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A Longitudinal Exploration of Factors that Influence Acculturation and Enculturation Patterns of First-Generation Mexican Immigrant Women

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A LONGITUDINAL EXPLORATION OF FACTORS THAT INFLUENCE

ACCULTURATION AND ENCULTURATION PATTERNS OF FIRST-

GENERATION MEXICAN IMMIGRANT WOMEN

by

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ABSTRACT

A Longitudinal Exploration of Factors that Influence Acculturation and

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by

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Utah State University, 2009

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Biculturalism in the Latino population in U.S. has been found to relate to positive

outcomes in the literature. However, little is known about the development of bicultural

adaptation. The constituent parts of biculturalism, acculturation, and enculturation were

measured over several years as part of an existing longitudinal study along with several

variables that held promise as predictors of acculturation and enculturation change. An

additional data point for acculturation and enculturation was gathered along with other

important demographic information. Change in both acculturation and enculturation was

modeled revealing that acculturation and enculturation increase and decrease linearly.

The trajectory for acculturation is much steeper than the trajectory of enculturation,

providing support for orthogonal measurement and indicating real possibilities for

interventions to increase bicultural adaptation. The best-fit model for acculturation

included years in the U.S., preference for speaking English, and receptive English

vocabulary. The best-fit model for enculturation included years in the U.S., preference for speaking English, and receptive English vocabulary.

(119 pages)

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<div style="text-align: right">Dennis Aaron Ahern</div>

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CHAPTER I

INTRODUCTION

The growing Latino population in the U.S. is facing several challenges. Latinos
are at a disadvantage in major economic, educational, and health indicators. Of all the
major ethnic groups in the U.S., Latinos have the lowest rates of high school and college
completion (US Census Bureau, 2007a) and the lowest rate of health insurance coverage
(US Census Bureau, 2007b). Latinos also have a higher likelihood of living in poverty
than non-Latino Whites (US Census Bureau, 2007b). Understanding the way that Latinos
adapt to the cultural context of the U.S. may provide a framework of how best to
intervene to address these challenges.

When peoples new to the U.S. adapt to the new cultural context by acquiring
behaviors and values that are reflective of the majority culture it is called *acculturation*
(Marín, Sabogal, Marín, Otero-Sabogal, & Perez-Stable, 1987). High acculturation to the
U.S. culture has been found to relate to positive outcomes, such as lower rates of school
dropout (Martinez, DeGarmo, & Eddy, 2004) and higher income (Mason, 2004).
However, acculturation is one dimension of a more complex process. The complexity is
evident in research findings showing that acculturation is related to not only positive
outcomes, but also negative outcomes such as mental health difficulties, delinquency,
poorer diet, and substance abuse (Ayala, Baquero, & Klinger, 2008; Fridrich & Flannery,
1995; Koneru, Weisman de Mamani, Flynn, & Betancourt, 2007; Unger et al., 2000;
Vega et al., 1998; Zemore, 2007).

Acculturation is adaptation to a host culture. A related construct, enculturation, is

the process of acquiring and maintaining behaviors and values that reflect the individual's culture of origin (Storino, 2001). There is evidence that enculturation in combination with acculturation leads to more positive outcomes.

Biculturalism, the combination of high acculturation with high enculturation, has been found to be related to fewer problem behaviors, higher academic competency, and cognitive advantages such as cognitive and linguistic flexibility (Coatsworth, Maldonado-Molina, Pantin, & Szapocznik, 2005; Padilla et al., 1991). Biculturalism is also linked to a more varied set of achievement styles (Gomez & Fassinger, 1994). Achievement styles are the different ways in which people go about reaching their goals. In addition, biculturalism has been found to relate to increased life satisfaction, social support, and psychological adjustment, and better mental health outcomes (Rodriguez, 2007; Shpiegelman, 2007). This evidence suggests that individuals who acquire features of the majority culture in the U.S., while simultaneously maintaining their cultural practices, receive the benefits of acculturating and the protective effects of enculturating.

While some evidence exists that biculturalism, the combination of high acculturation and high enculturation, is related to positive outcomes in Latino samples, little is known about the factors that relate to the development of biculturalism. In order to properly assess the development of biculturalism, longitudinal research is needed that measures acculturation and enculturation over time and also measures variables that may influence acculturation and enculturation change (Coatsworth et al., 2005).

With these data, trajectories of acculturation and enculturation change could be modeled. In addition, variables of interest could be used as predictors of change for both

variables. Although not measuring biculturalism development specifically, this method of investigation would increase our knowledge of the development of biculturalism by examining the change in its constituent parts, acculturation and enculturation, over time.

The extant data of the Bilingual Early Language and Literacy Support Project (BELLS) study provided an excellent opportunity to study factors related to the development of biculturalism. Acculturation and enculturation were measured at various times over the course of the BELLS project. In addition to acculturation and enculturation, several variables that were either found to be related to acculturation or enculturation or are of theoretical importance to these processes were measured.

These variables included income, education, language proficiency in Spanish and English of parent, and child language preference. In addition, parents were videotaped interacting with their children as part of the BELLS project. By coding these videos, the skin color and attractiveness of the participants could be determined. The participants of the BELLS project were also called and asked two questions to briefly determine their age at immigration and time in the U.S. and administered the Bidimensional Acculturation Scale.

The data gathered during the BELLS project and by the researcher provide a good opportunity to gather information about the development of biculturalism by answering the following research questions.

RQ1. Do acculturation and enculturation change over time?

RQ2. Do individual differences affect the rate of change in acculturation and enculturation over time?

CHAPTER II

REVIEW OF THE LITERATURE

In this review of the literature, the findings from the areas of acculturation and enculturation in Latino/a populations are reviewed. Aspects of acculturation and enculturation conceptualization and measurement are discussed. Longitudinal studies, reviews of literature, and cross-sectional research involving acculturation and enculturation were reviewed to determine the variables that have been found to relate to acculturation and enculturation change.

Acculturation and Enculturation

Acculturation occurs when an individual or a group of people encounter a new culture and accept attitudes and behaviors of that new culture (Marín et al., 1987). Acculturation has been linked to many outcomes with widely varied styles of investigation (Caetano & Schafer, 2000; Fridrich & Flannery 1995; Masten, Plata, Wenglar, & Thedford, 1999; Unger et al., 2000). The theoretical models that have guided research in the area of acculturation have evolved over time and have become increasingly more complex (Oetting & Beauvais, 1991). While the study of acculturation is not new, much remains to be done to fully understand the process and its impact on people. There is no universally accepted way to conceptualize and measure acculturation and its effects on individuals, families, and communities (Magaña et al., 1996).

Much of the literature on acculturation has focused on placing individuals on a continuum or a single dimension that ranged from absolute adherence to values, beliefs,

and behaviors of a host culture to adherence to the values, beliefs, and behaviors of the culture of origin. More recently, one researcher has recognized that these are two separate dimensions in which acculturation reflects movement toward a host culture, and enculturation is the process of acquiring and maintaining behaviors and values that reflect an individual's culture of origin (Storino, 2001). Enculturation is a more recent construct than acculturation and has been studied less widely. Often enculturation is measured by acculturation measures but not reported as a separate construct. One example of this is seen in linear conceptualizations of acculturation.

Although the definitions of acculturation and enculturation are relatively clear, the ways in which acculturation and enculturation have been measured vary greatly. The following is a brief discussion of predominant forms of acculturation and enculturation conceptualization and measurement.

Proxy Variables

The simplest form of acculturation measurement has been conducted with proxy variables. Variables such as time in the U.S., choice of responding to research items in English (in English-speaking countries), or the number of generations a person's family has been in the host country have been used as proxies for acculturation measures. Measuring acculturation with proxy variables assumes that acculturation can be approximated by exposure an individual has to the majority culture; however, measuring acculturation this way does not account for individual variability in response to this exposure (Lara, Gamboa, Kahramanian, Morales, & Hayes Bautista, 2005). While one individual may acquire behaviors reflective of the majority culture after being exposed to

the majority culture, another may not. Therefore, while proxy variables represent convenient measures when acculturation has not been measured independently, they do not directly measure acculturation and are not recommended for research intended to examine acculturation.

Unidimensional Conceptualizations

For unidimensional conceptualizations of acculturation, theorists posit that cultural adaptation occurs along a continuum that has acculturation at one end and enculturation at the other (Oetting & Beauvais, 1991). These conceptualizations hold that as people adopt behaviors and beliefs that more closely identify them with one culture they necessarily move away from the other culture. Unidimensional conceptualizations of acculturation place the individual on a continuum that ranges from fully enculturated to their culture of origin on one end and fully mainstream acculturated to their new culture on the other (see Figure 1). The mainstream culture in the U.S. is predominantly a reflection of Western European values and behaviors. Individuals who are highly acculturated have moved closer to the mainstream U.S. culture and moved further from their culture of origin, while enculturated individuals have acquired and maintained behaviors and beliefs reflective of their culture of origin. However, when using unidimensional measures of acculturation, researchers tend to report the scores as reflective of high or low acculturation and make no mention of enculturation.
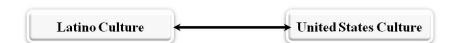
Figure 1. Representation of unidimensional conceptualizations.

Orthogonal Conceptualizations

In orthogonal conceptualizations of acculturation, theorists posit that movement toward or away from each culture occurs independently (Oetting & Beauvais, 1991). These independent trajectories allow for individuals to gain or lose comfort with a culture without this change affecting their comfort with other cultures to which they are exposed. In orthogonal conceptualizations two continua are used for measuring enculturation and acculturation. Figure 2 shows categorizations using an orthogonal framework. The two continua, acculturation and enculturation, are represented by two lines. Enculturation is represented by a line that runs from low Latino on one extreme to high Latino on the other. Acculturation is represented by a line that runs from low U.S. at one end to high U.S. at the other. People responding to an orthogonal measure will receive a score on both continua (i.e., a score that represents their acculturation and a score that represents their enculturation). Scores can also be combined to place the participant into a category (e.g., traditional, bicultural). The scoring of orthogonal measures varies; high and low

Acculturation Axis
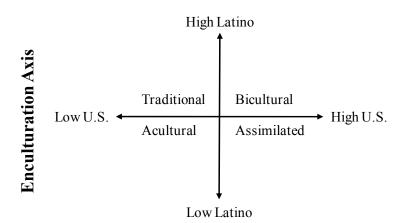
Figure 2. Representation of orthogonal conceptualizations.

scores can be divided on each continuum using a median split or a predetermined cut off score. The scores from these measures have also been used as continuous measures with an interaction term representing biculturalism in statistical analyses (e.g., Ahern, 2005). Orthogonal measures are preferred to other measures of acculturation because they measure both acculturation and enculturation independently.

Measuring the Acculturation/Enculturation Process

Acculturation is defined as a process, yet is most commonly measured at a single point in time in cross-sectional research designs. The research design that could most accurately assess factors that influence change in acculturation and enculturation is the longitudinal research design (Coatsworth et al., 2005). Cross-sectional studies report correlations between acculturation and/or enculturation and other variables, but because the correlations between acculturation or enculturation and other variables are only calculated at one data point, it is impossible to know how these variables relate to acculturation or enculturation change.

Longitudinal studies measuring acculturation and enculturation at more than one data point while also measuring important predictors of acculturation and enculturation would provide more information about the *process* of acculturation and enculturation development than cross-sectional studies. For this reason, data from longitudinal studies that reported scores of acculturation or enculturation from at least two data points and information regarding variables that were related to acculturation or enculturation were reviewed first. Next reviews of cross-sectional research were examined to search for

variables that had been found to relate to acculturation or enculturation that could have promise as predictors of acculturation and/or enculturation change. Reviews of existing literature were examined because they provide information from several studies.

Findings from Longitudinal Research

Because longitudinal designs offer the best hope of understanding the *process* of acculturation and enculturation, a thorough review of the existing longitudinal research in the areas of acculturation and enculturation was conducted. Two searches on three databases—Academic Search Premier, PsycINFO, Psychology & Behavioral Sciences Collection—were conducted using the keywords longitudinal, acculturation, and Hispanic and longitudinal, acculturation and Latino. Two searches for enculturation were conducted using the same keywords but "acculturation" was replaced by the keyword "enculturation." These searches were done originally in 2005 and updated in April 2009. These searches yielded 91 possible acculturation studies and one possible enculturation study. In addition, studies were excluded from the final analysis that either did not provide information about variables related to acculturation and/or enculturation or did not provide information about the change in acculturation and/or enculturation over time. Six studies reported acculturation scores from at least two data points, and two studies reported enculturation scores from at least two data points. Because two of the studies reported acculturation scores for both parents and children involved in the same study, the six studies that measured acculturation at more than one point provided a total of eight samples. The time between data points varied between 6 months and 4 years (see Appendix A for a summary table of these studies).

Change in acculturation and enculturation scores were not reported by most of these authors. When possible, standardized mean effect sizes were calculated by the researcher for each study to enable comparison across these studies. In four of the eight samples, acculturation increased slightly (standardized mean effect sizes of .05, .06, .10 and .12; Cote & Bornstein, 2003; Duarte et al., 2008; Gonzalez-Soldevilla, 2003; Kissane, 2007). In one sample, there was no change in acculturation scores (Duarte et al.). In two samples, acculturation decreased over time (standardized mean effect size of -0.27 and -.52; Gonzalez-Soldevilla; Nieri, 2007). In one study in which enculturation was measured and reported, mothers' and daughters' enculturation increased standardized mean effect sizes were .64 and .13, respectively, indicating that enculturation increased moderately for mothers and slightly for daughters.

One study involving acculturation and one study involving enculturation did not report data that would allow the calculation of a standardized effect size. The results of the study measuring acculturation indicated that acculturation scores were for the most part stable over time; however, individuals who began the study using English frequently while rarely using Spanish experienced a slight decline in English usage (Losoya, Knight, Chassin, Little, & Piquero, 2008). The study involving enculturation reported that Hispanic professionals experienced a statistically significant decrease in Hispanic identity 1 year after the terrorist attacks of September 11, 2001 (Del Campo, Blancero, & Boudwin, 2008).

