BIDIMENSIONAL ACCULTURATION MEASUREMENT AND SEXUAL RISK-TAKING OF LATINO COLLEGE STUDENTS

BY

STEVE TRAN

THESIS

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Advisors:
Professor Marcela Raffaelli, Chair
Professor Reed Larson, Second Reader
Abstract

This study examined different methods for measuring acculturation as a multidimensional process and tested for associations between acculturation and sexual risk-taking. Respondents were students from colleges and universities in the Midwest ($N = 153$, $M age = 21.25$, 58% female) who completed self-report measures of acculturation and sexual risk-taking behavior. The ARSMA-II, a bidimensional acculturation scale, was used to assess two dimensions of acculturation: Anglo orientation and Latino orientation. The ARSMA-II allows for multiple methods of operationalizing acculturation, and in this study two different methods were used to calculate and operationalize acculturation. The first method (cut scores) uses arithmetic means for Latino and Anglo orientation, and subtracts the Latino Orientation mean from the Anglo mean to create a difference score that is placed on an acculturation continuum. The second method (top- and bottom-third splits) places participants within a $2 \times 2$ matrix of acculturation categories by identifying participants who are high and low on each subscale. An association between acculturation and levels of sexual risk-taking was found using one of the methods. There were differences in sexual risk-taking between acculturation categories using the split scores method. Individuals categorized as “Integrated” (i.e., had both high Latino and Anglo orientations) engaged in less sexual risk-taking. However, no differences were found on sexual risk-taking between acculturation levels using the cut scores method. These findings underscore the strengths, weaknesses, and impact of using different methods to calculate and operationalize acculturation, as well as the links between acculturation and sexual risk-taking.
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Chapter One: Introduction

The United States has experienced unprecedented levels of immigration in recent decades, and demographic trends indicate that many immigrant and ethnic minority groups are growing at especially rapid rates. In particular, Latinos are one of the fastest growing groups in the United States, with a growth of over 15 million individuals between 2000 and 2010, and now make up around 16% of the total population (U.S. Census Bureau [U.S. Census], 2011). Despite this major demographic shift, there is still little research on the Latino population in the U.S., especially on Latino college students. For instance, prior research has shown that college students often engage in risky sexual behaviors, but fewer studies have attempted to examine the health behaviors of Latino college students. This is of concern since past research has shown that Latinos have poorer outcomes than non-Latinos on certain sexual health issues and outcomes such as HIV infections (Center for Disease Control and Prevention [CDC], 2011).

One salient area of research for determining associations and correlates of health outcomes for immigrant populations is acculturation. Acculturation is defined as the process of exchange of cultural features when individuals from relatively different cultures interact (Berry, 1997). Many studies have examined how immigrants learn about or adopt the cultural norms of a new host culture (Phinney, 2003), and researchers have begun to examine how acculturation is associated with a variety of health issues, including sexual risk-taking (Raffaelli, Zamboanga, & Carlo, 2005; Schwartz et al., 2011). Previous studies and models have typically conceptualized acculturation as a unidimensional process. In these unidimensional models, host- and heritage-orientations are not treated as independent dimensions. Individuals are portrayed as moving along a single spectrum with heritage and host-cultures as opposite ends, and individuals typically end up giving up their heritage culture and taking on values and behaviors of their new homeland (Gans, 1979). However, there is accumulating evidence of the utility of examining acculturation as a bidimensional process, where individuals move along a spectrum for the two independent dimensions (Berry, 1997). There is a growing body of literature that recognizes acculturation as a multidimensional process. However, most studies that examine health outcomes have still assessed acculturation as a unidimensional construct. Moreover, there does not appear to be a consensus on measurement methods from the smaller number of studies that have utilized bidimensional scales (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). Therefore, the purpose of this study was to test two methods of measuring bidimensional
acculturation and to examine the relations between acculturation and sexual risk-taking. In order to do this, the first step is to understand how acculturation has been defined, the evolution of acculturation theory and measurement, and the patterns of relationships identified by researchers on acculturation and its associations with health.
Chapter Two: Literature Review

Acculturation and Health

Acculturation is typically defined as the exchange process of cultural features when individuals from different cultures interact (Berry, 1997). For example, immigrants may learn, use, and adopt the language, forms of dress, values, and beliefs of the new host-culture. Acculturation does not necessarily just apply to first-generation immigrants, however, since it still can be a socialization process for individuals who are second-generation and beyond. These individuals have been raised in households with immigrant parents, and their households may be a context where heritage culture is observed and practiced (Portes & Rumbaut, 2001).

Researchers interested in immigrants and their experiences have continued to use acculturation to understand how immigrants learn about or adopt the cultural norms of new host culture (Phinney, 2003), and theories have also been proposed by scholars (Berry, 2001) on how different acculturation strategies may be associated with positive, as well as deleterious, behaviors and outcomes.

Studies have shown associations between acculturation and a variety of health behaviors, with somewhat different patterns emerging by gender. In general, studies demonstrate that higher acculturation is associated with increased alcohol use for both men and women. An early study, however, found that this association appeared to be more pronounced among women than men. For example, an early study on acculturation and alcohol with analyses of the Hispanic Health and Nutrition Examination Survey (HHANES), a national study of Mexican Americans, Puerto Ricans and Cubans, found that acculturation was related to greater alcohol use, especially among women (Marks, Garcia, & Solis, 1990). A recent literature review confirmed a strong positive relationship between acculturation and alcohol use for women, but for males the association is weaker and sometimes in the opposite direction (Zemore, 2007). Similar patterns have been documented in studies on smoking behavior. For example, researchers have found that women’s increased likelihood of smoking was associated with higher levels acculturation, but the same effect was not found for men (Abraido-Lanza, Chao, & Flórez, 2005; Haynes, Harvey, Montes, Nickens, & Cohen, 1990). In another study, less acculturated Latino men had higher rates of smoking than the highly acculturated (Perez-Stable et al., 2001). These findings demonstrate that associations between acculturation and health behaviors and outcomes do not necessarily operate in the same direction (i.e., high acculturation related to poorer health), especially when gender is
considered. Therefore, studies must test for potential differences between the outcomes for men and women.

Moreover, most studies on acculturation and health outcomes have used unidimensional models to conceptualize acculturation. The use of unidimensional models rather than bidimensional models can be seen in the literature on acculturation and sexual health, despite criticisms by scholars that the former models are problematic when trying to understand the complex and multidimensional process of acculturation (e.g., Raffaelli, Zamboanga, & Carlo, 2005). Despite the recognition of the weaknesses of unidimensional models, few studies have utilized bidimensional models, which may be a result of a lack of common measurement standards. Therefore, it is necessary to test new methods of measuring acculturation that address these weaknesses. By doing so, researchers may better understand the association between acculturation and health, and the area of sexual health is a prime area for this research to be conducted.

