

University of Nevada, Reno

Evaluation of an exploratory model addressing the role of
acculturation gap on sexual risk communication between Hispanic
mother and daughter

A dissertation submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy in Social Psychology

by
Joanne Brosh

Dr. Bill Evans/Dissertation Advisor

August 2010



University of Nevada, Reno
Statewide · Worldwide

THE GRADUATE SCHOOL

We recommend that the dissertation
prepared under our supervision by

JOANNE BROSH

entitled

**Evaluation Of An Exploratory Model Addressing The Role Of Acculturation Gap
On Sexual Risk Communication Between Hispanic Mother And Daughter**

be accepted in partial fulfillment of the
requirements for the degree of

DOCTOR OF PHILOSOPHY

Dr. Bill Evans, Advisor

Dr. Dan Weigel, Committee Member

Dr. Paul Devereaux, Committee Member

Dr. Karen Kopera-Frye, Committee Member

Dr. Kristen Clements-Nolle, Graduate School Representative

Marsha H. Read, Ph. D., Associate Dean, Graduate School

August, 2010

Abstract

Sexual risk behavior trends have been found among Hispanic girls in the U.S. Research has found that reported condom use is particularly low for Hispanic adolescents (Centers for Disease Control & Prevention, 2005). The acculturation process is one factor that has been found to affect sexual health behavior outcomes. The present study evaluated exploratory models linking one acculturation theory, the acculturation gap hypothesis, to sexual risk communication between Hispanic mother and daughter, and ultimately condom use. Data from the National Longitudinal Study of Adolescent Health was used and the models were evaluated using structural equation modeling (SEM). All five iterations of the model tested were not significant. Despite the outcomes, the results do provide some insight into certain relationships for Hispanic adolescents. Specifically, the acculturation gap hypothesis appears to be an important theoretical construct when examining relations between Hispanic mother and daughter; as Hispanic adolescents spend more time in the U.S., dissonance in the relationship with their mothers increases. In addition, sexual risk communication seems to be dependent on the degree to which Hispanic adolescent mothers experience comfort in discussing these topics. More research is needed, however, to determine what combination of risk and protective factors ultimately influence condom use among Hispanic adolescents.

Acknowledgements

This research uses data from Add Health, a program project designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris, and funded by a grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 17 other agencies. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Persons interested in obtaining data files from Add Health should contact Add Health, Carolina Population Center, 123 W. Franklin Street, Chapel Hill, NC 27516-2524 (addhealth@unc.edu). No direct support was received from grant P01-HD31921 for this analysis.

TABLE OF CONTENTS

Acknowledgements.....	ii
Abstract.....	i
Chapter 1: Introduction.....	1
Overview.....	1
Challenges that Affect the Hispanic Population in the United States.....	2
Sexual Risk Outcomes for Hispanic adolescents.....	3
Impact of acculturation process on sexual risk outcomes.....	4
Chapter 2: Review of the Literature.....	10
Theoretical Perspective that Underlies the Current Study.....	10
Acculturation Trends and Issues.....	13
a. <i>Conceptualizations of acculturation</i>	13
b. <i>Unidimensional theory of acculturation</i>	14
c. <i>Bidimensional theory of acculturation</i>	15
d. <i>Issues related to measuring acculturation</i>	16
e. <i>Proxy measure of acculturation</i>	17
Variables and relationships in the exploratory model.....	19
a. <i>The acculturation gap hypothesis</i>	21
b. <i>H1: Daughters' acculturation and generational dissonance</i>	22
c. <i>H2: Daughters' acculturation and mothers' comfort level</i>	24
d. <i>H 3: Generational dissonance and perceived relationship quality</i>	27
e. <i>H4: Mothers comfort level and perceived relationship quality and sexual risk communication</i>	30

f. <i>H5: Sexual risk communication and condom use</i>	33
g. <i>H6: Mothers' comfort level indicators</i>	36
h. <i>H7: Sexual risk communication indicators</i>	37
Exploratory Model and Follow-up Research Questions.....	38
Definitions.....	39
Chapter 3: Materials & Methods.....	42
Add Health Data Set.....	42
Participants.....	44
Procedure.....	46
Measures.....	46
a. <i>Ethnic identity and gender</i>	47
b. <i>Acculturation gap</i>	47
1. Daughters' length of time in country.....	49
2. Generational dissonance.....	50
c. <i>Perceived relationship quality</i>	52
d. <i>Mothers' comfort level</i>	53
e. <i>Sexual risk communication</i>	54
f. <i>Condom use</i>	55
g. <i>Wave 2 data</i>	55
Data Analysis Plan.....	56
Chapter 4: Results.....	61
Preliminary analyses.....	61
Assumptions of the study.....	65

Model estimation.....	68
Model fit.....	73
a. <i>Original model fit</i>	76
Hypotheses outcomes.....	76
a. <i>Hypothesis 1</i>	77
b. <i>Hypothesis 2</i>	77
c. <i>Hypothesis 3</i>	77
d. <i>Hypothesis 4</i>	77
e. <i>Hypothesis 5</i>	78
f. <i>Hypothesis 6</i>	78
g. <i>Hypothesis 7</i>	79
Alternate models.....	79
a. <i>Alternate model 1: Addition of Wave 2 data</i>	82
b. <i>Alternate model 2: Removal of condom use</i>	83
c. <i>Alternate model 3: Removal of perceived relationship quality</i>	85
d. <i>Alternate model 4: Correlated error terms</i>	87
e. <i>Alternate model 5: Alternate theoretical model</i>	89
Model change summary.....	93
Post hoc tests.....	94
Chapter 5: Discussion.....	97
Models Tested in Study.....	97
a. <i>Original model</i>	98
1. Generational dissonance and perceived relationship	

Quality.....	98
2. Perceived relationship quality and sexual risk communication.....	101
b. <i>Alternate model 1</i>	103
c. <i>Alternate model 2</i>	107
d. <i>Alternate models 3 & 4</i>	108
e. <i>Alternate model 4</i>	110
Significant relationships within the model.....	112
a. <i>Daughters' acculturation level and generational dissonance</i>	112
b. <i>Mothers' comfort level and sexual risk communication</i>	115
Implications.....	118
a. <i>Theoretical implications</i>	118
b. <i>Research implications</i>	118
c. <i>Applied and practical implications</i>	119
Study Limitations.....	121
a. <i>Limitations of secondary data analysis</i>	121
b. <i>Additional methodological concerns</i>	127
Directions for future research.....	131
a. <i>Suggestions for study replication</i>	135
Conclusions.....	140
References.....	142

Chapter 1: Introduction

Overview

Immigration is central to the sociology of the United States; therefore, it is crucial to understand how the acculturation process influences the way new populations adapt to American society. This is especially relevant today, while the U.S. is experiencing the largest surge of immigration in its history (Suarez-Orozco & Suarez-Orozco, 2001). Currently, immigrants from Spanish speaking countries are entering the U.S. at significantly higher rates than individuals from any other region, making Hispanics¹ the largest and fastest growing minority group in the U.S. (U.S. Census Bureau, 2008). Currently, Hispanics comprise 14% of the population, but according to projections, Hispanics will comprise 29% of the US population by 2050 (Pew Research Center, 2008). Because most children in immigrant families belong to Hispanic or nonwhite racial and ethnic minorities, future projections indicate that approximately 50% of this group will be age 18 or over in 2030, making up a large percentage of the U.S. workforce (US Census Bureau, 2008).

Despite being the fastest growing segment of the population, researchers report that the status of immigrant children and adolescents is “severely understudied” (Hernandez & Charney, 1998, p. 22). Research on Hispanics has focused on the adaptation processes and outcomes for immigrant children, but during the 1990s has

¹ The ethnic Hispanic (*adj.*) is used instead of Latino (*noun or adj.*) or Latina (n or a) as the ethnic designation of study participants. The terms Latino and Latina refer to individuals who speak a Romance language (not only Spanish) and are born in Latin America. In the book, *Hispanic Marketing*, the authors point out that the term Latino "encompasses almost anyone from a culture with Latin roots. That could be Italians, Romanians, Portugese, French and so on." Therefore, Hispanic is a more precise term for the participant data used in the present study.

mainly used surveys that identified a regional location with one particular ethnic group from a Spanish-speaking country and generalized the results to Hispanic people as a whole (Portes & Rumbaut 2001; Siatowski, 2007; Unger, Ritt-Olson, Soto, & Baezconde-Garbanati, 2007; Zhou, 1997). Hispanics are a diverse group with significant dissimilarities in language, values, cultural norms, and ethnic backgrounds.

The purpose of the current study is to further the study of people of Hispanic origin and Hispanic culture. Specifically, this research will examine how the acculturation process may impact the relationship between Hispanic mother and daughter and how this may subsequently affect sexual risk communication and condom use. A model will be posited explaining relationships between certain variables that may intercede between the acculturation process and condom use for Hispanic adolescents. The following section will review research conducted on the Hispanic population and why the study is necessary.

Challenges that Affect the Hispanic Population in the United States

Economic issues have been found to accompany the Hispanic population influx. Hispanics are more likely to be unemployed and live in poverty in comparison to non-Hispanic Whites (Ramirez & de la Cruz, 2003). This unprecedented situation creates unique cultural changes and challenges for Hispanic youth. Between 1990 and 2002, 40% of this population was born in a country other than the U.S. (Ramirez & de la Cruz, 2003). Research indicates that Hispanic adolescents are at particularly high risk for negative health behaviors such as substance abuse and delinquency (Kaplan, Erickson, & Juarez-Reyes, 2002; Prado, Szapocznik, Maldonado-Molina, Schwartz, & Pantin, 2008; Samaniego & Gonzales, 1999; Wall, Power, & Arbona, 1993). For example, over the past

20 years, non-Latino adolescent alcohol use has declined, yet alcohol use among Latino youth has remained high (Johnston, O'Malley, & Bachman, 2003). Also, binge alcohol use has been found to be higher among Hispanics than the national average (26.3 vs. 24.5 percent) (SAMHSA, 2010). In addition, several recent studies have indicated that more acculturated adolescents also are more likely to engage in delinquent behaviors (Caldwell, Beutler, Ross, & Silver, 2006; Prado, Szapocznik, Maldonado-Molina, Schwartz, & Pantin, 2008).

Sexual Risk Outcomes for Hispanic Adolescents

In addition to other risk behaviors, Hispanic girls in the U.S. have been linked to negative sexual behavior outcomes. The percentage of female teens using any method of contraception at first sexual intercourse was lowest for Hispanics compared to other ethnic groups (Centers for Disease Control & Prevention, 2002). Only 46% of Hispanic women used a method at their first premarital intercourse compared with 67% of non-Hispanic white women and 60% of black women (Mosher, Martinez, Chandra, Abma, & Willson, 2004). In addition, Hispanic adolescents have less conceptual knowledge about contraception and reproductive processes than African Americans and European Americans (Nadeem, Romo, & Sigman, 2006).

Research has found that reported condom use is particularly low for Hispanic adolescents (Centers for Disease Control & Prevention, 2005). Hispanic adolescents reported the lowest rate of condom use among sexually active high school students at most recent intercourse in comparison to other ethnic groups (YRBSS, 2009). According to the CDC's Youth Risk Behavior Surveillance from 2009, 45.1% of Hispanic reported not using a condom during last sexual intercourse in comparison to 37.6% of Black

adolescents and 36.7% of White adolescents (YRBSS, 2009). Because condom use is the sole way to protect against sexually-transmitted disease, it is critical to identify factors that encourage condom use; the information obtained can be used to design more effective public health campaigns and programs for this demographic.

Impact of Acculturation Process on Sexual Risk Outcomes

The acculturation process is one factor that has been consistently linked in the literature as affecting sexual health behavior outcomes (Peragallo, 1996; Rapkin & Erickson, 1990; Sabogal, Perez-Stable, Otero-Sabogal, & Hiatt, 1995). Acculturation refers to the "...psychological, behavioral, and attitudinal changes that occur when individuals and groups from different cultures come into continuous contact with each other" (Cabassa, 2003, p. 127). Overall research results on acculturation, however, are inconclusive as to whether acculturation has a positive or negative impact on sexual risk outcomes. Some research has found acculturation to be associated with increased risk of high-risk sexual behaviors, including unprotected sex (Lahiff & Berreto, 2006; Peragallo, 1996; Rapkin & Erickson, 1990; Sabogal et al., 1995). Highly acculturated Hispanics report a higher number of lifetime sexual partners than do less acculturated women (Lahiff & Berreto, 2006; Sabogal et al., 1995) and are more likely to have sexually transmitted diseases (Lahiff & Berreto, 2006), the latter of which is a consequence of having unprotected sex.

In contrast, as pointed out by Ford and Norris (1993) as well as Sterling and Sadler (2009), other research has found that acculturated individuals report greater acceptance and use of condoms, and express fewer negative beliefs about condoms than their less acculturated counterparts. This indicates that although acculturation may lead to

increased rates of sexual behaviors, it may also lead to greater acceptance of preventive behaviors that can minimize the risk associated with sexual behavior. In some studies involving Hispanic women, acculturation was found to correlate positively with the efficacy of contraceptive use (Ford & Norris, 1993; Norris & Ford, 1992; Sterling & Sadler, 2009).

Thus, there is need for improved understanding of the mechanisms through which acculturation influences sexual behavior. Why is the effect of acculturation on sexual risk behavior unclear? Some researchers point out there is a lack of research on theoretical models concerning the specific mechanisms by which acculturation affects health (Abraido-Lanza, Armbrister, Florez, & Aguirre, 2006). One of the few theoretical models that has been posited addressing this issue is the acculturation gap hypothesis. Research has determined that children often become involved in U.S. culture faster than adults, creating an “acculturation gap” between generations of parents and children (Coatsworth, Pantin, & Szapocznik, 2002; Smokowski & Bacallao, 2006; Szapocznik, Scopetta, & King, 1978; Szapocznik & Williams, 2000). While immigrant parents tend to focus on economic survival in the host society and use home country values, norms, and behaviors to assess their accomplishments and educate their children, children are more likely to be attracted by the culture of the host society and have a strong desire to fit in (Zhou, 2001). The resulting acculturation gap has been found to produce parent-adolescent conflict, and decreased perceived relationship quality and communication (Coatsworth et al., 2002; Smokowski & Bacallao, 2006; Szapocznik et al., 1978; Szapocznik & Williams, 2000).

As previously mentioned, Hispanic adolescents have a poorer record of condom use in comparison to their White and Black peers. Within the U.S., recent prevention programs have included mass media campaigns targeted to adolescents and young adults warning of the risks for STDs and HIV, and promoting condom use. While these individually-based approaches are vital to include in prevention programming, multi-targeted approaches which include the parents and the family also may be significant and yet, to date, have largely been ignored. Families, and parents in particular, have a significant impact on their children's socialization and preparation to enter into society (Epstein & Ward, 2008; Lipsitt, Kail, Spiker, & Reese, 2005).

The mother-daughter relationship, in particular, has been found to have significant impact on daughters' sexual behavior and decisions (Baumeister, Flores, & Marin, 1995; Hutchinson, 2002; McKee & Karasz, 2010; O'Sullivan, Meyer-Bahlberg, & Watkins, 2001). Research has established that sexual risk communication that transpires between Hispanic mother and daughter is highly valued and important to the adolescent (McKee & Karasz, 2010). Specifically, Hispanic mothers want to provide this information and adolescent daughters want to receive it. Both mothers and daughters, however, report achieving adequate sexual risk communication is difficult (McKee & Karasz, 2010). Thus, it is necessary to identify factors which may enhance or impede the ease with which Hispanic adolescents and mothers engage in sexual risk communication.

Based on this information, it seems likely that the acculturation gap will significantly impact the sexual health decisions of Hispanic adolescents. Research has determined that one major factor for engaging in protected intercourse, including condom use, among adolescent females is the level of sexual risk communication that transpires

between mother and daughter (Hutchinson, 2002; Hutchinson & Cooney, 1998; Hutchinson, Jemmott, Jemmott, Braverman, & Fong, 2002; Romo, Lefkowitz, Sigman, Lefkowitz, & Au, 2007; Whitaker & Miller, 2000). For example, in a study on pregnant Hispanic adolescents, researchers found that when contraception was explicitly mentioned, adolescents reported having accurate and detailed information on condom use (Nadeem & Romo, 2008). In another study, 55 Hispanic mothers and their mid-adolescent children were observed talking about dating and sexuality. These conversations were videotaped and coded for the amount of discussion on five message types - beliefs and values, advice, cautionary messages, comments about the adolescents' everyday experiences, and maternal self-disclosure about her own dating and sexuality experiences (Romo et al., 2002). Results indicated that maternal communication in Hispanic families influenced adolescents' behaviors and attitudes toward sex and adolescents' perceptions of openness in the mother-child relationship (Romo et al., 2002).

Sexual risk communication among Hispanic mothers and daughters, however, occurs at rates lower than other ethnic groups (Hutchinson et al., 2003). For example, a study examining sexual communication among Mexican mother-daughter dyads found that sexually active girls reported speaking less frequently about sexual behavior than girls who were not sexually active (Pick & Palos, 1995). Various cultural factors may contribute to this finding, and will be discussed in Chapter Two.

The present study attempted to elucidate a pathway through which the acculturation gap affects sexual risk communication rates between Hispanic mother and daughter and how this ultimately influences condom use. An exploratory model encompassing these factors was developed and tested. Data from the National

Longitudinal Study of Adolescent Health (Add Health), gathered by the University of North Carolina Population Center, has made new research on the well-being of immigrant children and families possible (e.g., Bankston & Zhou 2006; Gordon-Larsen, Harris, Ward, & Popkin, 2003; Harker, 2001; Harris, 1999; King, Harris, & Heard, 2004). This was a significant data set because certain Hispanic groups were over-sampled (described in the Data section in Chapter 3), thus increasing the number of children in immigrant and first and second-generation families who were selected. Additionally, the study was also conducted in the 1990s, which reflects the increasing representation of children from Hispanic families in the United States and diversity in race and ethnicity on a national level.

Add Health data are well-suited for this particular study for several reasons. First, it is one of the few adolescent studies in which contraceptive behavior is measured (Hansen, Paskett, & Carter, 1999). Many surveys do not address the topic of sexuality and birth control because of its sensitive nature; specifically, it is often difficult to obtain approval from Human Subjects review boards for studies that address adolescent sexuality. Additionally, this study was specifically developed in order to examine the relationships between adolescent health behavior and social factors. Finally, Hispanics were over-sampled in this study. Large national data sets collected previously that address health behaviors have not focused so heavily on the Hispanic population. The large number of Hispanic youth surveyed by the Add Health study enables a more comprehensive study of this population.

Add Health data were used in the present study to examine processes of acculturation in mother-daughter relations in the United States, and the impact it had on

the adolescent daughters' condom use. Specifically, the study centered on the following research question: What kind of impact does the acculturation gap have on sexual risk communication and ultimately, reported condom use? The current project examined this research question by testing the support for a proposed model addressing these factors. This general overview of the project is outlined in Chapter Two, where the model is posited.

Chapter 2: Review of the Literature

This chapter serves to provide a theoretical context for the proposed study, review the relevant acculturation literature, outline relationships in the exploratory model, present the entire model, along with research questions, and finally provide definitions for terms used in the study. First, a social psychological context – social learning theory - is presented, which explains why acculturation may impact sexual risk communication between mother and daughter. Next, a review of acculturation is presented and tied to social learning theory. Following this, each relationship within the exploratory model was explained, with the entire model ultimately presented at the end. Finally, definitions of terms and concepts used in the current study are provided.

Theoretical Perspective that Underlies the Present Study

Social Learning Theory. Social learning theory, developed by Bandura (1977) and later renamed Social Cognitive Theory, posits that individuals learn from the example of others, models, as well as from direct experience with rewards and punishments. Modeling refers to both observational learning and retaining instructional messages presented by the model (Bandura, 1977; Grusec, 1992). Most of Bandura's (1977) early work addressed social learning theory through the context of research on aggression; specifically, Bandura and colleagues found that models influence the aggressive, antisocial behavior of frustrated children (Bandura, Ross, & Ross, 1961). In one early study, mildly frustrated children were more aggressive towards a doll during play after watching an adult kick and punch the doll (Bandura et al., 1961). Bandura and colleagues concluded, based on these results, that individuals mimic the behavior of a model in certain circumstances (Bandura et al., 1961). Subsequent research has amply

demonstrated that models can influence a wide range of behaviors (Bandura, 1973; Baron & Richardson, 1994; Berkowitz, 1993; Huesmann, Moise, & Podolski, 1998; Manz & Sims, 1981; Rosenstock, Strecher, & Becker, 1988).

Social learning theory combines two previously established research lines: behavioral and cognitive learning. Behavioral learning posits that the environment causes individuals to engage in certain behaviors (Bandura, 1973; Bandura, 1977; Bandura, 1986). Cognitive learning posits that psychological factors influence the way an individual behaves (Bandura, 1973; Bandura, 1977; Bandura, 1986).

Research suggests that programs intended to reduce risk-taking sexual behaviors by teenagers are maximally effective when contraceptive information, discussions about adolescent sexuality, and skills training (e.g., decision making) are based on social learning techniques, such as modeling and the reinforcement of prosocial norms (Franklin & Corcoran, 2000). Unfortunately, many of the programs serving teens and their families do not utilize social learning or other similar approaches to facilitate effective communication about sex between parents and their adolescents. In addition, many programs do not emphasize effective familial communication about adolescent sexuality, specifically the prevention of pregnancy and STDs, and this lack of attention may explain, at least partially, why changes in adolescents' knowledge, attitudes, and skills have not always resulted in corresponding changes in their risk-taking sexual behaviors (Franklin & Corcoran, 2000). It is important to note, however, that oftentimes, attitudes and beliefs do not match behaviors regardless of the information and models available to individuals (Sutton, 2006). Despite this, researchers and evaluators who are developing sexual health programs should still recognize the importance of family to Hispanic

adolescents, and subsequently recognize that parents have the potential to be viewed as a model by their children.

Children do not automatically view parents as models. There are certain factors that influence the importance and relevance of the model and its subsequent impact. Research has shown that certain aspects and characteristics of the model significantly influence the likelihood of actually adopting the behavior (Bandura, 1973; Bandura, 1977; Bandura, 1986). Individuals are more likely to pay attention to models with such characteristics as trustworthiness (Mischel, 2007; Valente & Davis, 1999), similarity (Bandura, 1977; McCullagh, 1987; Mischel, 2007), social power (Wann & Brewer, 1998), and perceived competence (Mischel, 2007; Mischel & Grusec, 1966; Paradise, Conway, & NcZweig, 1986).

The mother-daughter relationship, in particular, has been found to be very significant among Hispanics (Boyd-Franklin & Garcia-Preto, 1994; Penalosa, 1968; Madsen, 1964; McKee, Varasz, & Weber, 2004; Villaurrel, 1998). Specifically, out of the different relationships within the Hispanic family, research has established that the mother-daughter relationship is the closest one (Boyd-Franklin & Garcia-Preto, 1994; Penalosa, 1968; Madsen, 1964, McKee, Karasz, & Weber, 2004). This information suggests that family members occupy positions of importance, and thus most likely are viewed as similar, trustworthy, competent, and socially powerful among other family members. Thus, mothers serve as a significant and relevant model for Hispanic adolescents, and the messages and behavior that they convey impact the decisions that Hispanic adolescents make (Boyd-Franklin & Garcia-Preto, 1994; Penalosa, 1968; Madsen, 1964; McKee et al., 2004).

Research establishing the relevance of the mother role in Hispanic adolescents' lives has seldom taken the process of acculturation into account. Acculturation is a powerful and influential factor in the lives of Hispanics living in the U.S. (Cabassa, 2003; Gordon, 1964); it affects individuals' values, beliefs, and behaviors and therefore, it seems probable that it will influence the likelihood that a Hispanic daughter will view her mother as a model. Before the specific ways in which acculturation may influence model status can be discussed, acculturation, as a construct, must be reviewed.

Acculturation Research Trends and Issues

Acculturation, classically defined, refers to "...those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact with subsequent changes in the original culture patterns of either or both groups" (Redfield, Linton, & Herskovits, 1936, p. 149). Acculturation has been defined as both a unidimensional process and a bidimensional process. The unidimensional process specifies that acculturation occurs on a continuum, ranging from immersion in heritage culture to immersion in host culture. The bidimensional process specifies that there are two separate components to acculturation – immersion in host culture and immersion in heritage culture.