Unfortunately, none of these studies reported predictors of change in acculturation or enculturation. It was, therefore, impossible to determine what factors influenced

change in the acculturation and enculturation of the participants. Some of the longitudinal studies reviewed that did not measure acculturation or enculturation at more than one data point did report correlates of acculturation and/or enculturation at one point in time. The results of these studies are reviewed below.

A Review of Constructs Reported to Correlate
with Acculturation and Enculturation in
Longitudinal Studies

There were seven longitudinal studies that did not report change in acculturation over time but did report correlations with acculturation and/or enculturation at one data point. Of the seven studies, three reported that proxy variables were used, and four reported that established measures of acculturation were used.

Proxy variables found in these studies to relate to acculturation were language used by participants, time in the U.S., and immigrant status. Specifically, Spanish used in the home was negatively related to SES ($r = -.21$), such that lower income individuals were more likely to speak Spanish in the home than individuals with a higher income (Barrett, Joe, & Simpson, 1991). Time in the U.S. was negatively related to perceived discrimination ($r = -.29$) and positively correlated with parents' expectations of their children's academic achievement ($r = .31$) indicating that the longer Latino individuals lived in the U.S. the less likely they were to perceive that they were being discriminated against and the more likely they were to have high academic expectations for their children (Goldenberg, Gallimore, Reese, & Garnier, 2001). Time in the U.S. had a changing correlation with child academic progress positively correlating when the children were in kindergarten ($r = .26$) and negatively correlating during the first grade

(r = -.31). The correlation between parents' time in the U.S. and children's academic

progress was not significant when the children were in the fifth grade (r = .02). These

correlations indicate an inconsistent relation between time in the U.S. and academic

progress such that during kindergarten the longer the children's parents had been in the

U.S. the greater their academic progress but during first grade the longer they had been in

the U.S. the lower their academic progress (Goldenberg et al.). Proxy variables such as

immigrant status, language spoken at home, and language used to fill out surveys were

also found to have significant paths in a mediation model in which acculturation was a

latent construct. Statistically significant paths were found between acculturation and

grade level (β = -.24) and self-esteem (β = .16). These findings indicated that being born

in the U.S. and using English were related to decreased likelihood of being on grade

level, but increased self-esteem (Dihn, Roosa, Tein, & Lopez, 2002).

The studies using established measures of acculturation and/or enculturation

provided mixed support for the above findings. In two studies, acculturation was not

found to relate to income (Ericksen, 2003; Kessler & Cordeiro, 1996). Speaking Spanish,

as measured by a subscale of the Short Acculturation Scale for Hispanic Adults, however,

was negatively correlated with income (r = -.31), indicating that the more individuals in

the sample spoke Spanish the lower their income (Kessler & Cordeiro). One study

reported that parental education correlated positively (r = .41) with acculturation

(Jimenez, 2002), while another study reported that mothers' education positively

correlated with child acculturation (r = .39), but that fathers' education was not

statistically significantly correlated with child acculturation (Ericksen). These

correlations indicate mixed support for the finding that the more educated the individuals in the sample the more likely it was that their children were acculturated. In one study generational status was found to correlate negatively ($r = -.28$) with acculturation (Reyes, 2002). In another study father's and child's preference for English were positively correlated with acculturation ($r = .40$ and $r = .39$, respectively), indicating that the more acculturated fathers and children were, the more likely they were to choose to answer questions in English (Ericksen). Acculturation was also found to correlate with social support ($r = .36$), ethnic identity ($r = -.32$), the abstract belief that education brings opportunity generally ($r = -.20$), and to students' assessment that schooling will bring opportunities in their reality ($r = .20$). These correlations indicated that the more acculturated participants were, the more likely they were to have social support and to believe that education would bring opportunity in for them, but the less likely they were to believe in the abstract idea that schooling leads to opportunities and more likely they were to have lower identification with their ethnic group (Jimenez; Kessler & Cordeiro).

Two studies reported correlations between speaking Spanish in the home and lower SES ($r = -.21$; $r = -.31$). Two studies reported that parental education was positively correlated with child acculturation (average of correlations = .40). Two studies reported that generational status was negatively correlated with acculturation. One of these studies correlated acculturation with generational status as an ordinal variable ($r = -.28$), while the other correlated acculturation with each generation (i.e., reporting the relation between acculturation and generational status). Other variables found to correlate with acculturation that were not corroborated by more than one study are: self-esteem,

social support, preferred language, perceived discrimination, attitudes about opportunities, and problem behavior proneness. Only one longitudinal study reported correlates of enculturation. In this study, it was found that boys' enculturation was positively correlated with boys' language preference ($r = .39$) and with fathers' preferred language ($r = .40$). Unfortunately, the author did not report whether preference for English or Spanish was related to enculturation, just that preference of which language to respond to research items was related to enculturation (Erikson, 2003).

Some of the findings in this section were contrary to what would be expected. It would be expected that being born in the U.S. and speaking English would predict higher probability of being on grade level, that being born in the U.S. would correlate with higher acculturation, and that having higher acculturation would correlate with more belief in the idea the education brings opportunities. In each case the opposite was found. In each of these studies, acculturation was measured in a different way, and the findings may be due to problems with measurement. It is important that more basic research in the area of acculturation and enculturation, such as in this study, be conducted in order to better understand the process and measurement of acculturation.

Findings from Acculturation and Enculturation Reviews

Because the review of the studies using longitudinal designs yielded little information about factors important in acculturation and enculturation change, a search of the reviews of literature in the area of acculturation and enculturation research was carried out. Two searches were conducted for both acculturation and enculturation using

the online databases—Academic Search Premier, PsycINFO, Psychology & Behavioral Sciences Collection. The keywords for the searches were [acculturation, review, and Hispanic] and [acculturation, review, and Latino] and [enculturation, review, and Hispanic] and [enculturation, review, and Latino]. These searches were done originally in 2005 and updated in April 2009. These searches yielded 212 possible acculturation studies and one possible enculturation study. Studies that either were not reviews of literature (i.e., were in journals with the word "review" in their name or articles that were book reviews) or did not address enculturation or acculturation were excluded from this review of the literature. After these filters, 24 reviews of findings in the area of acculturation remained, and unfortunately no reviews of findings in the area of enculturation were found. The remaining 24 studies were reviewed searching for variables that had been found to correlate to acculturation.

Of the 24 reviews, 12 reported consistent correlations between acculturation and variables that could be related to acculturation development. Only one review reported the strength of the relations between acculturation and other variables (Rodriguez, 2007). The other reviews of the literature reported that generational status, education, income, age, years of residence in the U.S., ethnic density of residence, country of birth, job skills, religion, kinship structures, purpose of migration, darkness of skin color, alcohol consumption, drug use, smoking, poor diet, and somatization were related to acculturation (Ayala et al., 2008; Bethel & Schenker, 2005; Carter-Pokras et al., 2008; Gasquoine, 2001; Kano-Wells, 2007; Koneru et al., 2007; Ming-Chin, Viladrich, Bruning, & Royce, 2009; Montclavo & Codina, 2001; Sodowsky, Lai, & Blake, 1991;

Wray, 2003; Zemore, 2007).

The majority of these studies did not report the strength of the relations between acculturation and the other influential variables, so it is impossible to compare across these studies with a common metric other than number of times a variable was found to relate to acculturation. Socioeconomic status was found in three studies to be related to acculturation (Gasquoine, 2001; Sodowsky et al., 1991; Wray, 2003). Drinking alcohol was found to have a positive relation with acculturation in three studies (Carter-Pokras et al., 2008; Koneru et al., 2007, Zemore, 2007). Generational status was found to relate to acculturation in two studies (Sodowsky et al., 1991; Wray). Smoking was found to have a positive relation to acculturation in two studies (Bethel & Schenker, 2005; Carter-Pokras et al.). Poor diet was found to have a positive relation with acculturation in two studies (Ayala et al., 2008; Ming-Chin et al., 2009). Substance abuse was found to have a positive relation with acculturation in two studies (Carter-Pokras et al.; Koneru et al.) Somatization was found to have a negative relation with acculturation in one study (Kano-Wells, 2007).

In the current literature review, there were only six studies found that measured acculturation over time with the same participants and two that measured enculturation over time. Unfortunately, these studies did not report how change in acculturation or enculturation related to other variables. Results of reviews of cross-sectional studies, and correlates of acculturation and enculturation from one data point in longitudinal studies, show a plethora of variables related to acculturation. Income, education, generational status, alcohol, smoking, and substance abuse have been consistently found to correlate to

acculturation. Other variables that were found to correlate with acculturation and have promise as predictors of acculturation change are skin color, social support, age at immigration, years in the U.S., perceived discrimination, and ethnic density of place of residence. Only boys' and fathers' language choice were reported to be correlated with enculturation.

The extant data of the BELLS project provided an excellent opportunity to study predictors of change in acculturation and enculturation. In addition to measuring acculturation and enculturation at various points, some of the variables found in the review of literature to correlate with acculturation and enculturation and other variables of theoretical importance were measured. These variables included income, education, language proficiency in Spanish and English of parent, time in the U.S., age at immigration, family language preference, skin color, and attractiveness.

<div align="center">Review of Variables Available in This Study</div>

To facilitate a discussion of these variables, they have been grouped into the following categories: variables that have been used as proxy measures, personal appearance, and variables measuring socioeconomic status.

Variables Formerly Used as Proxy Measures

Variables discussed in this section are: English proficiency, Spanish proficiency, age at immigration, language preference, and time in the U.S. Because the ability to participate in any culture is highly mediated by language, access to culture is greater with greater language ability. Therefore, higher English and Spanish language proficiency

should predict faster acculturation increase and enculturation maintenance or slower decline respectively. Because it may be difficult for older persons to learn new languages and to change behavior patterns that have been established over several years, age at immigration should predict slower acculturation increase and maintenance or slower decline in enculturation. Because preference for speaking English likely relates to comfort or at least desire to engage with others in that language, setting the stage for more cultural contact and acquisition, stronger preference for speaking English should predict faster acculturation increase. In addition, because preference for speaking English among family members would provide the participant with further opportunities to learn and practice English, stronger preference for speaking English among family members should predict faster acculturation increase. Because speaking Spanish in the home likely represents maintenance of the Latino culture and the Spanish language, preference for speaking Spanish by participants and their family members should predict maintenance or slower decline in enculturation. Because being in a new country for a longer period of time provides more opportunities for cultural contact with the majority culture of that country, more time in the U.S. should predict acculturation increase. Also because being in a foreign country implies having less access to one's native language and culture, time in the U.S. should predict enculturation decline.

Variables Assessing Personal Appearance

Variables discussed in this section are skin color and attractiveness. If people new to the U.S. perceive that they are rejected and discriminated against, it seems likely that they would resist acquiring behaviors and beliefs in keeping with the majority culture.

Because persons with darker skin have been found to be more likely to experience discrimination (Klonoff & Ladrine, 2000), darker skin color should predict slower acculturation increase. Persons who are attractive have been found to have higher self-worth/self-esteem and to be more extroverted than unattractive people (Langlois et al., 2000). Because people who have higher self-worth/self-esteem and are more extroverted would seem more likely to interact with people from a new culture, higher attractiveness should predict faster acculturation increase. Persons who are attractive have been found to have more traditional attitudes than nonattractive people (Langlois et al.). Because being more traditional would seem to be related to maintaining one's traditional cultural beliefs, higher attractiveness should predict maintenance or slower enculturation decline.

Socioeconomic Status

Variables discussed in this section are income and education. Because being able to communicate and to work within the majority culture would allow an individual to acquire a higher-paying job, income seems like it would be related to acculturation. However, because higher income would seem to be a byproduct of higher acculturation rather than a predictor of acculturation change, income should not be a significant predictor of acculturation change. Because having more education would seem to prepare an individual for learning a new language and culture, more years of education should predict acculturation increase.

To support the usefulness of these variables as potential predictors of acculturation and/or enculturation change, an extensive review of cross-sectional studies measuring both the variable in question and acculturation and/or enculturation was

conducted. Over 186 articles and dissertations were reviewed. The results of this review are summarized in Tables 1 and 2. Proxy variables were not included as acculturation or enculturation measures in the current review. Proxy variables were not included because of the reasons listed earlier in this literature review, and because several of the predictors currently being examined, for example years in the U.S. and language preference, are commonly used as proxy variables.

Income, education, and time in the U.S. were found to have consistent positive relations with acculturation. Age at immigration was found to have a consistently negative relation with acculturation. No consistent relation was found between skin color and acculturation. No studies reported the relation between acculturation and English proficiency, Spanish proficiency, attractiveness, and language preference.

Income, education, and time in the U.S. were found to have consistent negative relations in enculturation. Age at immigration was found to have a consistently positive

Table 1

Correlates of Acculturation

	# of articles that measured the predictor	# of articles reporting relation to acculturation	# of articles reporting statistical significant positive relation	# of articles reporting statistically significant negative relation
Income	92	15	12	1
Education	130	39	29	1
English proficiency	4	0	0	0
Spanish proficiency	3	0	0	0
Time in the U.S.	61	23	17	2
Age at immigration	11	6	0	6
Skin color	3	3	0	0
Attractiveness	0	0	0	0
Language preference	20	0	0	0

Table 2

Correlates of Enculturation

	# of articles that measured the predictor	# of articles reporting relation to enculturation	# of articles reporting statistical significant positive relation	# of articles reporting statistical significant negative relation
Income	92	3	0	3
Education	130	4	0	2
English proficiency	4	0	0	0
Spanish proficiency	3	0	0	0
Time in the US	61	4	0	3
Age at immigration	11	2	2	0
Skin color	3	1	0	0
Attractiveness	0	0	0	0
Language preference	20	0	0	0

relation with enculturation. No studies reported the relation between enculturation and English proficiency, Spanish proficiency, attractiveness, skin color, and language preference.

While there was no consistent relation between acculturation and skin color and no report of correlation between enculturation and skin color, it remains a promising predictor of acculturation and enculturation development and as reported earlier in this review has been found to relate to acculturation and has theoretical importance. Although the present review could not locate any studies reporting the relation between acculturation and enculturation and English or Spanish proficiency, attractiveness, and language preference, these variables, as discussed previously, hold theoretical promise as predictors of acculturation and enculturation development.