**Acculturation and Sexual Risk**

Recent data indicate that Latinos are at risk for negative sexual health outcomes and disproportionately account for new sexual transmitted infections cases (STIs) such as chlamydia and HIV compared to European Americans (CDC, 2007). A national school-based survey of 9th – 12th grade students indicates that a higher percentage of Latino students reported having sexual intercourse than European American students (CDC, 2006). In addition, other studies have found that Latinas were less likely to use condoms during intercourse than their European American counterparts (Raine, Minnis, & Padian, 2003). These behaviors put this population at an increased risk for negative health outcomes such as STIs and may affect other aspects of their lives because of unplanned pregnancy. Other behaviors that may be considered risky include having concurrent or multiple sexual partners, as this increases the opportunity for exposure to STIs (CDC, 2000). The physical health risks of contracting STIs are obvious, but studies have also shown that a positive STI diagnosis is associated with an increase in psychological problems such as depression and suicidal thoughts or attempts (Houck, Hadley, Lescano, Pugatch, & Brown, 2008).

With respect to acculturation and sexual behavior, some studies have found that less-acculturated Latinas were more likely to be involved in sexual risky behaviors (e.g., less overall condom use) and have less positive beliefs regarding condom use (Afable-Munsuz & Brindis,
2006; Ford & Norris, 1993). In contrast, other studies have shown that Latinas who were born in the U.S. (and therefore likely to be more acculturated) engaged in sexual activity at earlier ages than Latinas not born in the U.S. (Jimenez, Potts, & Jimenez, 2002). Additional studies have reported similar findings, with U.S.-born Mexican Americans more likely to engage in sexual intercourse and at earlier ages than Mexican-Americans born in Mexico (Adam, McGuire, Walsh, Basta, & LeCroy, 2005). Another study sampling young pregnant Latinas in California found that participants who were moderate-to-highly acculturated were more likely to have multiple sexual partners than those with low levels of acculturation (Kasirye et al., 2005). These findings indicate that acculturation may be positively related to increased sexual risk-taking behaviors, but findings from other studies have been contradictory, especially when accounting for gender.

To understand how acculturation can influence sexual health and behaviors, researchers have examined some of the underlying cultural values and beliefs that may be affected by the process. A report by the CDC (2011) states that acculturation is linked with both healthy (e.g., communicating with partners about safe sex practices) and unhealthy (e.g., practices associated with increased risk of HIV infection) behaviors. Issues such as gender inequality and differences in power and decision-making ability within relationships may lead to poorer health outcomes for females if they are unable to exercise control over sexual behavior, and this may be more prevalent for less acculturated immigrants who maintain traditional values and beliefs that favor male authority. In addition, other aspects of traditional Latino culture may impose norms that increase the sexual risk taking of males. For example, machismo (masculinity) is highly embedded in Latino culture, and it has been associated with behaviors like having multiple partners, low condom use, and pressure for young men to have sex to prove their manhood (Villarruel, Jemmott, & Jemmott, 2005; Villarruel & Rodriguez, 2003). If this holds true, then acculturation to European American culture could reduce these particular behaviors and levels of sexual risk, which contradicts the general findings that acculturation is associated with unhealthy behaviors. For females, cultural beliefs and stereotypes about Latinas include the desire for them to be faithful and practice fidelity, which results in a low number of sexual partners. However, the disposition of females to defer to males may challenge their ability to negotiate safe sex practices with their partners (Moreno, 2007).

These findings indicate that associations for acculturation and sexual risk-taking may depend on gender and on what indicators are used to assess risk. As evident by the research
reviewed, studies examining Latino acculturation, cultural factors, and sexual health show complicated patterns that can be contradictory. Therefore, it is necessary to continue research in this area with new ways of conceptualizing and operationalizing acculturation. Recent work suggests bidimensional models and methods of measurement better tap into the construct of acculturation. There is a need to also examine the multiple dimensions of sexual risk-taking.

**Latino College Students**

The growth in the Latino population has resulted in an increased presence of Latinos entering the context of U.S. higher education. The enrollment of college students of Latino heritage has accelerated in recent years, and they represent a higher proportion of college students than ever before. Between 2009 and 2010, Latinos made up 1.8 million (15%) of the overall 12.2 million 18 - 24-year-olds enrolled in colleges in the United States (Pew Hispanic Research Center, 2011). It is alarming, however, that despite the recognition that college students often engage in higher levels of risk-taking behavior than the general populace (Dawson, Grant, Stinson, & Chou, 2005), and that Latinos are the fastest growing population on U.S. college campuses, they remain an understudied group.

Since researchers have discovered that college students are often one of the highest population subgroups to engage in risk behaviors, sexual risk-taking has emerged as an important and large area of study. The college context is one where opportunities for sexual risk-taking behaviors are fairly common (Grello, Welsh, & Harper, 2006). Sexual risk-taking behaviors include not using condoms to prevent the spread of sexually transmitted infections (STIs), not using contraceptives (e.g., condoms or birth control pills) to avoid unplanned pregnancy, and having a higher numbers of sexual partners, all of which can be linked to poorer health outcomes. However, it is important to recognize that much of the research on sexual risk-taking has used primarily European-American samples. The relative lack of research on Latinos is problematic since studies have indicated that some Latino college students may be at higher risk than non-Latino college students. For example, in a study with an ethnically diverse college student sample, condom use self-efficacy was lower for Latinos than both Whites and Asians (Farmer & Meston, 2006). Therefore, there is a need to understand sexual risk-taking in the Latino college population, and examining acculturation may offer insight into how cultural orientations are associated with risk behaviors. In addition, we must concurrently utilize new measurement methods that reflect the current reconceptualization of acculturation as a bidimensional process.
Measuring Acculturation

As noted earlier, in recent years researchers have developed new ways of conceptualizing acculturation due to the theoretical criticisms of the unidimensional model. For example, Berry (1997) developed a bidimensional model of acculturation that does not assume a straight-lined acculturation process of adoption of the new host culture. Berry’s model considers both maintenance of heritage culture and adoption of the host culture as separate, independent dimensions. This bidimensional model creates four distinct acculturation categories: 1) assimilation, where heritage culture is discarded and the host culture is adopted; 2) separation, with the heritage culture maintained and host culture rejected; 3) integration (biculturalism), when heritage culture is maintained while also adopting the host culture; 4) and lastly, marginalization, in which both heritage and host cultures are rejected. Recent studies have demonstrated that bicultural acculturation (integration) is associated with healthier psychological and physical outcomes for immigrant populations (Coatsworth, Maldonado-Molina, Pantin, & Szapocnik, 2005; Wang, Quan, Kanaya, & Fernandez, 2011). While previous studies have used unidimensional models of acculturation that typically indicated a positive relation between acculturation and poorer health behaviors and outcomes, the bidimensional model may demonstrate whether or not maintaining a heritage culture while also adopting a host culture may be deleterious or protective for youth from ethnic minority and immigrant backgrounds.

Scholars interested in immigrant populations and adaptation have developed various methods of assessing and identifying acculturation as a bidimensional process of maintenance of heritage culture and adoption of the host culture (Berry & Sam, 1997). According to Cabassa (2003), one particular measure that has demonstrated promise for measuring acculturation for certain groups is the Acculturation Rating Scale for Mexican Americans (ARSMA), originally developed by Cuéllar, Harris, and Jasso (1980) and later revised by Cuéllar, Arnold, and Maldonado (1995). By measuring both the maintenance of heritage culture and adherence to the dominant, host culture, the ARMSA allows for the classification of respondents into various acculturation categories.