Theorists point out that the effect of acculturation on health outcomes is unclear and muddled because specific pathways and models have not been developed linking acculturation to health behaviors (Abraido-Lanza et al., 2006). The purpose of the present study is to attempt to bridge this gap in the literature and develop an exploratory model that identifies the role of the acculturation gap on sexual risk communication, and ultimately condom use. The following section will discuss research addressing

acculturation and its measurement, as well as the acculturation gap and its relationship to health risk behaviors.

Conceptualizations of acculturation. As mentioned previously, even though the acculturation process has been linked to health risk behavior outcomes, the relationship is unclear. A significant reason for the varying research outcomes on this topic is because of the way researchers conceptualize and measure acculturation (Abraido-Lanza et al., 2006). Specifically, researchers have taken different theoretical approaches to acculturation, which ultimately leads to different empirical outcomes – some outcomes that indicate more acculturation is indicative of more risk behavior and some outcomes that indicate more acculturation is indicative of less risk behavior (Ford & Norris, 1993; Norris & Ford, 1994; Rapkin & Erickson, 1990; Sabogal, Perez-Stable, Otero-Sabogal, & Hiatt, 1995).

Unidimensional theory of acculturation. The appropriate methods of measuring and conceptualizing acculturation have been extensively debated. Initially, theories of acculturation centered on a unidimensional interpretation of the acculturation process. This interpretation, known as the unidimensional model, specifies that the acculturation process is on a continuum, ranging from an individual's exclusive immersion in his heritage culture to exclusive immersion in the host culture (Cabassa, 2003; Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005). It was originally conceptualized by Milton Gordon, who took an assimilationist, Eurocentric perspective and described acculturation as unidimensional and inevitable (Lara et al., 2005; Sena-Rivera, 1976). In his book, *Assimilation in American Life*, he specified that immigrants must adopt the “middle-class cultural patterns of largely white Protestant, Anglo-Saxon origins”

(Gordon, 1964, p. 72). He posited that acceptance into mainstream culture is always accompanied by "...the disappearance of the ethnic group as a separate entity and the evaporation of its distinctive values" (Gordon, 1964, p. 73).

Researchers, however, are critical of this conceptualization of acculturation. They argue that it bases the reality of the acculturation process on the experiences of white, European immigrants who transitioned into a society (the United States) that was phenotypically similar and a prior product of European immigration (Rueschenberg & Buriel, 1989). Additionally, critics say that it ignores any potential contribution the acculturating group may have on the process. As mentioned in Chapter 1, acculturation is one factor that has been consistently linked in the literature as affecting risk behavior (Romero, Martinez, & Caravajal, 2007; Sanchez, Rice, Stein, Milburn, & Boris, 2009). Specifically, the studies that determined acculturation were associated with higher levels of risk behavior relied on a measure of acculturation that determined how closely aligned individuals were with only the host U.S. culture; they did not identify how closely aligned individuals were with their country-of-origin culture. In addition, they did not determine how their acculturation levels matched with individuals in close relationships around them, such as the family (Kaplan, Erickson, Juarez-Reyes, 2002; Samaniego & Gonzales, 1999; Wall, Power, & Arbona, 1993).

Bidimensional theory of acculturation. Other researchers have attempted to correct the weaknesses they see in the unidimensional model by creating the bidimensional theory of acculturation. This theory specifies that the acculturation process has two primary components - participation in the culture of origin and participation in the host culture (Berry, 1997). Some research has indicated that empirically,

bidimensional models of acculturation are stronger than unidimensional models. For example, Ryder, Alden, and Paulhus (2000) conducted a study examining the validity of these two types of models, by comparing their explanatory power in terms of how acculturating Asian individuals identified themselves. Their results indicated that the bidimensional model is a more valid and useful operationalization of acculturation (Ryder, Alden, & Paulhus, 2000).

Issues Related to Identifying and Measuring Acculturation

Acculturation scales using unidimensional and bidimensional theories.

Investigators have found acculturation measurement to be somewhat elusive and perplexing (Blomstedt, Hylander, & Sundquist, 2007). Many researchers have criticized the scales that have been developed based on unidimensional and bidimensional conceptualizations of acculturation (Blomstedt, Hylander, & Sundquist, 2007). One major criticism leveled against these scales is that they lack adequate demographic and psychometric information, which would allow comparisons across people of different ages, samples, interview sites, and geographic locations. In this way, the external validity of the measures has been overshadowed by the emphasis on establishing internal validity (Sue, 1999).

In a review of bidimensional models of acculturation, investigators found that only one-fifth of the measures permitted separate scores to be calculated on both American and Hispanic acculturation factors – a necessity for a measure designated as “bidimensional” (Mendoza, 1989; Zea, Asner-Self, & Birman, 2003). In addition, critics argue that there also is a need to include standardized measures of socioeconomic status,

considering that in general, lower levels of education are related to lower acculturation scores.

Critics also specify that weaknesses of unidimensional and bidimensional scales are that they rely on ethnic stereotypes, (e.g., Hahn, 1995; Hahn & Stroup, 2002; Hunt, Schneider, & Comer, 2004; Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005), typically include multiple dimensions of acculturation which are summarized and distilled down to a total acculturation score (e.g., Burnham, Hough, Karno, Escobar, & Telles, 1987; Coronado, Thompson, McLerran, Schwartz, & Koepsell, 2005; Olmedo & Padilla 1978). This methodological issue has prompted discussion of the validity of the acculturation construct as it is currently assessed (Hunt et al., 2004; Rudmin, 2003). Despite the problems with acculturation measurement, the inclusion of acculturation measures remains an essential component for research on health issues with Hispanic populations (Cortés et al. 2003).

Proxy measure of acculturation. Based on this information, many researchers in the health field have determined that although both unidimensional and bidimensional approaches are used to measure the extent of acculturation, neither one of them is completely optimal to study the topic (Gordon-Larsen, Harris, Ward, & Popkin, 2003). Even though these methods are less than optimal, they are the prevailing methods of studying acculturation in the literature (Gorden-Larsen et al., 2003). However, the data set that will be used (and was discussed in chapter 1), Add Health data, does not contain validated and reliable multi-component acculturation scales. As a result, a proxy conceptualization of acculturation will be calculated, using daughters' acculturation level. Previous researchers have used generation status, years of residence in the United States,

proportion of the respondent's life lived in the United States, or age at arrival in order to approximate acculturation status (Becerra, Hogue, Atrash, & Perez, 1991; Leclere, Jensen, & Biddlecom, 1994; Scribner & Dwyer, 1989). Research suggests that Anglo-Hispanic cultural differences become less noteworthy as successive generations of Hispanics are born in the US (Knight & Kagan, 1977; Knight, Kagan, Nelson, & Gumbiner, 1978). In addition, previous measures of acculturation that were comprised from the Add Health Data relied on generation status, years in the U.S., or age at arrival (Hahm, Lahiff, & Guterman, 2003; Popkin & Udry, 1998).

Many studies also use language use to measure levels of acculturation (Farver et al., 2002; Heck, Franco, Jurkowski, & Sheinfeld, 2008; Samaniego & Gonzales, 1999; Springer, Lewis, Kelder, Fernandez, Bolloso, & Hoelscher, 2009). Language facility is a very strong indicator of acculturation level (Cuellar, Harris, & Jasso, 1980; Farver et al., 2002; Mendoza, 1989; Padilla, 1980; Samaniego & Gonzales, 1999). Language is considered one of the most important components of ethnic identity among ethnically diverse individuals (Heck et al., 2008; Laroche, Kim, Hui, & Tomiuk, 1998; Noels, Pon, & Clement, 1996; Phinney, 1990; Springer et al., 2009). Generally speaking, English language use is commonly associated with higher levels of Latino acculturation (Marin & Marin, 1991). Although scales can identify culture specific values and beliefs, language is considered more central to the lives of people from other countries and easily measureable.

Many studies examining the relationship between acculturation and health outcomes have created a measure of acculturation using generational status and language use in conjunction with one another (Epstein, Dusenbury, Botvin, & Diaz, 1996; Gil,

Wagner, & Vega, 2000; Heck et al, 2008; Springer et al., 2009; Unger, Cruz, & Rohrbach, 2000; Zapata, & Katims, 1994). In addition, previous measures of acculturation that were comprised from the Add Health Data primarily relied on language use and length of time in the host country (Hahm, Lahiff, & Guterman, 2003; Heouyk, Hahm, Lahiff, & Barreto, 2006).

For the current study, the proportion of the daughter's life in the U.S. will be used to assess acculturation. Many studies examining the relationship between acculturation and health outcomes have created approximated acculturation using this method (Epstein, Dusenbury, Botvin, & Diaz, 1996; Gil, Wagner, & Vega, 2000; Harris & Chen, 2004; Unger, Cruz, & Rohrbach, 2000; Welte, & Barnes, 1995; Zapata, & Katims, 1994). It is important to note, however, that language use will also be used to conceptualize acculturation for one of the iterations of the original model tested. Proportion of daughter's life in the US will be the primary way in which acculturation is conceptualized.

Variables and Relationships in the Exploratory Model

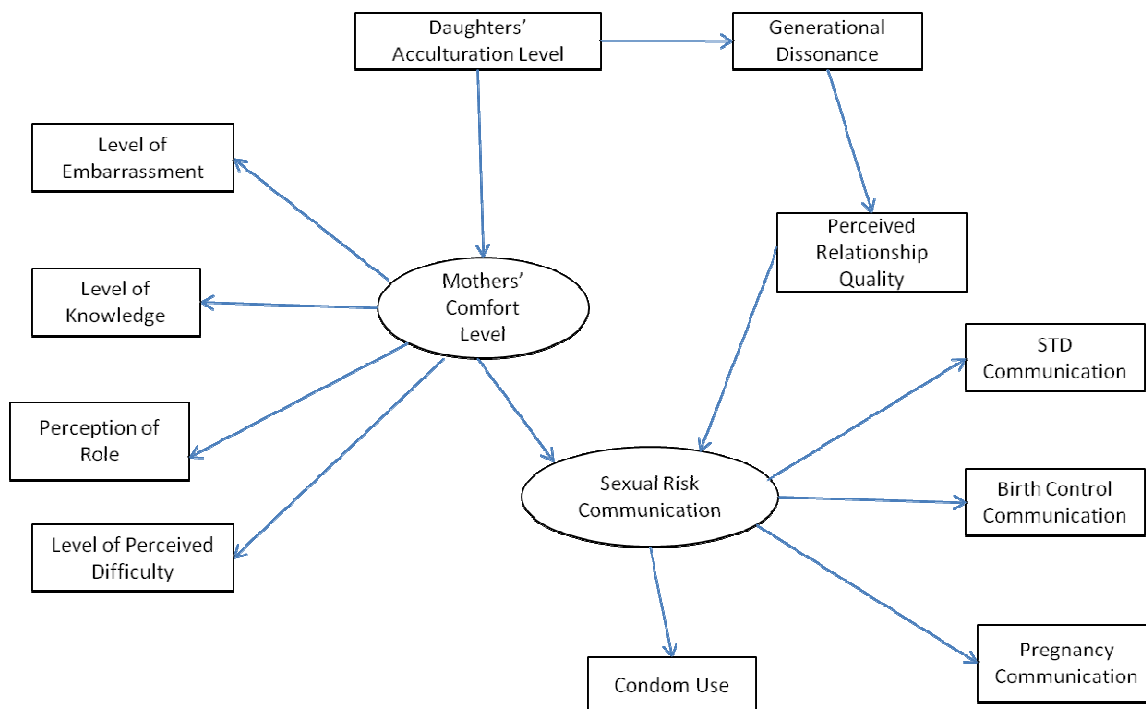
Regardless of the conceptualization of the construct, researchers agree that acculturation is significantly associated with changes in beliefs, behaviors, and values among immigrating individuals (Berry, 1997; Cabassa, 2003; Gordon, 1964). The degree and valence of these changes, however, varies. As mentioned previously, social learning theory predicts that individuals respond to messages from models that are trustworthy, similar, possess social power, and competence. If acculturation levels differ between mother and daughter, and subsequently beliefs, behaviors, and values differ between these two, then overall the mother may not be perceived as a suitable, relevant model to

her daughter. This is the theoretical reasoning that underlies the present study. An exploratory model has been developed in order to explain how a mothers' role as model may be attenuated by an acculturation gap and subsequently influence the rate of sexual risk communication between mother and daughter, and ultimately, reported condom use by the daughter.

The overall model is presented in Figure 1. Each relationship within the integrated, exploratory model will be discussed in detail and presented as hypotheses. The overall model addresses the relationships among several variables: the daughters' level of acculturation, generational dissonance, mothers' comfort level discussing sexual risk with her daughter, perceived relationship quality, sexual risk communication, and reported condom use. Structural equation modeling will be used to evaluate the data and therefore, several latent variables will be included in the analysis. These latent variables include mothers' comfort level discussing sexual risk with her daughter and sexual risk communication. The overall model and paths will be discussed first, followed by a discussion on the latent variables.

Figure 2.1:

Path through which the Acculturation Gap affects Condom Use



The Acculturation Gap Hypothesis

Berry and Sam (1996) developed a theory of acculturation, based on the bidimensional model, to explain the different outcomes and paths that immigrants take when they enter a new country. They segmented acculturation into four modes – assimilation, separation, integration, and marginalization - that reflect immigrants' orientation toward their new identity and their heritage identity. Separation is characterized by possessing a strong orientation toward the heritage culture, while rejecting the host culture. Integration is characterized by embracing both the host and the heritage cultures and marginalization is characterized by exclusion from both host and

heritage cultures. Assimilation is characterized by embracing the host culture, while rejecting the heritage culture (Berry & Sam, 1996; Cabassa, 2003).

Portes and Rumbaut (2001) expanded this theory, positing that the speed at which parent and child acquire cultural capital impacts the parent-child relationship significantly (Portes & Rumbaut, 2001). Specifically, according to this model, acculturation may range from dissonant acculturation, whereby the child acquires cultural capital faster than the parents to consonant acculturation, whereby parent and child acquire cultural capital at the same speed. In the case of dissonant acculturation, the parental role is undermined and parents cannot thus uphold authority (Portes & Rumbaut, 2001). This theoretical perspective forms the basis of the acculturation gap hypothesis. Research has shown that acculturation is strongly associated with time spent in the host country (Palumbo & Teich, 2004). A majority of research, however, shows acculturation rates, in accordance with the acculturation gap hypothesis, does not occur at the same rate for parents and children; specifically, children acculturate faster than parents (Pasch et al., 2006; Trinh, Rho, Lu, & Sanders, 2009; VanHook & Baker, 2010). Children typically adopt the culture, customs, and language faster than their parents (Pasch et al., 2006; Trinh et al., 2009; VanHook & Baker, 2010). This has been found extensively in research examining successive generations of immigrant youth, which will be described in more depth in the next section.

Hypothesis 1: Relationship between the daughters' acculturation level and generational dissonance. The acculturation gap hypothesis specifies that in order to avoid family conflict and stress, parent and child must have similar levels of acculturation. If parent and child do not match in these levels, conflict and conduct

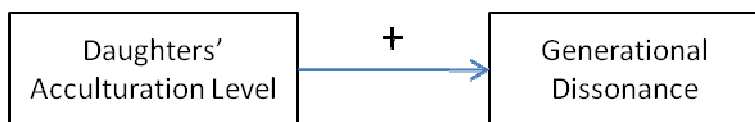
problems result. The resulting conflict and conduct problems are known in the literature as generational dissonance. Many studies have documented the effect of the acculturation gap on parent-child interactions. In one study of Cuban families, researchers found that children acculturated faster than their parents, resulting in more intergenerational gaps, family conflict, and less communication (Szapocznik & Hernandez, 1988; Szapocznik & Kurtines, 1980). Gil and Vega (1996) conducted another study on Nicaraguan and Cuban immigrant families and found that adolescents have more initial language conflicts than their parents, but their parents have more long-term language conflicts, an indication that overall, children acculturate faster. These acculturation-related stressors were associated with lower family cohesion and more family conflict (Gil & Vega, 1996). In a study of Asian Indian families, Farver, Narang, and Bhadha (2002) found that mismatches in parent and youth acculturation style were associated with greater perceived conflict and poorer perceived relationship quality between parent and child. It is important to note that previous studies examining the acculturation gap hypothesis among a Hispanic population were culture-specific, had a sample of both girls and boys, and mothers and fathers. No studies exclusively examined the mother-daughter relationship or used a nationally-representative sample with participants from multiple Hispanic cultures, which the current study does.

In the present study, there was not a direct way to measure the acculturation gap between parent and child. Based on the acculturation gap theory, however, it was hypothesized that the higher the level of acculturation of the child (i.e., the lower the percentage of life lived in the U.S), the more dissonance there will be in the relationship (Figure 2). This hypothesis was a direct reflection of the acculturation gap hypothesis

because, as mentioned previously, this theory specifies that children acculturate faster than their parents, leading to discord in the relationship.

Figure 2.2:

Daughters' Acculturation Level Leads to Generational Dissonance



It is imperative to recognize, however, that adolescence can be characterized by conflict. A review of research suggests that conflict between parents and adolescents increases and peaks during the early years of adolescence and is associated with the onset of puberty (Holmbeck & Hill, 1991; Steinberg, 1988). Specifically, during middle school years (around grades seven and/or eight), researchers have found increased levels of conflict; the researchers consider this period to be the transitional years between later childhood and adolescence (Allison, 1999; Galambos & Almeida, 1992; Smetana & Asquith, 1994). In addition, conflict within families occurs more often between adolescents and their mothers, and between mothers and daughters in particular (Paikoff & Brooks-Gunn, 1991).

Based on this information, it seemed likely that the overall model proposed in this study would differ between those daughters in early adolescence and those in late adolescence. Specifically, it seemed likely that the relationship between the acculturation gap and generational dissonance would be more positively correlated for those adolescents in late adolescence, where there is less conflict, than early adolescence, where there is most likely more conflict. The acculturation gap may not have as powerful an effect on generational dissonance during early adolescence. Specifically, because

dissonance occurs at high rates in the relationship during this time period, it may not be related to the level of acculturation that the daughter has. Essentially, there would be no correlation between acculturation level and dissonance level during early adolescence. Because of the lack of influence of the acculturation level on dissonance, the rest of the relationships in the model for early adolescence may not be significant. As a result, the model may have stronger, more significant fit statistics with participants in late adolescence in comparison to early adolescence. These scenarios were outlined and described more thoroughly in the research questions section.

Hypothesis 2: Impact of the daughters' acculturation level on mothers' comfort level discussing sexual behavior with her daughter. Acculturation has been found to significantly impact the beliefs, values, and attitudes of individuals in general, and the Hispanic community in particular. These specific values include machismo and familism. Machismo is a term that refers to "...rugged, aggressive male behavior, rooted historically in the tradition of male superiority found within most old and new world cultures" (Mayo, 1997). Also, familism has a significant impact on the values and behavior of Hispanics. Typically, it is conceptualized as strong identification and attachment among extended and nuclear families, which is accompanied by feelings of loyalty and reciprocity (Rodriguez, Mira, Paez, & Myers, 2007; Triandis, Marin, Betancourt, Lisansky, & Chang, 1982). Both of these values heavily influence ideas of culturally acceptable, gender-based sexual behavior for young Hispanic men and women (Unger, 2000; Villarruel, 1998).

These values, to a certain extent, dictate sexual gender conduct; there are specific prescriptions and experiences attached to sexual conduct by gender (Gagnon, 1990).

Hispanic adolescents, for example, are expected to exhibit traditional gender role attitudes regarding virginity, children, and the relationship between love and marriage (Marin, Tschann, Gomez, & Kegeles, 1993; Padilla & Baird, 1991; Padilla & O'Grady, 1987; Raffaelli & Ontai, 2004). Instead, Hispanic adolescents, not females, are expected to control decisions regarding sexual behavior (Marin et al., 1993; Padilla & Baird, 1991; Padilla & O'Grady, 1987; Raffaelli & Ontai, 2004).

Acculturation, however, affects familism and machismo. Research has determined that levels of familism decrease as acculturation increases (Cortes, 1995; Rogler & Cooney, 1984; Gil, Vega, & Dimas, 1994). Researchers found that second-generation adult children displayed and reported less familism than their first-generation immigrant parents. Gil et al. (1994) conducted research on Florida middle school students and determined that perceived acculturation gaps between parents and children increased with higher levels of U.S. cultural immersion. Additionally, students with high levels of U.S. cultural immersion reported low levels of familism (Gil et al., 1994).

Machismo also decreases as acculturation increases. One study has found that acculturation is associated with increases in egalitarian attitudes toward men and women (Leaper & Valin, 1996). Specifically, this study examined factors related to attitudes about gender-role equality in 50 Mexican American married mothers and 33 Mexican American married fathers. Each parent completed the "*Attitudes Toward Gender*" Scale (a modified version of the Attitudes toward Women Scale) and other attitude questionnaires (Leaper & Valin, 1996). Mothers who were born in the United States were significantly more likely to have gender-egalitarian attitudes (Leaper & Valin, 1996). In addition, researchers found an inverse relationship between acculturation and levels of

machismo in studies with Puerto Rican men who had immigrated to the United States; as acculturation level increased, machismo decreased (Mayo, 1994).

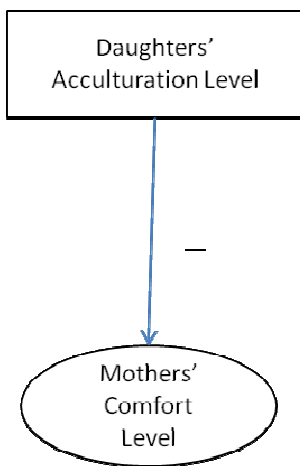
Between 1943 and 1999 in the United States, adolescents' sexual attitudes and behavior have changed substantially, with the largest shifts occurring among girls and young women (Wells & Tweange, 2005). Both young men and women became more sexually active over time, as measured by age at first intercourse (decreasing from 19 to 15 years among young women) and percentage sexually active (increasing from 13% to 47% among young women) (Wells & Tweange, 2005). Attitudes toward premarital intercourse became more lenient, with approval increasing from 12% to 73% among young women and from 40% to 79% among young men. In addition, feelings of sexual guilt decreased (Wells & Tweange, 2005). This behavior contrasts to the values of familism and machismo, which dictate more conservative attitudes towards sexual behavior.

The acculturation gap hypothesis suggests that children acquire cultural capital of the host country faster than their parents and therefore the presence of a gap indicates that mothers' may still hold on to the traditional beliefs about sexual behavior. Because these values emphasize giving sexual decision-making power to the male and also remaining a virgin, the mother may not feel comfortable discussing sexuality with her daughter. Also, it is noteworthy that if both mother and daughter have low acculturation levels, the mother may still not feel comfortable discussing sexuality because of her traditional values. In conclusion, it seems likely that the presence of an acculturation gap (or the absence of a gap when mother and daughter both have low acculturation levels) would be

associated with the mother feeling less comfortable discussing sexual risk with her daughter (Figure 2.3).

Figure 2.3:

Relationship between the Daughters' Acculturation Level and Mothers' Comfort Level Discussing Sexual Risk with Her Daughter



Hypothesis 3: Impact of the generational dissonance on daughters' perceived relationship quality. Research on Hispanics has identified the concept of familism to be a critically important culture-specific value (Moore, 1970). Typically, it is conceptualized as strong identification and attachment among extended and nuclear families, which is accompanied by feelings of loyalty and reciprocity (Triandis et al., 1982; Cooley, 2001). Research has documented the importance of family above all other institutions for Mexican Americans (Avirez & Bean, 1976), Puerto Ricans (Glazer & Moynihan, 1963), Cuban Americans (Szapocznik & Kurtines, 1980), and Central and South Americans (Cohen, 1979). Furthermore, Hispanic families are perceived as a significant source of support that encourages psychological well-being (DeLa Torre, 2009; Mannino & Shore, 1976; Miranda, 1980; Valle & Martinez, 1980).