Summary and Objectives

In this review of the literature, aspects of acculturation and enculturation conceptualization and measurement were discussed. Longitudinal studies, reviews of literature, and cross-sectional research involving acculturation and enculturation were reviewed to determine the variables that have been found to relate to acculturation and enculturation change. In addition, studies measuring acculturation and/or enculturation along with variables measured by the BELLS project with potential as predictors of acculturation and/or enculturation change were reviewed.

There were only six studies found that measured acculturation over time with the same participants and two that measured enculturation over time. Unfortunately, these studies did not report how change in acculturation or enculturation related to other variables. Results of reviews of cross-sectional studies, and correlates of acculturation and enculturation from one data point in longitudinal studies, show that income, education, generational status, alcohol, smoking, and substance abuse have been consistently found to correlate to acculturation. Other variables that were found to correlate with acculturation and have promise as predictors of acculturation change are skin color, social support, age at immigration, years in the U.S., perceived discrimination, and ethnic density of place of residence. Only boys' and fathers' language choice were reported to be correlated with enculturation. A review of cross-sectional studies measuring variables of interest from the BELLS project and acculturation and/or enculturation revealed that income, education, time in the U.S., and age at immigration were found to be related to acculturation and enculturation. Although this review did not

encounter consistent relations between acculturation and enculturation and English and Spanish language proficiency, skin color, attractiveness, and language preference, these variables hold theoretical promise as predictors of acculturation and/or enculturation change.

There were relatively few studies that measured acculturation and enculturation over time and no studies that predicted change in acculturation and enculturation. Several variables have been found to relate to acculturation and to a lesser extent enculturation. Some of these variables hold promise as predictors of acculturation and enculturation change. In order to properly assess the development of biculturalism, longitudinal research is needed that measures acculturation and enculturation over time and also measures variables that may influence acculturation and enculturation change (Coatsworth et al., 2005). The data gathered during the BELLS project and by the researcher provides an excellent opportunity to gather information about the development of biculturalism by answering the following research questions and addressing the following hypotheses.

RQ1. Do acculturation and enculturation change over time?

RQ2. Do individual differences affect the rate of change in acculturation and enculturation over time?

For acculturation:

H1. Stronger preference for English by participants and their family members will predict faster gains in acculturation.

H2. Being older at the time of immigration will predict slower gains in

acculturation.

H3. Higher English language proficiency will predict faster gains in acculturation

H4. While higher income will be related to higher acculturation, income will not be an important predictor of acculturation change.

H5. More education will predict faster increases in acculturation.

H6. Being rated as having darker skin will predict slower gains in acculturation.

H7. Being rated as attractive will predict faster increases in acculturation.

For enculturation:

H8. Preference for Spanish by participants and their family members will predict maintenance or slower declines in enculturation.

H9. Being older at the time of immigration will predict slower declines in enculturation.

H10. Being rated as attractive will predict maintenance or slower declines in enculturation.

H11. Higher Spanish language proficiency will predict slower declines in enculturation.

CHAPTER III

METHODS

Participants

Participants were recruited from the BELLS project. The BELLS project staff studied the effect of the home environment and early English exposure, and for some immersion, on emergent literacy in young, primarily Spanish-speaking and bilingual children. Their sample was drawn from the Salt Lake City, Utah, area and consisted of an intervention group and a comparison group. The sample consisted mainly of Latina mothers and their children, and the sample was of predominantly Mexican descent. The present study used extant BELLS project data consisting of demographic information, English and Spanish language proficiency, language choice, acculturation, and enculturation. These data were complemented with data collected for the present study including an additional data point of acculturation and enculturation, ratings of the participants' attractiveness and skin color, and additional demographic information. All data used in this study were related to mothers recruited from the BELLS project. The only exception was language use, which included other family members' language use. Both Latina immigrants and U.S.-born Latinas participated in the BELLS project. Immigrant participants were predominantly from Mexico. The researcher targeted mothers from the BELLS project who were first generation immigrants from Mexico, based on findings from previous research that indicated significant differences between immigrant and nonimmigrant populations in acculturation (Ahern, 2005). In addition,

only participants that had at least 18 months time lapse between baseline and one of their follow-up measurements were selected. Delimiting the BELLS sample in this way limited the possible sample for the present study to 85.

Recruitment occurred over several phases. The researcher initially attempted to contact participants via a letter sent to their last known address. These letters explained the study and informed the participants that the researcher would be contacting participants via telephone. Next, the researcher attempted to call each participant for an interview. Because several of the participants had relocated since the end of the BELLS project, those who had not received the letter at the time of the telephone contact had the purpose and scope of the study as well as anticipated risks of participation explained to them and gave verbal informed consent before the interview was completed. Next, the researcher contacted community liaisons from two Salt Lake communities used by the BELLS project to locate the participants. In conjunction with those efforts, the researcher attempted to contact persons acquainted with or related to the participants. As part of the BELLS project's tracking system, participants gave names and contact information of people who would know how to contact them in case they moved. Unfortunately, data regarding the number of participants recruited by each method was not kept. The researcher of the present project successfully recruited 73 participants or over 85% of possible participants. Of the remaining 12 possible participants, 2 refused, 1 had left the U.S., and 9 were unreachable. Care was given to inform clients of their rights as participants and to obtain informed consent before each interview.

Table 3 contains the demographic information for the sample. The sample was

Table 3

Demographic Information

	Initial assessment			Final assessment		
	Mean	*SD*	Range	Mean	*SD*	Range
Age (yr)	29.76	6.05	17.1 - 44.8	35.5	6.11	22.7 - 50.1
Education, mother (yr)	8.77	2.65	3 - 16	[a]	[a]	[a]
Years of education in the U.S., mother	0.73	2.23	0 – 12	[a]	[a]	[a]
Monthly income, mother	$425.89	478.54	0 - 2000	[a]	[a]	[a]
Monthly income, father	$1211.40	425.0	0 - 2000	[a]	[a]	[a]
Age at immigration (yr)	21.0	7.11	0.50 - 35	[b]	[b]	[b]
Time since immigration (yr)	8.5	5.7	1.1 - 24.8	14.5	5.7	6.2 - 30.7
Time out of the U.S. post-immigration (yr)	[c]	[c]	[c]	0.12	0.44	0 - 2.5

[a] These variables were only measured during the initial assessment by the BELLS project.
[b] This variable is time invariant.
[c] This variable was not measured by the BELLS staff .

relatively young (*M* = 29.76, *SD* = 6.48), and of low income (*M* = $425.89 per month,

SD = 478.54), and education (*M* = 8.77, *SD* = 2.65). The sample had spent very little time

outside of the U.S. since immigrating (*M* = 0.12, *SD* = 0.44, in years). All information

provided in Table 3 is regarding the participants in the study with the exception of

fathers' income. Fathers' income is provided because in most cases the combination of

fathers' and mothers' income is an approximation of household income. Information

regarding fathers' age at immigration and time in the U.S. was not reported because they

were not variables of interest for this project.

<div align="center">Measures</div>

During the BELLS project and the current study, data were collected using the

Bidimensional Acculturation Scale (BAS), Peabody Picture Vocabulary Test-III (PPVT),

Test de Vocabulario en Imágenes Peabody (TVIP),Woodcock-Muñoz Language Survey, Family Information Survey (FIS), coding scales for attractiveness and skin color, questions assessing language usage, and three additional demographic questions.

Latino Acculturation and Enculturation

The BAS (Marin & Gamba, 1996) was developed to overcome the shortcoming of linear measurements of acculturation. The BAS consists of 24 items that comprise two subscales (acculturation and enculturation). Because the BAS measures both acculturation and enculturation, it is considered an orthogonal scale.

The BAS contains three content areas: electronic media, language proficiency, and language use. Each of these content areas is measured for English and Spanish language-related behaviors. The BAS consists of six items that address the preference of participants for English language based media and English language use, six that address the participants' English language proficiency, six items that address the preference of participants for Spanish language-based media and Spanish language, and six items that address the participants' Spanish language proficiency. The items from the BAS are based on a 4-point Likert scale (see Appendix B). The developers indicated that each participant should receive a score for both acculturation and enculturation that is based on the mean score for each of the subscales and that both scores should be used to determine the cultural adaptation of the individual. The developers suggested that biculturalism is indicated when scores are above 2.5 on both the acculturation and enculturation scales.

The BAS is available in both Spanish and English and has been validated for use with both Mexican and Central American populations. Marin and Gamba (1996) reported

that Cronbach's alpha for the acculturation scale was .96 and .90 for the enculturation scale. They did not report whether these alphas were calculated based on the English or Spanish versions of the scale. To assess the validity of the BAS, Marin and Gamba correlated subscale scores with the generational status, age at arrival to the U.S., length of residence in the U.S., proportion of life in the U.S., amount of formal education, self-identification of ethnicity of the participants, and the participants' scores on the Short Acculturation Scale for Hispanic Adults (SASH). They found that correlations for the acculturation subscale ranged from -.72 with age at arrival to the U.S. to .88 with the score from the SASH. The correlations for the enculturation subscale ranged from -.84 with the SASH to .68 with age at arrival. The direction of the correlations was as expected, and it was concluded that the measure had good validity (Marin & Gamba).

English and Spanish Language Proficiency

The PPVT (Dunn & Dunn, 1997) measures receptive verbal ability in English. Examinees are shown four pictures and asked to point to the picture that best represents a stimulus word presented orally by the examiner. The items are presented in order of increasing difficulty. Raw scores on the measure are then converted into standard scores. The PPVT is also available in Spanish. The Cronbach's alpha for the PPVT across all age groups ranged from .92 to .98. The split-half reliability ranged from .86 to .97. The test-retest reliability for the PPVT ranged from .91 to .93 across age groups (Dunn & Dunn). The PPVT has also been found to correlate with established tests of intelligence: .91 and .92 for the Wechsler Intelligence Scale for Children (WISC-III) Verbal IQ, .90 WISC-III Full Scale IQ, between .80 and .82 Kaufman Brief Intelligence Test (K-BIT) Vocabulary,

and between .87 and .91 for Kaufman Adolescent and Adult Intelligence Test (KAIT) Crystallized (Pearson Assessment, 2009).

The TVIP is based on the PPVT and measures receptive verbal ability in Spanish. Examinees are shown four pictures and asked to point to the picture that represents a stimulus word presented orally by the examiner in Spanish, items are presented in order of increasing difficulty, and raw scores are converted to standard scores. The split half reliabilities of the TVIP ranged from .80 to .94 (Dunn, Padilla, Lugo, & Dunn, 1986). The content validity of the measure with the Kauffman Assessment Battery for Children (K-ABC) Spanish ranged from .25 to .56 (Pearson Assessment, 2009). Concurrent validity was .44 with the Habilidad General Ability Test (Pearson Assessment).

The Woodcock-Muñoz Language Survey contains four subtests, which measure different aspects of both Spanish and English language proficiency. The Picture Vocabulary and Letter-Word Identification subtests were administered in both Spanish and English at baseline to all of the mothers in the BELLS sample. The Picture Vocabulary subtest predominately assesses expressive language ability at the single word level. The Letter-Word Identification subtest predominately assesses reading identification skills. The split-half reliabilities for the Picture Vocabulary subtest across age groups ranged from .77 to .96, with a median coefficient of .87. The split half reliabilities for the Letter-Word Identification subtest across age groups ranged from .88 to .98, with a median coefficient of .93. Information regarding the concurrent validity of the subtests for adults is not reported in the Woodcock-Muñoz manual (Woodcock & Muñoz-Sandoval, 1993).

Socioeconomic Status

The FIS was developed by the BELLS staff and contained several interview questions focused on gathering information about the sociocultural context of the family. Questions for all families addressed family income, parental education, family size, family composition, immigrant and generational status, and parental age.

Video Coding

A 5-point Likert scale was created and used to rate each participant on both attractiveness and skin color. The scale for attractiveness ranged from "Not attractive" on one extreme and "Attractive" on the other. The scale for skin color ranged from "Light" on one extreme to "Dark" on the other.

Participants were videotaped interacting with their children as part of the BELLS project. These videos were processed in order to develop still shots of each participant that could be used to obtain measures of the participants' attractiveness and skin color. These images were then processed to standardize image size and lighting. Next the images were incorporated in random order into a power point presentation to present the images for rating.

Initially two coders were recruited. The results of the initial coding revealed poor inter-rater reliability. As a result, the researcher recruited undergraduate students enrolled in university psychology classes. Coders were simply explained the Likert scales for skin color and attractiveness and asked to rate the participants. After two sessions, 27 coders had been recruited. Because the reliability for attractiveness was too low, efforts were made to recruit more coders. Only one additional coder attended the coding session. This

coder's data were incorporated into the attractiveness data, but not into the skin color data because the skin color reliability was already above .90. Four coders were removed from the group of coders for attractiveness because of poor reliability with other coders. One coder was removed from the group of coders for skin color, due to missing data. Raters were anonymous, and data regarding their age, ethnicity, and so forth, are not available. Interrater reliability, as measured by an alpha, for attractiveness and skin color were .85 and .95, respectively. The mean of the coders' ratings for attractiveness and skin color for each participant were calculated and used in subsequent analyses.

Language Usage

As part of the BELLS project, participants were asked to provide information about the languages spoken in their family. Specifically the participants were asked in what language they usually spoke with their child, in what language their child spoke to them, in what language their child spoke to his/her father, in what language the father usually spoke to the child, in what language the child spoke to his/her siblings, and in what language the child spoke to friends. All of these variables were measured on a 5-point Likert scale with the possible choices being "Only Spanish, More Spanish than English, Both Equally, More English than Spanish, and Only English." Each of these variables was used separately in the analyses.

