showed a moderate negative relationship between the Puerto Rican Cultural Behaviors and the European American Cultural Behaviors factors ( $r = -.29, t = 6.17, p = .05$ ). Moreover, the model found negative relationships between the Puerto Rican Cultural Values factor and the European American Cultural Behaviors factor ( $r = -.13, t = 2.51, p = .05$ ), however, the effect size of this relationship was low (Hopkins, 1997). Finally, study results showed a significant, yet insubstantial negative relationship between the Puerto Rican Ethnic Identity and the European American Cultural Behaviors factors.

These relationships suggested that among Central Florida Puerto Ricans adherence to Puerto Rican cultural values was positively related to Puerto Rican cultural behaviors and Puerto Rican ethnic identity. On the other hand, frequent participation in Puerto Rican behaviors was negatively related to European American cultural behaviors. Finally, strong European American cultural behaviors orientation was also strongly related to European American identity orientation.

Table 7

*Correlations for Latent Variables in the Bilinear Three-Dimensional Model*

| Latent Variable | 1 | 2    | 3    | 4    | 5     | 6    |
|-----------------|---|------|------|------|-------|------|
| 1. PRV          | — | .39* | .48* | .36  | -.13* | -.24 |
| 2. PRB          |   | —    | .43* | -.04 | -.30* | -.11 |
| 3. PRI          |   |      | —    | .23  | .02*  | -.20 |
| 4. EAV          |   |      |      | —    | .21   | -.30 |
| 5. EAB          |   |      |      |      | —     | .58* |
| 6. EAI          |   |      |      |      |       | —    |

*Note.* PAS = PRV = Puerto Rican Cultural Values; PRB = Puerto Rican Cultural Behaviors; PRI = Puerto Rican Ethnic Identity; EAV = European American Cultural Values; EAB = European American Cultural Behaviors; EAI = European American Ethnic Identity. \*  $p < .05$ .

**Summary**

Four measurement models were tested and compared using CFA to answer study questions. These tests were examined from the most simple to the most specialized model. All study hypotheses were supported by study results. First, the addition of a second cultural orientation parameter to the bilinear unidimensional model was warranted according to the  $\chi^2_{\text{difference}}$  test. Thus, this model was chosen over the unilinear unidimensional model. Similarly, the bilinear bidimensional model was preferred over the bilinear unidimensional model after results from the  $\chi^2_{\text{difference}}$  test warranted the addition of an additional cultural parameter estimation. Although  $\chi^2_{\text{difference}}$  tests supported the addition of parameters in the first three models, goodness-of-fit indices for these models (i.e., unilinear unidimensional, bilinear unidimensional, and bilinear bidimensional) indicated poor model fit, thus the adequacy of these three measurement models was disconfirmed. As hypothesized, the bilinear three-dimensional model yielded the best fit to the data.

Taken together, the most complex model (i.e., bilinear three-dimensional) presented the best fit to the data. Results provided empirical support for the conceptualization of acculturation as a bilinear three-dimensional process consisting of six latent factors. These factors shared commonalities but were also distinct. Thus, among adult Puerto Ricans living in Central Florida, acculturation was best understood as a bilinear process in which individuals concurrently adhered to their home culture and the dominant's group culture. Moreover, results also supported the existence of three discrete cultural dimensions (i.e., cultural behaviors, cultural values, and ethnic identity) within each cultural orientation. These three domains in turn accounted for the degree to which Puerto Ricans living in the area retained and acquired cultural behaviors, cultural values, and ethnic identities. The identification of a distinct third dimension of acculturation was also significant, as it provided empirical support for the bilinearity of ethnic identity. Furthermore, it supported the conceptualization of acculturation as a process influencing broad factors as well as finer components.

Within the Puerto Rican cultural orientation, strong positive correlations were found between all of the cultural dimensions (i.e., behaviors, values, and ethnic identity), whereas within the European American orientation only the behaviors and ethnic identity factors were strongly related to each other. Finally, the cultural behaviors dimensions were negatively related across the two cultural orientations.



## CHAPTER 5

### DISCUSSION

This chapter begins with a summary of the study and the main results. Following this discussion, the chapter will delineate theoretical and research implications. Next, clinical implications will be presented and explored. The chapter ends with a presentation of study limitations and directions for future investigations.