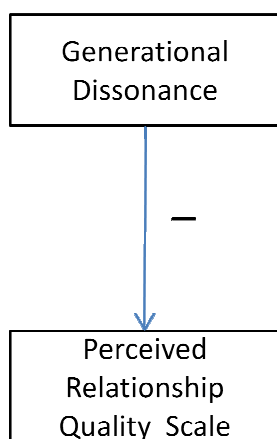
In terms of social learning theory, it is highly probable that family members serve as significant models to other members of the Hispanic family, and that the parental position represents social power, similarity, and competence. The mother-daughter relationship, in particular, has been found to be valuable among Hispanics (Boyd-Franklin & Garcia-Preto, 1994; Penalosa, 1968; Madsen, 1964; McKee et al., 2004). Specifically, out of the different relationships within the Hispanic family, research has found that the mother-daughter relationship is the closest one (Boyd-Franklin & Garcia-Preto, 1994; Penalosa, 1968; Madsen, 1964; McKee et al., 2004). This information suggests that family members occupy positions of importance, and thus most likely are viewed as similar, trustworthy, competent, and socially powerful among other family members. Thus, mothers serve as a significant and relevant model for Hispanic adolescents, and the messages and behavior that they convey impact the decisions that Hispanic adolescents make (Boyd-Franklin & Garcia-Preto, 1994; Penalosa, 1968; Madsen, 1964; McKee et al., 2004).

Acculturation, however, has the power to alter the perception of the relationship. When parent and child differ in their level of acculturation (the acculturation gap), family conflict results (generational dissonance) (Portes & Rumbaut, 2001). Generational dissonance, in turn, has been found to undermine parental authority and the traditional values that encourage strong and positive relationships among family members (Torres-Stone & Meyler, 2007; Marin & Marin, 1991; Wall, Power, & Arbona, 1993). Thus, the messages that mothers convey, either through behavior or instruction and communication, are weakened because of their weakened status as a model. As a result, peers and other sources become significant and relevant models for Hispanic adolescents.

Because generational dissonance undermines parental authority and erodes strong positive relationships among family members, it was hypothesized that daughters would not perceive a good relationship between her and her mother (Figure 2.4). This is supported by previous studies. Generational dissonance appears to be a risk factor for declines in the quality of the parent–child relationship (Birman, 2006; Farver et al., 2002; Kim, Chen, Li, Huang, & Moon, 2009; Tardiff & Geva, 2006). Empirical studies do indeed indicate that there are increased tensions between parents and children in the dissonant family context. Farver et al. (2002) noted that adolescents from generationally dissonant families reported more frequent and more intense family conflict.

Figure 2.4:

Relationship between Generational Dissonance and Daughters' Perceived Relationship Quality between Her and Her Mother



Hypothesis 4: Impact of mothers' comfort level and daughters' perceived relationship quality on sexual risk communication. As mentioned previously, sexual risk communication has been linked to condom use in the literature (Hutchinson, 2002; Hutchinson et al., 2003). The frequency of parent-child sexual risk communication, however, has been found to be dependent on two factors - parental beliefs and comfort

with the subject matter, as well as perceived relationship quality between mother and daughter (Holtzman & Robinson, 1995; King & Lorusso, 1997; Raffealli et al., 1998).

Mother-daughter discussion of sex is a frequent familial issue examined in the literature. According to Lefkowitz, Kahlbaugh, Au, and Sigman (1998), examining mother-daughter sexual risk communication is justified because daughters spend more time with mothers, talk to mothers more than fathers about personal problems, and feel closer to mothers than fathers. Research has found that there appear to be several barriers to effective familial sex communication, including discomfort talking about sex, misperceptions about adolescents' sexual behavior, and a lack of accurate information about sexual behavior (Raffealli et al., 1998). In one study on sexual communication between mothers and daughters, participants reported that sex in general was somewhat comfortable to talk about because it is perceived as a natural topic, but reported challenges in how to begin the conversation and what should be included (Coffelt, 2010). Research has established that parents need accurate information and support to feel more comfortable and confident that they possess the necessary communication skills to be effective in discussing risk-taking sexual behaviors with their adolescents (Burgess, Dziegielewski, & Green, 2005). Miller et al. (1998) found that, when mothers were open and receptive to discussions about sex with their adolescents, more sex topics were discussed and mothers and adolescents were more likely to be in agreement that the conversations had occurred.

Although effective familial sex communication can lead to decreased adolescent risk-taking sexual behaviors, discomfort experienced by parents can prevent effective sex education from occurring (Holtzman & Robinson, 1995; King & Lorusso, 1997). Because

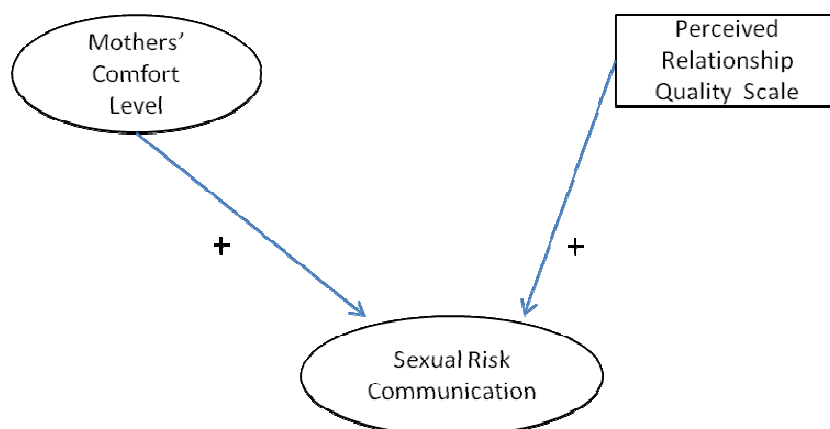
mothers who are less acculturated than their daughters likely hold traditional Hispanic values such as familism and machismo, they may not feel comfortable to discuss sexual behavior with their daughters. Therefore, it is hypothesized that the rate of sexual communication between mother and daughter would be affected by the level of comfort the mother has discussing this topic with her daughter (Figure 2.5).

In addition, perceived relationship quality between mother and daughter has been found to impact the sexual risk communication that transpires within this relationship. Adolescent perceptions of parental behavior have been proposed to exert a major influence on adolescent behavior (Acock & Bengston, 1980). Specifically, one study examined the role of perceived relationship quality on sexual risk communication between 751 minority adolescents and their mothers (Buhi & Goodson, 2007). Both maternal and adolescent reservations about discussing sexual behavior were recorded and determined how these were associated with communication behavior (Buhi & Goodson, 2007). Results indicated that the quality of the parent-teen relationship was predictive of communication behavior (Buhi & Goodson, 2007). In another study, 350 African-American females between the ages of 14 and 17 years and their mothers residing in the Philadelphia metropolitan area were interviewed (Jaccard, Dodge, & Dittus, 2003). Multiple regression analyses were used to predict adolescents' pregnancy attitudes from maternal-adolescent discussions about pregnancy, perceived maternal disapproval of pregnancy, and relationship satisfaction (Jaccard et al., 2003). The authors found that the quality of the mother-daughter relationship, in general, impacts adolescent attitudes toward pregnancy and condom use (Jaccard et al., 2003). The relationship between good relationship quality and sexual risk communication has been found for Hispanics as well.

For example, Hispanic adolescents' reports of higher quality of communication (i.e., more openness and fewer problems) with their mothers (but not fathers) were associated with greater extent of discussion about sexual topics (Baldwin & Baranoski, 1990). This information suggests that if generational dissonance, which is influenced by the acculturation gap, erodes the quality of the relationship between mother and daughter, then the level of sexual risk communication would be lower when daughters do not perceive a good relationship with her mother (Figure 2.5).

Figure 2.5:

Relationship among Mothers' Comfort Level Discussing Sexual Risk with Her Daughter, Daughters' Perceived Relationship Quality with Her Mother and the Level of Sexual Risk Communication Occurring within the Relationship



Hypothesis 5: Relationship between sexual risk communication and daughters' reported condom use. First, it is important to point out that using condoms is perceived as a male-centered activity. That is, the steps taken to use a condom during intercourse are typically taken by the male. The condom negotiation process, however, is more complex than that. Research shows that adolescents who had more power than their

partners in the domain of emotional intimacy were more likely to get their way about condom use than adolescents who had less power in this domain (Tschann, Adler, Millstein, Gurvey, & Ellen, 2002). Decision-making power was not related to whether adolescents got their way about condom use. Young men reported greater emotional intimacy power and greater decision-making power than young women. However, gender was not related to getting one's way about condom use. Therefore, if females hold the power in the relationship with her partner, it can be expected that she will have control over condom use (Tschann et al., 2002).

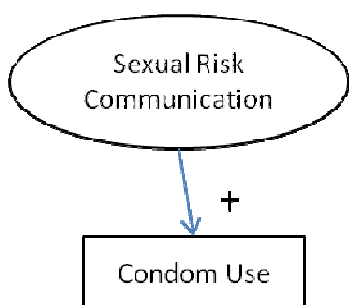
Research has established a link between sexual risk communication that transpires between parents and children and condom use that children report. A study by Whitaker (1999) found that teens' communication with their partners about sexuality and sexual risk was associated with increased condom use. In addition, this link has been explicitly found with mother-daughter dyads. A study by Hutchinson and Cooney (2003) examined communication patterns between mothers and daughters and the impact it had on sexual behavior patterns. They recruited 219 female participants from an inner-city adolescent medicine clinic in Philadelphia. The researchers found that higher levels of mother-daughter sexual risk communication were associated with fewer episodes of unprotected intercourse at 3-month follow-up. Another study by Hutchinson and Cooney (1998) found that mother-daughter communication about sex, as assessed from the daughters' perspective, was associated with increased condom use and partner discussion about condom use. The questions included in the study centered on how much information mothers' shared with their daughter about pregnancy, STDs, contraception, and sexuality in general. Another study by Miller, Levin, Whittaker, and Xu (1998) examined

discussions about condoms and sexuality between mother and adolescent and adolescents' condom use during their first and subsequent sexual encounters. A survey was administered to 372 sexually-active adolescents and their mothers who participated in the Adolescent Risk Behavior Study, a cross-sectional interview study conducted in New York, Alabama, and Puerto Rico. In the survey, adolescents were asked whether or not they discussed condom use with their mother and when this discussion(s) took place. In addition, they answered questions about their own condom use. Results indicated that mother-adolescent discussions about condoms that occurred prior to sexual debut were strongly associated with greater condom use during first intercourse and most recent intercourse, along with greater lifetime regular condom use.

Clearly, there is an association between sexual risk communication between mothers and daughters and daughters reported condom use. However, if an acculturation gap exists, which affects generational dissonance, and subsequently both perceived relationship quality and mothers' comfort level discussing sexual risk with her daughter, than sexual risk communication is not likely to occur. This would ultimately influence reported condom use by the adolescents (Figure 2.6). It is important to note that the condom use variable was only examined for a subset of the sample that was being used; this is due to the fact only a percentage had the opportunity to use a condom, most likely due to the age range sampled in the Add Health data set.

Figure 2.6:

Relationship between Sexual Risk Communication and Condom Use



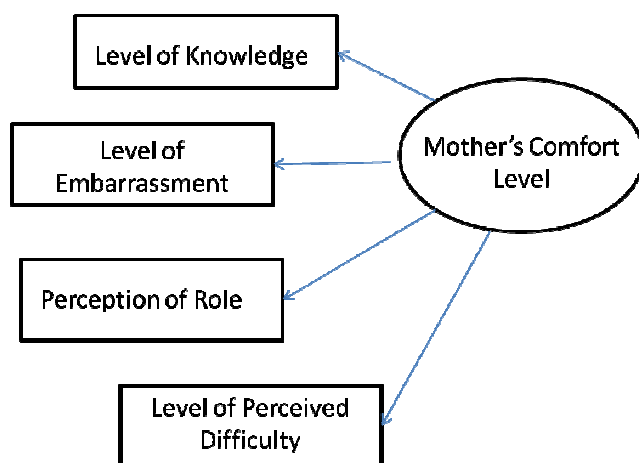
Latent Variables

Hypothesis 6: Four indicators will accurately measure the latent variable, mothers' comfort level. In the current study, mothers' comfort level with discussing sexual risk was a latent variable. This means that it is not directly tested and instead, multiple indicators composed the variable. Based on the information presented, it seems likely that four factors comprise a mothers' comfort level with discussing sexual risk – personal knowledge about sex, their level of embarrassment with discussing sex, their perception of the difficulty in discussing sex, and the perception of their role in discussing sex. First, in order for a mother to feel comfortable discussing sex, she must feel as though she has enough knowledge to discuss this topic with her child. In addition, in order for a mother to feel comfortable in discussing sex, she must not perceive the task as too difficult. Also, she must not feel embarrassed or ashamed when discussing sex or this will influence her comfort level in discussing sex. Finally, the mother must recognize that part of her role in her relationship with her daughter is to discuss sex and sexual behavior. Previous research has utilized this measure in studies of sexual health beliefs, which have been labeled differently according to the particular study, but the degree to

which the statements that reflect these components hold together and reflect one underlying construct has not been determined (Meneses, Orrell-Valente, Guendelman, Oman, & Irwin, 2006). In addition, this measure has not been tested for this particular population – Hispanic mothers. It is essential to determine whether or not this variable, which is used to approximate mothers’ comfort level in other Add Health research, applies to this subpopulation (Meneses et al., 2006). This hypothesis is shown in Figure 2.7. The specific way in which this latent variable was operationalized is discussed in Chapter 3.

Figure 2.7:

The Relationship Between Mothers’ Comfort Level Indicators and the Latent Variable, Mothers’ Comfort Level



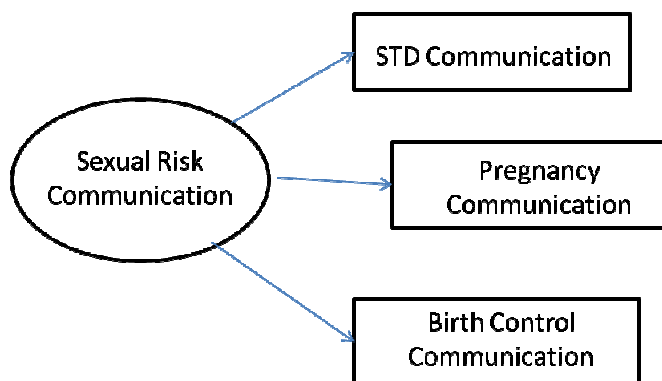
Hypothesis 7: Three indicators will accurately measure the latent variable, sexual risk communication. What constitutes sexual risk communication? Research has defined sexual risk behavior in a variety of ways, depending on the demographic group that is the subject of the study and the theoretical perspective of the researchers. In general, CDC defines sexual risk behavior, at least, as any behavior that puts them at risk

for acquiring an STD or unintended pregnancy, or a behavior that decreases the risk of acquiring an STD or unintended pregnancy (CDC, 2006, <http://www.cdc.gov/mmwr/PDF/SS/SS5505.pdf>).

Therefore, this study attempts to elucidate what this particular subpopulation – Hispanic mothers and daughters – consider to be sexually risky and subsequently about which they communicate. Many prior studies have examined pregnancy communication, STD risk communication, and birth control communication as proxies for sexual risk communication, but the degree to which these factors hold together as a sexual risk communication measure has not been determined (Eisenberg, Bearinger, Sieving, Swain, & Resnick, 2007; Hutchinson et al., 2003). The model for this hypothesis is shown in Figure 2.8. The specific way in which this latent variable was comprised is discussed in Chapter 3.

Figure 2.8:

The relationship between sexual risk communication indicators and the latent variable, sexual risk communication

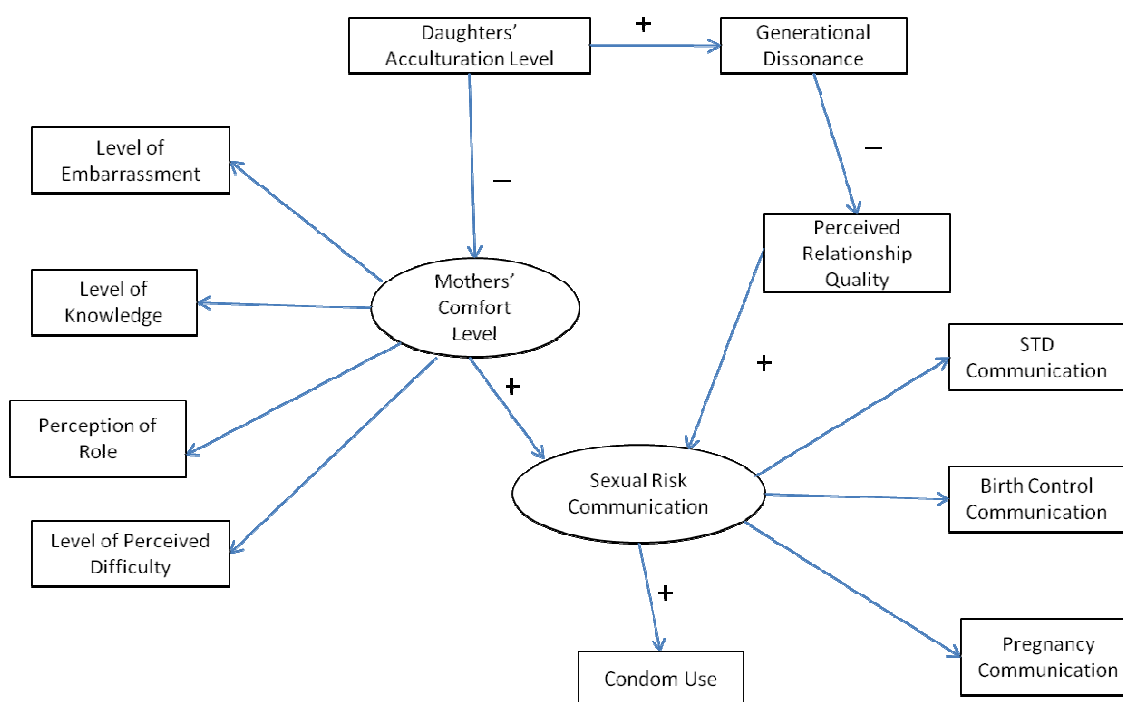


Exploratory Model and Follow-up Research Questions

This following section presents specific research questions that were examined in the current study. Outlined below is the full exploratory model with the directionality of the associations noted for each of the pathways as if an acculturation gap is present between mother and daughter (Figure 2.9). The present study attempts to determine if an acculturation gap has an impact on sexual risk communication and ultimately, reported condom use. The purpose of the study was to evaluate the overall fit of this model, which as mentioned previously, will be accomplished using Structural Equation Modeling, and outlined further in Chapter 3.

Figure 2.9:

The overall model, including latent variables and their indicators, linking the daughters' acculturation level and generational dissonance to sexual risk communication between mother and daughter and reported condom use



Definitions

Hispanic adolescent youth. Hispanics, as a demographic group, currently total approximately 43 million people in the United States. More than three-quarters of Hispanics live in the West and South, and half of them live in two states - Texas and California (Guzman, 2000). Thirty-five percent of this group is less than 18 years old (Guzman, 2000). People of Mexican origin represent the largest group of Hispanics in the United States, at 66.8%, followed by Puerto Ricans (8.6 percent), Cuban Americans (3.8

percent), and other Hispanic (20.8 percent) (Guzman, 2000). Those who identify as having one of these ethnicities are considered “Hispanic.”

The current study focuses on the time period of adolescence in the lives of Hispanics in the US. There is no standard definition of adolescence. Although often captured as an age range, chronological age is just one way of defining adolescence (Maternal Child and Health Bureau, 2002). Adolescence can also be defined in numerous other ways, considering such factors as physical, social, and cognitive development as well as age (Maternal Child and Health Bureau, 2002). Historically, adolescence has been defined as the “...period of life after puberty during which a young person remains in a position of dependence (Graff, 1985). For the purposes of this study, adolescents are defined as youth ages 10 to 18, which is a general way adolescence is defined. Using this definition, there were an estimated 36.6 million adolescents in the United States in 2000 (U.S. Census Bureau, 2001)

Condom use. Condom use in the current study refers to whether or not an adolescent reported using condoms the first time she had intercourse, as well as if she used condoms at most recent intercourse. The specific questions that will be used to determine this information will be detailed in Chapter 3.

Acculturation gap. The acculturation gap hypothesis refers to the mismatch in acculturation level between parent and child, which subsequently produces parent-adolescent conflict, and decreased perceived relationship quality and communication (Coatsworth et al., 2002; Smokowski & Bacallao, 2006; Szapocznik et al., 1978; Szapocznik & Williams, 2000). In terms of the current study, it refers to the years the adolescent has spent in the U.S. The longer the time the adolescent has spent in the U.S.,

the more acculturated the adolescent is theorized to be. This is based on prior research that has established that children acculturate faster than their parents and become more acculturated as they spend more time in the host country (Garcia-Preto, 1982; Hernandez, 2000; Palumbo & Teich, 2004; U.S. Census Bureau, 2000). The specific way in which the acculturation gap will be operationalized in the current study will be detailed in the third chapter.

Chapter 3: Methods

Add Health Data Set Overview

The participants in this study were part of the National Adolescent Health study, a program project designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris, and funded by a grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 17 other agencies. The Add Health survey aims to investigate adolescent physical and mental health, as well as disparate factors that may influence health, such as neighborhood safety, involvement in violence, social integration, family structure, and romantic relationship history. The unique aspect of Add Health is its focus on social networks as a means of understanding adolescent health. Rather than relying on subjects' reports of peer behavior, Add Health obtains information directly from some subjects' peers. The in-home interview portion of the survey contains measures addressing the following topics: social or familial connections with other study participants, household composition, frequent activities including exercise and sports, feeling of belonging in school and neighborhood, close relationships with adults, measures of physical and mental health, previous day's food intake, access/use of medical care, weight and eating disorders, use of vehicle safety devices such as helmets and seatbelts, health education, school disciplinary record, sexual history and attitudes towards sexual relationships, STD history, knowledge about birth control, detailed information about past and ideal romantic relationships, friend risk-taking behavior, self-efficacy, illegal and legal drug use, ease of access to weapons and drugs, delinquency, experiences with violence, connections between drugs and violence, reproductive history, religious attitudes and

behavior, educational plans and future predictions, and interviewer description of respondent. The in-home parent interview portion of the study asks participants questions addressing the following topics: inheritable health conditions, marriages and marriage-like relationships, neighborhood characteristics, involvement in volunteer, civic, and school activities, health-affecting behaviors, education and employment, household income and economic assistance, parent-adolescent communication and interaction, parent's familiarity with the adolescent's friends and friends' parents.

Data were gathered from participants using the CASI/CAPI system. The CASI system refers to computer-assisted self-interviewing, where the participant sits at a computer terminal to answer questions and no interviewer is present. CAPI refers to computer-assisted personal interviewing, where an interviewer is present to act as a host or guide to the participant. These are useful techniques because they eliminate the time and expense needed to enter in all of the data once it is collected. A cost-effectiveness analysis revealed that although the CASI system is more cost-effective than traditional self-administered paper-and-pencil questionnaires (SAQs) when the sample size is large, as in the case of the Add Health study (Brown, Vanable, & Ericksen, 2008). In addition, the CAPI system helps to reduce the social desirability bias that is captured through traditional face-to-face interviewing techniques; participants now have a level of anonymity when participating in the interviews, while the study is still able to preserve the advantages that face-to-face interviewing allows. Also, this system allows the researcher to develop complicated skip and branch patterns or adjustments within the survey. SAQs where there is a complicated skip pattern are not recommended because

there is a larger chance respondents would incorrectly interpret skip patterns or lose motivation, thus threatening data quality.

Participants

The dataset consists of a nationally representative sample of 80 high schools and their feeder middle schools (7th to 12th grades). The sample was stratified by region, urbanicity, school type, and school size (Chantala & Tabor, 1999). From September 1994 to April 1995, Wave I of the Add Health sample was collected, which included 90,118 participants. These participants completed an in-school questionnaire if they had obtained parental consent and were present on the day of data collection. The Wave I response rate was 78.9% (Harris, Tucker Halpern, Entzel, Tabor, Bearman, & Udry, 1998).

A subset of participants was selected to complete an in-home interview using a stratification process. In-home interview data exclusively provided the content for the current study. First, students were first stratified by grade and sex. Seventeen students from each stratum were randomly selected (approximately 200 students were chosen from each of the 80 schools). From this, a sample of 12,105 participants was obtained, creating a nationally-representative core. Several subpopulations of students were over-sampled (African-Americans from well-educated families, the disabled, Chinese, and Puerto Ricans), creating a final in-home sample of 20,745 (Chantala & Tabor, 1999). A parent completed an accompanying parent-questionnaire for over 65% of the sample (Udry, 1998).