Reliability

Cronbach's alphas for scales used in the research project are reported in Table 4. With a few exceptions, the scales showed good-to-excellent internal reliability (i.e., .70

Table 4

Summary of Study Measures and Reliabilities

Constructs	Measures	Citations	Time measured	Reliability
Acculturation	Bidimensional Acculturation Scale (BAS)	Marin & Gamba, 1996	1,2,3,4,5,6	.93, .94, .92, .94, .96, .92
Enculturation	Bidimensional Acculturation Scale (BAS)	Marin & Gamba, 1996	1,2,3,4,5,6	.68, .79, .75, .69, .74, .74
English language proficiency	Peabody Picture Vocabulary Test-III	Dunn & Dunn, 1997	1	NA
	Woodcock-Muñoz Language Survey	Woodcock & Muñoz-Sandoval, 1993	1	NA
Spanish language proficiency	Test de Vocabulario en Imágenes Peabody	Dunn, Padilla, Lugo, & Dunn, 1986	1	NA
	Woodcock-Muñoz Language Survey	Woodcock & Muñoz-Sandoval, 1993	1	NA
SES	Family Information Survey	BELLS Instrument	1	NA
Skin color	Coding of photographs	NA	1,2,3,4, or 5	.95
Attractiveness	Coding of photographs	NA	1,2,3,4, or 5	.85
Language usage	Questions assessing language usage	BELLS Instrument	1	NA

and above). At two points, the enculturation scale's alpha was slightly below .70 (0.68

and 0.69). Cronbach's alphas are not reported for income, education, and language usage

because these constructs were measured with single questions. Cronbach's alphas were

also not reported for the Woodcock-Muñoz, the PPVT, and the TVIP because it was not

appropriate to do so due to the organization of the measures (i.e., because these measures

were constructed with basals and ceilings).

Data Collection Procedures

Data were collected from three sources. A major source of data was existing data gathered as part of the BELLS project. Two new data collection efforts were undertaken in addition to using extant data. One source of new data came from follow-up interviews with participants. Another source of new data was ratings of participants' skin color and attractiveness.

The BELLS project measured language and emergent literacy outcomes of Spanish-speaking/bilingual children in the BELLS intervention and in a comparison group with limited early childhood intervention experiences. Children were assessed at 18, 24, 36, and 48 months of age and the spring before kindergarten entry. Some of the children were assessed again at the end of kindergarten and first grade.

The follow-up interviews were collected to supplement the existing acculturation and enculturation data and to add data related to participants' age at immigration and time in the U.S. All interviews were conducted by the student researcher in Spanish. Interviews lasted approximately 10 minutes. Participants who were willing to take part in the study were asked the age at which they had immigrated to the U.S., how long they had lived in the U.S., and whether or not they had left the country for a period of 6 months or more. Their answers were quickly verified using the date of birth that the participant had given during her participation in the BELLS project, and time was spent determining how much time the participant had spent outside of the U.S. after immigration. Next each participant was administered the BAS (Marin & Gamba, 1996).

CHAPTER IV

RESULTS

Analysis Plan

A variety of statistical procedures were considered to answer the research

questions. Hierarchical linear modeling (HLM) was chosen because it allows for

modeling change over time in the outcome variables, does not require a large sample size,

and does not require that time between assessments be uniform for all participants. In

addition to modeling change over time, HLM allows for modeling individual differences

in change trajectories using relevant predictor variables.

In preparation for modeling change in acculturation and enculturation,

correlations were computed between the outcome variables and potential predictor

variables. Variables that were found to be correlated with acculturation and/or

enculturation were later used in HLM models. Results from preliminary analyses are

presented, followed by HLM models, and finally post hoc analyses.

Preliminary Analyses

The first step in preparing for HLM procedures was to correlate potential

predictor variables with acculturation and enculturation. Correlations between

acculturation and time varying predictors, predictors that were measured at more than one

data point and vary across those points, are presented in Table 5. Correlations between

acculturation and time invariant predictors are presented in Table 6. Correlations between

Table 5

Correlations Between Time Varying Predictors and Acculturation

Variables	Acculturation					
	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6
Years since immigration	.582[**]	.707[**]	.364[*]	.492[**]	.586[*]	.420[**]
	73	28	45	47	17	73
Language mother speaks to child	.675[**]	.496[**]	.683[**]	.437[**]	.810[**]	[a]
	73	28	45	47	17	
Language father speaks to child	.190	-.070	.219	.015	.269	[a]
	73	24	43	43	16	
Language child speaks to mother	.601[**]	.346	.384[**]	.360[*]	.588[*]	[a]
	71	28	45	47	17	
Language child speaks to father	.395[**]	.128	.369[*]	.137	.445	[a]
	69	25	43	43	16	
Language child speaks to friends	.480[**]	.123	.468[**]	.297[*]	.470	[a]
	71	28	45	47	17	
Language child speaks to siblings	.490[**]	.367	.369[*]	.353[*]	.548[*]	[a]
	66	27	45	47	17	

[a] Language preferences were not measured at Time 6.
* $p < 0.05$ level (2-tailed).
** $p < 0.01$ level (2-tailed).

enculturation and time varying predictors are presented in Table 7. Correlations between enculturation and time invariant predictors are presented in Table 8. Unless otherwise noted, all data presented in these tables are related to mothers' scores. In addition to the correlations between variables, the number of participants who were given both measures at each assessment point is provided. For most variables in Tables 6 and 8, correlations with acculturation and enculturation are only reported at time one because they were only measured at time one.

Statistically Significant Correlations
with Acculturation

Time varying predictors with statistically significant correlations with

Table 6

Correlations Between Time Invariant Predictors and Acculturation

	Acculturation					
Variable	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6
Age at immigration	-.461[**]	-.422[*]	-.493[**]	-.432[**]	-.609[**]	-.352[**]
	73	28	45	47	17	73
Total time outside the US in years						-.102
						73
Attractiveness	.052	.214	-.113	.063	-.205	-.144
	73	28	45	47	17	73
Skin color	.116	-.219	.234	.009	.181	.120
	73	28	45	47	17	73
Mother education	.435[**]					
	73					
Father education	.160					
	73					
Mother income	.280[*]					
	73					
Father income	.214					
	57					
PPVT raw score	.767[**]					
	73					
TVIP raw score	.330[**]					
	73					
Woodcock-Muñoz PV English	.837[**]					
	73					
Woodcock-Muñoz PV Spanish	.167					
	73					
Woodcock-Muñoz LW English	.771[**]					
	73					
Woodcock-Muñoz LW Spanish	-.053					
	73					

Woodcock-Muñoz PV = Woodcock-Muñoz Picture Vocabulary.

Woodcock-Muñoz LW = Woodcock-Muñoz Letter-Word Identification.

* $p < 0.05$ level (2-tailed).

** $p < 0.01$ level (2-tailed).

Table 7

Correlations Between Time Varying Predictors and Enculturation

	Enculturation					
Variable	Time 1	Time 2	Time 3	Time 4	Time 5	Time 6
Years since immigration	-.204	-.334	-.323[*]	-.140	-.415	-.259[*]
	73	28	45	47	17	73
Language mother speaks to child	-.395[**]	-.227	-.524[**]	-.274	-.512[*]	[a]
	73	28	45	47	17	
Language child speaks to mother	-.313[**]	-.433[*]	-.415[**]	-.155	-.416	[a]
	71	28	45	47	17	
Language father speaks to child	-.251[*]	-.161	-.349[*]	.129	-.219	[a]
	73	24	43	43	16	
Language child speaks to father	-.276[*]	-.353	-.450[**]	.014	-.204	[a]
	69	25	43	43	16	
Language child speaks to friends	-.243[*]	-.363	-.448[**]	-.172	-.092	[a]
	71	28	45	47	17	
Language child speaks to siblings	-.232	-.421[*]	-.327	-.187	-.184	[a]
	66	27	45	47	17	

[a]   Language preferences were not measured at Time 6.

* $p < 0.05$ level (2-tailed).

** $p < 0.01$ level (2-tailed).

acculturation were: years since immigration (at five of five data points), the language the

mother spoke to her child (at five of five data points), the language the child spoke to

his/her mother (at four of five data points), the language the child spoke to his/her father

(at two of five data points), the language the child spoke to his/her friends (at three of five

data points), and the language the child spoke to his/her siblings (at four of five data

points). For these significant correlations, increased time since immigration and increased

English spoken with family members were related to higher acculturation.

Time invariant predictors having statistically significant correlations with

Table 8

Correlations Between Time Invariant Predictors and Enculturation

Variable	Enculturation					
	Time 1	Time2	Time 3	Time 4	Time 5	Time 6
Age at immigration	.137 73	.361 28	.233 45	.027 47	.663** 17	.248* 73
Total time outside the U.S. in years						.079 73
Attractiveness	.198 73	-.157 28	.450** 45	.024 47	.420 17	.232* 73
Skin color	.088 73	.184 28	.052 45	.114 47	-.164 17	.010 73
Mother education	-.165 73					
Father education	-.067 73					
Mother income	-.171 73					
Father income	.015 57					
PPVT raw score	-.325** 73					
TVIP raw score	-.078 73					
Woodcock-Muñoz English	-.368** 73					
Woodcock-Muñoz Spanish	.103 73					
Woodcock-Muñoz English	-.310** 73					
Woodcock-Muñoz LW Spanish	-.005 73					

Woodcock-Muñoz PV = Woodcock-Muñoz Picture Vocabulary.

Woodcock-Muñoz LW = Woodcock-Muñoz Letter-Word Identification.

* $p < 0.05$ level (2-tailed).

** $p < 0.01$ level (2-tailed).

acculturation were: age at immigration, mother's education, mother's income, PPVT scores, TVIP scores, Woodcock-Muñoz English Picture Vocabulary scores, and Woodcock-Muñoz English Letter-Word Identification scores. All statistically significant correlations were positive, with the exception of age at immigration.

Statistically Significant Correlations
with Enculturation

Time varying predictors having statistically significant correlations with enculturation were years since immigration (at two of six data points), the language the mother spoke to her child (at three of five data points), the language the child spoke to his/her mother (at three of five data points), the language the child spoke to his/her father (at two of five data points), the language the father spoke to his child (at two of five data points), the language the child spoke to his/her friends (at two of five data points), and the language the child spoke to his/her siblings (at two of five data points). For these significant correlations more time since immigration and more English use with family members were related to less enculturation.

Time invariant predictors with statistically significant correlations with enculturation were age at immigration, attractiveness, PPVT scores, Woodcock-Muñoz English Picture Vocabulary scores, Woodcock-Muñoz English Letter-Word Identification scores. For these significant correlations, higher age at immigration and attractiveness were related to more enculturation, while higher English proficiency was related to less enculturation. Variables that were found to have statistically significant correlations with acculturation and enculturation were used as predictors in later HLM models.

Results by Research Questions and Hypotheses

RQ1. Do Acculturation and Enculturation
Change Over Time?

To answer this question, hierarchical linear modeling procedures (HLM 6.02

software) were used to statistically assess changes in acculturation and enculturation over

time. Hierarchical or multilevel modeling can be used to assess change over time. The

first level or Level 1 is a model that describes how individuals change over time, and the

second level or Level 2 describes how these changes vary by individual (Singer &

Willert, 2003). The list of the variables used in the modeling and the associated variable

names are presented in Table 9. The results of the analyses for acculturation and the

specifications for those models are presented later in this chapter in Tables 10 and 11,

respectively. The results of the analyses for enculturation and the specifications for those

models are presented later in this chapter in Tables 12 and 13, respectively. (*Note*: To

Table 9

Variables Used in Modeling and Their Labels

Variable name	Variable label
Age.Imm	Age at immigration
Yrs.Imm	Years since immigration
M2Ch	Language mother speaks to child
Ch2Fr	Language child speaks to father
Ch2Sibs	Language child speaks to siblings
WW010	Woodcock-Muñoz English Picture Vocabulary
M_Income	Mother's monthly income
TVRS	TVIP raw score
M_Edu	Mother's years of education
Attract	Attractiveness rating

make it easier for the reader to compare these tables, they will be located at the end of

this discussion on pages 51-54.) Within Level 1 for hierarchical models π_0 equals each

individual's true initial status, π_1 denotes each individual's true rate of change during the

time studied, and e equals the unpredicted variance. For Level 2 for hierarchical models,

β_{00} and β_{10} equal the population average initial status and rate of change, and r_0 and r_1 the

portions of initial status and rate of change that are unexplained at Level 2 (Singer &

Willert). The initial step to answer RQ 1 was to estimate an unconditional means model

for both acculturation and enculturation. The unconditional means model assumes that

the scores on the outcome variable (acculturation or enculturation) do not change over

time (Singer & Willert). This analysis for the simplest (nongrowth) model is always a

useful first step in developing HLMs because if unconditional means models are not

statistically significant, then there is not variability over time within individuals for the

outcome variable and further modeling would be inappropriate.

The unconditional means model for acculturation is labeled as Model A in Table

10 and the unconditional means model for enculturation is labeled as Model A in Table

12. In both cases, the models were found to be statistically significant, and this indicates

that there is variability over time within individuals for scores in acculturation and

enculturation scores. Next, an unconditional growth model for acculturation and an

unconditional growth model for enculturation were estimated. The unconditional growth

model for acculturation is labeled as Model B in Table 10 and the unconditional growth

model for enculturation is labeled as Model B in Table 12. In both cases, the

unconditional growth model was a test of simple linear change over time, estimated for

acculturation and enculturation, and both were found to be statistically significant. Other forms of growth (i.e., quadratic) were tested, but the linear model was determined to be the best fit for the data. In the case of acculturation, the model estimated that at the time of immigration the average acculturation score for participants was 16.13 and that for each year since immigration, acculturation increased by 0.67 points. In the case of enculturation, the model estimated that at the time of immigration the average enculturation score for participants was 46.53 and that for each year since immigration, enculturation scores decreased by an average of 0.23 points. In both cases, the intercepts and slopes were statistically significant indicating that both were necessary to describe the mean growth trajectory.