#### **Summary of Study Purpose and Results**

The geographical shift of Puerto Ricans to Central Florida is a newer phenomenon that presents unique research challenges and opportunities (Martínez-Fernandez, 2010). Puerto Ricans living in Central Florida appear to present a different demographic picture compared to Puerto Ricans living in New York (see Table 1). These differences also appear to be present in geographical concentration, with Puerto Ricans in Central Florida favoring the suburbs over urban areas (Duany & Silver, 2010). Another important difference comes from the use of pan-ethnic or blending of identities, with Puerto Ricans in the Northeast anecdotally preferring terms such as Latino or Nuyoricán and Puerto Ricans in Central Florida selecting their national identity as their main ethnic identity (Duany, 2010). Despite these demographic differences, prior to this study, no other study had examined the acculturation factor structure of Central Florida Puerto Ricans. As noted earlier, the use of aggregate Latina/o samples or labels presents a challenge in acculturation research as these pan-ethnic labels and samples overlook the diversity within Latina/o subgroups and can result in misleading and conflicting conclusions (Trimble, 1990). Thus the use of a solely Puerto Rican sample in this study answers the call for investigations to

not assume generalizability across Latina/o subgroups and test specific hypotheses in specific Latina/o samples and regions (Arredondo, Gallardo-Cooper, Delgado-Romero, & Zapata, 2014).

The purpose of this investigation was to identify adequate acculturation measurement models for adult Puerto Ricans living in Central Florida by testing the applicability of four competing models via CFA. The first study question was answered by testing two competing *a priori* models (i.e., unilinear unidimensional model and bilinear unidimensional model). The investigator first evaluated these two measurement models independently and later compared these models using  $\chi^2_{\text{difference}}$  tests. As hypothesized, the bilinear acculturation model outperformed the unilinear acculturation model. The results of these analyses demonstrated that Puerto Ricans living in Central Florida can simultaneously adhere to Puerto Rican and European American cultural orientations and that assimilation towards the European American cultural orientation is not the preferred acculturation strategy for this community.

The multidimensionality of acculturation for Central Florida Puerto Ricans also received empirical support. After examining the model fit and conducting  $\chi^2_{\text{difference}}$  tests of three models (i.e., bilinear unidimensional model, bilinear bidimensional model, and bilinear three-dimensional model), results indicated that the three-dimensional model (i.e., cultural values, cultural behaviors, and ethnic identity) yielded the best fit to the data, answering study questions two and three. That is, three related but orthogonal cultural factors appear to best capture and measure the acculturation process of Puerto Ricans in Central Florida. The three underlying factors were cultural behaviors, cultural values, and ethnic identity. These factors in turn influence the extent to which Puerto Ricans in this region adhere to Puerto Rican and European American cultural values, endorse Puerto Rican and European American ethnic identities, and practice Puerto Rican and European American cultural behaviors.

Results indicated that the bilinear three-dimensional acculturation model best describes the acculturation process of this community. This model identified six factors related and discrete factors (see Table 6). The inclusion of ethnic identity as a nested acculturation dimension received empirical support from study results, answering study question five. This may suggest that at the same time Puerto Ricans in Central Florida negotiate the retention and acquisition of cultural behaviors and values they also negotiate which ethnic identity to adopt.

Within the Puerto Rican cultural orientation, the three cultural factors were all strongly related to each other. These relationships seem to suggest that Central Florida Puerto Ricans' retention of Puerto Rican values, behaviors, and ethnic identity seems interconnected. For instance, the more Puerto Ricans in Central Florida participate in Puerto Rican cultural behaviors (e.g., participate in Puerto Rican festivals, eat Puerto Rican foods) the more likely they are to practice Puerto Rican cultural values (e.g., *simpatía*) and espouse a Puerto Rican ethnic identity.

On the other hand, within the European American cultural orientation, only the ethnic identity and cultural behaviors factors were highly associated. This association may indicate that Puerto Ricans' engagement in European American behaviors and endorsement of a European American identity is independent of their endorsement of European American values. For instance, a Puerto Rican living in Orlando may socialize with European American friends and identify as American. However, these behaviors do not mean that this person is willing to espouse European American values. The long-standing relationship between the island of Puerto Rico and the mainland U.S. provides an important context to this latter finding given that a majority of the sample identified as first-generation Puerto Ricans. While Puerto Ricans on the island have had long exposure to U.S. cultural behaviors (e.g., English language taught in the school system) and identity (i.e., U.S. citizens since 1917) they report mainly Puerto Rican

cultural values (García-Preto, 2005). Therefore, by the time Puerto Ricans migrate to the Central Florida area they may have been exposed to U.S. cultural behaviors and ethnic identity but not to European American cultural values. If this accelerated behavioral and ethnic identity acculturation is not already in place, the longstanding relationship with the U.S. may facilitate the integration of European American cultural behaviors and ethnic identity once they arrive in Central Florida.