As it is a central concern of the Add Health study that the confidentiality of respondents be strictly protected, only a subsample of the full data is available to the public. Add Health researchers developed this public-use dataset for use by any

individuals affiliated with an institution. This dataset consists of data from Waves I and II, with information collected in 1994 and 1996. Specifically, this data set consists of one-half of the core sample, chosen at random, and one-half of the oversample of African-American adolescents with a parent who has a college degree. It was sampled in this way so that there would be an adequate minority population represented in the public use data set. The total number of respondents in this dataset is approximately 6,500 (Udry, 1998). Because this data set was randomly selected, but stratified at least for African American participants, it can be argued that this subsample is still nationally-representative. Although the full dataset may be purchased by qualified research institutions following successful implementation of a detailed security plan, substantial legal implications² and computer programming requirements³ place it beyond the scope of an individual thesis dissertation.

Participants in the present study were derived from the Wave I, in-home interview public-use data set. Participants were selected if their biological sex of the adolescent was identified by the interviewer as female (2), if they identified as Hispanic (1), and if the parent interviewed for the in-home parent interview identified as female as well. Based on these criteria, 309 participants were included in the present study. Of the 309 participants, 296 had a biological mother complete the in-home parent interview, three had an adoptive mother, and 10 had a stepmother. This information reveals that the nature of mother-daughter relationship was relatively consistent, since over 95% of participants

² As part of this contract, a PhD researcher with a faculty appointment at an institution, as well as the institution to which he or she belongs, must enter into a legal agreement and may be subject to criminal, civil, and administrative penalties associated with violations of the statutes outlined in the contract.

³ This contract additionally requires a dedicated computer locked in a physically-secure location within the participating university. This computer is to be programmed with multiple redundant layers of access-restricting safeguards and accessed through a specified standard operating procedure.

had a biological mother complete the interview. Specifically, the in-home parent interview was predominately completed by the biological mothers, allowing researchers to generalize the results to a Hispanic biological mother-daughter population.

This data sample was adequate for statistical analysis, and in particular, structural equation modeling (SEM). Mitchell (1993) specifies that there should be 10 to 20 times as many cases as variables. There are 17 variables, making the parameters for acceptability between 140 and 340 cases, which indicates that the current sample size was adequate. Another rule of thumb is to have at least 15 cases per measured variable or indicator (Stevens, 1996). In the current case, there were 15 indicators, which further supports that the sample size was acceptable to perform SEM.

Procedure

The questionnaires and interviews were conducted between September 1994 and April 1995. The in-school paper and pencil questionnaires were administered during a school period of 45 to 60 minutes. In-home interviews, however, lasted between one and two hours. Sensitive questions were asked via an Audio Computer Assisted, Self-administered Interviewing (CASI) where participants are asked questions through audiocassette and headphones. Participants then recorded their answers directly onto a laptop computer. This method was adopted to reduce participant embarrassment and ensure more accurate responses to sensitive questions (Supple, Aquilino, & Wright, 1999). Less sensitive questions were asked directly by an interviewer (Bearman, Jones, & Udry, 1997).

Measures. It is necessary to establish that prior studies have operationalized and measured these factors in similar ways. The following section will review ways in which

these variables have been operationalized and measured as well as describe the exact questions contained in the Add Health data that composed each variable in the present study. It is important to note that the Add Health database is set up so that the adolescent completing the interview represents each individual case. The answers given by the parent or guardian during his or her interview is entered in the line of data that corresponds to their son or daughter. Therefore, the adolescent was the unit of study.

Ethnic identity and gender. As mentioned previously, selection criteria for participation in the study was comprised of three requirements: they had to identify or be identified as female, they had to identify as Hispanic or Spanish origin, and the parent completing their portion of the in-home questionnaire had to identify as female. The gender identity measure for both adolescent and adult was assessed by the interviewer through a visual designation. If there was ambiguity, the interviewer asked the participant to confirm the identity that the interviewer believed was the participant. The ethnic identity measure was used to select for adolescent participants that identified as Hispanic/Hispanic. Specifically, for the daughter, the ethnicity measure was composed of the following questions: *Are you of Hispanic or Spanish origin?* Participants who answer “yes” are designated with a “1” whereas participants who answer “no” are designated with a “0.”

The acculturation gap. This study does not provide an adequate measure of the acculturation gap directly, nor was there an optimal way to measure the acculturation gap. There are two major ways in which acculturation gaps have been measured in prior studies. The first method used to calculate the acculturation gap is the difference score approach. This method calculates the acculturation gap by subtracting the daughter’s

acculturation score from the mother's acculturation score (Buki, Ma, & Strom, 2003; Merali, 2002; Rick & Forward, 1992). While this method is appropriate when acculturation is being assessed from a one-dimensional framework (i.e., assimilation to the new, host culture), it is problematic because it relies on using difference scores (Buki et al., 2003; Merali, 2002; Rick & Forward, 1992). Difference scores are unfavorable because there are many statistical issues associated with them and the validity and reliability of conclusions generated by difference scores are suspect (Cohen & Cohen, 1983; Collins & Horn, 1990; Cronbach & Furby, 1970). Specifically, the non-error variance in the two measures that constitute the difference score is mostly composed of the correlation between the two measures. As the reliability of either component score decreases, the reliability of the difference score decreases. In addition, the correlations between a difference score measure and other measures may create the illusion of discriminate validity (Cronbach & Furby, 1970).

The other method often used is the matched vs. mismatched approach, which simply categorizes the variables into matched and mismatched pairs (Farver et al., 2002). Each dyad is either categorized as having a gap or not having a gap. This method is valued because researchers do not have to deal with statistical issues associated with using difference scores (Cohen & Cohen, 1983; Collins & Horn, 1990; Cronbach & Furby, 1970). Its weakness, however, is that it does not provide directionality or a context of the gap. This method statistically equates mothers and daughters who are foreign-born with mothers and daughters who are U.S.-born. Logically, this does not make sense in terms of the present study; foreign-born mothers and daughters are not likely to have the

same amount of sexual risk communication, based on the cultural and psychological theory reviewed, as U.S.-born mothers and daughters.

In order to avoid the traps and problems associated with the traditional ways of evaluating an acculturation gap, more studies are using a contextual approach to studying the acculturation gap, such as using length of time in the U.S. combined with a measure of generational dissonance (Harris, 1999; Harris & Chen, 2004). As mentioned previously, children acculturate faster than their parents to the host country (Garcia-Preto, 2004; Hernandez, Cohen, & Garcia, 2000; Palumbo & Teich, 2004; U.S. Census Bureau, 2000). Therefore, the longer the adolescent has been in the country, the higher the likelihood that there will be a larger gap between mother and daughter in terms of acculturation and the more dissonance there will be in the relationship. Specifically, the acculturation gap will be measured using the daughters' level of acculturation combined with generational dissonance. An increase in the amount of time an adolescent has spent in the U.S. indicates more of a disconnect with her culture of origin; she is more accustomed to U.S. traditions and beliefs than adolescents who have spent less time in the host culture, the U.S.

Daughters' level of acculturation. The daughters' level of acculturation will be measured by the amount of time the daughter has spent in the U.S. Previous conceptualizations of the acculturation gap using this data set have subtracted the age of arrival of the adolescent from the age at the Wave I interview. The years in the U.S. were then categorized into four ordinal variables: <6 years (1); 6-10 years (2); 11-14 years (3); and 15+ years (4) (Harris, 1999; Harris & Chen, 2004). In the current study, the age at arrival of the adolescent was subtracted from the age at the Wave I interview, but was not

collapsed into ordinal variables. Instead, years in the U.S. remained as a continuous variable, thus improving the statistical power in the analysis. It is likely that the age of the adolescent is highly correlated with the time spent in the country, which was examined in preliminary analyses.

Specifically, in order to calculate the proportion of time the daughter spent in the U.S., Excel was used. The raw data used to calculate this variable was based on the following questions: *What month were you born? What year were you born? Were you born in the United States?* If they answered “no” to “*Were you born in the United States?*”, the interviewer asked the following two questions: *In what month did you move to the United States? In what year did you move to the United States?* In Excel, columns that listed the years and months in which individuals were born or moved to the United States were summarized by converting month to a decimal proportion of each year and adding this decimal to each year value. As the survey was completed during the 1994-1995, individual age was calculated by subtracting birth year from 1994.5. The IF function (an Excel formula) was used to calculate the length of time each individual lived in the United States by subtracting the year of arrival from 1994.5 unless the individual was born in the United States, in which case age was substituted. This column was then divided by age in order to produce a ratio of the proportion of each individual's lifetime spent in the United States, with native-U.S. born persons indicated by a "1."

Generational dissonance. Generational dissonance, as mentioned previously, was conceptualized as a measure of parent-child conflict and control (Harris & Chen, 2004). Research has linked the acculturation gap to generational dissonance and some research, in fact, has used generational dissonance to approximate an acculturation gap (Birman,

2006). No previous research, however, has examined how the dissonance that already occurs during adolescence is influenced by the acculturation gap in this particular relationship – the Hispanic mother and daughter relationship. This will be examined in the current study.

Prior Add Health studies have conceptualized generational dissonance using two measures - parental control/monitoring and mother-daughter conflict (Harris & Chen, 2004). Parental control and conflict is measured by the total count (ranging from 0 = low to 7 = high) of decisions about daily activities that parents do not allow youth to make on their own, including the time one must be home on weekend nights, the people they hang around with, what to wear, how much television to watch, kind of television programs to watch, the time to go to bed on week nights, and what to eat, as well as a question addressing whether they had a serious argument about their behavior with the mother in the last four weeks, which was reversed coded (i.e., the absence of an argument is indicated by a 1 and the presence of an argument is indicated by a 0) (alpha level = .79) (Harris & Chen, 2004). These questions were in a yes = 1, no = 0 format. Therefore, the scores for this particular variable ranged from “0” to “7”, with the higher the score, the lower the level of the dissonance. Only adolescent girls who reported living with or having a relationship with their mother was included; if they did not have contact/interaction with their mother, they were not included. It is important to note that this is a proxy measure of generational dissonance and cannot be considered a scale. There is no psychometric information, such as reliability and validity scores, that can be reported with regard to this measure, and therefore the degree to which these items really reflect the construct of generational dissonance is unclear.

Why is this a legitimate measure of generational dissonance? Although it is a proxy measure, as the generation or cultural gap widens because of differences in rate of acculturation between youth and their parents, parents may have less disciplinary control or influence over their children. As parents' ability to control or monitor their child's behavior decreases, the influence of peers may become more salient. Other theories, such as the social development model (Hawkins & Weis, 1985), also suggest that weak attachment to or alienation from conventional parents may lead to the likelihood of developing problem behaviors. Indeed, acculturated youth in general tend to become more involved in systems outside of the family, such as peer groups and group activities (Reuschenberg & Buriel, 1989).

Perceived relationship quality. The status of the mother as a model will be measured with a "perceived relationship quality" measure in this study. The purpose of this measure is to determine the degree to which the daughter values the role and opinions of the mother; this is thought to reflect the degree to which the daughter sees the mother as a suitable behavioral model. In the current study, perceived relationship quality will be assessed at the individual level. The Add Health study included items assessing the relationship between parent and child, and mother specifically. Specifically, the items included in this measure reflect the perception of the relationship by the daughter. Thus, perceived relationship quality is essentially comprised of values, beliefs, and needs, as opposed to norms, rules, and power (Robinson, 1950). Mother-daughter relationship quality was assessed by five items scored on a five-point Likert-type scale with 1 indicating "strongly agree" and 5 indicating "strongly disagree". The items in this established scale are as follows: *Most of the time, your mother is warm and loving; Your*

mother encourages you to be independent; When you do something wrong that is important, your mother talks about it with you and helps you understand why it is wrong; You are satisfied with the way your mother and you communicate with each other; and Overall, you are satisfied with your relationship with your mother. Items will be reverse-coded such that higher scores on this scale indicated more positive mother-adolescent relationship quality ($\alpha=.85$). This scale methodology has been used in prior Add Health studies examining mother-daughter relationship quality, and validity and reliability has been established with these studies (Bynum & Kotchik, 2006; Sieving, Beurhing, Resnick, Bearinger, Shew, Ireland, et al., 2001). In this situation, the perceived relationship quality scale was the single predictor variable for the overall latent variable of perceived relationship quality.

Mothers' comfort level. The comfort level that the mother holds in this study was measured with a "mothers' comfort level" latent variable. The purpose of this latent variable was to determine the degree to which the mother recognizes the importance of discussing contraception and safe sex behaviors (behaviors that do not reflect traditional values) with their daughters. The comfort level measure that mothers hold towards sexual behaviors was composed of several indicator variables taken from the survey. Specifically, these indicators were statements that parents responded to with their degree of agreement. The statements that composed the measure are the following: *You really don't know enough about sex and birth control to talk about them with (your child). It would embarrass (your child) to talk to you about sex and birth control. (Your child) will get the information somewhere else, so you don't really need to talk to her about sex and birth control. It would be difficult for you to explain things if you talked with (your child)*

about sex and birth control. These statements are on a five-point Likert scale ranging from “strongly agree” to “strongly disagree.” Previous research has utilized this measure in studies of sexual health beliefs, which have been labeled differently according to the particular study, but the degree to which the statements hold together and reflect one underlying construct has not been determined (McNeely, Shew, Beuhring, Sieving, Miller, & Blum, 2002; Meneses, Orrell-Valente, Guendelman, Oman, & Irwin, 2006; Wingood & DiClemente, 2002). As part of SEM, confirmatory factor analysis (CFA) was used to determine the relationship among the variables in the survey. For the purposes of post hoc tests, the value that each participant selected was summed, yielding a mothers’ comfort level score.

Sexual risk communication. The sexual risk communication latent variable was composed of three indicator variables, which were questions taken from the survey. These indicators are the following questions: *How much have you and your daughter talked about her having sexual intercourse and the negative or bad things that would happen if she got pregnant? How much have you talked to your daughter about birth control? How much have you talked to your daughter about STDs?* These questions are on a four-point Likert-scale from “not at all” to “a great deal.” Confirmatory factor analysis will be used to determine how well the predictors hold together with regard to the latent variable, mothers’ comfort level. Many prior studies have utilized this measure, but the degree to which they hold together has not been determined (Eisenberg, Bearinger, Sieving, Swain, & Resnick, 2006; Hutchinson, Jemmott, Sweet-Jemmott, Braverman, & Fong, 2003).

Condom use. The condom use measure is composed of the following two variables: condom use at sexual debut and condom use at most recent intercourse. The questions that denote these variables are the following: *Did you or your partner use any method of birth control the first time you had sexual intercourse? Did you or your partner use any method of birth control at most recent sexual intercourse?* If the answers to these questions are “yes,” than those participants that selected “condoms (rubbers)” to the follow-up questions – *What method of birth control did you or your partner use the first/most recent time at sexual intercourse?* – were selected. Many previous studies using Add Health data have used these questions as measures of condom use (Bruckner & Bearman, 2005; Roberts, Auinger, & Klein, 2005; Taraneh, Stovel, Holmes, & King, 2007). Specifically, the score for condom use has a 0-2 range: 0=No debut & No most recent; 1=No at debut, Yes at most recent or Yes at debut, No at most recent; and 2=Yes at debut and Yes at most recent. This variable will be approached as a continuous variable, but the limitations of having a continuous variable with only three points will be addressed in the limitations section.

Wave 2 Data. One unique feature of Add Health data is that follow-up in-home interviews were conducted for a proportion of the original sample of adolescents in 1996. Therefore, in order to increase the probability that a substantial proportion of the sample had engaged in sexual intercourse, follow-up analyses on those that participated in the Wave 2 interview will be conducted. Specifically, condom use will be assessed in the same manner as described above for Wave 2 participants. The same model will be examined using Amos and SEM, but condom use will be matched to participants in Wave 2, instead of Wave 1.

Data Analysis Plan

Structural equation modeling (SEM) is a powerful statistical approach that allows the researcher to propose and validate hypothetical causal relationships among variables based on theory (Maryuma, 1998). This technique corrects for measurement error, establishes content validity of indicator variables, informs construct validity of constructs, tests models of expected relationships and produces generalizable estimates of population parameters. Confirmatory tests of model fit allow multiple models, reflecting alternate theoretical bases, to be compared, providing a method to validate theoretical assumptions (Maryuma, 1998). As the accuracy of theoretical bases impacts model goodness of fit, SEM provides a means to validate and improve theoretical understanding. SEM is a confirmatory, not exploratory, approach as goodness of fit tests assess total model fit, not local fit. The model is formed first by proposing theoretical concepts, followed by constructs, and lastly, by indicators. Consequently, this theoretical model is translated into a statistical model, which can be compared with sample data (Maryuma, 1998).

SEM combines a structural model (as used in path analysis) with a measurement model (as used in factor analysis). This approach allows the research to simultaneously assess associations among endogenous and exogenous variables in addition to associations among latent and indicator variables (Maryuma, 1998). In a directed (box and arrow) graph, exogenous variables are hypothesized independent variables that cause endogenous variables. Endogenous variables can be both independent and dependent variables as causal arrows can point both towards and away from them. In the current study, however, this will not be a recursive model. In such a directed graph, measured

variables are inscribed within rectangles (Maryuma, 1998). One-headed arrows indicate causal relationships while two-headed arrows indicate unresolved associations. Latent variables are un-measurable, but are estimated through their hypothesized causal relationship with measured (indicator) variables. In a directed graph, latent variables are inscribed within ovals (Maryuma, 1998). Endogenous variables in a SEM are assumed to follow a multivariate normal distribution, while exogenous variables can be either continuous or categorical (Li et al., 2006).

SEM allows the estimation of unknown parameters (values of interest). This is commonly manifested by using known measured variables to estimate regression coefficients among endogenous and exogenous variables, or factor loading between indicator and factor estimation of free parameters (Maryuma, 1998). In practice, this approach compares the actual covariance matrices among variables with the estimate covariance matrices of the best fitting models. Although all possible models are technically “wrong,” this approach allows the discrimination among multiple theoretically-justified alternate models to find which most closely approximates reality (Maryuma, 1998). Numerical maximization of fit criterion is provided by maximum likelihood, weighted least-squares, or asymptotically distribution-free methods.

Although model fit does not imply a causal relationship among the variables, it does provide evidence for underlying theoretical structure through the similarity of estimated and actual matrices of relationships among variables (Maryuma, 1998). Goodness-of-fit is commonly assessed with a statistical test such as χ^2 . Alternate tests include absolute and relative practical fit indices such as the root mean square error of approximation (RMSEA), Bentler comparative fit index (CFI), normed fit index (NFI)

and incremental fit index (IFI). None of these are ideal in all situations, especially as they react diversely to different sample sizes, so it is generally advisable to employ more than one for any given model (Maryuma, 1998).

All goodness-of-fit tests are manipulations of the original chi-squared statistic. Steiger, Shapiro, and Brown (1985) specified that the chi-squared statistic does not follow a central χ^2 distribution under misspecification. Instead, it follows a noncentral χ^2 distribution, where the noncentrality parameter λ (estimated by chi-squared statistic $- df$) denotes the degree of incorrect fit in the model. CFI, IFI, and NFI make use of the noncentrality parameter by making comparisons between λ (chi-square) and λ (baseline), with λ (chi-squared) measuring the amount of incorrect fit of the target model and that of the baseline model (Bentler, 1990; Goffin, 1993). These statistics range from 0 to 1, but it is important to note that it is possible to achieve values outside the expected range. If this occurs, values should be reset to 0 or 1, in accordance with the directionality of the value (<http://faculty.chass.ncsu.edu/garson/PA765/structur.htm>). Achieving an NFI, CFI, or IFI above .90 is considered acceptable fit, achieving a statistic above .95 is considered good fit. RMSEA is closely tied to the noncentrality parameter λ and uses it to calculate a confidence interval to determine how well the model, with unknown but optimally chosen parameter values, fit the population covariance matrix if it were available. CFI seems to be appropriate in more exploratory contexts, whereas RMSEA is appropriate in more confirmatory contexts (Rigdon, 1996).

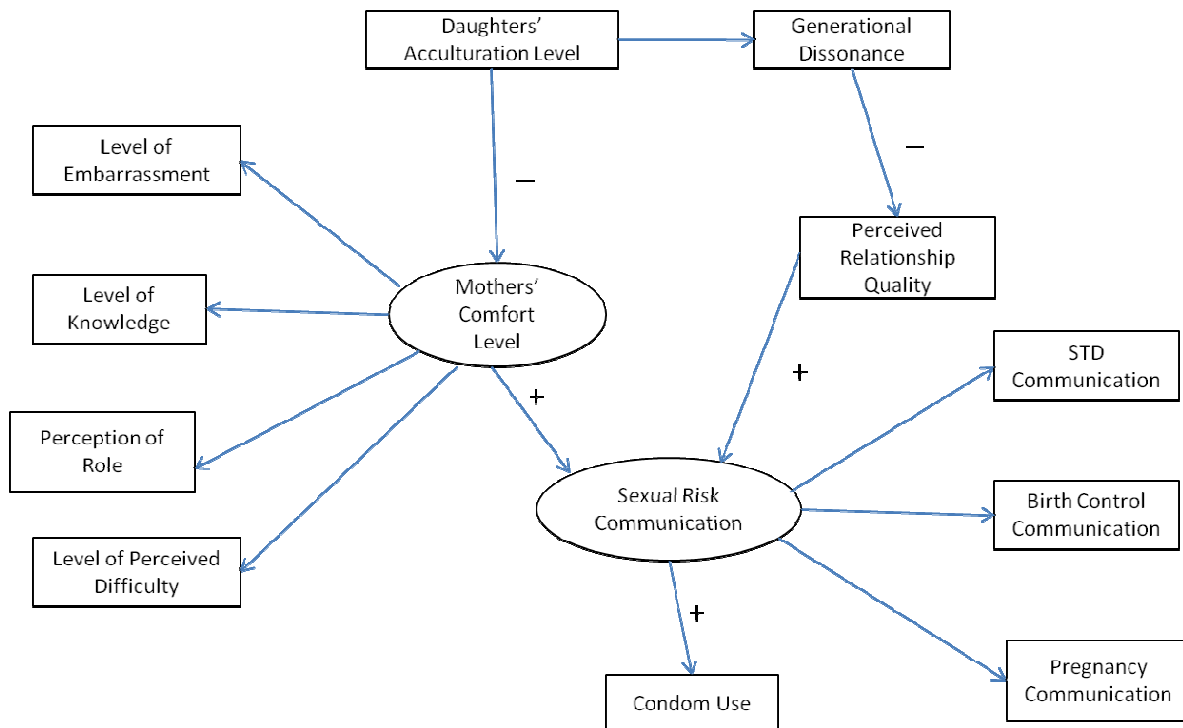
If goodness-of-fit tests are less than optimal, SEM allows researchers to respecify relationships within the model. Respecification can occur in two ways – model building and model trimming. Model building is done by using modification indices generated by

AMOS. Modification indices (MIs) are often used to alter models to achieve better fit, but this must be done carefully and with theoretical justification. That is, using MIs without using theory to justify the modifications could lead to models that do not offer valid information (see Silvia & MacCallum, 1988). High modification index values indicate a place where an arrow may be added to a model (Marayuma, 1998). In modification indices, improvement in fit is measured by a reduction in chi-square, noted as “par change” in AMOS. Model trimming is another way in which the model can be modified in order to achieve acceptable goodness-of-fit test statistics. Pathways to and from certain variables, along with the variables themselves, may need to be removed because of their non-significant standardized estimates within the model or theoretical justification may appear to be tenuous upon review.

AMOS (Version 6.0), a component of SPSS, was used for this project. Model identification is a critical requirement of directed graphs that assures the proper relationships among measured and latent variables, and is assessed through statistical programs such as AMOS. The following figure depicts the preliminary model examined in the present study based on the principles of SEM (Figure 3.1).

Figure 3.1

An SEM model to be tested linking acculturation and generational dissonance to sexual risk communication among Hispanic mother and daughter.