These results provide evidence that acculturation increased steadily over time while enculturation decreased steadily over time for this sample. The BAS has a minimum score of 12 and a maximum score of 48. As might be expected, at the time of immigration participants had very low acculturation scores (16.13) and very high enculturation scores (46.53). For each year of residence in the U.S., acculturation increased slightly (.67 points per year). Enculturation decreased even more slightly with each year of residence in the U.S. (.23 points per year). The developers of the BAS suggest that a score of 30 or higher represents high acculturation and/or high enculturation. Therefore, it would take an acculturating person from this population on average 21 years to reach a level of acculturation that was considered high. In contrast, on average it would take 74 years for a person from this population to reach a level of enculturation that would be considered low.

*RQ2. Do Individual Differences Affect the
Rate of Change in Acculturation and
Enculturation over Time?*

To answer this question and to address study hypotheses, a variety of predictors found to correlate with acculturation and enculturation were tested. Time-varying predictors were tested at Level 1 and time-invariant predictors were tested at Level 2. A brief description of the models tested for acculturation and enculturation follows. A summary of the results of these models are found later in this chapter in Tables 10 and 12. For acculturation, the following hypotheses were presented.

H1. Stronger preference for English by participants and their family members will predict faster gains in acculturation.

H2. Being older at the time of immigration will predict slower the gains in acculturation.

H3. Higher English language proficiency will predict faster gains in acculturation

H4. While higher income will be related to higher acculturation, income will not be an important predictor of acculturation change.

H5. More education will predict faster increases in acculturation.

H6. Being rated as having darker skin will predict slower gains in acculturation.

H7. Being rated as attractive will predict faster increases in acculturation.

Again, for acculturation, results from the testing of the unconditional growth model (Model B in Table 10) indicated that acculturation changed over time: the intercept, representing scores at the time of immigration, and the slope, representing the rate of acculturation, were both significant. A chi-square test of variability revealed that

there was statistical significant residual or unexplained variance in the acculturation scores at time of immigration but that there was not residual variance in individual growth. When residual variances are statistically significant, it is often taken as indication that it is appropriate to attempt to account for the unexplained variance. Therefore, what follows are the results of introducing additional explanatory variables into unconditional growth models.

Two time varying predictors, the language that the participants spoke to their children (M2Ch) and the language that children spoke to their friends (Ch2Fr), were found to be statistically significant at Level 1. (These results are summarized in Models C and D, respectively, in Table 10.) These results provided evidence supporting H1. Both of these variables were scored on Likert scales with higher scores representing higher English usage. In both cases, increased English usage corresponded to increased growth rates in acculturation. In addition, for both Models C and D, a deviance statistic for each was compared to the simpler, nested versions of the same model. The deviance statistic is a useful measure of model fit, with less deviance indicating better fit. Deviances of less complex models nested within more complex models can be compared statistically and can inform model building (Singer & Willett, 2003). In the case of Models C and D, there was a reduction in the deviance statistic and it was statistically significant, therefore providing evidence that the models that included one or more additional terms were a better fit than the previous simpler models.

Next, Level 2 predictors were added to the model. The selection of Level 2 predictors was guided by the results of correlations between the predictors and

acculturation. The first Level 2 predictor to be added was the participants' age at immigration (Age.imm). Age at immigration was not found to be related to acculturation scores at immigration, but was found to be significantly related to growth rates of acculturation. The older the participants were at the time of immigration, the slower the rate of acculturation growth. On average, each year of life lived before immigration correlated to 0.043 points slower growth per year (see Model E in Table 10). This result provided evidence supporting H2. The change in deviance from Model D to Model E was statistically significant, thus supporting the idea that Model E was a better fit.

Next, the participant's Picture Vocabulary Standard Score from the Woodcock Muñoz (WW010) was added to the model. It was decided to select only one predictor to represent English language proficiency because of high intercorrelations between them. English Picture Vocabulary was chosen because it was the variable that most highly correlated with the other two variables. When English language proficiency was added as a predictor for acculturation growth and age at immigration was removed from the prediction of the intercept, English language proficiency was found to be a significant predictor for acculturation growth, when controlling for the other variables in the model. This result provided support for H3. Higher English language proficiency was related to increased acculturation, and age at immigration was no longer a statistically significant predictor for acculturation change (see Model F in Table 10). The change in deviance from Model E to Model F was not significant and age at immigration ceased being a statistically significant predictor of acculturation slope. For these reasons, in the next model (Model G), age at immigration was removed. The change in deviance statistic

between Model E and Model G was significant.

For subsequent models (H, I, and J) the participants' monthly income, Spanish picture vocabulary (score from the TVIP), and participant's education were added to the model in a stepwise fashion (see Table 10). Participants' income was not found to be a significant predictor of acculturation change. This result provided supported for H4. Although Spanish language proficiency was not included in the hypotheses, it was found to correlate with acculturation in this sample and was included in HLM models. When controlling for the other variables in the model, higher Spanish receptive language scores and more years of education were found to be related to faster growth rate in acculturation. The result concerning years of education provided support for H5. The final model, Model K, provided the best fit based on statistically significant reduction of the deviance statistic, and included English receptive language scores and years of education both of which predicted faster increases in acculturation. Skin color and attractiveness were not found to correlate with acculturation and were therefore not included in HLM models. H6 and H7 were not supported.

For enculturation, the following hypotheses were presented.

H8. Preference for Spanish by participants and their family members will predict maintenance or slower declines in enculturation.

H9. Being older at the time of immigration will predict slower declines in enculturation.

H10. Being rated as attractive will predict maintenance or slower declines in enculturation.

H11. Higher Spanish language proficiency will predict slower declines in enculturation.

For enculturation, the unconditional growth model (Model B in Table 12) revealed that enculturation changed over time, and that the intercept, time of immigration, and the slope, measured by years since immigration, were statistically significant. One time varying predictor, the language that children spoke to their siblings (Ch2Sibs), was found to be statistically significant at level 1. These results are summarized in Model C in Table 12. This variable was scored on Likert scales with higher scores representing higher English usage. Increased English usage between the BELLS target child and his/her siblings corresponded to faster decline in enculturation. This result provided evidence supporting H8. Several combinations of Level 1 predictors were modeled but none yielded significantly lower deviation statistics; however, the change in deviance between Models A and B, and between B and C were statistically significant. The selection of level two predictors was guided by the results of the literature review and the correlations between the predictors and enculturation in the present study. Age at immigration (Age.Imm), attractiveness (Attract), and English proficiency (WW010) were added to the model in a stepwise manner. Age at immigration was not found to be a statistically significant predictor of enculturation change. This result did not provide support for H9. When controlling for the other variables in the model, higher attractiveness was found to predict slower enculturation decline. This result provided support for H10. Although not originally included in the hypotheses, English proficiency was found to correlate with enculturation and was included in the

HLM models. When controlling for the other variables in the model, higher English proficiency was found to predict faster declines in enculturation. The final model, Model F, was the best fit based on change in deviance, and included English language proficiency and attractiveness (see Models D, E, and F in Table 12). Spanish language proficiency was not found to correlate with enculturation and was therefore not included in HLM models. H11 was not supported.

Post Hoc Analyses

To explore this relation between English proficiency and acculturation and enculturation, exploratory analyses were conducted. See Table 14 for a summary of the correlations between English proficiency and total acculturation/enculturation and the acculturation and enculturation subscales.

The correlations between English receptive vocabulary scores and acculturation total scores and subscale scores were statistically significant and positive ranging from .57 to .87. The highest correlation was between English receptive vocabulary and the English Proficiency subscale. In addition, a regression analysis was computed revealing that English vocabulary scores explained 70% of the variance in total acculturation scores. The correlations between measured Spanish vocabulary and enculturation total scores and subscale scores ranged from -.208 to .181, but none of these correlations were statistically significant. In addition, a regression analysis was computed revealing that Spanish vocabulary scores did not explain a statistically significant portion of the total enculturation scores. Scatterplots were developed to graphically represent the relations

between Spanish Vocabulary scores and enculturation scores (see Appendix C). It seems that the relations between Spanish Vocabulary and the Language use and Proficiency subscales were not significant due to limited variability in score for the enculturation subscales. Most participants reported very high Spanish proficiency and use. The results of these post hoc analyses seem to indicate that the BAS acculturation scale is highly related to English language proficiency.

Table 10

Hierarchical Linear Modeling of Acculturation

Variables		Parameter	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I	Model J	Model K
Fixed effects													
Initial status, π_{oi}	Intercept	γ_{oo}	23.522*** (.826)	16.131*** (0.828)	15.923*** (0.918)	16.062*** (0.891)	10.639** (3.167)	18.643*** (0.900)	18.777*** (0.932)	18.780*** (0.935)	18.674*** (0.900)	18.778*** (0.873)	18.837*** (0.883)
	Age.imm	γ_{01}					0.253 (0.135)						
Rate of change, π_{1j}	Yrs.Imm	γ_{10}	--	0.671*** (0.079)	0.543*** (0.106)	0.414** (0.110)	1.242*** (0.296)	-7.594*** (1.143)	-7.105*** (0.970)	-7.118*** (0.966)	-7.077*** (0.954)	-6.765*** (0.917)	-6.753*** (0.919)
	Age.imm	γ_{11}					-0.043** (0.014)	0.006 (0.007)					
	WW010	γ_{12}						0.017*** (0.002)	0.016*** (0.002)	0.016*** (0.002)	0.014*** (0.002)	0.014*** (0.002)	0.015*** (0.002)
		γ_{13}								-0.00002 (0.000)			
	TVRS	γ_{14}									0.007* (0.003)	0.004 (0.003)	
	M-Edu	γ_{16}										0.035* (0.015)	0.041** (0.014)
	M2Ch	γ_{20}	--	--	2.783*** (0.566)	2.281*** (0.604)	2.294*** (0.568)	2.518*** (0.533)	2.473*** (0.531)	2.480*** (0.536)	2.504*** (0.525)	2.472*** (0.519)	2.423*** (0.518)
	Ch2Fr	γ_{30}	--	--	--	0.721** (0.252)	0.787** (0.256)	0.989*** (0.223)	1.015*** (0.233)	1.012*** (0.236)	0.951*** (0.219)	1.007*** (0.220)	1.049*** (0.224)
Variance components													
Level 1	Within-person	σ^2_E	15.282	12.32	9.398	9.046	9.274	9.408	9.397	9.404	9.530	9.371	9.323
Level 2	In initial status	σ^2_0	45.834***	7.026**	9.572	8.700	4.816	8.130	8.621	8.497	7.404	8.352	9.447
	In rate of change	σ^2_1		0.061	0.226	0.243	0.129	0.136	0.133	0.128	0.125	0.131	0.144
Goodness of fit	Deviance		1757.181	1675.333***	1211.346***	1192.780***	1181.966**	1129.656	1130.499*** Compared to model E	1130.409	1126.348* Compared to model G	1120.887*	1122.155** Compared to model G

* $p = .05$
** $p = .01$
*** $p = .00$

Table 11

Acculturation Model Specification

Model	Level-1 model specification	Level-2 model specification
A	$ACCUL = \pi_0 + e$	$\pi_0 = \beta_{00} + r_0$
B	$ACCUL = \pi_0 + \pi_1 (Yrs.Imm) + e$	$\pi_0 = \beta_{00} + r_0$ $\pi_1 = \beta_{10} + r_1$
C	$ACCUL = \pi_0 + \pi_1 (Yrs.Imm) + \pi2 (M2Ch) + e$	$\pi_0 = \beta_{00} + r_0$ $\pi_1 = \beta_{10} + r_1$ $\pi_2 = \beta_{20}$
D	$ACCUL = \pi_0 + \pi_1 (Yrs.Imm) + \pi2 (M2Ch) + \pi3(Ch2Fr) + e$	$\pi_0 = \beta_{00} + r_0$ $\pi_1 = \beta_{10} + r_1$ $\pi_2 = \beta_{20}$ $\pi_3 = \beta_{30}$
E	$ACCUL = \pi_0 + \pi_1 (Yrs.Imm) + \pi2 (M2Ch) + \pi3(Ch2Fr) + e$	$\pi_0 = \beta_{00} + \beta_{01} (Age.Imm) + r_0$ $\pi_1 = \beta_{10} + \beta_{11} (Age.Imm) + r_1$ $\pi_2 = \beta_{20}$ $\pi_3 = \beta_{30}$
F	$ACCUL = \pi_0 + \pi_1 (Yrs.Imm) + \pi2 (M2Ch) + \pi3(Ch2Fr) + e$	$\pi_0 = \beta_{00} + r_0$ $\pi_1 = \beta_{10} + \beta_{11}(Age.Imm) + \beta_{12}(WW010) + r_1$ $\pi_2 = \beta_{20}$ $\pi_3 = \beta_{30}$
G	$ACCUL = \pi_0 + \pi_1 (Yrs.Imm) + \pi2 (M2Ch) + \pi3(Ch2Fr) + e$	$\pi_0 = \beta_{00} + r_0$ $\pi_1 = \beta_{10} + \beta_{11}(WW010) + r_1$ $\pi_2 = \beta_{20}$ $\pi_3 = \beta_{30}$
H	$ACCUL = \pi_0 + \pi_1 (Yrs.Imm) + \pi2 (M2Ch) + \pi3(Ch2Fr) + e$	$\pi_0 = \beta_{00} + r_0$ $\pi_1 = \beta_{10} + \beta_{11}(M.Income) + \beta_{12}(WW010) + r_1$ $\pi_2 = \beta_{20}$ $\pi_3 = \beta_{30}$
I	$ACCUL = \pi_0 + \pi_1 (Yrs.Imm) + \pi2 (M2Ch) + \pi3(Ch2Fr) + e$	$\pi_0 = \beta_{00} + r_0$ $\pi_1 = \beta_{10} + \beta_{11}(TVRS) + \beta_{12}(WW010) + r_1$ $\pi_2 = \beta_{20}$ $\pi_3 = \beta_{30}$
J	$ACCUL = \pi_0 + \pi_1 (Yrs.Imm) + \pi2 (M2Ch) + \pi3(Ch2Fr) + e$	$\pi_0 = \beta_{00} + r_0$ $\pi_1 = \beta_{10} + \beta_{11}(TVRS) + \beta_{12}(WW010) + \beta_{13}(M\_EDU) + r_1$ $\pi_2 = \beta_{20}$ $\pi_3 = \beta_{30}$
K	$ACCUL = \pi_0 + \pi_1 (Yrs.Imm) + \pi2 (M2Ch) + \pi3(Ch2Fr) + e$	$\pi_0 = \beta_{00} + r_0$ $\pi_1 = \beta_{10} + \beta_{11}(WW010) + \beta_{12}(M\_EDU) + r_1$ $\pi_2 = \beta_{20}$ $\pi_3 = \beta_{30}$