Across cultural orientations, a strong negative relationship was observed between Puerto Rican cultural behaviors and European American cultural behaviors. In other words, frequent participation in Puerto Rican behaviors was linked to less participation in European American behaviors; however 91% of the variance was not accounted by this relationship. Thus caution should be taken when interpreting this inverse relationship.

The identification of six distinct factors coupled with the different patterns of cultural dimensions relatedness within and across the Puerto Rican and European American orientations strongly supported the idea that acculturation is multifaceted. Thus, a bilinear multidimensional conceptualization of acculturation for Puerto Ricans in Central Florida is needed in order to capture their strategic retention and acquisition of cultural factors while they navigate these two cultures.

### **Theoretical and Research Implications**

While a majority of acculturation investigations using Latina/o samples have focused on exploring the role of acculturation on physical health (see Gamboa, Kahramanian, Morales, & Bautista, 2005 for a review) and mental health (Gonzalez, Huan, & Hinton, 2001; Torres, 2010), to date only two studies have been conducted to provide empirical support for a bilinear model of acculturation for Latinas/os in the U.S. (Kim, Newhill, & López, 2013; Schwartz & Zamboanga,

2008). While these two studies offer important information about acculturation strategy clusters, their statistical procedures did not allow for the identification of acculturation factors. Therefore, these previous studies provide a limited understanding of measurement models and acculturation factors for Latina/o acculturation in the U.S. Moreover, both studies only measured behavioral indicators of acculturation. The present study is the first of its kind to provide empirical support for the conceptualization of acculturation as a complex bilinear and three-dimensional process for one of the largest Latina/o subgroup in the U.S.

Results from this investigation provide multiple theoretical implications. First, because the bilinear model outperformed the unilinear model this provides empirical support for the conceptualization of acculturation among adult Puerto Ricans in Central Florida as a bilinear model that allows for the concurrent preservation and adaptation of two cultural orientations. Unfortunately, a majority of acculturation measures often used are unilinear in nature (see Knight et al., 2009 for a review). Furthermore, although many bilinear scales of acculturation are available, these scales are often used to generate summed scores across items which in turn defeat their utility as bilinear measures (Abraído-Lanza et al., 2006; Knight, et al., 2009; Zane & Mak, 2003). Thus, future investigations should stay away from employing unilinear models and measures of acculturation as these will be unable to capture this dual process among Puerto Ricans in this region.

Moreover, given the different relationship patterns between the cultural factors identified, the use of unidimensional models of acculturation will provide a very limited view of the strategic acculturation of Puerto Ricans in Central Florida. For instance, the non-significant association between the European American values and the two other European American dimensions suggests that acculturation across these three dimensions is independent of each

other. Additionally, though study results showed a relationship between the three Puerto Rican cultural factors, these factors are discrete. Therefore, researchers cannot conclude for example, the extent to which Puerto Ricans in Central Florida endorse a Puerto Rican ethnic identity or cultural values by solely looking at the frequency with which they engage in Puerto Rican cultural behaviors. Therefore, future acculturation studies would need to include cultural values and ethnic identity dimensions in order to understand the impact of these processes on Puerto Ricans' well-being (Arredondo et al., 2014).

Finally, although acculturation is hypothesized to comprise multiple dimensions, no consensus has been reached about exactly how many dimensions exist (Miller, 2007). The current findings are significant on three fronts: first, they provide empirical support for three dimensions. Secondly, the identification of ethnic identity as a common factor in an important first step in identifying more nuanced dimensions. Additionally, the study found evidence for bilinear conceptualization of ethnic identity among adults for the first time. In other words, results showed that the process of acculturation among adult Puerto Ricans in Central Florida influences changes in cultural behaviors, cultural values, and ethnic identities. Changes in ethnic identities impact the extent to which individuals in this community see themselves as members of the home and host culture. Although this is an important first step in identifying finer dimensions, the bilinear three-dimensional model may not reflect a comprehensive range of acculturation factors, therefore more investigations are needed to identify additional dimensions (Miller, 2007).