In the revised ARSMA-II scale (Cuéllar et al., 1995), there are two subscales that independently measure an Anglo and Mexican Orientation (abbreviated AOS and MOS, respectively). Scores are summed and then divided by the total number of questions for each respective scale to create two overall mean scores. In the original scoring scheme, the MOS
mean score is subtracted from the AOS mean score to generate a single acculturation score. From this acculturation score, cutoffs are defined that create 5 different levels of acculturation (from Level 1 = *Very Mexican oriented*, Level 2 = *Mexican oriented to approximately bicultural*, Level 3 = *Slightly Anglo oriented bicultural*, Level 4 = *Strongly Anglo oriented*, to Level 5 = *Very assimilated; Anglicized*). Other studies have used the Anglo and heritage subscales to access acculturation bidimensionally by conducting median splits on each scale and placing individuals into the various categories in Berry’s model (i.e., assimilation, separation, integration, and marginalization) (Giang & Wittig, 2006).

These two methods allow for the classification of individuals as integrated/bicultural, which is not available through unidimensional models that do not measure heritage and host orientations independently. The ability to identify bicultural or integrated individuals may be important since studies have found that in certain immigrant populations that biculturalism may lead to the most favorable outcomes. This is because integrated (often synonymously referred to as "bicultural") individuals may pick the most beneficial aspects of their two cultures to adopt (López & Contreras, 2005; Sullivan, Schwartz, Prado, Shi, Pantin, & Szapocznik, 2007). Bidimensional models of acculturation are increasingly used in other areas of research (Giang & Wittig, 2006), but additional work needs to be done on issues such as sexual risk-taking. Therefore, this study will explore the use of the both the cutoff score and split score method in relation to sexual risk-taking behavior.

**Sexual Risk**

Sexual risk is multidimensional and can cover a wide variety of behaviors and experiences. Studies that have included single behaviors (e.g., condom use) as outcomes variables may not be capturing the complex nature of sexual activity and risk. As shown in this review, acculturation can show a particular directional relationship with some measures of risk and then an inverse relationship with different risks. Therefore, a composite that indexes together well-documented risk factors can correct for this limitation.

**Having sex.** Although use of condoms and other safe-sex practices can be used to reduce risks, the CDC (2012) states that only abstinence is 100% effective in preventing deleterious health outcomes such as contraction of sexual transmitted infections (STIs). However, sexual intercourse statistically is a relatively normative activity for college-aged individuals. A report from the University of Minnesota (2007) finds that over 77% of 10,000 college students
surveyed had been sexually active in their lifetime. The CDC (2009), using data from the National Vital Statistics System, found that 76.1% of Hispanic females between the ages of 20 - 24 reported ever having sexual intercourse, compared to 82.3% of White females. In contrast, Hispanic males (94.9%) were more likely to report having had sexual intercourse than their White male peers (85.8%).

**Forced sex.** A national college-based survey found that 13.1% of college students reported at least one experience of forced sexual intercourse in their lifetime (CDC, 1997). More female (20.4%) than male (3.9%) students reported they had ever been forced to have sexual intercourse. In addition, 2.6% of college students’ first forced sexual intercourse occurred before the age of 13, and this was significantly more common for Hispanic students (4.9%) compared to their White peers (1.9%). A recent report by the CDC (2009) on youth risk behaviors of 9 – 12th grade students reported that 11.2% of Hispanic females and 5.9% of Hispanic males had experienced forced sex. These findings are troubling as researchers have found that individuals who experience coerced sex are significantly more likely to report a wide range of health-risk behaviors and outcomes (Brener, McMahon, Warren, & Douglas, 1999; Maman, Campbell, Sweat, & Gielen, 2000). In particular, individuals whose first sexual intercourse experiences were forced have been demonstrated to engage in a myriad of risk behaviors such as increased number of sexual partners, inconsistent condom use, and negative outcomes such as increased rate of STIs (Kalichman, Williams, Cherry, Belcher, & Nachimson, 1998).

A study with a nationally representative sample of heterosexually active American women found that women whose first sexual intercourse experience was forced were at the highest risk of having multiple sexual partners, with women who had had coerced sexual intercourse experiences after their sexual debut being the second highest group for multiple sex partners (Stockman, Campbell, & Celentano, 2010). Moreover, women who had experienced coerced sexual intercourse at their first experience or after their sexual debut were at increased risk for unprotected vaginal intercourse. Although generally less is known about men who had been forced to have sex, they make up about 9% of overall sexual rape and sexual assault cases in the United States (Weiss, 2010). Using data from the National Survey of Family Growth, Smith and Ford (2010) examined men’s rates of forced sexual experiences. From an analytic sample of 1,400 males between the ages of 18 to 24, 6% of men reported having been forced by a female perpetrator to have vaginal sex, and 1% had been forced to engage in oral or anal sex by
men. Similar to findings with female samples, men who reported experienced forced sex were more likely to have engaged in these sexually risky behaviors than men who had no history of sexual victimization.

**Early sex.** The relation between age of first heterosexual vaginal intercourse and factors such as sexual risk behaviors and outcomes has remained an area of interest for scholars, especially due to the negative aspects usually associated with early sexual experiences. For example, analysis of data from the National Longitudinal Study of Adolescent Health, which contained a nationally representative sample of respondents, found age of first sexual intercourse was negatively correlated with the probability of having an STI (Kaestle, Halpern, Miller, & Ford, 2005). Zimmer-Gembeck and Helfand (2008) conducted a review of 35 longitudinal studies on the onset of heterosexual intercourse for U.S. adolescents. They categorized “Early” intercourse as before age 15, “Middle” as sexual intercourse up to age 18 (i.e., 15 - 18), and “Late” as experiencing sexual intercourse until after age 18. Other scholars have used this categorization for “early” sexual debut, and they have also found that early age of first sex is associated with sexual risk-taking such as having multiple sex partners and unprotected sex (Cavazos-Rehg et al., 2010; Santelli, Brener, Lowry, Bhatt, & Zabin, 1998).

Caputo (2009) examined the rates of adolescent sexual debut using data from the 1997 cohort from the nationally representative National Longitudinal Survey of Youth (NSYL97) and found that among youth who were sexually active, 30.1% of White youth and 41.3% of Hispanic youth had their first sexual intercourse by age 14. Moreover, of the youth who reported their first intercourse was before the age of 14, Hispanic youth (12.8 years) reported earlier ages of first intercourse than Whites (13.1 years), and Hispanic males were about twice as likely to have had sex before the age of 14 compared to Hispanic females.