Chapter 4: Results

Structural equation modeling (SEM) is a complex statistical strategy that proceeds through four stages: specification, identification, estimation and evaluation (Kline, 1998). Since SEM is a confirmatory approach, it allows the researcher the opportunity (and limitation) to validate a hypothesized causal relationship among variables (Kline, 1998). Accordingly, these steps proceed through the theory-informed proposal of a causal relationship structure, the identification of the structure and latent variables, the estimation of the components, and the test of model fit (Kline, 1998). Ultimately, the proposed model is retained or rejected according to model fit (Kline, 1998). Reporting SEM results varies widely among researchers, but standard reporting conventions developed by the American Psychological Association (2002) and McDonald and Ho (2002) have been followed. It is important to note that the original model along with five iterations of the original model were tested.

Preliminary Analyses

Preliminary analyses revealed that the total sample for the study included 309 participants. In terms of age, 46 participants were 12 years old, 52 were 13, 72 were 14, 56 were 15, 52 were 16, and 31 were 17. A table of ethnic demographic information is presented below:

Table 4.1
Ethnic Demographic Statistics

Variable		Count (%)
Daughter's Ethnicity	Mexican	183 (59)
	Chicano	26 (8)
	Cuban	25 (8)
	Puerto Rican	46 (15)
	South American	48 (16)
	Other	135 (44)
Daughter Born	Inside U.S.	154 (50)
	Outside of U.S.	155 (50)
Mother's Ethnicity	Mexican	138 (45)
	Chicano	4 (1)
	Cuban	14 (5)
	Puerto Rican	29 (9)
	South American	39 (13)
	Other	30 (10)
Mother Born	Inside U.S.	125 (40)
	Outside of U.S.	184 (60)
Language in Home	Spanish	141 (46)
	English	160 (52)

According to the demographics table, 50% of Hispanic daughters were born inside the US, and 50% were born outside. In addition, 40% of mothers were born inside the US, and 60% were born outside. This suggests that the majority of the sample used in the current study were immigrants, first-generation, or second-generation families. In addition, the primary language used in the home was approximately equal between

Spanish and English. As mentioned earlier, language use is frequently used as a measure of acculturation, because it indicates adherence to a specific culture; use of Spanish indicates identification with heritage culture, and use of English indicates identification with host, US culture.

Cross-tabs reveal that there were 10 mother-daughter pairs where both the mother and daughter were born in the US and spoke Spanish in the home. There were 115 pairs where the mother and daughter were born in the US and spoke English in the home. There were 123 pairs where both mother and daughter were born outside the US and spoke Spanish in the home. There were 32 pairs where both mother and daughter were born outside the US and spoke English in the home. There were 15 pairs where the mother was born in another country and the daughter was born in the US and they spoke Spanish in the home. There were 14 pairs where the mother was born in another country and the daughter was born in the US and they spoke English in the home. There were no mother-daughter pairs where the mother was born in the US and the daughter was born in another country.

As mentioned previously, Mitchell (1993) specifies that there should be 10 to 20 times as many cases as variables. There are 17 variables, making the parameters for acceptability between 140 and 340 cases, which indicates that the current sample size is adequate. Another rule of thumb is to have at least 15 cases per measured variable or indicator (Stevens, 1996). In the current case, there are 15 indicators, which further supports that the sample size is adequate to perform SEM. This sample was obtained by selecting participants who were included in the public sample, identified as

Latino/Hispanic, were female, and had a mother/female parent or guardian who completed the parent survey.

In addition, it is necessary to check the generational dissonance scale by both grade and age. This determines if age or grade are confounding factors in the overall analysis. As mentioned previously, conflict in the parent-adolescent relationship peaks during early adolescence. This suggests that the association between the acculturation gap and generational dissonance may not be as strongly linked and the levels of generational dissonance, in general, may be lower for those in late adolescence. This may ultimately affect perceived relationship quality between mother and daughter, sexual risk communication, and reported condom use. Specifically, there may be stronger associations between these variables than for early adolescents. According to multiple researchers, early adolescence includes those from age 11 through 14 and late adolescence includes those from age 15 through 18 (Adesman, Greenburg, Pratt, Robb, Goodman, & Montano, 2008; Austin et al., 2009; Clark-Lempers, Lempers, & Ho, 1991).

Bivariate correlations revealed that both age ($r = .269, p > 0.05$) and grade ($r = .088, p > 0.05$) were non-significant when correlated with the generational dissonance scale. Therefore, the relationship between daughter's acculturation level and generational dissonance is most likely not confounded by age or grade. Because there is most likely not a confounding relationship, models for early vs. late adolescence were not tested. Essentially, because there was not a significantly correlated relationship, there is no reason to assume that generational dissonance levels would differ in early vs. late adolescence and subsequently, affect the relationships among all of the variables in the overall model.

Assumptions of the Study

The study makes several assumptions that, if incorrect, are likely to impact the validity of the conclusions made about the data. First, because this is a secondary analysis of data previously collected, it is assumed that the data contained within the database are adequate to answer the present study's research hypotheses. Specifically, the study assumes that the constructs developed were adequately measured by the questions within the database. In addition, the assumption is made that the interviewers who conducted the study were consistent in their scripts to gather the data. The study also assumes that all questions asked to participants were understood by the participants.

In addition, assumptions about the characteristics of the data were examined. Statistical assumptions for conducting confirmatory factor analysis (CFA) are the same as those guiding multivariate analyses – data accuracy, sample size, missing data, outliers, homogeneity of variance-covariance matrices, and multicollinearity (Tabachnick & Fidell, 1996). A check with SPSS frequencies reveals that no data are out of the expected range, either for constructed variables or for variables used directly from the Add Health data set. In addition, the results of Little's (1988) Test for MCAR did not reject the hypothesis that data are missing completely at random for this subgroup of the Add Health data set ($\chi^2 = 49.612, df = 37, p > 0.05$).

Exploration of the data revealed several outliers for some of the variables and non-normal distributions of variables, with the majority of the variables skewed to the right. For example, for the daughters' level of acculturation, approximately half of the sample were born in the U.S. and half were not; thus, those adolescents who had spent a very small portion of their life in the U.S. were designated as outliers in the analysis.

These girls should not be excluded, however, because it is to be expected that a smaller portion of the sample would have been born outside the U.S. as this reflects the immigration patterns and demographic composition of the U.S. as a whole.⁴ In addition, the variable, condom use, was heavily skewed to the left, with the majority of participants reporting that they had never used a condom ($n = 242$, 78.3%). Only 33 participants (10.7%) reported using condoms at first or most recent intercourse and only 34 (11%) participants reported using condoms at both first and most recent intercourse.

Removal of these statistical (but not theoretical) outliers would reduce the power and precision of the study. Thus, no cases were removed from analysis based on extreme response scores. Instead, greater reliance was given to the Full Information Maximum Likelihood Estimation Procedure (FIML) to be robust against the deviations from normality (Steenkamp & van Trijp, 1991). It is important to note that Bollen and Stine (1992) bootstrapping methods could not be used to assess model fit and parameter estimates with the non-normal data because of the presence of missing data. Several data transformations were conducted, including *log10* transformation and a *square root* transformation, but they did not improve the distribution, and in some cases, worsened it.

The presence of multicollinearity also was assessed. Multicollinearity occurs when two independent (or predictor) variables have a correlation of .70 or above. Correlations were conducted among all of the variables, including the indicators for the latent variables, and no pair of variables had a correlation greater than or equal to .70. Thus, no variables were eliminated for reasons pertaining to multicollinearity.

⁴ Currently, the U.S. population is at approximately 309,029,000. Hispanic people comprise 11% of that total (35,200,000), and Hispanic people that immigrated during their lifetime represents approximately 47% of that total (17,600,000) (U.S. Census Bureau, 2000).

Table 4.1 lists the means and standard deviations for all of the variables in the study, both measured and latent. Means were calculated using Expectation Maximization (EM) estimation, instead of listwise or pairwise estimation. EM estimation most closely resembles the FIML estimation, which was used to test the hypothesized model. Second, EM estimation estimates missing values, and thus there are an equal number of cell entries for all variables. Finally, listwise estimation would have yielded different cell frequencies for each indicator in Table 4.1 and pairwise estimation would have yielded equal cell frequencies, but would have reduced the number of cases.

Table 4.1

Mean Scores for Indicators for Latent Variables

Factor	Indicator	Mean	S.D.
Mothers' Comfort Level	Personal Knowledge about Sex	3.89	1.193
	Embarrassment in Discussing Sex	3.68	1.130
	Role in Discussing Sex	3.92	1.225
	Perceived Difficulty in Discussing Sex	3.84	1.212
Sexual Risk Communication	STD Communication	3.05	1.037
	Pregnancy Communication	2.95	1.030
	Birth Control Use	2.57	1.150
Daughters' Acculturation		0.82	0.309
Generational Dissonance Scale		5.30	1.724

Perceived Relationship Quality Scale	20.28	4.018
Condom Use	0.45	0.080

Note: Means were calculated using EM estimation.

Model Estimation

Structural equation modeling software uses the variance-covariance matrix because it produces more accurate parameter estimates than the analysis of correlation matrices (Boomsma, 1983). Statistically, the model is evaluated by comparing two variance/covariance matrices. From the data, a sample variance-covariance matrix is calculated. From this matrix and the model, an estimated population variance-covariance matrix is computed. If the estimated population variance/covariance matrix is very similar to the known sample variance/covariance matrix, then the model is said to fit the data well. A chi-square statistic is computed to test the null hypothesis that the model does fit the data well. There are also numerous goodness of fit estimators designed to estimate how well the model fits the data. The calculated variance-covariance matrix is shown in Table 4.2. Covariances among the measures were generally of the expected valence and magnitude. There were, however, some exceptions that raised concerns (Table 4.2). Daughters' acculturation level and condom use appear to have a weak association with all other measures (Table 4.2).

Table 4.2*Variance-Covariance Matrix for All Variables in the Model, Both Latent and Directly Measured*

Sample (n = 309)	1 _a	2 _a	3	4	5	6 _a	7 _a	8	9	10	11
1 Perceived Relationship Quality	16.254										
2 Daughters' Acculturation Level	-0.111	0.072									
3 STD Communication	0.257	0.027	0.123								
4 Birth Control Communication	0.600	0.042	0.561	0.403							
5 Pregnancy Communication	0.282	0.001	0.354	0.594	1.000						
6 Generational Dissonance	-0.303	0.051	0.298	0.286	0.757	0.041					
7 Condom Use	-0.346	0.024	0.128	0.117	0.116	0.179	0.419				
8 Perceived Role	0.054	0.035	0.298	0.296	0.277	0.146	0.011	0.349			
9 Embarrassment Level	0.650	0.040	0.496	0.568	0.533	0.193	0.041	0.745	0.567		
10 Knowledge Level	0.315	0.040	0.418	0.438	0.395	0.332	0.044	0.755	0.762	0.422	
11 Perceived Difficulty	0.243	0.023	0.144	0.257	0.099	0.238	0.058	0.810	0.677	0.632	0.711

^a Denotes that this is not a latent variable, but instead, is directly measured.

A correlation matrix was also calculated (Table 4.3). Correlations are the covariances standardized between -1 and 1. SEM relies on correlation coefficients but in a more sophisticated manner by using partial regression coefficients; for example, partial regressions say how much variables a and b are correlated when you control for the fact that they both are also correlated with variable c. In this sense, they allow the researcher to evaluate variable relationships in terms of additional relationships proposed in the model. Based on the information presented in the correlation matrix, it appears as though the hypothesized relationships in the model have moderate correlations among them. For example, generational dissonance and daughter's acculturation level have a positive correlation of .503 (Table 4.3). Again, it is important to note that SEM will confirm that a relationship exists between the variables mentioned by using more sophisticated statistical methods.

Table 4.2

Correlation Matrix for All Variables in the Model, Both Latent and Directly Measured

Sample (n = 309)	1 _a	2 _a	3	4	5	6 _a	7 _a	8	9	10	11
1 Perceived Relationship Quality	1.000										
2 Daughters' Acculturation Level	0.220*	1.000									
3 STD Communication	0.207*	0.048	1.000								
4 Birth Control				1.000							
5 Pregnancy Communication	0.211	0.052	0.576*	1.000							
6 Generational Communication	0.230*	0.021	0.835*	0.594*	1.000						
7 Dissonance	-0.041	-0.470*	0.121	0.286	0.145	1.000					
8 Condom Use	-0.137*	0.133	0.123	0.117	0.175*	0.179	1.000				
9 Perceived Role	0.457	0.554	0.522*	0.296	0.564*	0.146	0.011	1.000			
10 Embarrassment Level	0.250	0.340	0.366*	0.382*	0.399*	0.193	0.041	0.485*	1.000		
11 Knowledge Level	0.211	0.448	0.618*	0.438	0.221*	0.452*	0.044	0.522*	0.496*	1.000	
11 Difficulty Level	0.333	0.325	0.254	0.651*	0.422*	0.233	0.433	0.611	0.592	0.674	1.00

^a Denotes that this is not a latent variable, but instead, is directly measured.

* Denotes that the correlation is significant at the .05 level.

The latent factor mothers' comfort level was estimated using four indicators and the latent factor sexual risk communication was estimated using three indicators. Three indicators are acceptable and sufficient to estimate latent variables (Kline, 1998). By convention, indicators should have pattern coefficients (factor loadings) of .60 or higher on their latent factors (Kline, 1998). Measurement models that fit the following four criteria were interpreted as having an acceptable fit: a) all factor loadings are statistically significant, b) χ^2/df ratio is less than or equal to five, c) NFI, CFI, and IFI values are greater than or equal to .90, and d) RMSEA values are at or less than .08 (Kline, 1998).

The first criterion to determine whether or not a measurement model was satisfactory was to assess whether or not the factor loadings for the measurement model are statistically significant. Figure 4.1 shows all pathways in the model along with their corresponding factor loadings. As can be seen, all parameters in the specified latent variable models (i.e., mothers' comfort level and sexual risk communication) were statistically significant at the $p < .01$ level (Figure 4.1). This suggests that all indicators successfully loaded onto their respective latent variables, and thus the items in the survey seem to adequately approximate the hypothesized latent variables included in the model.

Additional support for this conclusion is provided in Table 4.3. This table lists the percentage of variance for each indicator that is accounted for by its corresponding latent factor. This measure is often interpreted as the reliability of the indicator (Kline, 1998). A percentage below 50 percent suggests that a different factor may predict that indicator (Tabachnick & Fidell, 1996). Results indicate that all indicators have acceptable percentages of explained variance for their corresponding latent factors, and thus are all reliable indicators for the latent variable (Table 4.3). It appears as though embarrassment

in discussing sex, role in discussing sex, and perceived difficulty in discussing sex are more reliable indicators than personal knowledge about sex. It is critical to note that no factor loadings were recorded for daughters' acculturation level, generational dissonance, perceived relationship quality, and condom use, since these variables were directly measured and not approximated by indicators.

Table 4.3

Percentage of Variance in Each Indicator Explained by Its Respective Factor

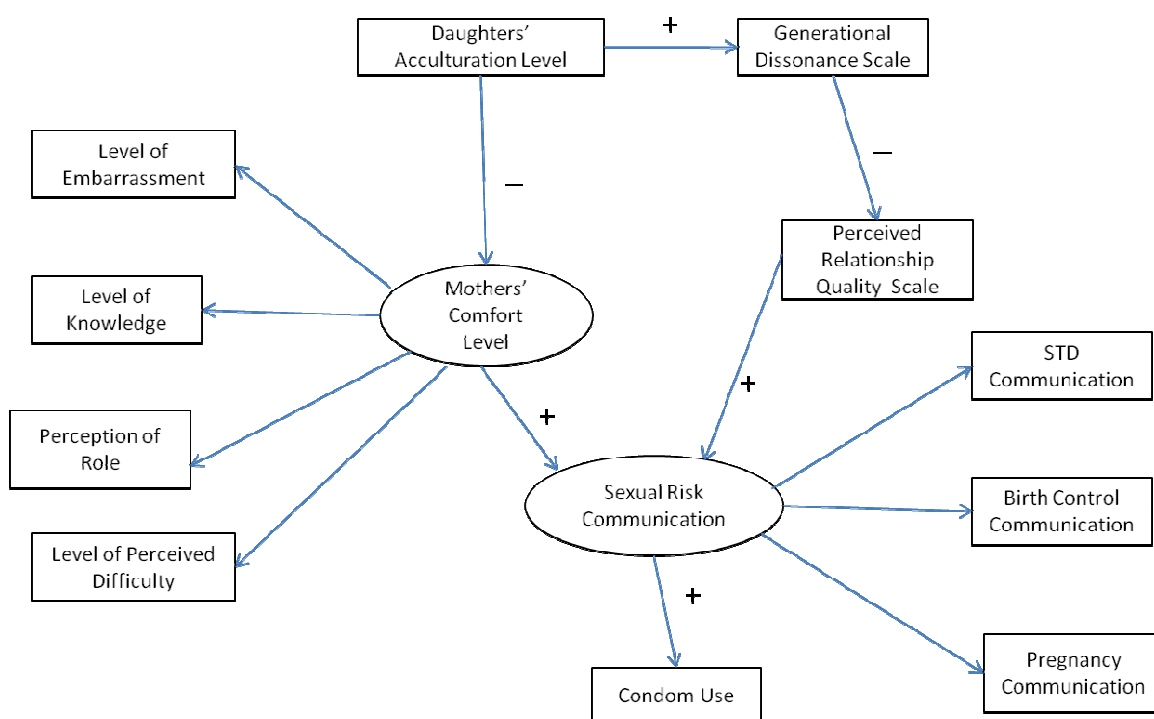
Factor	Indicator	Percentage of Variance
Mothers' Comfort Level	Personal Knowledge about Sex	.596
	Embarrassment in Discussing Sex	.723
	Role in Discussing Sex	.724
	Perceived Difficulty in Discussing Sex	.752
Sexual Risk Communication	STD Communication	.666
	Pregnancy Communication	.615
	Birth Control Use	.672

Model Fit. Model fit was assessed with goodness-of-fit tests. Figure 4.1 shows the original hypothesized model and relationships. As mentioned previously, it was hypothesized that there would be a positive relationship between daughters' acculturation

level and generational dissonance, a negative relationship between daughter's acculturation level and mothers' comfort level, and a negative relationship between generational dissonance and perceived relationship quality. In addition, it was hypothesized that there would be positive relationships between perceived relationship quality and sexual risk communication and mothers' comfort level and sexual risk communication. Finally, it was hypothesized that there would be a positive relationship between sexual risk communication and condom use.

Figure 4.1

Hypothesized Model and Relationships



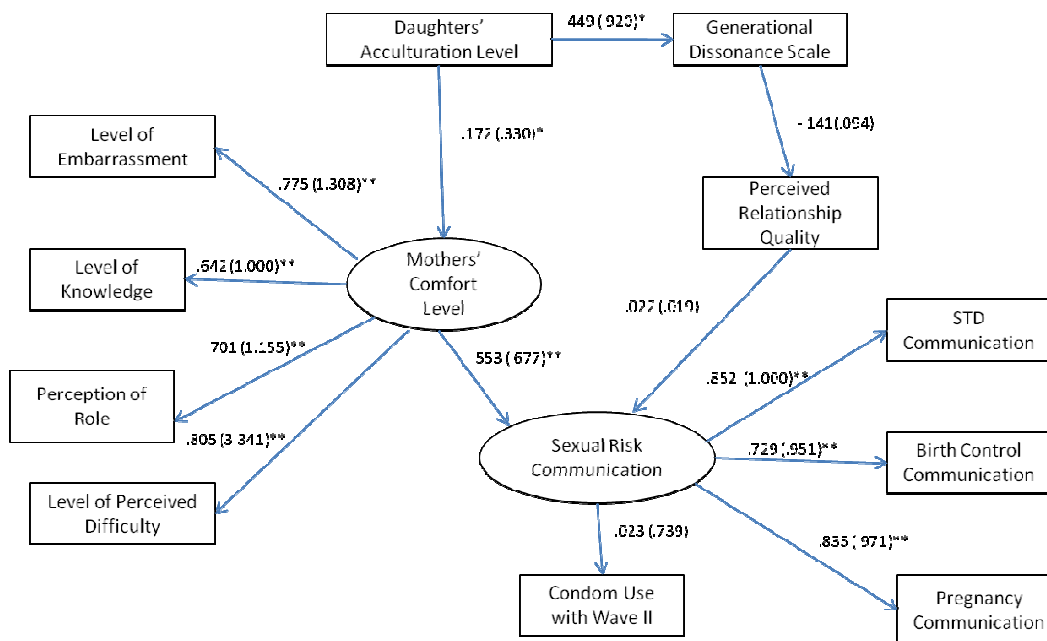
SEM was used to determine the relationships among the variables and the overall goodness-of-fit of the model. Figure 4.2 also shows the factor loadings and parameter estimates for the pathways among the exogenous and all endogenous variables.

Standardized factor loadings should be above .60 and below .95 (Bagozzi & Yi, 1988). All of the standardized factor loadings for the indicator variables were between .60 and below .95, indicating that all indicator variables successfully loaded onto their respective latent variables (Figure 4.2).

In addition, this model shows that all of the pathways among the variables were significant except for the following three: a) the parameter estimate connecting generational dissonance and perceived relationship quality, b) the parameter estimate connecting perceived relationship quality and sexual risk communication, and c) the parameter estimate connecting sexual risk communication and condom use.

Figure 4.2

Factor Loadings for the Different Pathways in the Hypothesized Model



Standardized estimate (Unstandardized estimate)

*Significant at the .05 level

**Significant at the .01 level

NFI = -1.14

CFI = -1.95

IFI = -1.19

Original Model Fit. Tests of the original, non-transformed data set revealed a significant chi-squared test, which superficially indicates that the model fit is poor ($\chi^2(75) = 280.42, p < .05$). It is of note, however, that the legitimacy of the chi squared test is routinely questioned, particularly in situations where the sample size is over 200 (Bollen & Long, 1993). In the current case, the sample size is 309. Instead, a common rule of thumb is to divide the overall chi square value by the degrees of freedom (called the relative chi-squared statistic), and to proceed if the value is five or less (Schumacker & Lomax, 2004). In the current case that means $280.42 / 75 = 3.7$. The low χ^2/df ratio suggests that the model is not necessarily misspecified, but instead may have reflected sensitivities to small variations in the data. NFI⁵, CFI⁶, and IFI⁷ values, however, were not greater than or equal to .90, indicating that that the model is less than an optimal fit (NFI = -1.14; CFI = -1.95; IFI = -1.19). In addition, the RMSEA⁸ measure indicates that the model does not have a good fit. AMOS provides a lower and upper RMSEA value; the lower RMSEA value is .09 and the upper value is .11. RMSEA should be equal to or below .08 in order for the model to be considered a good fit. Based on the information presented, it seems as though the model, in its current form, does not fit the criteria for adequate fit.

Hypotheses Outcomes

The following section will explain whether or not the results supported the corresponding hypotheses of the proposed model. All explanations and implications for the model will be discussed in Chapter 5.

⁵ NFI stands for the Normed Fit Index or the Bentler Bonett Index.

⁶ CFI stands for the Comparative Fit Index.

⁷ IFI stands for the Incremental Fit Index.

⁸RMSEA stands for the Root Mean Square Error of Approximation.

Hypothesis 1: Relationship between the daughters' acculturation level and generational dissonance. The hypothesis that there will be a positive, significant relationship between daughters' acculturation and generational dissonance was supported by the results. Specifically, the relationship was significant at the .05 level and was moderately strong, with a standardized regression coefficient of .449.

Hypothesis 2: Impact of the daughters' acculturation level on mothers' comfort level discussing sexual behavior with her daughter. The hypothesis that there will be a significant, negative relationship between daughters' acculturation level and mothers' comfort level discussing sexual behavior was not supported by the results. Specifically, the relationship between these two variables was significant at the .05 level, but was positive and low, with a standardized regression coefficient of .163.

Hypothesis 3: Impact of the generational dissonance on daughters' perceived relationship quality. The hypothesis that there will be a negative, significant relationship between generational dissonance and daughters' perceived relationship quality was not supported by the results. Specifically, though the relationship between these variables was negative as was hypothesized, it was not significant at the .05 level.

Hypothesis 4: Impact of mothers' comfort level and daughters' perceived relationship quality with her mother on sexual risk communication between mother and daughter. The hypothesis that there will be a significant, positive relationship between mothers' comfort level and sexual risk communication and a significant, negative relationship between perceived relationship quality and sexual risk communication was only partially supported. Specifically, there was a positive relationship between mothers' comfort level and sexual risk communication, with a

standardized regression coefficient of .547 and significant at the .01 level. The relationship between perceived relationship quality and sexual risk communication was not significant, and was weak and positive, with a standardized regression coefficient of .022. Because perceived relationship quality was not significant and had very weak standardized regression coefficients, it was removed (along with its associated pathways) from the final model discussed.