### **Clinical Implications**

The findings also offer important clinical insights for mental health practitioner working with Central Florida Puerto Ricans. This study found that this group can independently and

simultaneously adhere to their home and host cultures. While adherence to both cultures may be necessary and/or unavoidable for Puerto Ricans given the long-standing association with the U.S., negotiating two cultural orientations has been associated with acculturative stress and negative mental health outcomes (Castillo et al., 2015; Torres, Driscoll, & Voell, 2012; Warren & Rios, 2013). Acculturative stress has been identified as a predicting factor of depressive symptomatology among Central Florida Puerto Ricans (Capielo et al., in press). It is then important for practitioners to assess how the demands of cultural negotiations may lead to psychological distress (Berry, 2006; Smart & Smart, 1995). It is estimated that about 87% of Puerto Ricans in Central Florida travel to the island of Puerto Rico more than once a year (Duany, 2011). This circular mobility is also thought to exacerbate the stress that may accompany the process of acculturation for Puerto Ricans (Arredondo et al., 2014). Therefore, it is also recommended for counselors and psychologists working with this population to facilitate explorations about how their clients are navigating these two cultures and provide education about the potential psychological distress that come from living in two cultures (Miller, 2007).

Perceived ethnic and racial discrimination has also been identified in the literature as a factor associated with acculturative stress among Latinas/os (Araújo Dawson & Panchanadesanaran, 2010). Although discrimination practices against Puerto Rican in the area has not yet been empirically investigated, local newspapers and historians have reported multiple incidents of violence and protests against Puerto Ricans in the Central Florida (see Martínez-Fernández, 2010). Capielo et al. (in press) also showed that as Puerto Ricans in Central Florida increased their use of maladaptive coping mechanisms (e.g., denial), their risk for endorsing depression symptoms also increased. Conversely, traditional Latina/o cultural values have been identified as protective factors against acculturative stress (Gil, Warner, & Vega, 2000).

Additionally, ethnic identity has been associated with psychological well-being among Puerto Rican women in the U.S. (López, 2008). Thus, counselors and psychologists in this community may focus on integrating cultural values such as *personalismo* and sense of Puerto Rican ethnic identity to encourage individuals to engage in adaptive coping strategies such as seeking emotional support against these discriminatory practices.

Results from the study also suggest that bilinear and multidimensional assessments of acculturation should be considered when selecting psychotherapeutic interventions (Marín & Gamba, 2002). Clinical interviews may begin with a comprehensive assessment of the client's acculturation practices. Though the literature suggests brief acculturation assessment (Paniagua, 2013), mental health professionals working with Puerto Ricans in Central Florida should exercise caution when interpreting their clients' responses to these scales. Results from this study point out to the multidimensionality of acculturation; therefore, brief acculturation measures may not provide a true picture of how Puerto Ricans in Central Florida are negotiating their home and host cultures. In order to address this limitation, clinical interviews could include bilinear and multidimensional acculturation measures as well as interview questions that assess cultural behaviors, cultural values, and ethnic identities (Arredondo et al., 2014; Miller, 2007).

### **Limitations**

This study examined a unique population with regards to time, identity, and place of migration, therefore, the study results cannot be automatically generalized to the larger Latina/o or Puerto Rican community. Although the present study is an important first step in examining the complexity of acculturation, its cross-sectional design prevents the examinations of how these distinct cultural factors may change over time. Another limitation is the potential for self-selection bias in the data collection procedures. The investigator had access to a majority of the



sample through organizations, businesses, and events serving the Puerto Rican population in Central Florida. Thus, it possible that the relationships among the identified underlying factors or their measurement structure may differ among Puerto Ricans in Central Florida who choose not to receive services from these organizations and businesses, or participate in Puerto Rican cultural events.

Poor internal consistency reliability in the EAVS-AA is also a limitation of this study. Poor reliability can result in lower statistical power (i.e., an increase in type II error; Henson, 2001; Henson, Kogan, & Vacha-Haase, 2001). Despite this noted limitation, it is important to remember that model fit indices used in this model are sensitive to model misspecification, and that the bilinear three-dimensional model yielded adequate indices values suggesting a good model fit.

### **Future Directions**

Though the current study is an important step forward in identifying nuanced acculturation factors, the bilinear three-dimensional model is not inclusive of all acculturation dimensions. Acculturation research can be further advanced by including other acculturation dimensions such as cultural beliefs and cultural knowledge. Another important next step of this investigation is to gather empirical support for the validity of the bilinear three-dimensional model with Puerto Ricans in other U.S. regions. It is possible that the acculturation experience of Puerto Ricans residing in older Puerto Rican settlement areas may not be adequately measured by the bilinear three-dimensional model. For instance, because Puerto Ricans in the island may not have the same level of exposure to European American cultural values as Puerto Ricans in Central Florida, the bilinear bidimensional model may yield a better model fit.