**Condom use.** The United States National Institutes of Health (NIH) reviewed the scientific evidence of the use of condoms in preventing STIs in 2000, and they concluded that condoms were effective against transmission of STIs such as gonorrhea and transmission of HIV (Holmes, Levine, & Weaver, 2004). Despite the documented protective benefits of condom usage, many college students do not consistently use condoms (Kiene & Barta, 2006). Recent national data on college students are not available; the CDC (1995) found that only 29.6% of college students nationwide used a condom during last sexual intercourse, and Hispanic students reported similar rates (29.8%) of condom use as the national average. A recent study of 694
Latino youth aged 16 - 22 found that participants used condoms about 50% of the time within the last month; 37% of youth reported always using a condom, 26% sometimes (more than 0% and less than 100%), and 37% reported never using condoms (Tschann, Flores, de Groat, Deardorff, & Wibbelsman, 2010). Moreover, males reported significantly more frequent condom usage in the previous month than females. These findings indicate that there is a wide range in frequency of condom usage between Latino youth, also signifying various degrees of possible risk and exposure to negative outcomes such as STIs.

**Number of sexual partners.** Research on sexual risk has indicated that having multiple partners and/or surpassing certain numbers of partners is related to sexual risk-taking. For example, it was found that one-third of college students had more than one sexual partner within a period of 11 weeks, three-quarters reported inconsistent or no condom use, and they found that having multiple sexual partners was negatively related with disclosure about previous partners and about failure to use condoms (Desiderato & Crawford, 1995). Risk may also be compounded if the various partners are engaging in sexual activity concurrently, as studies have demonstrated that adolescents and young adults who report having a high number of sexual partners report sometimes having multiple partners in the same period rather than just serial relationships (Valois, Oeltmann, Waller, & Hussey, 1999). A study of U.S. adolescents and young adults found that Hispanic males were more likely to report 6 or more lifetime sexual partners than Whites males, but Hispanic females were less likely than White females to have had 6 or more partners (Santelli, Brener, Lowry, Bhatt, & Zabin, 1998). Institutions such as the CDC (2006) measure risk behavior engaged by respondents in the past year, and they consider the risk threshold to be 5 or more overall lifetime sexual partners. The CDC’s HIV/AIDS Reporting System defines sexual HIV risk behavior as acts that increase the risk of acquiring or transmitting HIV such as having oral, anal, exchanging money or drugs for sex, receiving an STI diagnosis, and having multiple sexual partners (CDC, 2012). Studies that have examined immigrant and minority populations have found that low acculturation is associated with reduced number of sexual partners, which reduces the opportunities for transmission of STI from various partners; however, later generations of minority individuals who are U.S.-born have been found to engage in the opposite behavior, enhancing risk of STI transmission and higher number of sexual partners (Deardorff, Tschann, Flores, & Ozer, 2010).
**Research Goals**

This study has two primary goals. The first concerns methods for measuring acculturation. Past studies have overwhelmingly utilized unidimensional models of acculturation, and there are still relatively few studies that measure acculturation bidimensionally. In addition, the methods for measuring acculturation bidimensionally vary from study to study, which may affect the observed associations between acculturation and sexual risk-taking. Therefore, this study will examine two methods of operationalizing bidimensional acculturation in a single data set and sample. It should be noted that the goal is not to conduct a direct comparison between the two methods; instead, the goal is to examine how each method uses the data to measure acculturation and identifies acculturation levels and categories. Doing so can elucidate the strengths and issues associated with the various methods, which can help scholars better select and implement acculturation measurement techniques in future studies that better align and integrate with theory.

The second goal is to examine the associations between acculturation and sexual risk-taking behavior in a sample of Latino college students. The review of the literature indicated that acculturation has been useful in understanding and predicting health behaviors and outcomes for Latino populations, but findings have been at times contradictory and/or unclear, and much is still unknown about Latinos enrolled in college. These inconsistent findings may be a result of the flaws of using a unidimensional model to measure acculturation since critics have pinpointed issues in its construct validity. Therefore, this research would contribute to the literature on acculturation and sexual health by using a dimensional model of acculturation. In addition, understanding how acculturation levels and strategies/categories are associated with sexual risk-taking can aid in development of risk prevention techniques or interventions. For example, there may be differences in positive health and behavior and attitudes that are associated with different levels or forms of acculturation. Researchers and practitioners can be more effective in creating culturally relevant and appropriate methods with a stronger knowledge of how acculturation influences risk and health.
Chapter Three: Method

Participants and Procedures

Participants were from a larger study of 18 to 45-year-olds (N = 242) Latino students from four Midwestern colleges/universities (two state universities, one community college, and one private university). With the cooperation of each school’s registration offices, survey packets and reminder postcards were sent to all currently enrolled students who self-identified as Latino/Hispanic in the registration records. The analytic sample for the current study was limited to 18 to 25 year-old Latino college students during the normative ages of college enrollment to generalize findings. The sample was limited to non-married individuals as married individuals may engage in different sexual behaviors (e.g., condom use). Participants responded on one item for their marital status (1 = not married/not engaged, 2 = engaged to be married, 3 = married, 4 = separated, 5 = divorced, 6 = widowed, 7 = other, 8 = life partner). Those who reported themselves as married (n = 13) were not included in the analyses. After these restrictions were put in place, the analytic sample consisted of 153 students (M age = 21.25 years, SD = 1.87; 59% female).

Measures

Acculturation. The Acculturation Rating Scale for Mexicans Americans-II (ARSMA-II) (Cuéllar, Arnold, & Maldonado, 1995) is comprised of 30 items rated on a five-point scale (1 = Not at all to 5 = Extremely often or almost always). The ARSMA-II examines behavioral and attitudinal indicators of acculturation such as language use and preference in a variety of situations and contexts (e.g., “My thinking is done in the English language,” “I enjoy listening to Spanish language music”); ethnic association and interaction (e.g., My friends are of Anglo origin); and ethnic parent- and self-identification (e.g., I like to identify myself as American). The scale was adapted for this study with instructions altered to read: “This scale was originally designed for Mexican-Americans. If you are not of Mexican heritage, please substitute whatever country your family comes from as you fill out the scale. For example, if your family is from Chile, wherever the scale says “Mexico” or Mexicans” you should respond as if it said “Chile” or “Chileans.” Seventeen items (α = .85) are used to create the subscale for Latino (originally Mexican) Orientation Scale (LOS), and 13 items (α = .78) are used for the Anglo Orientation Scale (AOS). LOS and AOS were independently summed and mean scores were calculated. Participants had to answer at least 75% of the items on each of the subscales to receive a score.
Participants missing one or both of the subscales scores were dropped from the analyses. One participant was dropped from analyses due to inadequate completion of the ARSMA-II scale.

**Acculturation levels using cut scores.** The first method of computing acculturation level used the computed mean scores on the subscales and involved subtracting each participant’s LOS mean from their AOS mean. The difference value was used to classify participants into one of five acculturation levels (1 = Very Latino oriented, 2 = Latino oriented to approximately balanced bicultural, 3 = Slightly Anglo oriented bicultural, 4 = Strongly Anglo oriented, 5 = Very assimilated; Anglicized). The difference scores ranged from -1.81 to 3.82, and the cut-off values specified by Cuéllar, Arnold, and Maldonado (1995) were used to classify participants’ acculturation levels (see Table 1). Table 2 shows the average age, gender distribution, and number of individuals in each of the Levels. Since there was only one person with a score classified as Level 1, Level 1 and Level 2 were combined together for analysis purposes.