Table 12

Hierarchical Liner Modeling of Enculturation

Variables		Parameter	Model A	Model B	Model C	Model D	Model E	Model F
Fixed effects								
Initial Status, π_{oi}	Intercept	Γoo	43.996*** (0.337)	46.529*** (0.561)	46.186*** (0.612)	48.496*** (2.523)	46.290*** (0.616)	45.489*** (0.695)
	Age.Imm	γ01				-0.108 (0.108)		
	Attract	γ02						
Rate of Change, π_{1j}	Yrs.Imm	γ10	--	-0.233*** (0.050)	-0.138* (0.065)	-0.386 (0.197)	-0.306** (0.099)	1.161* (0.572)
	Age.Imm	γ11				0.013 (0.010)		
	Attract	γ12					0.234** (0.082)	0.236** (0.076)
	WW010	γ13						-0.003* (0.001)
	Ch2Sibs	γ20	--	--	-0.382** (0.146)	-0.398** (0.148)	-0.370* (0.147)	-0.395** (0.152)
Variance components								
Level 1	Within-person	σ 2E	7.042	6.148	5.354	5.504	5.328	5.603
Level 2	In initial status	σ 20	6.452***	5.216**	4.831	3.433*	5.543	2.617
	In rate of change	σ 21	--	0.032*	0.051	0.031	0.055	0.002
Goodness of fit	Deviance		1464.115	1433.541***	1012.952***	1010.203	1007.716* Compared to Model C	1002.151*

*   *p* =.05
**   *p* = .01
*** *p* = .00

Table 13

Enculturation Model Specification

Model	Level-1 model specification	Level-2 model specification
A	$ENCUL = \pi_0 + e$	$\pi_0 = \beta_{00} + r_0$
B	$ENCUL = \pi_0 + \pi_1 (Yrs.Imm) + e$	$\pi_0 = \beta_{00} + r_0$ $\pi_1 = \beta_{10} + r_1$
C	$ENCUL = \pi_0 + \pi_1 (Yrs.Imm) + \pi2$ (Ch2Sibs) + e	$\pi_0 = \beta_{00} + r_0$ $\pi_1 = \beta_{10} + r_1$ $\pi_2 = \beta_{20}$
D	$ENCUL = \pi_0 + \pi_1 (Yrs.Imm) + \pi2$ (Ch2Sibs) + e	$\pi_0 = \beta_{01}(Age.Imm) + r_0$ $\pi_1 = \beta_{11}(Age.Imm) + r_1$ $\pi_2 = \beta_{20}$
E	$ENCUL = \pi_0 + \pi_1 (Yrs.Imm) + \pi2$ (Ch2Sibs) + e	$\pi_0 = \beta_{01}(Attract) + r_0$ $\pi_1 = \beta_{11}(Attract) + r_1$ $\pi_2 = \beta_{20}$
F	$ENCUL = \pi_0 + \pi_1 (Yrs.Imm) + \pi2$ (Ch2Sibs) + e	$\pi_0 = \beta_{01} + r_0$ $\pi_1 = \beta_{11}(WW010) + r_1$ $\pi_2 = \beta_{20}$

Table 14

Correlations Between Woodcock Munoz English Picture Vocabulary (WMEPV) Standard

Scores, Spanish Picture Vocabulary (TVIP) and Acculturation and Enculturation Total

and Subscale Scores at Time One

Variables	WM PV standard scores Time one	Spanish receptive vocabulary (TVIP) raw scores: Time one
English lang use subscale Time One	.658** 73	.157 73
English proficiency subscale Time One	.871** 73	.371** 73
English media subscale Time One	.565** 73	.258* 73
Total acculturation Time One	.837** 73	.330** 73
Spanish language use subscale Time One	-.225 73	-.001 73
Spanish proficiency subscale Time One	-.103 73	.181 73
Spanish media subscale Time One	-.350** 73	-.208 73
Total enculturation Time One	-.368** 73	-.078 73

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

CHAPTER V

DISCUSSION

To explore the factors that influence the development of acculturation and enculturation, the present study assessed change over time in both variables and explored the variables that predicted change in each. The results of this study provide a clearer understanding of the development of acculturation and enculturation over time and provide insight into the variables that are important in these processes. The discussion that follows includes a review and interpretation of the findings related to the above research aims. The discussion of the results follows the order of the research questions. The discussion also includes a review of the limitations of the study and suggestions for future research in the area of acculturation and enculturation change.

Findings Overview

The first aim of the study was to determine if acculturation and enculturation change over time. The results of the study indicate that acculturation and enculturation do change over time. In addition, the results characterize change in acculturation as increasing linearly after immigration to the U.S., and change in enculturation as decreasing linearly after immigration. As would be expected the model estimated that acculturation scores were very low at the time of immigration and that enculturation scores were very high. For each year of residence in the U.S., acculturation increased slightly. Enculturation decreased even more slightly with each year of residence in the U.S. It would take an acculturating person from this population on average 21 years to

reach a level of acculturation that was considered high. In contrast, on average it would take 74 years for a person from this population to reach a level of enculturation that would be considered low. This suggests that while acculturation and enculturation change linearly over time, change in this population is at best very gradual and in the case of enculturation extremely gradual.

Although it was not part of the primary research aims of this study to evaluate acculturation theory, these results provide evidence that partially supports the orthogonal theory. As discussed in the literature review, linear or unidimensional theories of acculturation assume that increases in acculturation necessarily correspond to equal decreases in enculturation. Orthogonal theories of acculturation assume that changes in acculturation and enculturation are independent of each other. Although these results do not support complete independence between acculturation and enculturation, the trajectories varied sharply, with acculturation increasing at a much more rapid pace than enculturation decreased, implying relative independence between the two variables.

The second aim of the study was to determine the individual differences that would impact the rate of change in acculturation and enculturation. In preparation for modeling, correlations between predictor variables and acculturation and enculturation were calculated. Variables found to correlate with acculturation or enculturation were tested as predictors of acculturation and enculturation change. First the results for the modeling of acculturation growth will be presented and discussed, followed by the results for the modeling of enculturation growth.

Acculturation

It was hypothesized that stronger preference for English by participant and her family, higher English language proficiency, having more education, and being rated as attractive would predict faster gains in acculturation. It was predicted that being older at the time of immigration and having darker skin would predict slower gains in acculturation. It was also hypothesized that income would not be an important predictor of acculturation change.

The majority of these hypotheses were supported. English spoken by the participant with her child, by the child with his/her friends, more years since immigration, more years of education, and higher English and Spanish receptive vocabulary predicted faster increases in acculturation. The older the participant was at the time of immigration the slower acculturation increased. In addition, income was not found to be a statistically significant predictor of change in acculturation scores. However, skin color and attractiveness were not found to correlate with acculturation and were not included in HLM models.

As hypothesized, the more English a participant speaks with her child and the higher her English proficiency the more quickly she would acculturate. Using English at home and increasing one's ability to communicate in English would seem to open access to the prevalent culture in the U.S. and provide for faster growth in acculturation. Also if a participant's child speaks with his/her friends it would mean more exposure to English for the participant, and could also mean that the participant was living in an area with more English speakers. Living in an area with more English speakers would provide an

opportunity for more cross-cultural contact and more rapid acculturation. As was anticipated, more years of education predicted faster increases in acculturation. Some evidence exists that having more education is related to higher second language proficiency (Urponen 2004), which could speed up acculturation. In addition, in support of what was hypothesized, being older at the time of immigration was found to predict slower increases in acculturation. It seems that the older the participant at immigration the less likely the individual would be to embrace and learn a new language and culture because they had more time to become accustomed to the traditions of the culture of origin.

Somewhat surprisingly, higher Spanish receptive vocabulary predicted faster increases in acculturation. This may indicate that individuals who have higher verbal language abilities are more able to learn a new language. Receptive vocabulary has also been found to correlate with intelligence (Pearson Assessment, 2009), and people with higher language proficiency may acculturate faster because they are more intelligent.

It was also surprising the skin color and attractiveness were not correlated with acculturation. The anticipated connection between acculturation and skin color was perceived discrimination. It is possible that the amount of discrimination experienced by this sample did not vary by skin color, and that the amount of discrimination experienced by the participants may have been based upon being Latinos and speaking a different language and not based upon the relative darkness of their skin. The failure to find a statistically significant correlation between acculturation and attractiveness may have been due to restricted range in the sample. It was hypothesized that attractive people

would acculturate more quickly because they would likely be more extroverted and possess higher self-esteem. However, the Likert scale of attractiveness was based on five points ranging from "1" or "Not Attractive" on one end to "5" or "Attractive" on the other. None of the participants received a 4 or a 5. Perhaps if the sample contained persons rated as more attractive, a significant relation with acculturation would have been found.

The model with the best fit included only English receptive vocabulary, years of education, language spoken by the participant with her child, language spoken by the child with his/her friends, and years since immigration. These variables seem to be the best predictors of acculturation change.

Enculturation

It was hypothesized that preference for Spanish by participant and her family, being older at the time of immigration, being rated as attractive, and having higher Spanish language proficiency would predict maintenance or slower declines in enculturation. Only two of these hypotheses were supported. More Spanish spoken by the participant's child with his/her siblings and higher attractiveness were related to slower declines in enculturation. Age at immigration was not found to be a statistically significant predictor of change in enculturation scores, and Spanish language proficiency was not found to correlate with enculturation and was not included in HLM models. Although not originally included in the hypotheses, English language proficiency was found to correlate with enculturation and was included as a predictor of enculturation change. Higher English receptive vocabulary predicted faster declines in enculturation.

As anticipated, preference for Spanish by the participants' children was related to slower declines in enculturation. This may be because children speaking Spanish would mean that the Spanish language and the Latino culture were being preserved in the home. Also as anticipated, attractiveness was found to relate to slower declines in enculturation. As mentioned earlier, none of the participants in the current study was rated as being a "4" or a "5" on the scale. It is possible that the relation between attractiveness and enculturation would have been stronger if the sample contained more attractive participants.

Contrary to what was hypothesized, age at immigration was not found to be a significant predictor of enculturation change. This may be due to restricted range in this sample. Ninety two percent of the sample were in their twenties or younger when they immigrated to the U.S. It seems that greater resistance to change would be encountered in individuals who immigrated at a more advanced age.

In addition, contrary to what was hypothesized, Spanish language proficiency was not found to correlate with enculturation. In retrospect this finding seems intuitive. The participants, for the most part were raised in Mexico, and as such were surrounded by the culture and language prevalent in their surroundings. Higher Spanish proficiency relative to other Mexicans would not predict higher levels of enculturation because even basic Spanish would provide access to the prevalent culture. There would likely not be a differential effect for exemplary Spanish language proficiency in the development of cultural awareness. Likewise, maintenance of one's cultural practices in a new country would not be dependent on language proficiency because proficiency beyond a basic

level would not be required to engage in cultural practices.

Unexpectedly, higher English proficiency and use lead to faster declines in enculturation. This finding seems to indicate that the more people speak English the less Spanish-related behaviors they engage in. This could indicated that as one begins to incorporate behaviors and attitudes reflective of the majority culture, that behaviors and attitudes from the culture of origin necessarily decrease to some degree.

The model with the best fit included only English receptive vocabulary, attractiveness, language spoken by the participant's child with his/her siblings, and years since immigration. These variables seem to be the best predictors of enculturation change.

Biculturalism

Both of the aims heretofore discussed, namely whether or not acculturation and enculturation change over time as well as which individual factors predicted differences in acculturation and enculturation change, were developed to determine which factors would lead immigrant populations toward biculturalism. Evidence from previous research (Coatsworth et al., 2005; Gomez & Fassinger, 1994; Padilla et al., 1991) seemed to indicate that acquiring behaviors reflective of the majority culture of the U.S. while maintaining behaviors reflective of the culture of origin lead to better outcomes.

The results of this study indicate that the most important variables to predict acculturation change were education, English proficiency, and English language use by participant and her child. The most important variables predicting change in enculturation were English language use by the participant's child, English proficiency, and

attractiveness. Higher English proficiency and use predicted faster declines in enculturation. More attractiveness predicted slower declines in enculturation scores. These results would seem to indicate that biculturalism is difficult if not impossible to attain. If immigrants increase English proficiency and usage their acculturation scores will increase, while their enculturation scores decrease. However, closer analysis of the enculturation model reveals that decreases in enculturation are very gradual. The highest values observed during the study for English proficiency and use combined with the lowest value observed for attractiveness, predicted that on average it would take over 11 years for enculturation scores to drop below the cut off for high enculturation. None of the participants in this study had that precise combination of scores and the great majority scored much lower. In addition, most immigrants would require time to acquire language proficiency. English usage, however, may increase more quickly within the family because of the immigrants' children learning and speaking English. Therefore, it seems unlikely that enculturation would decline to a level that would not be protective for several years, and acculturation could increase as quickly if participants seek more education, begin to develop more English vocabulary, and speak more English.

One potential way to maximize gains in acculturation and to minimize losses in enculturation would be for immigrant parents to seek educational opportunities and to develop English skills while attempting to keep a balance of both Spanish and English in the home. There are some shortcomings and limitations of these models and this study and they will be discussed next.

Limitations

The first and most important limitation to the study results had to do with the study's measure of acculturation and enculturation. The BAS is heavily language based. One portion of the measure addressed language proficiency, another language-related media consumption, and another language usage. Limiting the definition of acculturation and enculturation to behaviors based on language use does not capture the complexity of the process. English proficiency was found to be highly related to acculturation and enculturation scores. To explore this relation more fully, exploratory analyses were conducted. The correlations between English receptive vocabulary scores and acculturation total scores and subscale scores were statistically significant and positive. In addition, a regression analysis was computed revealing that English vocabulary scores explained 70% of the variance in total acculturation scores. None of the correlations between measured Spanish vocabulary and enculturation were significant and Spanish vocabulary scores did not explain a statistically significant portion of the total enculturation scores. The results of these post-hoc analyses seem to indicate that the BAS acculturation scale is highly related to English language proficiency, suggesting that the BAS is highly and overly reliant on language related behavior.