The roles of perceived ethnic and racial discrimination and neighborhood composition on the bilinear three-dimensional model should be examined. Limits imposed by race and ethnic discrimination are believed to influence the process of acculturation (Te Lindert, Korzilius, van de Vijver, Kroon, & Arends-Tóth, 2008; Yoon, Hacker, Hewitt, Abrams, & Cleary, 2012). Additionally, acculturation is also hypothesized to be influenced by the demographical composition of the settlement area (Schwartz et al., 2010). However, the influence of these environmental has received little attention. Hybrid structural equation modeling (i.e., measurement models and structure models) may be a useful statistical tool that could allow the examination of the effect of discrimination and demographical factors the bilinear three-dimensional measurement model.

## **Conclusion**

The present study is an important step in expanding the conceptualization of acculturation for the second largest Latina/o community in the U.S. After examining four *a priori* measurement models, the study confirmed the applicability and adequacy of a bilinear and three-dimensional conceptualization of acculturation for this community. The complex acculturative experience of Puerto Ricans in Central Florida provides a unique and exciting opportunity for counseling and multicultural psychology to understand the emergence of a new cultural group.

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## Appendix A

### English Face-to-face Recruitment Script

My name is Cristalís Capielo, a graduate student from the Counseling and Human Development Services at the University of Georgia. I would like to invite you to participate in my research study to learn more about the acculturation process of Puerto Ricans living in Florida and Puerto Rico. You may participate if you self-identify as Puerto Rican, are between the ages of 18-75, and live in Florida or Puerto Rico. Please do not participate if you do not self-identify as Puerto Rican.

As a participant, you will be asked to answer 6 questionnaires about demographic information, acculturation, ethnic identity and ethnic discrimination. It will take you between 30 minutes to complete these questionnaires.

Your participation is voluntary and you can refuse to participate or withdraw from the study at any time. The results of this participation will be anonymous. You will receive a \$10 gift certificate to Wal-Mart for your time.

Do you have any questions now? If you have questions later, please contact me at 786-566-7191 or you may contact my advisor, Dr. Edward Delgado-Romero, at 706-542-1812.

## Appendix B

### Spanish Face-to-face Recruitment Script

Mi nombre es Cristalís Capielo, estudiante de doctorado en el Departamento de Consejería y Desarrollo Humano en la Universidad de Georgia. Te quiero invitar a participar en mi estudio para así poder aprender sobre el proceso de aculturación de los puertorriqueños que viven en la Florida y Puerto Rico. Puedes participar si te identificas como puertorriqueño/a, estás entre las edades de 18-75, vives en la Florida o Puerto Rico.

Como participante, completarás 6 cuestionarios acerca de información demográfica, aculturación, la identidad étnica y la discriminación. Tomará alrededor de 30 minutos para completar estos cuestionarios.

Tu participación es voluntaria y puedes reusarte a participar. Los resultados de este estudio serán anónimos. Recibirás un certificado de compras de \$10 para Wal-Mart. No puedo garantizar que este correo será confidencial.

Si tienes preguntas y/ó para participar me puedes contactar al 786-566-7191 ó puedes llamar a mi mentor el Dr. Edward Delgado-Romero al 706-542-1812.

Muchas gracias por tu consideración,  
Cristalís Capielo, M.S.

## Appendix C

### English Consent Form

I \_\_\_\_\_ (*print your name*) agree to participate in the research study entitled: An Integrative Model of Acculturation for Puerto Ricans in the US that is being conducted by Ms. Cristalís Capielo (phone: 786.566.7191, email: ccapielo@uga.edu) under the direction of Dr. Edward A. Delgado-Romero (Department of Counseling & Human Development at the University of Georgia, phone: 706.542.1812, email: edelgado@uga.edu). I understand that my participation is voluntary. I can refuse to participate and can withdraw my consent at any time without giving any reason and without penalty or loss of benefits to which I am otherwise entitled.