Table 1

*Cutoff Scores for Determining Acculturation Levels Using ARSMA-II*

<table>
<thead>
<tr>
<th>Acculturation Levels</th>
<th>Description</th>
<th>ARSMA-II Acculturation Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Very Latino oriented</td>
<td>&lt; -1.33</td>
</tr>
<tr>
<td>Level 2</td>
<td>Latino oriented to approximately balanced bicultural</td>
<td>≥ -1.33 and ≤ -0.07</td>
</tr>
<tr>
<td>Level 3</td>
<td>Slightly Anglo oriented bicultural</td>
<td>&gt; -0.07 and &lt; 1.19</td>
</tr>
<tr>
<td>Level 4</td>
<td>Strongly Anglo oriented</td>
<td>≥ 1.19 and &lt; 2.45</td>
</tr>
<tr>
<td>Level 5</td>
<td>Very assimilated; Anglicized</td>
<td>&gt; 2.45</td>
</tr>
</tbody>
</table>

Note: The cutoffs for acculturation levels are from Cuéllar et al.’s (1995) study on revisions of the original ARSMA for the ARSMA-II.
Table 2

Demographics by Acculturation Level

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
<th>N</th>
<th>Mean Age (SD)</th>
<th>% Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1+2</td>
<td>Latino oriented + Latino oriented to approximately balanced bicultural</td>
<td>19</td>
<td>21.21 (1.96)</td>
<td>58%</td>
</tr>
<tr>
<td>Level 3</td>
<td>Slightly Anglo oriented bicultural</td>
<td>45</td>
<td>21.00 (1.72)</td>
<td>64%</td>
</tr>
<tr>
<td>Level 4</td>
<td>Strongly Anglo oriented</td>
<td>65</td>
<td>21.48 (1.89)</td>
<td>57%</td>
</tr>
<tr>
<td>Level 5</td>
<td>Very assimilated; Anglicized</td>
<td>23</td>
<td>21.17 (2.10)</td>
<td>52%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>152</td>
<td>21.26 (1.88)</td>
<td>59%</td>
</tr>
</tbody>
</table>

**Acculturation categories using top- and bottom-third splits.** For the second acculturation scoring method, the top- and bottom-third mean scores were identified from both the AOS and LOS. Participants whose mean scores fell into the top-third on either the AOS or LOS were identified as being “High” on the respective subscales. Likewise, participants whose mean scores fell into the bottom-third of the AOS and LOS were identified as being “Low” on the respective subscales. This method allowed us to place individuals at the extremes of the two subscales into a 2 x 2 matrix of acculturation categories derived from Berry’s (1980) categorizations for acculturation strategies (see Figure 1).
Figure 1

2 x 2 Matrix of Acculturation Categories by Anglo and Latino Orientation Scores

<table>
<thead>
<tr>
<th>Scores</th>
<th>Low Anglo</th>
<th>High Anglo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Latino</td>
<td>Marginalized</td>
<td>Assimilated</td>
</tr>
<tr>
<td>High Latino</td>
<td>Separated</td>
<td>Integrated</td>
</tr>
</tbody>
</table>

Individuals who did not score in the upper or lower third of the two subscales were not included in the classification, reducing the number of participants from 153 to 76 (M age = 21.03, SD = 1.84, 63% female). Table 3 shows the number of individuals, average age, and gender distribution in each of the categories.

Table 3
Demographics by Acculturation Category

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Mean Age (SD)</th>
<th>% Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marginalization</td>
<td>5</td>
<td>22.00 (2.35)</td>
<td>100%</td>
</tr>
<tr>
<td>Separation</td>
<td>28</td>
<td>21.32 (1.74)</td>
<td>54%</td>
</tr>
<tr>
<td>Integration</td>
<td>14</td>
<td>20.00 (1.41)</td>
<td>86%</td>
</tr>
<tr>
<td>Assimilation</td>
<td>29</td>
<td>21.07 (1.91)</td>
<td>55%</td>
</tr>
<tr>
<td>Total</td>
<td>76</td>
<td>21.03 (1.84)</td>
<td>63%</td>
</tr>
</tbody>
</table>

**Sexual risk-taking measures.** Sexual risk encompasses a variety of behaviors rather than one single dimension; therefore, a risk composite score was calculated to assess cumulative sexual risk-taking from a set of questions. Respondents were asked two questions on if they had ever had sex: “Were you ever forced to have sexual intercourse against your will, or raped?” (1 =
Yes, 2 = No), and “Have you ever had voluntary sexual intercourse?” (1 = Yes, 2 = No).

Participants who responded “Yes” to either question received a score of 1 (vs. 0) on the first risk indicator: ever having sex. Those who answered that they ever had forced sex received a score of 1 (vs. 0) on the second risk indicator: having forced sex. Respondents who had engaged in sexual intercourse reported their age (in years) when they first experienced sex; respondents who had sex (voluntary or involuntary) before age 15 were scored as engaging in the third risk indicator: Having early sex (0 = No, 1 = Yes). Respondents who had voluntary sex were asked two questions about contraceptive use: “What method(s) did you use the first time you had sex?” and “What method(s) did you use the last time you had sex?” They checked off which method they used from the following available responses: “None,” “Condom,” “Pill/hormone injection/implant,” and “Other method (describe).” Respondents who answered anything other than “Condom” on either question were given a risk score for the fourth indicator: not using a condom at first and/or last sex (0 = No, 1 = Yes). Respondents were also asked “How many people have you had sexual intercourse with voluntarily?”; those who answered with a number higher than “3” were scored as engaging in the fifth risk indicator: having more than 3 lifetime sexual partners (0 = No, 1 = Yes). The five individual risk items were summed to create a sexual risk composite score, which ranged from 0 (no risk = never had sex, therefore did not engage in any sexual risk behavior) to 5 (high risk = sexually active, forced to have sex, first sex before age 15, did not use a condom at first and/or last voluntary sexual intercourse, and had more than 3 lifetime sexual partners). The individual questions were also examined for descriptive purposes.