Hypothesis 5: Relationship between sexual risk communication between mother and daughter and daughters' reported condom use. The hypothesis that there will be a significant, positive relationship between sexual risk communication that occurs in the mother-daughter relationship and daughters' reported condom use was not supported by the results. Specifically, there was a positive relationship between the variables, with a standardized regression coefficient of .023, but was very weak and non-significant. When Wave 2 condom use data were added to Wave 1 condom use data, the standardized regression coefficient become slightly stronger, but was still weak overall and non-significant. Therefore, condom use was not included in the final model presented.

Hypothesis 6: Four indicators will accurately measure the latent variable, mothers' comfort level. The hypothesis that there will be four indicators that accurately measure the latent variable, mothers' comfort level was supported by the results. The four indicators composing this variable consisted of mothers' personal knowledge about sex, their level of embarrassment discussing sex, their level of perceived difficulty in discussing sex, and the perception of their role in discussing sex. The standardized factor loadings for the indicator variables were between .60 and .95, which indicates that the

indicator variables (e.g., mothers' personal knowledge about sex, their level of embarrassment with discussing sex, the perception of their role in discussing sex, and their level of perceived difficulty in discussing sex) successfully loaded onto their latent factors.

Hypothesis 7: Three indicators will accurately measure the latent variable, sexual risk communication. The hypothesis that there will be three indicators that accurately measure the latent variable, sexual risk communication was supported by the results. The three factors composing this variable were STD communication, pregnancy communication, and birth control communication. The standardized factor loadings for the indicator variables were between .60 and .95, which indicates that the indicator variables (e.g., STD communication, pregnancy communication, and birth control communication) successfully loaded onto their latent factor, sexual risk communication.

Alternate Models

As mentioned earlier in the chapter, the overall model fit for the originally proposed model was not adequate based on NFI, CFI, and IFI values. When using SEM, it is typical to present alternate models, particularly when SEM is used for exploratory model testing (Chin, 1998). Specifically, a model is tested using SEM procedures, found to be deficient, and an alternative model is then tested (Chin, 1998). Model fit may improve through examination of the modification indices or through model trimming.

Modification indices are measured by a reduction in chi-square (recall a finding of chi-square significance corresponds to rejecting the model as one which fits the data). Therefore, if a reduction in chi-square is substantial enough to not be significant anymore, model fit is considered to be improved. Modification indices of the original

model, however, did not indicate an improvement (e.g., reduction) in chi-square, and therefore additional arrows within the diagram were not added and tested (Table 4.4). It is important to note that relationships were seriously evaluated and included in the table if they did not suggest a recursive relationship, due to the theoretical justification of the study. The results of the table indicate that only one relationship would change the chi-square statistic in the correct direction. The addition of this arrow, however, would not significantly change the chi-square statistic enough to obtain a good model fit.

Table 4.4

Modification Indices Table

<u>Relationship</u>	<u>MI</u>	<u>Par Change</u>
Daughters Acculturation Level → Sexual Risk Communication	5.869	.822
Mothers' Comfort Level → Condom Use	4.337	.209
Daughters Acculturation Level → Condom Use	4.521	.395
Generational Dissonance → Condom Use	7.222	-.021
Daughters Acculturation Level → Perceived Relationship Quality	4.855	.199
<u>Perceived Relationship Quality → Condom Use</u>	<u>4.192</u>	<u>.284</u>

Because modification indices did not yield information that indicates certain pathways should be added to relationships within the original model, model fit may improve through model trimming. Model-trimming is a common approach found in the literature (vanDijk & Wagner, 2000; Wallace, Keil, & Rai, 2004; Wilcove, Shwerin, & Wolosin, 2003). Model-trimming refers to deleting one path at a time until a significant chi-square difference indicates trimming has gone too far. A non-significant chi-square difference means the researcher should choose the more parsimonious model (the one in which the arrow has been dropped). The goal is to find the most parsimonious model

which is well-fitting by a selection of goodness of fit tests (Garson, 1998; Kline, 1998). This is tantamount to saying the goal is to find the most parsimonious model which is not significantly different from the saturated model, which fully but trivially explains the data (Garson, 1998; Kline, 1998). After dropping a path, a significant chi-square difference indicates the fit of the simpler model is significantly worse than for the more complex model and the complex model may be retained (Garson, 1998; Kline, 1998). However, as paths are trimmed, chi-square tends to decrease, indicating a better model fit and also decreasing chi-square difference. In some cases, other measures of model fit for the more parsimonious model may justify its retention in spite of a significant chi-square difference test.

Naturally, dropping paths should be done only if consistent with theory and face validity (Garson, 1998). Specifically, non-significant paths within the model that were theoretically tenuous upon review were dropped from the model. The current study utilized this strategy in order to explore the model in-depth and find if modifications improve its fit. Four specific changes in regard to the original model were posed: a) the addition of condom use data from Wave 2 to Wave 1 condom use data, b) the removal of condom use from the model, c) the removal of both condom use and perceived relationship quality from the model, and d) correlation of error terms among the indicator variables for the two latent variables in the model. These four changes were reflected as alternate models to the original, hypothesized model. For alternate models 2 through 4, one relationship within the model was trimmed each time.

First though, before the model is trimmed at all, another available wave of data, collected two years after the initial wave was collected, will be added to supplement the

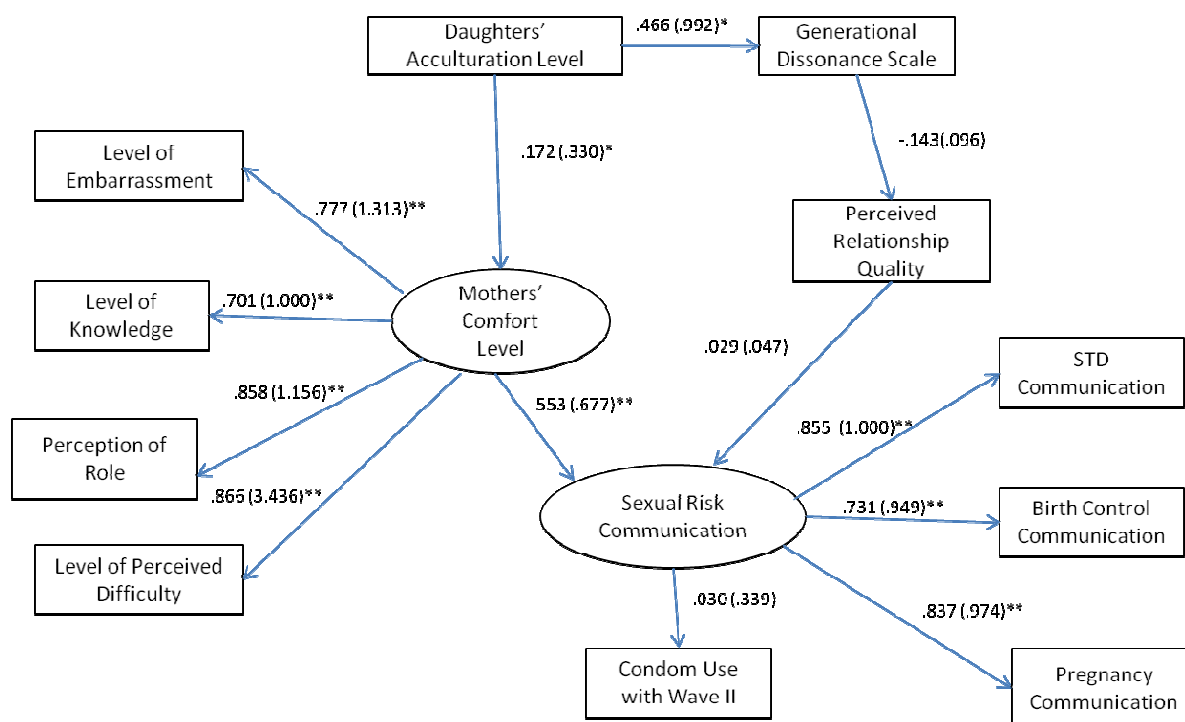
condom use data. Wave 2 data addressing condom use will be added to the Wave 1 data and the new fit statistics will be reported.

Alternate model 1: Addition of Wave 2 condom use data. One way to alter model fit is to change the way condom use is measured. Specifically, Wave 2 condom use data, collected two years after initial data collection, is added to Wave 1 condom use data. When it is added, the standardized estimate connecting sexual risk communication and condom use improves, but does not become statistically significant (standardized estimate = .111, $p = .11$).⁹ The chi squared test was again significant, however, the χ^2/df ratio was higher than five ($502.98 / 80 = 6.3$). In addition, NFI, CFI, and IFI values did not improve and instead, became worse (NFI = -1.15; CFI = 0.00; IFI = -1.21). When the perceived relationship quality variable is removed, but Wave 2 condom use, in addition to Wave 1 condom use, is kept, the standardized estimates are still very low and non-significant and overall model fit is still poor based on the chi-square statistic, as well as the NFI, CFI, and IFI values. The model fit diagram is shown in Figure 4.3.

⁹ It is important to note that Wave 2 data were not added during the initial stage of model testing because, as mentioned in Chapter 3, Wave 2 data were collected two years after Wave 1 data began to be collected. This is significant because it means that some girls had sex prior to collection of Wave 1 data and some girls had sex prior to collection of Wave 2 data, but not prior to Wave 1. There could be systematic differences between these two groups that account for their decision of when to have sex, and subsequently their decision to use or not use condoms. Therefore, Wave 2 was only used when it was deemed necessary because the number of girls who had sex at Wave 1 was so low.

Figure 4.3

Factor Loadings for the Different Pathways in the Alternative Model 1



Standardized estimate (Unstandardized estimate)

*Significant at the .05 level

**Significant at the .01 level

NFI = -1.19

CFI = 0.00

IFI = -1.21

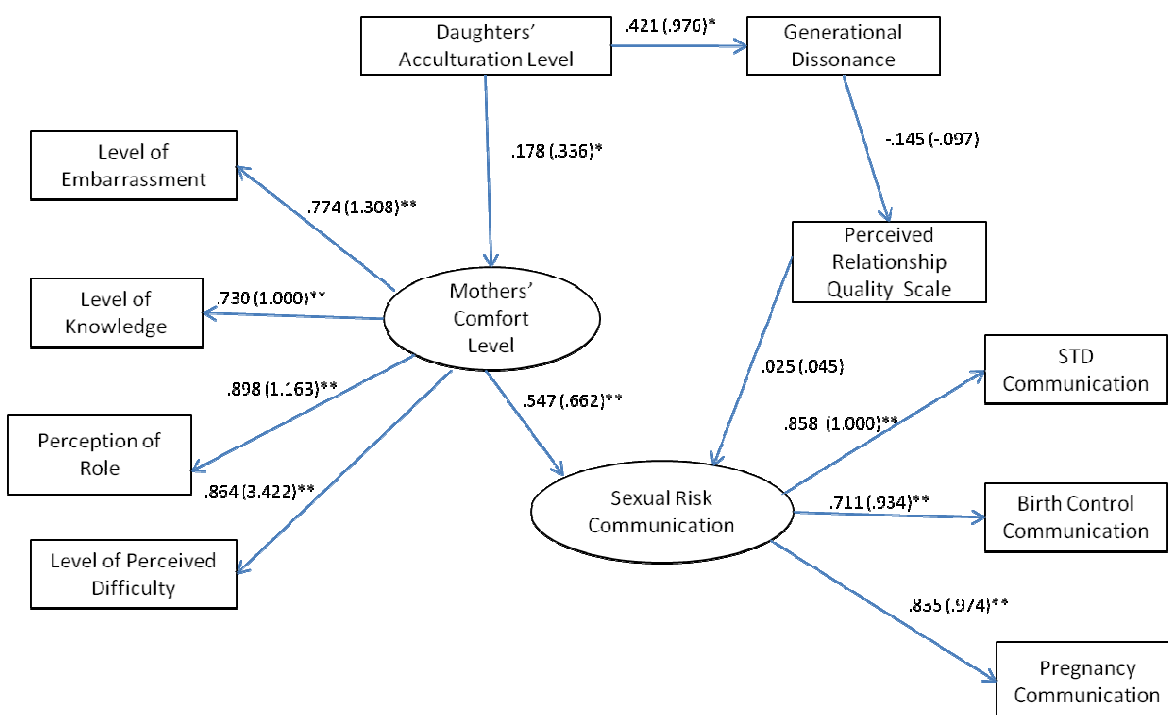
Alternate model 2: Removal of condom use. Although all standardized regression coefficients for the pathways were moderately strong, not all were significant for this alternate model and tests of model fit were poor overall. Examination of the data, particularly the distribution of responses for the question, “Have you ever had intercourse?” revealed that less than half of sample participants reported ever having sex. Specifically, 65% of participants ($n = 202$) reported that they had not had sex prior to the Add Health in-home interview. For this reason, the relationship between sexual risk

communication and condom use, and the condom use variable itself, was dropped from the model.

The chi-squared test was significant, but again, the χ^2/df ratio was less than five (409.02 / 83 = 4.9). The CFI, NFI, and IFI, however, were much lower than .90, indicating that the model does not approach an optimal fit (CFI = .59; NFI = .68; IFI = .67). In addition, the lower RMSEA value was .09, which is above the .08 threshold needed. Implications and explanations for the results for this model will be discussed in the following chapter. The model fit diagram is shown in Figure 4.4.

Figure 4.4

Factor Loadings for the Different Pathways in the Alternative Model 2



Standardized estimate (Unstandardized estimate)

*Significant at the .05 level

**Significant at the .01 level

NFI = .68

CFI = .59

IFI = .67

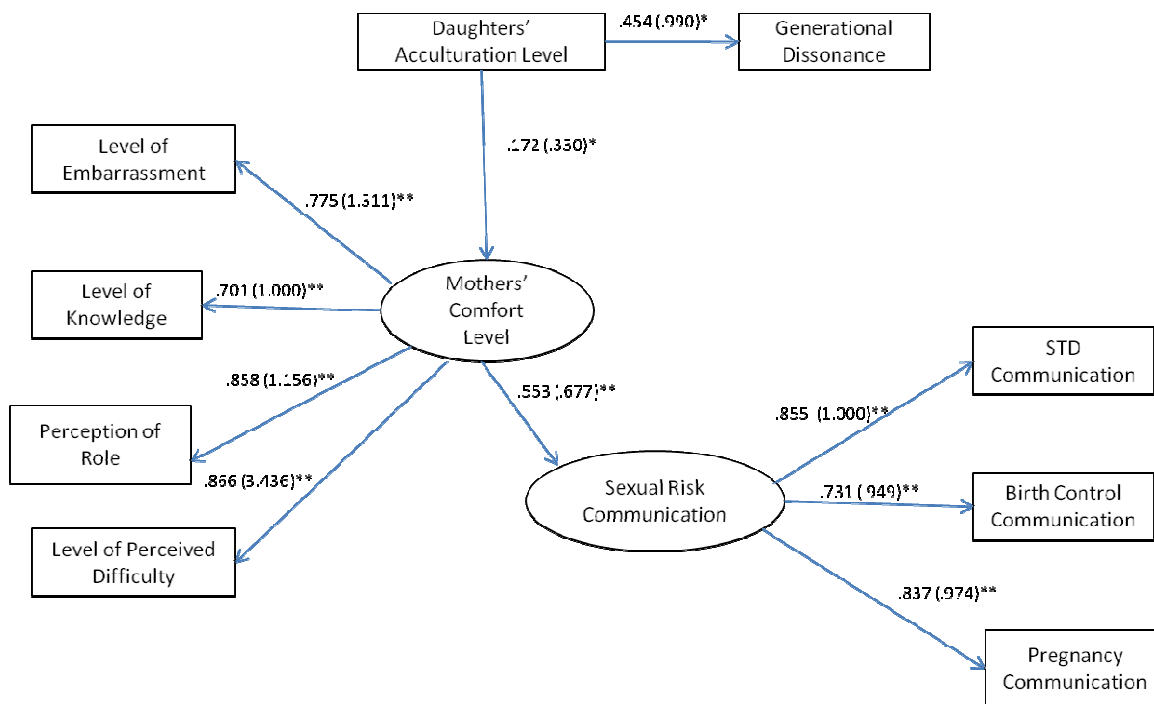
Alternate model 3: Removal of both condom use and perceived relationship quality pathways. In order to improve the fit of the model, the perceived relationship quality variable and its subsequent paths leading to and from the variable was removed from the model.¹⁰ This was done because the relationships between generational dissonance and perceived relationship quality and perceived relationship quality and sexual risk communication were non-significant.

According to results, all pathways in the model are now significant and the majority of the standardized regression coefficients are over .40. In addition, all indicators still have percentages of explained variance for their corresponding latent factors above .50. The new model, with the standardized and unstandardized regression coefficients, is shown in Figure 4.5.

¹⁰ It is important to note that at this stage, condom use, both Wave 1 and 2, has been removed from the model. This is because condom use has been determined to be an insignificant factor in the model.

Figure 4.5

Factor Loadings for the Different Pathways in the Alternative Model 3



Standardized estimate (Unstandardized estimate)

*Significant at the .05 level

**Significant at the .01 level

NFI = .87

CFI = .89

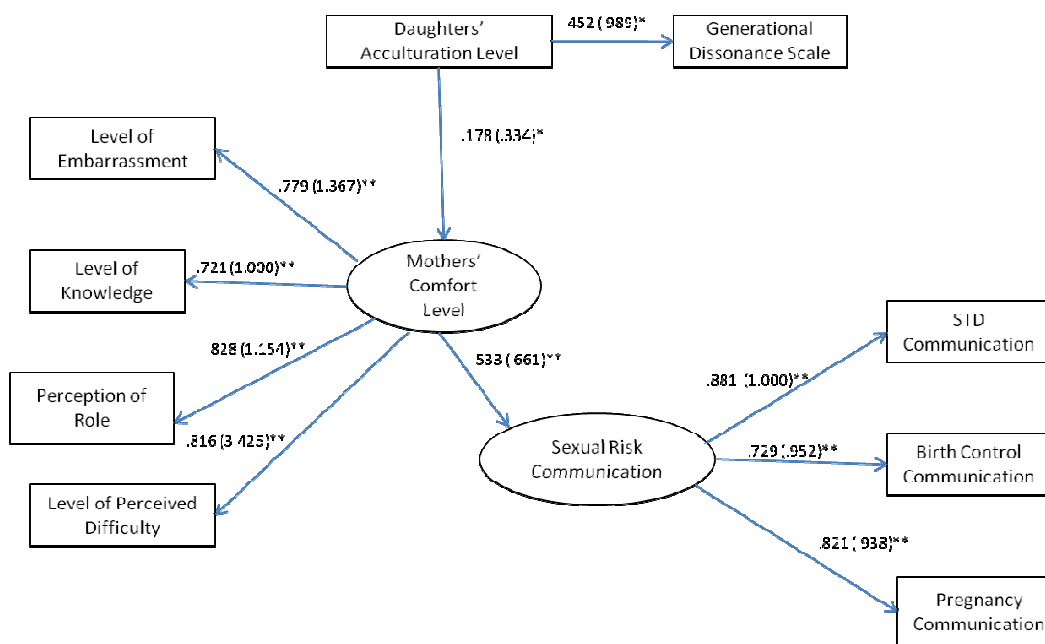
IFI = .89

The model fit improved once both perceived relationship quality and condom use were removed from the model. Specifically, the chi square statistic was still significant, but again, χ^2/df ratio was lower than five ($261.84 / 64 = 4.1$). In addition, NFI, CFI, and IFI values were almost equal to .90, indicating that the model approaches an optimal fit (NFI = .87; CFI = .89; IFI = .89). Finally, both lower and upper RMSEA values were below .08; the lower RMSEA value was .01 and the upper RMSEA value was .07. Implications for these results will be discussed in the following chapter.

Alternate Model 4: *Removal of both condom use perceived relationship quality and error terms correlated.* One way of improving a model's fit is by correlating the error terms in the model. Each indicator variable that measures a latent construct in the model has an associated error term. Variance not explained by theoretical constructs may covary across two indicators. Such covariance is called correlated errors. Typically, when SEM is run, the error terms remain uncorrelated (Schumacker & Lomax, 2004). It is possible, however, to correlate these error terms, by drawing two-headed arrows between the error terms in the model in AMOS, thus creating reciprocal feedback loops; this is known as a non-recursive SEM model. Certain conditions should be followed when correlating errors. Specifically, error should only be correlated when there is theoretical justification or rationale and if A's errors are correlated to B's errors and B's errors to A's errors, A's errors should be correlated to C's errors. Some researchers believe that it makes sense to correlate indicators that measure constructs because they measure something very similar and frequently use similar wording when asking questions in surveys. For this reason, this iteration of the model had the error terms for the indicator variables correlated. Standardized and unstandardized estimates are shown in figure 4.6.

Figure 4.6

Factor Loadings for the Different Pathways in the Alternate Model 4



Standardized estimate (Unstandardized estimate)

*Significant at the .05 level

**Significant at the .01 level

NFI = .91

CFI = .82

IFI = .89

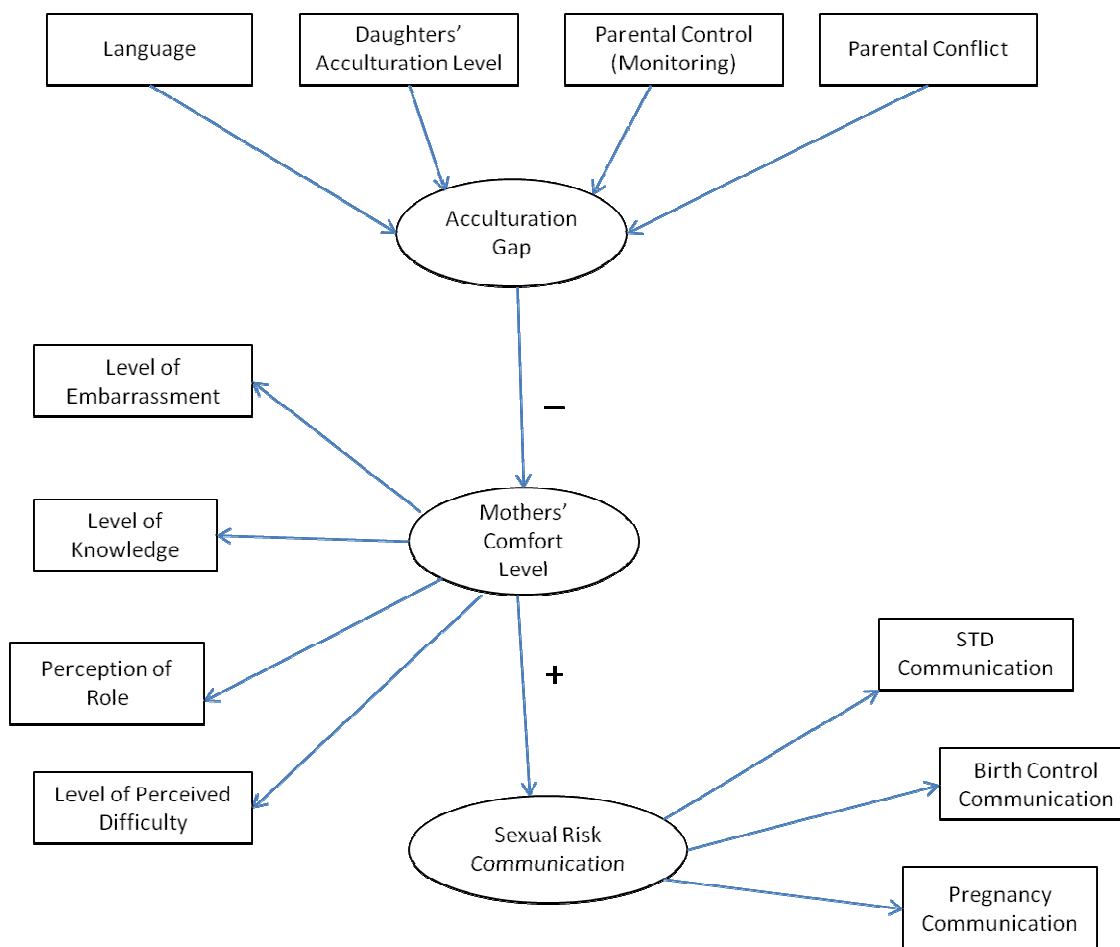
Goodness-of-fit statistics associated with this model iteration did not suggest that model fit greatly improved after correlating error terms associated with indicator variables for the latent construct. Specifically, the chi square statistic was still significant, but again, χ^2/df ratio was lower than five ($399.42 / 91 = 4.4$). In addition, NFI, CFI, and IFI values were almost equal to .90, indicating that the model approaches an optimal fit (NFI = .91; CFI = .82; IFI = .89). Finally, both lower and upper RMSEA values were below .08; the lower RMSEA value was .01 and the upper RMSEA value was .07. Although some statistics better approximated optimal model fit, overall this model

iteration was not adequate and was not significantly better than the model iteration where indicator errors were not correlated. Implications for these results will be discussed in the following chapter.