In addition to overreliance on language, aspects of acculturation and enculturation, such as participation in culture specific behaviors, culture specific values, and culture-based sense of identity, were not measured by the BAS. The results of the current study are accurate in measuring behavioral aspects of acculturation and enculturation related to language usage, but are likely not a valid representation of the

entire acculturation and/or enculturation process. Some research suggests that these other dimensions of acculturation and enculturation, such as cultural identification are separate constructs from language-related acculturation and enculturation (Ahern, 2005). Future research in this area should either involve measures that include both language-based behaviors as well as identity or should attempt to measure these aspects of acculturation and enculturation using independent measures.

All of the participants were female and these findings may not accurately represent change in acculturation and enculturation for males. Future research should replicate similar work in assessing the pattern of acculturation and enculturation change in males and look for gender differences. Similarly, all of the participants were from Mexico. Sampling all Mexican participants was done intentionally based on previous findings that suggested that the process of acculturation and enculturation varied within the Latino community (Ahern, 2005), and that research on the process of acculturation and enculturation should be done with specific cultural groups. However, because all of the participants were Mexican immigrants living in Utah, the results may not be generalizable to Latina immigrants from other countries or living in other areas of the U.S.

As part of the BELLS project some children received English immersion. The participants of this study did not participate in English immersion and it is assumed that there would not be any direct impact on the participants' acculturation and/or enculturation. More likely, any impact on participants' acculturation and/or enculturation would be filtered through their children, and measured by the study variables assessing

language usage by the participants with children. Nevertheless, this could have impacted the results of this study.

Although this study measured both components of biculturalism over time, namely acculturation and enculturation, bicultural development was not measured specifically. While this study provides useful information about acculturation and enculturation change over time and factors related to change in both variables, it did not assess factors that predicted bicultural adaptation at an individual level. The results of this study can be used to understand the combination of factors that likely lead to bicultural adaptation, but studies that measure the development of biculturalism specifically are need.

As part of the BELLS study, families in the intervention group received regular home visits in which visitors engaged participants and their children in literacy-developing behaviors. These visits were conducted in English and Spanish depending on the mother's preference and no records were kept to record which language was used. Engaging in activities aimed at developing literacy in English would seem to be correlated with increases in acculturation. To address this possible limitation, the researcher created a variable to represent which participants were in the intervention and which were in the comparison group. The majority of the participants, 50, in this sample were from the comparison group, while 23 were from the intervention group. This variable was used as a predictor for change in early stages of both acculturation and enculturation models. Being in the intervention group predicted faster increases in acculturation, but was not a significant predictor of enculturation change. Next, it was

added to the best-fit model for acculturation, and was not found to be a significant

predictor for acculturation when controlling for the impact of other, more important

variables. Although being in the intervention group was not among the most important

predictors of acculturation change and less than a third of the sample participated in the

BELLS intervention, caution should be taken in generalizing these findings to other

populations.

<div align="center">Suggestions for Further Research</div>

The suggestions for further research generated from this study are primarily for

basic research. While the initial hope of the researcher was to determine factors that

would lead to bicultural development, the current measurement of acculturation and

enculturation is too limited to adequately understand these complex processes. The

current study successfully measured and modeled change in language-related behaviors

and proficiency and these factors undoubtedly are part of the process of adapting to a new

cultural context. However, there are other important, and perhaps more important,

elements of these adaptations to a new cultural context, such as acquiring and

maintaining culture-specific values and norms (van den Berg & Bleichrodt, 1996) that

were not measured by the current study. For this reason, it is recommended that instead

of using these results to guide interventions to develop bicultural adaptation, that they be

used instead as data explaining a part of the acculturation and enculturation process and

that more complex measures of acculturation and enculturation be developed and used in

a similar research design. Steps toward achieving this broader understanding could

include simultaneously measuring language-based acculturation and enculturation, culture specific values and behaviors, and cultural identity. The results of such a study could then be used to aid in the development of a more comprehensive measure of acculturation and enculturation. A study measuring various aspects of acculturation has been conducted (Rosario, 1986), but to the author's knowledge a comprehensive measure of acculturation and enculturation has not been developed.

Another limitation of the present study was that bicultural adaptation was not modeled specifically. While acculturation and enculturation change were successfully modeled, bicultural adaptation was not. It is recommended that after developing a more comprehensive measure of acculturation and enculturation, that this measure be used to model the development of bicultural adaptation over time.

While research exists that suggests that developing acculturation can have positive and negative results and that maintaining enculturation can serve a protective role it is unclear for which outcomes and for whom. A study similar to the one previously mentioned could be used to determine which outcomes were related to which aspect of acculturation and enculturation and to determine if biculturalism did indeed relate to the best outcomes and for what. In such a study, positive and negative outcomes could be measured along with language proficiency and usage, cultural identity, and culture-specific values and behaviors. Care would be given to sample with recognition of the heterogeneity in the Latino population. Each level of generational status, gender, and country of origin should be stratified in the sample.

Finally, longitudinal studies similar to this one could be conducted with the

various aspects of acculturation and enculturation measured either as separate constructs or combined in a comprehensive measure of acculturation and enculturation.

Conclusions

Based on the findings of this study it can be concluded that acculturation and enculturation in this population change over time. Declines in enculturation were relatively slow increasing the possibility of bicultural development. In addition, the most important variables in predicting acculturation change over time are English language proficiency, years of education, amount of English spoken by mothers to their children, and the amount of English spoken between children and their friends. The most important variables in predicting enculturation change over time were English language proficiency, the amount of English spoken between participants' children, and attractiveness.

There were several limitations with the most important of these being the heavy reliance on language-related behaviors by the BAS. While the present results likely represent accurate measurement and modeling of language related acculturation and enculturation, there is some concern about the generalizability of the results because some of the sample participated in the BELLS intervention group. Future research should focus on attempting to measure acculturation and enculturation more comprehensively and modeling the development of biculturalism specifically.

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APPENDICES

Appendix A

Article Summary Tables

Table A-1

Summary of Findings from Longitudinal Studies of Acculturation and Enculturation

Authors	Research topic	Measure of acculturation	Acculturation measured >1 time	Correlates of acculturation
Barrett & Simpson (1991)	The influence of acculturation on inhalant use	Measure of language preference and other proxy variables	Language preference administered at time 1 and 2 but scores not reported	Adolescent home language was negatively correlated with socioeconomic problems. Spanish in the home related to lower SES ($r = -21, p < .05$). Mother's language preference was also negatively with socioeconomic problems ($r = -.26, p < .05$).
Cote & Bornstein (2003)	Cultural and parenting practices in acculturating South American sample	Adaption of the ARSMA – I	Time 1 and Time 2 Time 1: $M = 2.39$ $SD = .52$ Time 2 (15 mos later): $M = 2.42$ $SD = .55$	No
Del Campo, Blancero, & Boudwin (2008)	Change in Hispanic identity after the attacks of September 11th.		Hispanic identity was found to be statistically significantly lower one year after the attacks	No report of variables related to the change in Hispanic identity
Dihn, Roosa, Tein, & Lopez (2002)	Relationship between acculturation and problem behavior proneness in Hispanic youth	Proxy variables: Immigrant status, language spoken at home, language used to fill out surveys	Only at Time 1	Using path analysis it was found that factors associated with youth acculturation was negatively related with parental involvement ($\beta = -.19, p < .05$), grade level ($\beta = -.24, p < .001$), and problem behavior proneness ($\beta = -.16, p < .05$). Factors associated with youth acculturation was also positively related to self-esteem ($\beta = .16, p < .05$)

(*table continues*)

Authors	Research topic	Measure of acculturation	Acculturation measured >1 time	Correlates of acculturation
Duarte, Bird, Shrout, Wu, Lewis-Fernandez, Shen, & Canino (2008)	The relation between culture and psychiatric symptoms in Puerto Rican children	Cultural Lifestyle Inventory	Acculturation was measured three times for children and three times for adults. There was a period of 1 year between assessments. For children: Time 1: $M = 3.82$, Time 2: $M = 3.91$, Time 3 $M = 3.94$. For adults: Time 1: $M = 2.65$, Time 2: $M = 2.71$, Time 3: $M = 2.71$	No report of correlations between acculturation change and other variables.
Ericksen (2003)	Influences on boys' body satisfaction	Acculturation Rating Scale for Mexican Americans – II. The scale asks questions about language use, preference for media language, and ethnic social relationships.	One time point only	Boys' acculturation was positively correlated with mothers' education ($r = .39$, $p < .05$). Boys' enculturation was positively correlated with fathers' preferred language ($r = .40$, $p < .10$) and with boys' preferred language ($r = .39$, $p < .05$) Acculturation was not correlated statistically significantly with fathers' education, household income
Goldenberg, Gallimore, Reese, & Garnier (2001)	Immigrant Latino parent's aspirations and expectations of their children's school performance	Proxy variable: time in the U.S.	Used at all times	Time one: Time in U.S. negatively correlated ($r = -.29$, $p < .05$) with perceived discrimination and positively correlated with child academic progress ($r = .26$). Time 2 time in U.S. negatively correlated with child academic progress ($r = -.31$). Time 5: time in U.S. positively correlated with parents' expectations for achievement ($r = .31$).

(*table continues*)

Authors	Research topic	Measure of acculturation	Acculturation measured >1 time	Correlates of acculturation
Gonzalez-Soldevilla (2003)	Acculturation, family functioning, and adjustment in Hispanic adolescent girls	Bicultural Involvement Questionnaire	Time 1: Mother acculturation M = 51.49 SD = 18.17 Child acculturation M = 80.15 SD = 15.91 Mother enculturation M = 89.58 SD = 12.78 Child enculturation M = 76.70 SD = 14.88 Time 2 (2 years later) Mother acculturation M = 46.58 SD = 17.37 Child acculturation M = 82.05 SD = 12.26 Mother enculturation M = 96.13 SD = 10.29 Child enculturation M = 78.47 SD = 13.67	No. Analyses focus on differences between mother and child and acculturation combined with another variable
Jimenez (2002)	Academic achievement among low-income Mexican American adolescents	ARSMA – II	Time 1 only	Time 1 Acculturation correlated with first generation (r = -0.30, p < .001), third generation (r = -0.44, p < .001), ethnic identity (r = -.32, p < .001), abstract attitudes (r = -.20, p < .001), concrete attitudes (r = .2, p < .001), and Parental education (r = .41, p < .001)
Kessler & Cordeiro (1996)	Postpartum adjustment in Latina mothers with low birth weight babies	Short Acculturation Scale for Hispanic Adults. The scale includes three factors: language use, ethnic social relations, media.	Time one only	Total acculturation positively correlated (r = .36, p = .005) with social support. Income did not relate to total acculturation, but was negatively correlated with the language factor of the acculturation measure indicating that speaking more Spanish than English was related to lower income (r = -.31, p = .02)

(*table continues*)

Authors	Research topic	Measure of acculturation	Acculturation measured >1 time	Correlates of acculturation
Kissane (2007)	Changes in acculturation, acculturative stress, as well as adaptation experiences and their impact on adjustment outcomes.	3 item self-report of language preference	Time one: $M = 3.77$; $SD = .85$. Time two $M = 3.82$; $SD = .81$. Time four: $M = 3.85$; $SD = .79$. One year between time one and two and two years between times two and four.	No report of variables found to relate to acculturation or enculturation change
Losoya, Knight, Chassin, Little, Vargas-Chanes, Mauricio, & Piquero (2008)	Trajectories of acculturation and enculturation in relation to heavy episodic drinking and marijuana use	ARSMA-II	Reported that the affiliation subscale scores were stable over time. Reported that the language use scores were stable over time with the exception of the combination of low Spanish and high English use. For this language preference Spanish was stable and English declined slightly	No report of variables related to acculturation or enculturation change
Nieri (2007)	School composition and acculturation: how classmates shape Latino student's cultural identity	Three item measure with one item to address each of the following: language spoken with friends, language spoken with family, and language of media use	Time one: $M = 3.468$; $SD = .873$. Time two: $M = 3.426$; $SD = .810$. A period of 6 months passed between times one and two.	No report of variables predicting change in acculturation or enculturation. Predicted acculturation at time two using acculturation at time and other demographic information.
Reyes (2002)	Extended family support as a protective factor among college students	Authors report they used a 15 item scale based on existing literature	Time one only	Acculturation was negatively correlated with generational status ($r = -.28$, $p < .01$)

Appendix B

Measures

"To begin with I would like to ask you some questions about your use of English and Spanish and some general questions about your family."

Administer: CULTURAL-LANGUAGE SURVEY, HOME, AND FIS

BELLS Culture-Language Survey – English

The following questions are to let us know how comfortable you are with the English language as compared to Spanish.

Version 2

Language Use Subscale

	Almost Always	Often	Some-times	Almost Never
1. How often do you speak English?	4	3	2	1
2. How often do you speak English with your friends?	4	3	2	1
3. How often do you think in English?	4	3	2	1
4. How often do you speak Spanish?	4	3	2	1
5. How often do you speak in Spanish with your friends?	4	3	2	1
6. How often do you think in Spanish?	4	3	2	1

Linguistic Proficiency Subscale

	Very Well	Well	Poorly	Very Poorly
7. How well do you speak English?	4	3	2	1
8. How well do you read in English?	4	3	2	1
9. How well do you understand television programs in English?	4	3	2	1
10. How well do you understand radio programs in English?	4	3	2	1
11. How well do you write in English?	4	3	2	1
12. How well do you understand music in English?	4	3	2	1
13. How well do you speak Spanish?	4	3	2	1
14. How well do you read in Spanish?	4	3	2	1
15. How well do you understand television programs in Spanish?	4	3	2	1
16. How well do you understand radio programs in Spanish?	4	3	2	1
17. How well do you write in Spanish?	4	3	2	1
18. How well do you understand music in Spanish?	4	3	2	1

Electronic Media Subscale

	Almost Always	Often	Some-times	Almost Never
19. How often do you watch television programs in English?	4	3	2	1
20. How often do you listen to radio programs in English?	4	3	2	1
21. How often do you listen to music in English?	4	3	2	1
22. How often do you watch television programs in Spanish?	4	3	2	1

| 23. How often do you listen to radio programs in Spanish? | 4 | 3 | 2 | 1 |
| 24. How often do you listen to music in Spanish? | 4 | 3 | 2 | 1 |

The next set of questions are also about how much you prefer English as compared to Spanish, HOWEVER, now the questions will just be focused on *(target child's name)*. Then I will ask you some questions about your family's use of books.