**Data Analytic Approach**

Data analyses were conducted using IBM SPSS Statistics 20 for Windows and Mac OSX. Frequency and chi-square tests were conducted to identify the basic demographic characteristics of the sample for the number of individuals, age, and gender breakdown of acculturation classifications. For both methods that used the ARSMA-II to determine acculturation, two way ANOVAs (acculturation x gender) were used to test for significant differences on means scores of the sexual risk-taking composite. Fisher’s Least Significant Differences (LSD) tests were conducted to identify post-hoc mean differences. The alpha level was set at .05, but trends are also described ($p < .10$) due to the small sample size (overall and for comparison groups within the two models). The results for acculturation model implementing the cut-scores method (Levels) are presented first, followed by results for the acculturation model using the top- and
bottom-third splits (Categories). The analyses for both models use the same data, but the acculturation measure is scored differently and yields different categories. Therefore, there is a difference in sample size for the two models.
Chapter Four: Results

Analyses Using the Acculturation Level (Cut Scores) Method

**Descriptive analyses.** 152 respondents were included in these analyses. Table 2 shows the distribution, average age, and gender makeup of the participants in each the acculturation levels. A one-way ANOVA showed no differences between the four acculturation levels on age, $F(3, 151) = 0.59, p = .62$, partial $\eta^2 = .01$. A chi-square test performed to determine if males and females were distributed differently across acculturation level groups was not significant, $\chi^2(3, 152) = 1.10, p = .78$. Of the overall 152 participants in this sample, 108 (71%) had engaged in sexual intercourse, 13 (9%) had been forced to have sexual intercourse or raped, 16 (11%) had sex before 15 years of age, 78 (51%) did not use a condom at their first and/or last time they had sex, and 48 (32%) had 4 or more lifetime sexual partners.

**Association of acculturation level and sexual risk-taking.** A two-way (acculturation level by gender) ANOVA with the composite sexual risk-taking measure as the dependent variable was conducted. There was no main effect of acculturation, $F(3, 151) = 0.12, p > .05$, partial $\eta^2 = .002$, or gender, $F(1, 151) = .48, p > .05$, partial $\eta^2 = .003$. There was also no interaction effect for acculturation by gender, $F(3, 151) = 0.37, p > .05$, partial $\eta^2 = .008$. Post hoc comparisons using Fisher’s LSD revealed no significant differences between any of the acculturation levels using the cut scores method.

Displayed in Table 4 are the mean sexual risk-taking scores by acculturation level, as well as the percentage of individuals within each category who had engaged in the 5 individual risk behaviors. Chi-square tests were conducted to examine if there were differences in the number of respondents who responded that they had engaged in each of the 5 individual risk indicators, and no significant differences were found; all $\chi^2(3, N = 152)$ had $p > .05$. 
### Table 4

**Sexual Risk-Taking by Acculturation Levels using the Cut Scores Method**

<table>
<thead>
<tr>
<th></th>
<th>Level 1 + 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 19)</td>
<td>(n = 45)</td>
<td>(n = 65)</td>
<td>(n = 23)</td>
</tr>
<tr>
<td>Very Latino and Latino oriented to approximately balanced bicultural</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slightly Anglo oriented bicultural</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly Anglo oriented</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very assimilated; Anglicized</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ever Had Sex (% yes)</td>
<td>68%</td>
<td>71%</td>
<td>71%</td>
<td>74%</td>
</tr>
<tr>
<td>Forced to Have Sex (% yes)</td>
<td>11%</td>
<td>9%</td>
<td>6%</td>
<td>13%</td>
</tr>
<tr>
<td>Voluntary Sex Before Age 15 (% yes)</td>
<td>16%</td>
<td>11%</td>
<td>7%</td>
<td>17%</td>
</tr>
<tr>
<td>No Condom at First and/or Last Time Having Sex (% yes)</td>
<td>47%</td>
<td>49%</td>
<td>52%</td>
<td>57%</td>
</tr>
<tr>
<td>More than 3 lifetime sexual partners (% yes)</td>
<td>21%</td>
<td>36%</td>
<td>32%</td>
<td>30%</td>
</tr>
<tr>
<td>Sex Risk Composite Score (M)</td>
<td>1.60</td>
<td>1.75</td>
<td>1.68</td>
<td>1.83</td>
</tr>
</tbody>
</table>

*Note:* Percentages are column percent of individuals within that acculturation level group engaging in risk-taking behavior presented in rows.
Analyses Using the Categories (Top- and Bottom-Third Splits) Method

Descriptive analyses. As described in the method section, the sample was reduced to 76 participants when this method was implemented. The first step of this method identifies individuals who have mean scores in the top- and bottom-third of each of the Anglo and Latino Orientation subscales. Participants who do not have these “extreme” scores on either of the subscales are therefore uncategorized and ultimately not used in the analyses. Table 3 shows the distribution, the average age, and gender makeup of the participants in each the acculturation level categories.

A one-way ANOVA showed no between-group differences on age based on acculturation categories, $F(3, 75) = 2.27, p = .09$, partial $\eta^2 = .09$. A chi-square test performed to determine if males and females were distributed differently across the acculturation categories was significant, $\chi^2 (3, N = 76) = 7.88, p < .05$. As can be seen in the previously displayed Table 3, there are disproportionately higher proportions of females in the Marginalized (100% female) and Integrated (86% female) categories.

In the sample of 76 participants, 55 (72%) had engaged in sexual intercourse, 6 (8%) had had experienced forced sex and/or rape, 5 (7%) had sex before 15 years of age, 35 (46%) had not used a condom the first and/or last time they had sex, and 23 (30%) had 4 or more lifetime sexual partners.

Association of acculturation categories and sexual risk-taking. A two-way (acculturation category by gender) ANOVA was conducted with sexual risk-taking as the dependent variable. There was no main effect of gender $F(1, 75) = 2.10, p > .05$, partial $\eta^2 = .03$, and no interaction between acculturation and gender, $F(2, 75) = 0.97, p > .05$, partial $\eta^2 = .03$. However, there was a main effect for acculturation category on sexual risk-taking behavior, $F(3, 75) = 2.84, p < .05$, partial $\eta^2 = .11$. The partial eta-squared statistic indicates a small effect size. Post-hoc comparisons using the Fisher LSD test revealed several significant differences between some of the acculturation categories. As seen in Table 5, individuals in the Integrated and Separated categories reported less sexual risk-taking than individuals in the Marginalized category, $p < .05$. In addition, there was a trend observed with the Integrated group reporting less sexual risk taking than the Assimilated group, $p = .09$.

Table 5 also displays the percentages of respondents within each category who answered that they had engaged in the individual risk indicators that comprise the scale, and chi-square
tests were conducted to examine if there were differences in the number of respondents who responded that they had engaged in each of the 5 individual risk indicators. The chi-square test found a significant difference between groups on whether or not they had ever had sex, $\chi^2 (3, N = 76) = 8.80, p = .03$; only 43% of participants in the Integration category have had sex, compared to the other three categories that range from 75-100%. The chi-square test found was significant difference on the indicator for forced sex and/or rape between categories, $\chi^2 (3, N = 76) = 8.35, p = .04$, with all of the categories except for Marginalized have low rates of forced sex/and or rape. Chi-square tests for the 3 other indicators report non-significant differences, all with $p > .05$. 
Table 5
Sexual Risk-Taking by Acculturation Categories Using the Top- and Bottom-Third Splits Method