Alternate Model 5: Alternate theoretical model. Although many variations of the original model were tested, fit statistics associated with these models were not acceptable. As a result, another alternate model was posed, where the acculturation gap was conceptualized and measured in a different way within the model. The proposed model is shown below (Figure 4.7).

Figure 4.7

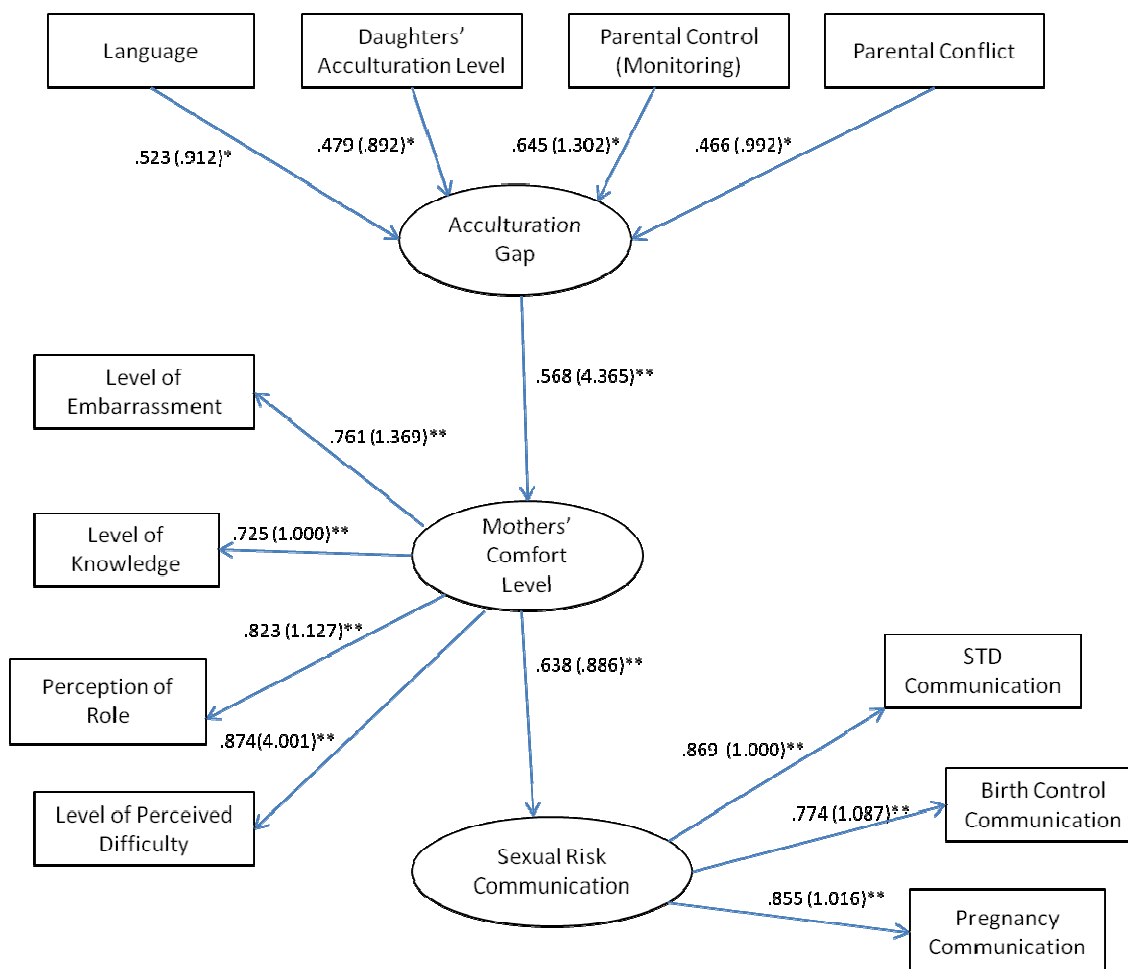
Alternate Model 5



This version of the model conceptualized the acculturation gap as a latent factor comprised of daughters acculturation level, language use, parental control (monitoring), and conflict. Previous iterations of the model examined the acculturation gap hypothesis by treating daughters' acculturation level and generational dissonance as separate variables. The acculturation gap hypothesis explains that as children spend more time in the host culture, they become more acculturated than their parents, as well as successive generations are more acculturated than their parents. Although this is the theoretical perspective, when parents and child have spent similar levels of time in the US and both did not immigrate during their lifetime, are they really that dissimilar in the level of acculturation? This cannot clearly be determined using only the daughters' acculturation level as an indicator. Thus, another measure of acculturation, one that reflects cultural preferences, was used, namely language use. As mentioned in chapter 2, many studies use language to approximate acculturation as well. Specifically, language is an important component of ethnic identity, and therefore, use of heritage or host language is an important indicator of the level of acculturation. It is important to note that language is a categorical variable. In accordance with alternate model 4, perceived relationship quality and condom use were not included in this iteration. The SEM results of this model are shown in Figure 4.8.

Figure 4.8

Factor Loadings for the Different Pathways in the Alternate Model



Standardized estimate (Unstandardized estimate)

*Significant at the .05 level

**Significant at the .01 level

NFI = .88

CFI = .89

IFI = .89

Results indicate that all relationships within the model are significant and all indicators loaded successfully onto their latent factors. This is noteworthy because previous iterations of the model did not measure the acculturation gap as a latent factor. Goodness-of-fit tests, however, revealed that model fit was not acceptable. Specifically,

χ^2 was extremely significant at 0.000, and χ^2/df was 9.8, a value above the heuristic threshold of 5. Additional Goodness-of-fit tests failed to exceed the threshold of 0.9, producing further evidence that the model should be rejected: CFI (.89), NFI (.88) and IFI (.89). Finally, RMSEA was indicated as .09 to .12, well above the maximum recommended threshold of 0.08. While CFI, NFI and IFI measures were only marginally significant, that χ^2 and RMSEA were well beyond their respective thresholds indicate that the above model should be rejected.

Subsequently, the above model was then amended by adding correlated error terms among the indicators of each latent variable. Unfortunately, the resulting alternative model was unidentified. Path coefficients could not be estimated as the number of known parameters was not sufficient to account for all the variance in the model. Additional constraints could not be added without destroying the structural model.

Finally, a Bayesian analysis was attempted. Prior to Amos version 7, categorical variables could only be analyzed by treating them as numeric and submitting them to maximum likelihood estimation. As such a compromise limits the accuracy and efficiency of model building, an automated, user-friendly Bayesian method was incorporated into later versions so that categorical variables could be handled more appropriately. The above model was submitted to Bayesian methods in order to optimize the analysis of included categorical variables. Upon convergence of the model, a posterior predictive p-value of 0.00 was generated. This significant value is in accordance with the significant χ^2 test and further indicates the lack of model fit.

Model change summary

Results indicated that the models where perceived relationship quality and condom use pathways were removed (Alternates 3 and 4) were the ones that most closely approach optimal fit. Alternates 3 and 4 differ in that Alternate 4 has the error terms correlated with one another and Alternate 3 does not. As previously mentioned, the majority of standardized regression coefficients were above .400 and all were statistically significant, and model fit was the strongest for these alternates (Figure 4.5). Despite this, the model could not be accepted because although some fit statistics were above the required threshold, some were not. In addition, all of the alternate models had better model fit than was obtained for the original model. The model fit statistics for the original model and the five alternate models are compared below, in Table 4.5.

Table 4.5

Table of Fit Statistics for the Original Model and all Alternates

Model	χ^2	df	χ^2/df	NFI	CFI	IFI	RMSEA L	RMSEA U
Original	280.42	75	3.7	0.00 ¹¹	0.00	0.00	.09	.11
Alternate 1	502.98	80	6.3	0.00	0.00	0.00	.12	.16
Alternate 2	261.84	64	4.1	.68	.59	.67	.09	.11
Alternate 3	409.02	83	4.9	.87	.89	.89	.01	.07
Alternate 4	399.42	91	4.4	.91	.82	.89	.01	.07
Alternate 5	807.73	82	9.8	.88	.89	.89	.09	.12

Alternate model 3 has the pathways going to and from perceived relationship quality, as well as the variable itself, removed and also has condom use removed from the

¹¹ As mentioned previously, it is possible to obtain values outside of the range of acceptability. In these cases, the values are customarily scaled to either 0 or 1, depending on their directionality. All of the 0.00 values in this chart actually reflect values outside the range of acceptability (from -1.12- -1.09) and were subsequently scaled to 0.

model. These changes yielded significant pathways among the variables as well as the strongest fit statistics out of all the models discussed. Though model 5 had a better theoretical justification than previous iterations of the model, it still did not have acceptable fit statistics. Explanations and implications for this model, as well as the original model, will be discussed in the following chapter.

Post Hoc Tests

Although none achieved optimal model fit, some pathways had significant standardized estimates through all iterations of the model. Specifically, the relationship between daughters' acculturation level and generational dissonance had a significant, negative relationship of moderate strength in all model versions in the current study. Standardized coefficients for the models ranged from -.421 to -.466. Because of the relationship, post hoc tests were conducted to further elucidate the nature of this relationship, where the sample was divided into two groups – those Hispanic adolescents who reported living at least 50% of their lives in the U.S. and those who reported living less than 50% of their lives in the U.S.

As generational dissonance was approximately normal but heteroskedastic following square-root transformation, Welch's one-way ANOVA was used to determine the relationship between daughter's length of time in the country and generational dissonance (Welch's ANOVA is robust to heteroscedasticity) (Garnage & Weerahandi, 1998). Results determined that those Hispanics born in the U.S. reported significantly different levels of generational dissonance than those not born in the U.S., $F(1, 124) = 72.4, p < .01$. Hispanics born in the U.S. had a higher mean level of generational dissonance ($M = 5.23, SD = 1.45$) than those not born in the U.S. ($M = 2.11, SD = 1.03$).

These results lend evidence to support the acculturation gap hypothesis - that as the daughters' acculturation level increases, so does the generational dissonance in the mother-daughter relationship.

A Kruskal-Wallis rank sum test also was performed, because it can be applied in the one factor ANOVA case, but is a non-parametric test for the situation where the ANOVA normality assumptions may not apply. As mentioned previously, the acculturation variable was highly skewed because approximately half of the sample had lived their entire lives in the U.S., meaning that 50% of the distribution was concentrated at that point in the distribution and the rest was scattered over all other points. Because of this non-normal distribution, it is important to see if the results conducted for the original ANOVA can be replicated with a rank sum test. Results of the Kruskal-Wallis test indicated that those adolescents who had over 50% of their lives in the U.S. had significantly different generational dissonance levels than those who had spent less than 50% of their lives in the U.S., $\chi^2(1, N = 309) = 4.11, p = .04$. This supports the results obtained using the original ANOVA test.

Another pathway with significant standardized estimates in all iterations of the model was that between mothers' comfort level discussing sex and sexual risk communication between mother and daughter. Mothers' comfort level and sexual risk communication had a significant positive relationship of moderate strength, ranging from a standardized coefficient of .544 to .553 among the different models tested. As mentioned in Chapter 3, for the purposes of post hoc tests, mothers' comfort level is based on summed Likert scale items to specific questions. The questions that comprise this variable address difficulty in discussing sex, knowledge level, embarrassment level,

and role in discussing sex; this measure has been used in previous studies (Meneses et al., 2006). The data for mothers' comfort level had a total score possibility of 16.

To examine this relationship, the sample was divided into two groups – those mothers' who had a combined score of 8 or above, indicating that they had more comfort discussing sex with their child and those who had a combined score of 7 or below, indicating they had less comfort discussing sex with their child. As sexual risk communication was approximately normal but heteroskedastic following a square-root transformation, Welch's one-way ANOVA was used. Results indicated that mothers with higher levels of comfort discussing sexual risk reported significantly different levels of sexual risk communication with their daughter ($M = 13.12$, $SD = 2.09$) than participants with lower levels of comfort discussing sexual risk ($M = 6.74$, $SD = 3.85$), $F(1, 122) = 72.8$, $p < .01$. These results suggest that the more comfortable a mother feels discussing sex with her daughter, the more sexual risk communication that occurs in the relationship between mother and daughter. The results obtained through post hoc tests lend support to the accuracy of the significant relationships identified in the models.

Chapter 5: Discussion

The purpose of the current study was to understand social factors that influence healthy behaviors in immigrant teenagers. Specifically, the study examined the role of the acculturation gap, found to have a significant negative impact on family communication and conflict, on condom use among Hispanic adolescents. This study attempted to elucidate a pathway through which the acculturation gap affects sexual risk communication rates between Hispanic mother and daughter and determine how this ultimately influences condom use. An exploratory model encompassing these factors was developed and tested. Because of the potential for Hispanic mothers to be viewed as relevant social models to their daughters, it seemed likely that factors that reduced the ability of these women to be viewed as models, like an acculturation gap between mother and daughter, would ultimately influence sexual risk communication and condom use.

SEM methods, established and validated by Kline (1998), were used to test the relationships among several variables. Through these methods, an overall model and alternative models were evaluated. The following section provides an in depth discussion of all of the models, along with possible interpretations and explanations. This will be followed by a discussion of the study limitations. In addition, applications and practical applications of the results are presented. Finally, directions and suggestions for future research studies addressing this topic are discussed.

Models Tested in Study

The purpose of this research was to examine ways in which the acculturation gap may influence sexual risk communication and ultimately condom use among Hispanic adolescents. The results obtained, regardless of outcome, are important because they

provide information on risk and protective factors surrounding adolescent sexual behavior.

Even though the study has value to the sexual risk behavior and acculturation fields as a whole, it must be noted that none of the models definitively explained the relationship among the variables examined. Optimal values were not obtained for the tests of model fit used in the current study (e.g., NFI, CFI, IFI, and RMSEA). Despite the lack of optimal fit, evaluation of the models provided important and significant information about the acculturation gap and how it affects relationships among Hispanic mother and daughter. In the following section, each of the models will be discussed in detail. Explanations for the non-significant relationships within each of the models will be posed.

Original model. The fit statistics associated with the original model proposed were not high enough (NFI, IFI, and CFI values were below the .9 threshold), and thus the original model did not adequately explain the relationship among the level of acculturation, generational dissonance, perceived relationship quality, mothers' comfort level, sexual risk communication, and condom use for Hispanic mothers and daughters. Several of the relationships were non-significant, and ultimately contributed to the poor fit statistics that were obtained.

Generational dissonance and perceived relationship quality. One non-significant relationship was that between the level of generational dissonance and the level of relationship quality the daughter perceived between her and her mother. The way in which these variables were measured may have contributed to the overall non-significant result. First, generational dissonance and perceived relationship quality were assessed

from different perspectives – generational dissonance was a measure of incidents that occurred, whereas perceived relationship quality was a measure of the adolescents’ feelings. It is possible that if generational dissonance and relationship quality were both assessed from the same perspective (e.g., both as feelings or both as actions), the relationship between the variables may have been different. Future studies should standardize the way in which these variables are measured. The way in which the variables were measured in the current study, however, were ways in which previous researchers had conceptualized and measured them in their respective studies (Buki et al., 2003; Merali, 2002; Rick & Forward, 1992).

Another possible explanation for this outcome is that the way in which these variables were measured may not accurately reflect the underlying theoretical construct. Although distribution of the generational dissonance variable used in this study was found to be relatively normal, this may not have significant meaning when the composition of the variable is examined. The generational dissonance variable consisted of six questions addressing parental control and one question addressing conflict. Conflict within the relationship was equated with particular activities that parents had control over. Specifically, an answer on whether or not there was conflict in the relationship between mother and daughter was weighted the same as an answer on whether or not the mother had control over a daughter’s specific activities, such as watching television. In addition, the specific activities included in the parental control (monitoring) measure may not be particularly important to certain parents, depending on their specific values and family life. For example, whether or not a mother controls what television her daughter watches or what food she eats may not be as important as whether or not the mother has

control over what time her daughter is home or if there is conflict in the relationship. Nevertheless, all activities comprising this measure had equal weight.

It is possible these activities that parents have control over could be less important in predicting dissonance within the relationship than conflict that actually occurs. Future studies should strive for a more balanced strategy between control and conflict items in the construction of dissonance variables for this type of research. Although control has been linked to negative affect and dissonance within parent-child relationships, conflict may comprise a larger component of the dissonance construct than was possible to obtain from the available items in the Add Health data set (Bradford, Vaughn, & Barber, 2008; Cummings & Davies, 2009; Nappi, Thakra., Kapungu, Donenberg, DiClemente, & Brown, 2008).

Characteristics of Hispanic families may influence this finding as well. As mentioned in Chapter 2, familism, and the mother-daughter relationship in particular, is very important in the Hispanic family. Because of the central importance of family in a Hispanic daughter's life, she may not feel that her relationship quality with her mother is threatened by conflict that exists in the relationship. As mentioned in Chapter 2, research on Asian Indian families found that mismatches in parent and youth acculturation style were associated with greater perceived conflict and poorer perceived relationship quality between parent and child (Farver et al., 2002). These research findings provided justification for hypothesizing that there would be a link between perceived relationship quality and mother-daughter conflict. The results obtained, however, suggest that although conflict and perceived relationship quality seem to be connected for Asian Indian families, it may not be connected in Hispanic families.

Perceived relationship quality and sexual risk communication. Another non-significant relationship was the relationship between perceived relationship quality and sexual risk communication. As mentioned in the preceding paragraph, one reason for this outcome may be attributed to the way in which perceived relationship quality was measured. Specifically, if perceived relationship quality was assessed from the same perspective as sexual risk communication (e.g., both from the mother's perspective or from the daughter's perspective), the outcome may have been different. Additionally, as mentioned in the prior paragraph, the way in which these variables were measured may not accurately reflect the underlying theoretical construct. Perhaps if the measurement of the dissonance variable was more balanced between control and conflict, the relationship between perceived relationship quality and sexual risk communication may have had another outcome.

As evidenced by the degree to which the indicators loaded onto its latent variable, it seems as though sexual risk communication was conceptualized and measured accurately for the population under study. Research has defined sexual risk behavior in a variety of ways, depending on the demographic group that is the subject of the study and the theoretical perspective of the researchers. In general, CDC defines sexual risk behavior, at least, as any behavior that puts them at risk for acquiring an STD or unintended pregnancy, or a behavior that decreases this risk (CDC, 2006, <http://www.cdc.gov/mmwr/PDF/SS/SS5505.pdf>). As a result, the questions that compose this variable appear to reflect the theoretical conceptualization of sexual risk communication. In addition, the factor loading values associated with these questions on the overall latent variable were strong and significant.

Therefore, it seems possible that theory may explain the non-significant relationship. As mentioned in earlier chapters, machismo and familism are very important values in Hispanic culture; they influence ideas of culturally acceptable, gender-based sexual behavior for young Hispanic men and women (Unger, 2000). Hispanic adolescents, for example, are expected to exhibit traditional gender role attitudes regarding virginity, children, and the relationship between love and marriage (Marin et al., 1993; Padilla & Baird, 1991; Padilla & O'Grady, 1987; Raffaelli & Ontai, 2004). Because of these values, it seems as though Hispanics may be less likely to plan for sexual behavior during adolescence, since this is not the typical expected time for marriage and starting a family. As a result of holding traditional, gender-based attitudes regarding sexual behavior, there may be a weak link between perceived relationship quality and sexual risk communication; essentially, perceived relationship quality may not impact the degree to which sexual risk communication occurs in the Hispanic mother-daughter relationship in any way.

In addition, the importance of perceived relationship quality in the life of the adolescent may differ depending on the age and subsequent developmental level of the adolescent. Studies have consistently found that parental factors, such as perceived relationship quality, influence outcomes for adolescents, but these studies tend to exclusively focus on younger adolescents (Fiese, 1992; Griffin, Botvin, Scheider, Diaz, & Miller, 2000; Steinberg, 2001). Although these studies are technically cross-sectional, the number of older adolescents is frequently very small in comparison to the number of younger adolescents (Fiese, 1992; Griffin et al., 2000; Steinberg, 2001). There is some evidence that the impact and importance of perceived relationship quality between parent

and child may diminish as the child gets older. Researchers have theorized and found some support for the assertion that the effect of parent–child interactions may begin to weaken during later adolescence (Aselthine, 1995; Cotterell, 1992; Windle, 2000), due in part to increased independence and identification with peers (Berndt, 1982; Furman, & Buhrmester, 1992). Perhaps relationships including the perceived relationship quality variable were not significant because both early and later adolescence were included in the analysis, and as evidenced by previous studies, the importance of the parent-child relationship diminishes during later adolescence.

Because of the overall non-significance of the model, an alternate model was posed in order to examine how model fit may improve if additional condom use data were added to the other condom use data. As variables within SEM are not independent, the modification of any one variable will affect the significance of other associations. Accordingly, condom use data were added to see if model fit could be improved, but did not remove previous non-significant variables which might still prove to be significant in the alternate models.

Alternate model 1. As mentioned in Chapter 4, when using SEM, it is typical to present alternate models, especially when it is used for exploratory model testing (Chin, 1998). As mentioned in the previous chapter, relationships within the original model were modified in order to see if that would yield a supported model overall. The first change made was adding Wave 2 condom use data to Wave 1 condom use data. This was done because the original model, with only Wave 1 data, was not supported by the results. This was most likely due to the fact that overall, the age of participants was below the average age when adolescents first engage in sexual intercourse. Adding Wave 2 data would

supplement the low level of reported condom users. Despite the addition, the outcome remained the same; this alternate model was not supported by the results; NFI, CFI, and IFI values were below .9, and therefore, the model was not an optimal fit. Why did this occur? There may be several reasons contributing to these results, both theoretical and measurement-related.

First, it appears as though the overall low level of reported condom use may be due to the relatively young age of the sample population. Statistics indicate that only forty-five percent of 9th to 12th grade females reported have had sexual intercourse, with the median age of first intercourse being 17.4 years (CDC, 2004). In addition, 66% of high school students reported being abstinent, meaning that they had not engaged in sexual intercourse in the last three months (CDC, 2004). Examination of the demographic characteristics of the sample population reveal that almost 75% of the sample was between the ages of 12 and 15 and in 7th to 10th grades. The percentages of sample ages and grades did not substantially become greater even when Wave 2 was added to this. Specifically, 66% of the Wave 2 sample was between the ages of 12 and 15 and in 7th to 10th grades. Because the majority of participants were below the average age and grade associated with first sexual intercourse, it seems likely that age contributed to the low level of condom use. As mentioned in Chapter 4 as a reason condom use was dropped from the model, this conclusion is further supported by the data: Respondents in the Add Health data set were asked, "Have you ever had sexual intercourse?" The majority of participants reported that they had not ever had sexual intercourse (n = 202, 65%).

Another contributing factor may be the way in which condom use was measured. As mentioned previously, the distribution of the condom use variable was heavily skewed

toward the no-no option (no condom use at first intercourse and no condom use at most recent intercourse). There are only three categories (0-2) and with a mean of 0.45 and standard deviation of 0.08, it appears that the responses are skewed toward 0 (no/no). Specifically, 11% of participants reported ever using condoms, while 89% of participants reported never using condoms. The addition of Wave 2 did little to improve the size of these groups – 215 participants reported never using condoms (69.6%), 54 participants reported using condoms at either first or most recent intercourse (17.5%), and 40 participants reported using condoms at both first and most recent intercourse (12.9%). This evidence suggests that the poor fit of the model when the condom use variable may be due to the specific way in which condom use was measured. Perhaps if condom use was measured in a different way, where the variable had a larger possible range, the model would have a better fit. It is important to note, however, that almost 70% of the sample reported never using a condom even at Wave 2. Therefore, this explanation alone does not appear to be able to explain the results.