I understand the following points:

1. PURPOSE: I understand that the purpose of this research is to conduct interviews to assess the factors that influence the process of acculturation among Puerto Ricans.
2. BENEFITS: There are no direct benefits for participating in this study. Understanding the different factors predicting acculturation among members of the Puerto Rican community, will better inform policies and treatment strategies when working with Puerto Ricans.
3. INCENTIVES: I will receive a \$10 gift certificate as compensation for my time.
4. PROCEDURES: After giving my permission to participate, the researcher will ask me to complete 6 questionnaires about demographic information, values, ethnic identity, cultural practices and perceived discrimination. It will take me about 30 minutes to complete the study. The investigator will also rate my skin color.
5. DISCOMFORTS, STRESSES or RISKS: No more than minimal risks are anticipated. Some people may experience slight discomfort when asked questions about perceived discrimination. However, I understand that I can skip any questions I do not want to answer. My skin color will remain anonymous.
6. ANONYMITY: The results of this participation will be anonymous.
7. FURTHER QUESTIONS: If I have any questions: Dr. Edward A. Delgado-Romero or a member of the research team (edelgado@uga.edu, ccapielo@uga.edu, 706.542.1812 or 786.566.7191).

\_\_\_\_ I consent to participate in this study. I have read and understood the consent agreement above.

\_\_\_\_ I do not give consent to participate in this study.

\_\_\_\_\_  
Participant's Signature & Date

\_\_\_\_\_  
Investigator (Dr. Edward A. Delgado-Romero)  
Phone: 706.542.1812  
Email: edelgado@uga.edu

Additional questions or problems regarding your rights as a research participant should be addressed to the IRB chairperson in the Human Subjects Office at the University of Georgia, 629 Boyd Graduate Studies Research Center, Athens, GA 30602-7411. Telephone: (706) 542-3199; E-Mail Address: IRB@uga.edu.

## Appendix D

### Spanish Consent Form

Yo \_\_\_\_\_ (escriba su nombre) estoy de acuerdo en participar en el estudio de investigación titulado: Un modelo integrado de aculturación para puertorriqueños en los Estados Unidos efectuado por Cristalís Capielo (teléfono: 786-566-7191, correo electrónico: ccapielo@uga.edu) bajo la dirección del Dr. Edward A. Delgado Romero (Departamento de Consejería y Desarrollo Humano de la Universidad de Georgia, teléfono: 706.542.1812, correo electrónico: elgado@uga.edu). Entiendo que mi participación es voluntaria. Puedo negarme a participar y retirar mi consentimiento en cualquier momento sin dar razón alguna y sin penalidad, ni pérdida de beneficios a los cuales tengo derecho.

Entiendo los siguientes puntos:

1. PROPÓSITO: Entiendo que el objetivo de esta investigación es evaluar los posibles factores que influyen el proceso de aculturación entre los puertorriqueños.
2. BENEFICIOS: No hay beneficios directos para los participantes de este estudio. El conocer cuáles son los diferentes factores que predicen la aculturación entre los puertorriqueños, ayudará a mejorar las políticas y esfuerzos de tratamiento para los puertorriqueños.
3. INCENTIVOS: Recibiré una módica compensación, un certificado de regalo por \$10.00 por mi tiempo.
4. PROCEDIMIENTOS: Después de dar mi consentimiento para participar en la investigación, el investigador me pedirá que conteste 6 cuestionarios acerca de datos demográficos, identidad étnica, valores y prácticas culturales, y la discriminación. Me tomará 30 minutos aproximadamente para completar los cuestionarios. El investigador también determinará el color de mi piel.
5. MOLESTIAS, ESTRÉS Ó RIESGOS: Solo se anticipan riesgos mínimos. Algunas personas podrían experimentar alguna leve molestia al contestar preguntas acerca de la discriminación. Pero entiendo que puedo optar por no contestar alguna pregunta que no quiera. El color de mi piel quedará anónimo.
6. ANONIMIDAD: Los resultados de este estudio serán anónimos.
7. PREGUNTAS ADICIONALES: Si tengo alguna pregunta puedo contactar al Dr. Edward A. Delgado-Romero o un miembro del equipo de investigación (edelgado@uga.edu, ccapielo@uga.edu ó 706.542.1812, 786.566.7191).

\_\_\_ Doy mi consentimiento para participar en este estudio. He leído y entendido el acuerdo del consentimiento.

\_\_\_ No doy mi consentimiento para participar en este estudio.

\_\_\_\_\_  
(Firma del Participante y Fecha)

\_\_\_\_\_  
Investigador (Dr. Edward A. Delgado-Romero)  
Teléfono: 706.542.1812  
Correo electrónico: edelgado@uga.edu

Preguntas adicionales ó problemas relacionados con sus derechos como participante de una investigación deben dirigirse al presidente de la IRB en la Oficina de Temas Humanos en la Universidad de Georgia, 629 Boyd Graduate Studies Research Center, Athens, GA 30602-7411. Teléfono: (706) 542-3199; E-Mail: IRB@uga.edu