<table>
<thead>
<tr>
<th></th>
<th>Marginalized (n = 5)</th>
<th>Separated (n = 28)</th>
<th>Integrated (n = 14)</th>
<th>Assimilated (n = 29)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever Had Sex (% yes)*</td>
<td>100%</td>
<td>75%</td>
<td>43%</td>
<td>79%</td>
</tr>
<tr>
<td>Ever Forced to Have Sex (% yes)*</td>
<td>40%</td>
<td>7%</td>
<td>0%</td>
<td>7%</td>
</tr>
<tr>
<td>Voluntary Sex Before Age 15 (% yes)</td>
<td>0%</td>
<td>11%</td>
<td>7%</td>
<td>3%</td>
</tr>
<tr>
<td>No Condom at First and/or Last Time Having Sex (% yes)</td>
<td>80%</td>
<td>40%</td>
<td>29%</td>
<td>59%</td>
</tr>
<tr>
<td>More than 3 lifetime sexual partners (% yes)</td>
<td>60%</td>
<td>25%</td>
<td>29.0%</td>
<td>31%</td>
</tr>
<tr>
<td>Sex Risk Composite Score (M)</td>
<td>2.80 (^a, b)</td>
<td>1.54 (^b)</td>
<td>1.07 (^a, c)</td>
<td>1.80 (^c)</td>
</tr>
</tbody>
</table>

Note: Percentages are column percent of individuals within that category engaging in risk-taking behavior presented in the rows.
* = Chi-square significant between acculturation categories, \( p \leq .05 \)
\(^a, b\) = Means that share the same superscript differ at \( p \leq .05 \) based on Fisher’s LSD post hoc paired comparisons
\(^c\) = Means that share the same superscript differ at \( p \leq .10 \) level based on Fisher’s LSD post hoc paired comparisons
Chapter Five: Discussion, Limitations, and Conclusion

The process of acculturation broadly encompasses the many social and psychological changes that take place when individuals from different cultural groups are in prolonged contact (Berry, 1997). The understanding of this process is important since certain acculturation orientations and strategies have been associated with poor health practices and outcomes. Recent theories have changed the way that acculturation is conceptualized; however, and there is still a lack of research on its association with sexual health and risk. Acculturation was initially conceptualized as a unidimensional process, with immigrants gradually adopting the new host-culture while leaving their heritage culture behind, and continued and increased acculturation was linked with poorer health. Now an increasing body of literature has suggested that acculturation is a bidimensional process. However, few studies that examine the associations between acculturation and sexual risk-taking have implemented methods that evaluate acculturation this way, and most research has still measured acculturation using unidimensional approaches.

Researchers are now attempting to correct for this by using bidimensional scales that measure both heritage and host culture orientations, but the methods for scoring these scales still vary greatly. The first goal of the study was to score a measure of acculturation using two different methods to observe how the different approaches would affect the results. The study utilized a bidimensional acculturation scale that has been widely used with Latino populations, the ARSMA-II (Cuéllar et al., 1995). The first method used cut scores to create a single score to determine acculturation level, and the second used a split scoring method to determine acculturation categories. The subsequent goal for this study was to then use these different approaches to test for associations between acculturation and sexual risk-taking.

For the first scoring method (cut scores), a difference score was calculated between the ARSMA-II’s subscales (Anglo orientation and Latino orientation). Because this method takes both heritage and mainstream dimensions into account, it is considered to be measuring acculturation bidimensionally. The Latino Orientation score was from the Anglo Orientation score, which then determined an individual’s acculturation level. In a way, this method is similar to unidimensional models since it is possible to visualize where individuals are on an acculturation spectrum. The lowest scores indicate stronger adherence to Latino orientations, and highest scores indicate stronger adherence to Anglo culture. For analyses using the cut score
approach, difference scores were calculated for all participants from the analytic sample who completed the ARSMA-II. Cuéllar et al.’s (1995) cutoff scores were used to determine the acculturation levels of the participants, with higher levels indicating stronger adherence to Anglo culture and practices. No significant differences were detected in sexual risk-taking based on acculturation level; this was true for analyses of the sexual risk-taking composite and the five individual risk indicators. This finding is inconsistent with prior work literature that positive associates acculturation with higher risks. However, the literature that focuses on levels of acculturation have typically been unidimensional, and certain elements of a bidimensional scale could have affected the ability to detect differences, which is discussed later as a limitation to the cut score method.

One issue with this scoring method is that different individuals can earn similar acculturation scores with different combinations of Anglo and Latino orientation scores. For example, someone earning a score of 4 on both the Anglo and Latino Orientation subscales would earn the same score (0) as someone earning a 2 on both of the subscales once a difference score is calculated through subtraction of means. These two individuals with scores of 0 would be considered “balanced bicultural” according to the acculturation levels developed by Cuéllar et al. (1995). They could be very different in their ethnic and cultural orientations, yet they would be considered as having similar acculturation levels. This is likely to be a particular weakness to this scoring method. Even though this method does fit the definition of a bidimensional method since it accesses Anglo and Latino cultural orientations independently, subtracting means from each other to create a single score still places individuals on a spectrum, which closely resembles a unidimensional acculturation scoring method.

However, there were some benefits to this method that were not observed in the split scores method. Since this method calculated a difference score and acculturation level for everyone in the sample, higher power was retained since analyses could and was conducted with all participants. Although having a larger number of participants for analysis is desirable, this factor may have also contributed to the lack of significant differences on sexual risk-taking, as there may have not been enough contrast between groups. For example, an individual with a difference score at the upper limit of the Level 2 group and another participant at the lower limits of the Level 3 group may not be too different in how acculturated they are.
The second method for scoring (split scores) also used the ARSMA-II scale and its Anglo and Latino orientation subscales. The methods of calculation and categorization were different, however. By splitting each of the subscale scores into tertaries based on the top- and bottom-thirds of scores, it was possible to identify individuals who were respectively high and low on host-culture acquisition and heritage-culture retention. This method has been used in previous studies (Giang & Wittig, 2006), but median splits have been more common than the use of tertaries. Tertiaries were used in the present study so that individuals with more “extreme” scores would be used to avoid not having enough contrast between comparison groups.

With the split scores method, significant differences were observed in overall sexual risk-taking by acculturation categories. Participants in the Integrated category reported the lowest levels of sexual risk-taking behavior, and the highest levels of risk-taking were reported by those in the Marginalized category, and this difference was significant at the $p < .05$ level. Moreover, there was a trend for Integrated individuals to report lower levels of risk-taking than Assimilated individuals. Participants in the Separated category also reported significantly less sexual risk-taking than those considered Marginalized. The results for the Integration group replicated and extended prior work demonstrating that bicultural acculturation (integration) is associated with positive health outcomes such as mental health and self-esteem (Smokowski, Rose, & Bacallao, 2008) by showing a similar effect for sexual risk-taking. The relatively small number of individuals in the Marginalized group makes valid comparisons difficult, although the low number of individuals fitting into this category is consistent with research that has questioned the validity of the marginalized category (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). The reason for this is that it is difficult to understand how individuals can acculturate without drawing upon a host or heritage culture.