25. What language do you usually speak to *(target child's name)*?

   1. Only Spanish
   2. More Spanish than English
   3. Both Equally
   4. More English than Spanish
   5. Only English

26. What language does the father usually speak to *(target child's name)*?

   1. Only Spanish
   2. More Spanish than English
   3. Both Equally
   4. More English than Spanish
   5. Only English

27. What language does *(target child's name)* speak to you?

   1. Only Spanish
   2. More Spanish than English
   3. Both Equally
   4. More English than Spanish
   5. Only English
   6. Child doesn't speak yet. (N/A)

28. What language does *(target child's name)* speak to friends and other same-age-peers?

   1. Only Spanish
   2. More Spanish than English
   3. Both Equally
   4. More English than Spanish
   5. Only English
   6. Child doesn't speak yet. (N/A)

29. What language does *(target child's name)* speak to his/her siblings?

    1. Only Spanish
    2. More Spanish than English
    3. Both Equally
    4. More English than Spanish
    5. Only English
    6. Child doesn't speak yet. (N/A)

30. What language does *(target child's name)* speak to his/her father?

    1. Only Spanish
    2. More Spanish than English
    3. Both Equally
    4. More English than Spanish
    5. Only English
    6. Child doesn't speak yet. (N/A)

31. Approximately how many picture books do you have in your home for *(target child's name)* use?

    1. 0-2
    2. 3-10
    3. 11-20
    4. 21-40
    5. more than 40

32. How often does *(target child's name)* ask to be read to?

    1. hardly ever
    2. once or twice a month
    3. once or twice a week
    4. almost daily

33. How often does *(target child's name)* look at books by himself /herself?

    1. hardly ever
    2. once or twice a month
    3. once or twice a week
    4. almost daily

34. How often do you go to the library with *(target child's name)*?

    1. hardly ever
    2. once or twice a month
    3. once or twice a week
    4. almost daily

35. How often does you or another family member read a picture book with *(target child's name)*?

    1. hardly ever
    2. once or twice a month
    3. once or twice a week
    4. almost daily

36. At what age did you or another family member begin to read to *(target child's name)*?

    1. 0-6 months
    2. 6-12 months
    3. 12 months to 1½ years
    4. 1½ years to 2 years
    5. later than 2nd birthday

37. How many minutes did you or another family member read to *(target child's name)* yesterday?

    1. 0 minutes
    2. 1-10 minutes
    3. 11-20 minutes
    4. more than 20 minutes

38. How many minutes per day do you spend reading, not counting time-spent reading with *(target child's name)* ?

    1. hardly ever
    2. 2-15 minutes
    3. 16-30 minutes
    4. 31-60 minutes
    5. more than an hour

39. How much do you enjoy reading to   _____*(target child's name)*_____?

      1. not at all
      2. some
      3. moderately
      4. very much

40. How much schooling do you expect *(target child's name)* will receive?

      1. some high school
      2. high school graduate
      3. some technical school
      4. technical school certificate
      5. some college
      6. college graduate
      7. graduate school
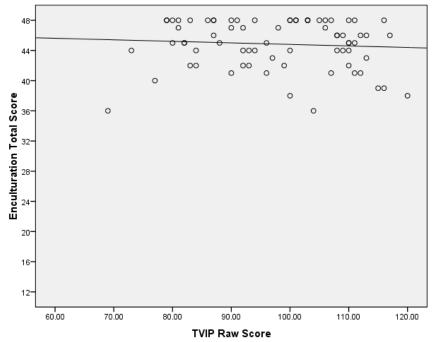
Appendix C

Scatterplots

Figure C-1. Scatterplot representing the correlation between enculturation total score and Spanish receptive vocabulary raw score.
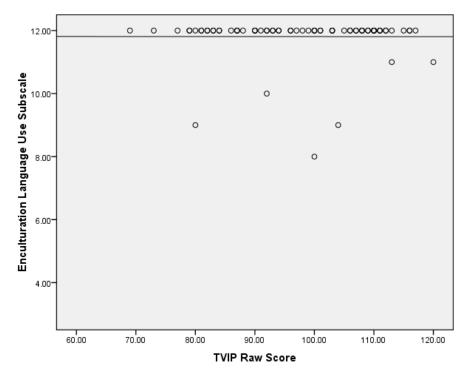

Figure C-2. Scatterplot representing the correlation between enculturation language use subscale score and Spanish receptive vocabulary raw score.
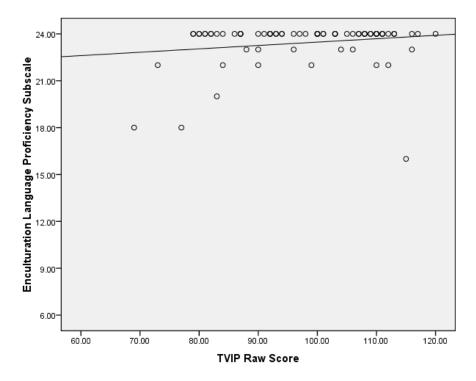
Figure C-3. Scatterplot representing the correlation between enculturation language proficiency subscale score and Spanish receptive vocabulary raw score.
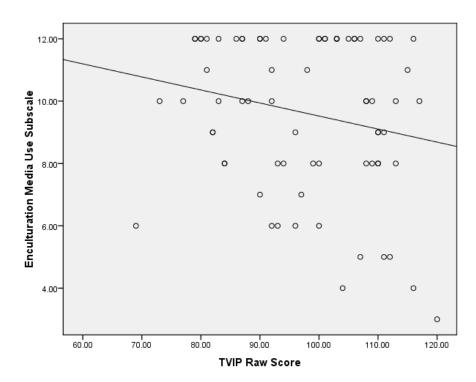

Figure C-4. Scatterplot representing the correlation between enculturation media use subscale score and Spanish receptive vocabulary raw score.

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Education

PhD 2009	**Utah State University, Logan, UT**

PhD
2009

Utah State University, Logan, UT
Combined Clinical, Counseling, and School Psychology Program (APA Accredited)
Dissertation: *A Longitudinal Exploration of Factors that Influence Acculturation and Enculturation Patterns of First Generation Mexican Immigrant Women,* Chair: Melanie Domenech Rodríguez, PhD
Date Defended: 7/2/2009   Result: Passed

2007-2008

University of Utah Neuropsychiatric Institute,
University of Utah Medical Center,
Salt Lake City, UT
Pre-doctoral Internship (APA Accredited)
Conducted psychological testing, individual, group, marital, and family therapy with adult, adolescent, and child inpatient, day treatment, and outpatient populations.
Supervisors: Jim Kahn, PhD, Christine Burns, PhD, Suzanne Tyndall, PhD

MS
2005

Utah State University, Logan, UT
Counseling Psychology
Thesis: *Acculturation versus cultural identification: A study comparing constructs and measurements*, Chairs: Melanie Domenech Rodríguez, PhD and Mark Innocenti, PhD

BS
1997

Brigham Young University, Provo, UT
Psychology; Spanish Minor

1996

Brigham Young University, Study Abroad, Madrid, Spain

Clinical Experience

2009-Present   **Psychology Resident**
Bear River Mental Health, Brigham City, UT
Providing individual and family therapy in English and Spanish with child, adolescent, adult, and geriatric populations. Conducting psychological evaluations as needed.
Supervisor: Scott Blikenstaff, PhD

2008-Present   **Psychology Intern**
Center for Human Potential, Salt Lake City, UT
Conducting psychological and neuropsychological evaluations in English and Spanish with adult and geriatric populations. Providing individual and family therapy in English and Spanish with child, adolescent, adult, and geriatric populations.
Supervisors: Anthony Morrison, PhD, C. Brendan Hallett, PsyD

2007   **Psychology Intern**
Aspen Institute for Behavioral Assessment, Syracuse, UT
Conducted psychological testing with adolescent inpatient clients. Conducted clinical interviews, administered a variety of intellectual and achievement measures, personality measures, ADHD measures, mood and substance abuse screeners. Scored and interpreted tests, and participated in report writing.
Supervisor: Parth Gandhi, PhD

2006-2007   **Student Therapist**
Utah State University Counseling Center, Logan, UT
Conducted intake interviews, provided individual and group therapy with adults, provided crisis intervention and consult services, supervised a peer counselor, and participated in outreach programs.
133 hours of individual client contact, 23 hours of group contact, 15 hours of supervision provided, 270 support hours, 441 total hours
Supervisor: David Bush, PhD; Mary Doty, PhD

2005 &   **Student Therapist, Practicum in Psychological Evaluation**
2006   *Center for Persons with Disabilities, Utah State University, Logan, UT*
Administered, scored, and interpreted psychological tests of children and adults.
33 hours of direct client contact, 118 support hours, 151 total hours
Supervisors: Pat Truhn, PhD; Robert Cook, PhD

2005-2006 **Student Therapist**
Bear River Mental Health, Brigham City, UT
Conducted intake interviews, individual therapy with adults, adolescents, and children, evaluation of eligibility for government assistance, and provided crisis intervention.
194 hours of direct client contact, 489 support hours, 683 total hours
Supervisor: Jim Edelman, PhD

2004-2005 **Student Therapist, Practicum in Counseling Psychology**
Utah State University Counseling Center, Logan, UT
Conducted intakes, assessments, individual therapy, marital therapy and participated in and co-facilitated group therapy. Provided services in Spanish and English.
102 hours of direct client contact, 128 support hours, 230 total hours
Supervisor: Mary Doty, PhD

2003-2005 **Mental Health Specialist**
Bear River Head Start, Logan, UT
Conducted intakes, marital, and individual therapy with children and adults. Provided services in Spanish and English.
249 hours of direct client contact, 212 support hours, 461 total hours
Supervisor: David Stein, PhD

2001-2006 **Student Therapist, Additional Clinical Experience**
Utah State University Community Clinic, Logan, UT
Conducted intakes, marital, and individual therapy with children and adults. Provided services in Spanish and English.
170 hours of direct client contact, 191 support hours, 361 total hours
Supervisor: Susan Crowley, PhD

2003-2004 **Student Therapist, Practicum in Clinical Psychology**
Utah State University Community Clinic, Logan, UT
Conducted intakes, evaluations, marital, and individual therapy with adults. Provided services in Spanish and English.
90 hours of direct client contact, 105 support hours, 195 total hours
Supervisor: Kevin Masters, PhD

2002-2003 **Student Therapist, Practicum in Child Psychology**
Utah State University Community Clinic, Logan, UT
Conducted intakes, evaluations, parental psycho-education, co-therapy, and individual therapy with children and early adolescents. Provided services in Spanish and English.
42 hours of direct client contact, 125 support hours, 167 total hours
Supervisor: Gretchen Gimpel, PhD

2002   **Student Therapist, Introductory Practicum**
Utah State University Community Clinic, Logan, UT
Conducted intakes, evaluations, individual, and marital therapy.
11 hours of direct client contact, 85 support hours, 96 total hours
Supervisor: Susan Crowley, PhD

Research Experience

2004   **Research Assistant**
Ski-Hi Institute, Utah State University, Logan, UT
Helped create measures, took notes during interviews, transcribed
interviews, and entered data.
Supervisor: Elizabeth Dennison, PhD

2001- 2003   **Research Assistant**
Early Intervention Research Institute, Utah State University, Logan, UT
Assisted with creating data bases, entered data, conducted phone
interviews of participants, translated and adapted research materials,
participated in data cleaning, and conducted interviews in Spanish and
English.
Supervisor: Mark Innocenti, PhD

2000-2001   **Research Assistant**
New Leaf Treatment Center, Concord, CA
Tracked participants and conducted interviews weekly, at 3 months, 6
months, and at 1 year.
Supervisor: Michelle Salinardi, MS

1997   **Research Assistant**
*Behavioral Analysis Laboratory, Psychology Department, Brigham Young
University, Provo, UT*
Helped to set up and run a laboratory for human participants.
Supervisor: Micheal Ehlert, PhD

Presentations

Ahern, D.A., Domenech Rodríguez, M., & Innocenti, M.S. (2004, November).
*Acculturation versus cultural identification: A study comparing constructs and
measurements.* Paper presented at the biannual meeting of the National Latina/o
Psychological Association, Scottsdale, AZ.

Ortiz, E., & Ahern, D.A. (2003, March). *Hispanic parents: An approach to
understanding.* Presentation at the annual conference of Educators for Diversity,
Logan, UT.

Innocenti, M.S., Price, C., & Ahern, D.A. (2002, November). *The future is now: The school career of students who once were in early intervention/preschool special education.* Presented at the annual Utah Statewide Preschool Conference, Provo, UT.

Publications

Ahern, D.A., Innocenti, M.S., Domenech Rodríguez, M., & Roggman, L. (2006). *A case for orthogonal measurement in acculturation research.* Manuscript in preparation.

Domenech Rodriguez, M. & Ahern, D.A. (2006). *Acculturation in Latino children.* Book chapter in press.

Professional Affiliation

2004 – Pres.   National Latino Psychological Association

Specialty Training

2005   **Our Lady of the Lake University**
                San Antonio, TX
                Summer Institute: Latino Cultural Competence for Mental Health Providers
                Training centered on increasing professional Spanish language proficiency and knowledge of cultural factors that often impact therapy.