The Assimilated group reported the second-highest level of sexual risk-taking, although not significantly higher than the Separated and Integrated groups. Prior research has generally suggested that highly assimilated individuals have the worst health-related behaviors and outcomes (Allen et al., 2008); however, other studies have found that assimilation does not always predict poorer health behavior (Warner, Fishbein, & Krebs, 2010). The assimilated group in the categories model did not report significantly higher levels of sexual risk-taking, which demonstrates some inconsistency with prior studies that show that more acculturated Latinos engage in more risky sex behavior (Kasirye et al., 2005). However, it may be possible that the
dynamics of assimilation are different in the context of sexual risk-taking behavior, and special consideration should be used when working with various populations and individuals based on a variety of factors. It is quite possible that assimilation may lead to increases in safer sexual practices by factors that may moderate risk-taking (e.g., gender, ethnicity) for certain groups. For example, an individual’s heritage cultural practices may be associated with less condom use, but assimilation to Anglo culture may promote and be related to increased condom use. Future studies should further examine this possible dynamic between assimilation and health behaviors, especially in regards to sexual behavior.

The ability to find significant results using the categories method but not the acculturation level method may demonstrate that methods better aligned with bidimensional conceptualizations that view acculturation strategies as distinct are preferable over methods that measure acculturation on a spectrum. The split score method appears to separate individuals distinctly, which is a feature that is somewhat lost in the cut score method. The cut score method creates only a single score, which limits the benefits of a bidimensional measure. Integrated individuals in the categories model showed significantly lower risk than the other groups, but the integrated individuals in the cut scores method (Level 2 and Level 3) did not. In the categories model using split scores, an Integrated person is someone who scores highly on Anglo and Latino orientations, and they were found to be different than the other categories. In contrast, someone who scores highly on both Anglo and Latino orientations (e.g., 4 and 4) would receive a score of 0 in the cut score method, but so would an individual who scores low on Anglo and Latino orientations (e.g., 1 and 1). Conceptually acculturation categories are distinct and require methods that can accurately classify people, and it is a difficulty for methods that resemble unidimensional measures that use a single score.

Differences in sexual risk-taking were detected based on acculturation categories, but no differences were found between males and females. Past studies have focused on comparisons within a single gender group (Lee & Hahm, 2010; Raffaelli, Zamboanga, & Carlo, 2005), and there may be issues with examining male and female sexual risk together using a risk-composite for both groups. However, there were differences in acculturation categories between males and females in one of the methods. In the top- and bottom-thirds method, the Marginalized group was comprised of all females, and they also made up the majority of the Integrated group (86%). This is of particular interest since Marginalization and Integration are the two categories that
require extreme scores on both dimensions of cultural orientation; Marginalized requires low scores on both subscales, and Integration requires high on the subscales. Other studies that have used Berry’s categories but with different methods of categorization (e.g., Latent Class Analysis) have not found differences based on gender and category membership (Schwartz & Zamboanga, 2008). Future studies can seek to discover whether gender is associated with particular acculturation orientations, and additional comparisons between different classification and categorization methods (e.g., splits scores, latent class analysis) may be necessary.

Limitations

There are a few limitations that should be noted in this study. The use of a university study sample likely skewed the acculturation scores of the participants in the study. Prior studies have found that being more acculturated is positively related to likelihood of college attendance (Hurtado & Gauvain, 1997), and thus the university students in the sample are more likely to be assimilated than the general Latino population, with higher Anglo and lower Latino orientation scores than one would expect to see in a non-college Latino sample.

Bidimensional scales were introduced to address the limitations of unidimensional scales, but scales such as the ARSMA-II are not without limitations of their own. Scholars have identified a variety of domains and important aspects of acculturation the ARSMA-II does not address. For example, a review of acculturation measures by Zane and Mak (2003) finds that the ARSMA-II contains items that assess language use/preference, social affiliation, cultural identity/pride, but it does not contain items on cultural traditions or values. Research has found that cultural traditions and values have an impact on sexual risk-taking in Latino populations (Edwards, Fehring, Jarrett, & Haglund, 2008; Russell, Alexander & Corbo, 2000), and their omission from the ARSMA-II may limit its usefulness in understanding how acculturation is related to sexual behavior.

With the cut scores method, one of the main limitations is that although it calculates the subscales independently, the use of single difference score to place individuals on an acculturation spectrum seems very similar to a unidimensional acculturation measure. Moreover, there may not be enough variation among groups with the use of cutoff scores. The second method using split scores addresses the lack of contrast between groups by using more “extreme” scores. However, one issue that arises with having a highly assimilated Latino sample comes when using split scores as these “force” individuals into categories. Participants are only high or
low on Anglo and Latino orientations in relation to the current sample. As previously mentioned, the college student participants in the current study were more acculturated than the general population, so participants receiving low scores may not represent low acculturation conceptually. Furthermore, the split scores method (e.g., median or tertiary split) uses arbitrary splits that vary from sample to sample, which makes it difficult to make comparisons and replicate studies. Alternative empirical methods have been presented and tested using techniques such as latent class analysis and cluster analysis, and these methods may offer benefits over the split scores method (Schwartz, Zamboanga, & Szapocznik, 2008).

Finally, sexual risk-taking was assessed through the use of multiple items and a composite risk score. Future studies can include additional indicators; for example, use of alcohol and other substances is positively related with risky sexual behaviors (Cooper, 2002; Dermen, Cooper, & Agocha, 1998). In addition, more precise measures of some sexual risk indicators are needed. For example, risk in relation to condom use was based on whether participants used condoms at their first and last sexual experience. Future measures can include items that ask about condom use that are more comprehensive (e.g., percentage of times condoms were used). Use of more comprehensive and nuanced measures would bolster confidence in the findings.

**Conclusion**

This study implemented two different methods for acculturation measurement, with noticeable effects on how each method handled the data and allowed detection of differences in sexual risk-taking based on acculturation. This highlights that work must be continued to better understand acculturation measurement and develop methods that reflect this complicated construct. Additional calculation and statistical methods (e.g., latent class analysis) can be developed and compared with the methods in this study. By testing and refining these techniques, researchers can further bridge theory and measurement to understand the health of Latino immigrants and their descendants. The lack of findings related to gender in this study also require further inquiry on how acculturation and gender may confound or affect analysis, and studies that examine both acculturation and sexual risk-taking must continue investigating these factors.

Some of the findings presented here do show similar patterns to other work examining the associations between acculturation and sexual risk-taking, but there is a need for replication
in studies involving larger and more representative samples of Latino college students. In addition, studies that include participants who are not college students might yield different results, as non-college students may present a wider range of acculturation orientations, especially at the less Anglo-oriented spectrum. This study examined two different methods to measure acculturation using the ARSMA-II to understand their respective strengths and weaknesses, which may help researchers in selecting a method that fits current conceptualizations on acculturation. In addition, the finding that Integrated individuals had the lowest level of risk further adds to the literature that finds this acculturation strategy to be related to the most favorable health-related outcomes and behaviors. This finding indicates a need to further explore how integration acculturation strategies can be used by individuals and for development of interventions to reduce risk-taking behavior. Furthermore, a closer look into the underlying and specific aspects of acculturation (e.g., differences in cultural preferences, language use, peer association) would allow identification of the most salient factors associated with sexual risk-taking to better assist researchers and practitioners working with Latino populations.
References