Another condom-measurement related reason may explain the outcome as well. As mentioned previously, the score for condom use has a 0-2 range: 0=No debut & No most recent; 1=No at debut, Yes at most recent or Yes at debut, No at most recent; and 2=Yes at debut and Yes at most recent. This variable was approached as a continuous variable, even though the variable had only three points. Some studies have reported that variables should not be considered continuous when using SEM techniques if there are less than five continuous points, particularly when the variable is highly skewed (Hu & Bentler, 1999). Researchers report that Pearson correlation coefficients are higher when computed between two continuous variables than when computed between same two

variables restructured with an ordered categorical variable. In addition, highly skewed continuous variables with less than five points inflate the reported chi-squared value and lead to underestimated factor loadings and factor correlations. Weak standardized factor loadings, due to underestimation, can ultimately lead to the overall model being non-supported, which may have happened in the current study.

In addition to the measurement-related explanation for the non-supported outcome of the first alternate model, there is also a theoretically-related explanation. As mentioned previously, familism and machismo are very important in Hispanic culture and to a certain extent, dictate gender-based behavior. Hispanic adolescents, for example, are expected to exhibit traditional gender role attitudes regarding virginity, children, and the relationship between love and marriage (Marin et al., 1993; Padilla & Baird, 1991; Padilla & O'Grady, 1987; Raffaelli & Ontai, 2004). Hispanic adolescents, in contrast, are expected to control decisions regarding sexual behavior (Marin et al., 1993; Padilla & Baird, 1991; Padilla & O'Grady, 1987; Raffaelli & Ontai, 2004). Because of the importance of familism and machismo, any sort of communication regarding sexuality and sexual behavior may not ultimately translate into actual behavior. Specifically, these values communicate the strong importance of having a family, being a mother, and allowing the male make decisions regarding sexual behavior. As a result, condom use, regardless of the sexual risk communication that occurs in the relationship, may not be prevalent.

Finally, although research has established that the level of sexual risk communication is related to the level of reported condom use by adolescents, attitudes and behaviors are not always linked (Ajzen, 1991; Ajzen & Fishbein, 2005; LaPiere,

1934). Many social psychological theories make the connection between intention/beliefs/attitudes to behavioral outcomes (Ajzen, 1991; Cooper & Neuhaus, 2000; Isen, 1994; Kelman & Hovland, 1953; Petty & Cacioppo, 1986). Decades of prevention and health promotion research, however, reveals that most individuals' health behaviors are influenced by circumstantial emotion. Circumstantial emotion often overrides the complex decision-making processes linking attitudes with behavior posited by particular behavioral theories (Dutta-Bergman, 2005). Research has shown this to be the case particularly as it relates to adolescent condom use. Specifically, a recent study examining adolescents' attitudes in Atlanta, Providence, and Miami found having positive attitudes toward condom use had no apparent impact on actual use with their partners (Lescano, Vazquez, Brown, Litvan, & Pugatch, 2006).

Alternate model 2. Based on examination of the standardized estimates and corresponding significance levels and the reasons stated above (e.g. age of participants and condom use measurement), one variable that can be removed is condom use. In both the original model and alternate model 1, the relationship between sexual risk communication and condom use was non-significant. For this reason, the pathway between sexual risk communication and condom use, as well as the condom use variable, were trimmed from the model. Overall model results, however, were the same; the CFI, NFI, and IFI, were much lower than .9, indicating that the model does not approach an optimal fit.

Despite the removal of condom use altogether from the model, all of the other standardized estimates were relatively the same. The relationships between generational dissonance and perceived relationship quality and perceived relationship quality and

sexual risk communication were weak and non-significant. As mentioned earlier in this chapter, the weak relationships among these variables may be due to the fact that the two variables were assessed from two different perspectives – generational dissonance from the mother and perceived relationship quality from the daughter. The result also could be due to incorrect assessment of the underlying theoretical construct or because familism is so important to the Hispanic family relationship.

Alternate models 3 and 4. In alternate models 3 and 4¹², the pathways going to and from perceived relationship quality and the pathway from sexual risk communication and condom use were removed. This was done because these relationships were non-significant in previous iterations of the model, and as mentioned previously, it is common to remove pathways (called model trimming) during exploratory model testing.

NFI, CFI, and IFI values fell below the threshold of .9, and therefore, the model did not have an optimal fit. Although this model was still not optimal, NFI, CFI, and IFI values all approached .9 and both the upper and lower RMSEA values were below .08. These test results suggest that although the model as a whole cannot be accepted, the model was approaching significance. The majority of the relationships within the model were moderately strong and significant at the .01 level. A few of the relationships among different variables were weaker than others, which may have ultimately led to the overall model being unsupported. One of the weakest relationships in this model was that between daughters' acculturation level and mothers' comfort level. Although it was significant at the .05 level, its standardized estimate was lower than other estimates in the

¹² The only difference between model iterations 3 and 4 was that for model iteration 4, the error terms associated with the indicator variables for the latent constructs in the model were correlated. Model fit did not significantly differ (improve) from model 3, where error terms were uncorrelated.

model. Examination of the covariance table in Chapter 4 reveals that daughter's acculturation level had a weak association with the indicator that comprised the mothers' comfort level factor, with all indicators having a covariance of less than .05. This suggests that the variation in the daughters' acculturation variable does not explain much variation in the mother's comfort level indicators.

Why is the relationship between daughters' acculturation level and mothers' comfort level relatively weak and positive when it was hypothesized to be negative? It appears that the way in which daughter's acculturation level was measured may contribute to this outcome. As mentioned in earlier chapters, daughter's acculturation level was measured as the amount of time the daughter has spent in the U.S. The decision to measure acculturation in this way was made because both unidimensional and bidimensional approaches to measuring acculturation were found to be less than optimal. They were less than optimal because they relied on very specific ethnic stereotypes which are not applicable to a diverse immigrant population and use small sample sizes to justify using certain items on their scale (Hahn, 1995; Hahn & Stroup, 2002; Hunt, Schneider, & Comer, 2004; Barrett, 2006).

Despite the reasoning behind conceptualizing and measuring acculturation in this way, acculturation level and comfort level were measured from two different sources; the acculturation variable was measured using the daughter as the source of information, while the comfort level variable was measured using the mother as the source of information. Differing perspectives can significantly impact the outcome of studies (Griffin, Murray, & Gonzalez, 1995. Data from two different categories, like mother and daughter, are drawn from different populations, and as a result, each bring a different

perspective to the study or analysis (Griffin et al., 1999; Kenny, 1996). In addition, mother and daughter are affected by partner effects (where one person affects the other), mutual influence (where both partners affect each other), and common fate (where a third source affects both) (Kenny, 1996).

After correlating the error terms among the indicators of the latent factors, model fit was still not acceptable. Correlated error terms in measurement models represent the hypothesis that the unique variances of the associated indicators overlap; that is, they measure something in common other than the latent constructs that are represented in the model.

Alternate Model 5. A fifth iteration of the model was developed and tested, which conceptualized the acculturation gap in a different way from previous iterations of the model. Specifically, parental conflict, parental control (monitoring), language use, and daughters' acculturation level were all included as indicators to measure the latent variable, the acculturation gap. It was measured in this way in order to determine if the acculturation gap is a legitimate construct, and if it can be effectively measured. Language use was included as an indicator because it provides a behavioral context of acculturation, as opposed to simply measuring time spent in the country..

NFI, CFI, and IFI values fell below the threshold of .9, and therefore, the model did not have an optimal fit. In addition, both the upper and lower RMSEA values were above .08. Overall, the model was approaching significance, even though it cannot be accepted based on fit statistics. All of the relationships within the model were moderately strong and significant at the .01 level.

There are several possible explanations for why this model had a much poorer fit than the other models tested. Unlike previous iterations of the model, this model included categorical variables as indicator variables measuring the latent factor, the acculturation gap. First, chi-squared and other Goodness of fit tests are very sensitive to departures from multivariate normality among indicator variables. Such departures are especially likely when categorical and continuous indicators are mixed. Even small departures from multivariate normality can lead to very large increases in chi-squared values – meaning good data can produce a model fit failure. However, such departures from multivariate normality in some cases can also cause decreases in chi-squared values. Some authors suggest that standardized estimates can still be somewhat accurate even if model fit fails (Kupek, 2006; Zwillinger, 1995). As attempts to transform the data failed to produce completely normal distributions, the validity of this model can never be definitively evaluated.

The indicator variables for a given latent variable also must be well correlated among themselves, but not correlated with other latent variables. Model fit failure could be caused by a failure to meet either of these assumptions. In particular, the combination of categorical and continuous indicator variables decreases the likelihood of proper correlation among a latent variable and its respective indicator variables.

Although the models tested were not supported by the results, several relationships among the variables emerged which are significant and important in regards to acculturation and sexual risk communication and behavior research. The following section will discuss the unique contributions to the field that this study has provided.

Significant Relationships within the Models

Despite the fact that the original model and alternate models did not achieve optimal model fit, as evidenced by NFI, CFI, and IFI values, significant relationships emerged among the variables that comprised the models. Specifically, the relationship between daughters' acculturation level and generational dissonance and the relationship between mother's comfort level and sexual risk communication were found to be significant and moderately strong. The following section will discuss these results in detail and offer theoretical explanations for their outcomes.

Daughters' acculturation level and generational dissonance. Daughters' acculturation level and generational dissonance had a significant, positive relationship of moderate strength in all model versions in the current study. Standardized coefficients for the models ranged from .421 to .466. A path coefficient is a standardized regression coefficient showing the direct effect of an independent variable on a dependent variable in the path model (Kline, 1998). Based on the standardized coefficients, there is a moderate effect size for the relationship between daughters' acculturation level and generational dissonance (Kline, 1998).¹³ This conclusion was supported by the post hoc ANOVA results, which indicated that Hispanic adolescents who had spent more than 50% of their lives in the U.S. had significantly more dissonance in their relationship with their mother than those Hispanic adolescents who had spent less than 50% of their lives in the U.S.

¹³ It is important to note that in Structural Equation Modeling, a standardized coefficient above .8 is considered strong and a coefficient below .2 is considered weak. Standardized coefficients around .5 are considered moderate (Kline, 1998).

The significant, positive relationship between these two variables suggests that as the percentage of the daughter's life in the U.S. increases, dissonance in the relationship between mother and daughter increases. Specifically, the relationship between daughters' acculturation level and generational dissonance provides evidence for the acculturation gap hypothesis; the amount of time the child spent in the U.S. reflects a decrease in identification from the culture to which her mother is tied. The acculturation gap specifies that children often become involved in U.S. culture faster than adults, creating an "acculturation gap" between generations of parents and children, which produces increases in conflict between parent and child.

As discussed in Chapter 2, this significant relationship is supported by previous research; in one study of Cuban families, researchers found that children acculturated faster than their parents, resulting in more intergenerational gaps, family conflict, and less communication (Szapocznik & Hernandez, 1988; Szapocznik & Kurtines, 1980). Gil and Vega (1996) conducted another study on Nicaraguan and Cuban immigrant families and found that adolescents have more initial language conflicts than their parents, but their parents have more long-term language conflicts, an indication that overall, children acculturate faster. These acculturation-related stressors were associated with lower family cohesion and more family conflict (Gil & Vega, 1996).

This is an important finding because previous studies have not exclusively examined the generational dissonance hypothesis for Hispanic mother and daughter pairs. Research has established that the mother-daughter relationship has been found to be highly valued among Hispanics (Boyd-Franklin & Garcia-Preto, 1994; Penalosa, 1968; Madsen, 1964; McKee et al., 2004). Specifically, out of the different relationships within

the Hispanic family, the mother-daughter relationship is the closest one (Boyd-Franklin & Garcia-Preto, 1994; Penalosa, 1968; Madsen, 1964; McKee et al., 2004). Because of the importance the mother-daughter relationship occupies within Hispanic culture, it is necessary to determine how different factors, namely acculturation, affect this relationship. Based on the results of this study, it seems as though the level of acculturation, at least that the daughter has, is related to the amount of dissonance in the relationship that exists between them.

Although in the current study the proposed models did not have an optimal fit, this particular finding is important for future studies focusing on the mother-daughter relationship and its impact on behavioral outcomes. Perhaps dissonance that exists within the relationship may directly impact sexual risk communication; perceived relationship quality between mother and daughter may not significantly impact how much sexual risk communication occurs in the relationship. Instead, the dissonance that results from acculturation may decrease communication between mother and daughter, which may subsequently reduce the amount of sexual risk communication that occurs in the relationship. There are many ways in which sexual risk communication may be impacted by the acculturation gap hypothesis.

This relationship has important implications for other outcomes as it relates to adolescent risk behavior. Although in the current study condom use was ultimately not linked to the acculturation gap, the rate and outcome of many risk factors may be impacted by differences in acculturation between mother and daughter. Specifically, the acculturation gap hypothesis may affect other risk behaviors such as delinquency and substance abuse as it relates to this particular subpopulation – Hispanic adolescents.

Many studies have indicated that more acculturated adolescents are more likely to engage in delinquent behaviors (Caldwell, Beutler, Ross, & Silver, 2006; Prado, Szapocznik, Maldonado-Molina, Schwartz, & Pantin, 2008). In addition, researchers have determined that communication between Hispanic parent and child is a protective factor against substance abuse (Litrownik, Elder, Campbell, Ayala, Slymen, Jessor, Donovan, & Costa, 1991; Parra-Medina, Zavala, & Lovato, 2000; Resnick et al., 1997; Wills & Vaughan, 1989). However, these studies, as mentioned previously, did not take an acculturation gap into account. As the family system is weakened through conflict caused by emotional separation and the erosion of familism, there is an increased risk for poor parental monitoring and supervision, which increases the probability that the adolescent will be susceptible to delinquent behaviors or substance abuse (Szapocznik & Kurtines, 1980). Although the particular sexual risk outcome (e.g., condom use) and pathways to the sexual risk communication were not found to be important components of the models tested, it is important to consider the possibility that sexual risk outcomes for Hispanic adolescents are linked in different ways to generational dissonance. More specific theoretical possibilities will be discussed in directions for future research.

Mothers' comfort level discussing sex and sexual risk communication.

Mothers' comfort level and sexual risk communication had a significant positive relationship of moderate strength, ranging from a standardized coefficient of .544 to .553 among the different models tested. The positive relationship between these variables suggests that as mothers' comfort level in discussing sex and sexual behavior increases, sexual risk communication between mother and daughter increases. This conclusion was supported by post hoc ANOVA results, which found that sexual risk communication

levels between Hispanic mother and daughter were significantly higher when mothers' had a higher level of comfort discussing sex. This is important because while previous research has established that mother's comfort level is linked to levels of sexual risk communication, a review of the literature reveals that it has not been established in an exclusively Hispanic sample.

Based on the results of model testing, sexual risk communication did not translate into increased condom use; however, as mentioned earlier in the chapter, this may be due to the way in which condom use was measured. Regardless, increased sexual risk communication between mother and daughter has been found to influence sexual socialization and behavior (Fox, 1981; Hepburn, 1983; Hutchinson et al., 2004; Miller et al., 1998). Young adults typically name parents as important sources of sex education (Bates & Joubert, 1993; Yarber & Greer, 1986). Sexual discussions with parents have been linked to less risky sexual behavior among teenagers and a reduction in the level of sexual activity overall (Casper, 1990; Fox & Inazu, 1980; Holtzman & Rubinson, 1995; Luster & Small, 1994).

Hispanic adolescents have less conceptual knowledge about contraception and reproductive processes than African Americans and European Americans (Driscoll, Briggs, Brindis, & Yankah, 2001; Ford, Rubinstein, & Norris, 1994; Norris & Ford, 1992; Padilla & Baird, 1991; Scott, Shifman, Orr, & Owen, 1988). As mentioned in Chapter 2, sexual risk communication among Hispanic mothers and daughters, however, occurs at rates lower than other ethnic groups (Hutchinson et al., 2003). Because sexual risk communication can have such a significant impact on knowledge about sexual activity, it is important to understand potential barriers to information transmission

between mother and daughter. This study suggests that mothers' comfort level could be a barrier to the rate of sexual risk communication that occurs in the relationship between Hispanic mother and daughter.

Acculturation gap as a latent factor. For the fifth iteration of the model, the acculturation gap was conceptualized as a latent factor with four indicators – daughters' length of time in the US, language use, parent-child conflict, and parental control (monitoring). All indicators loaded successfully onto the latent factor. This is important because previous iterations of the model only established a significant relationship between a measure of acculturation and a measure of generational dissonance. The results obtained in model 5 indicate that all of these indicators successfully approximate the acculturation gap construct.

These results suggest that the distributions of the latent factors vary in similar patterns across all four indicators: as one variable increases, so does another. Therefore, as daughters' length of time in the country increases, so does English language use, and dissonance within her relationship with her mother. Previous conceptualizations of the acculturation gap have measured the acculturation gap as either a difference in score across different acculturation dimensions or recorded an acculturation gap as a simply a match vs. mismatch in acculturation (Cohen & Cohen, 1983; Collins & Horn, 1990; Cronbach & Furby, 1970; Farver et al., 2002). No previous studies have examined the degree to which measures of acculturation and measures of dissonance actually measure the underlying construct of the acculturation gap.

Implications

Theoretical implications. There are several important implications of this study. First, there was a significant, negative relationship between daughters' acculturation level and generational dissonance in the mother-daughter relationship. This suggests that the acculturation gap hypothesis is plausible for the Hispanic mother and adolescent daughter relationship. Specifically, Hispanic daughters appear to become involved in U.S. culture faster than their mothers, creating an "acculturation gap" between the generations, which leads to increased dissonance in their relationship. This is important because it extends the applicability of the theory to multiple cultures and specific relationships within the family unit. As mentioned in Chapter 2, research conducted prior to the current study has examined the acculturation gap hypothesis as it applies to specific Hispanic cultures using both male and female samples. Specifically, previous studies have determined that generational dissonance has resulted from acculturation in specific Hispanic cultures, such as Cubans and Mexican Americans (Lau, McCabe, Yeh, Garland, Wood, & Hough, 2005; Szapocznik et al., 1984). This study used a nationally-representative sample with many different Hispanic cultures represented to provide support for the acculturation gap hypothesis. In addition, this study established the existence of generational dissonance resulting from acculturation with an exclusively Hispanic mother-daughter sample.

Research implications. The results of this study have implications for research relating social learning theory as it applies to sexual behavior and Hispanic mother-daughter pairs. Modeling refers to both observational learning and retaining instructional messages presented by the model (Bandura, 1977; Grusec, 1992). Previous research has established that the family unit is very important within Hispanic culture, and therefore,

parents are likely viewed as possessing characteristics relevant to perceiving them as a model - trustworthiness (Valente & Davis, 1999; Zimmerman & Koussa, 1979), similarity (Bandura, 1977; McCullagh, 1987), social power (Wann & Brewer, 1998), and perceived competence (Mischel, 2007; Mischel & Grusec, 1966; Paradise, Conway, & NcZweig, 1986). The acculturation gap hypothesis appears to be one way in which the parents position as a relevant social model to her daughter may be eroded. For this reason, when researchers examine social learning theory as it applies to Hispanic mothers and daughter, measures of acculturation and generational dissonance should be included in the analysis.

Applied and practical implications. Many brief sex education programs have been designed to increase parent-child communication. These programs typically serve parents or both parents and children. Encouraging parents to be the primary sexuality educators of their children is politically acceptable and less controversial than providing abstinence-only education, or sex and HIV education which includes discussion of condom use and other types of contraception (Kirby & Miller, 2002). The reasoning underlying this perspective is that parents will be able to communicate their own values to their children.

Kirby & Miller's (2002) review of the literature on sexual education targeting parents revealed several trends. Program follow-ups reveal many participants increased use of contraception in the short-term, but use did not endure long-term (Kirby & Miller, 2002). In addition, these programs heavily emphasized knowledge gain among parents. An analysis of one knowledge-based program targeting parents revealed that parents improved only slightly in their communication skills with their children, but little overall

(Lefkowitz, Sigman, & Au, 2000). This information suggests that having knowledge regarding sex is not enough to ensure that a mother engages in substantial, enduring sexual risk communication with her daughter.

Previous studies, however, have highlighted the importance of other characteristics, traits, and skills that mothers need to have in order for sexual risk communication to occur. Specifically, developing parents' belief in their ability to discuss sexual risk behavior with their daughter has been found to be important (O'Donnell, Myint, Duran, & Stueyve, 2007). Researchers found that a program designed to increase Hispanic and African-American parents' self-efficacy in discussing sexual activity led to a decrease in the amount of sexual risk behavior that the daughter reported (O'Donnell et al., 2007). In addition, research has shown that programming designed to increase parents' comfort level discussing sex with their children immediately affects key determinants of sexual risk behavior among middle school adolescents (Blake, Simkin, Ledsky, Perkins, & Calabrese, 2001).

All research on sexual risk communication programs should incorporate research on parent-child sexual risk communication, barriers to communication, and effective strategies for overcoming these barriers in order to improve program effectiveness (Blake et al., 2001; Kirby & Miller, 2002; O'Donnell et al., 2007). The current study supports prior research, by providing specific information regarding mothers' comfort level discussing sexual risk that can be translated into educational programming. Specifically, Hispanic mother's comfort level was found to be significantly related to the level of sexual risk communication that occurs between her and her child. According to current findings, mothers' comfort level is not just comprised of the knowledge that mothers'

possess about sexual risk topics; she must not perceive the task as too difficult, she must not feel embarrassed or ashamed when discussing sex, and she must recognize that part of her role in her relationship with her daughter is to discuss sex and sexual behavior. Focusing on these components that influence mothers' comfort level discussing sex, as well as knowledge about sexual behavior, may improve the outcomes of programs that target parents, and in particular, Hispanic mothers.

Study Limitations

Limitations of secondary data analysis. There was an advantage in using the Add Health Public Use Data Set, as it provided for a large, geographically representative sample that may not have been otherwise available due to cost limitations and the sensitive nature of the data itself. It had limitations, however, on the level and type of data collected. This parallels some of the benefits and concerns listed by Hofferth (2005) in a discussion of secondary data usage.

Social scientists have increased their use of secondary data analysis in family research over the past two decades. Hofferth (2005) conducted a content analysis on secondary data usage in research appearing in the *Journal of Marriage and Family*. He concluded that there was a significant rise from 1983, where 31% of the research used secondary analysis, to over 75% in 2003. Hofferth (2005) suggested that the increase in use of secondary data analysis is coupled with the increase in the number of grants being awarded by federal statistical agencies to large research facilities for the purpose of developing large-scale data sets for public research use. Large research facilities have the resources, both in terms of expertise and logistical ability, to generate these data sets, and then make them available to other research institutions and agencies.

Secondary data analysis is beneficial for many reasons. Studies using this secondary data typically have less cost associated with them than traditional quantitative, experimental research (Hofferth, 2005). In addition, secondary data sets are often selected because substantial cost was put into collecting them, and thus provide large, representative sample sizes for the population being studied, such as the Add Health dataset (Hofferth, 2005). Oftentimes, secondary data sources provide expansive longitudinal data individual researchers do not have time or resources to collect. Finally, secondary data sets provide researchers access to representative and methodologically-rigorous data easily and in a timely manner (Hofferth, 2005).

Despite these advantages, there are many limitations associated with this method as well. Sometimes, using a secondary dataset may influence the type and direction of research questions and hypotheses, so that they fit the data available. In this sense, the researcher is letting the data guide the direction of the study as opposed to theory, which is unethical (Hofferth, 2005). Researchers who designed the study initially often have different goals and hypotheses than researchers conducting secondary analyses have, and thus researchers are often tempted to modify their research questions to fit the original intention. Often large data sets tend to focus on how representative the sample is instead of constructs in the data set. Specifically, large data collection procedures are often funded by various government or nonprofit organizations, thus limiting control that the individual researchers have over construction and measurement of variables in the dataset. As a result, reliability and validity of constructs within these datasets can be somewhat compromised (Hofferth, 2005).

In order to address the concerns that arise when using the Add Health data set, several issues were addressed before using the secondary data source. Hofferth (2005) suggests that researchers should consider the following questions: 1) Is the sample size adequate for the research project proposed? 2) Are the original methods, data collection procedures, and question sequences correctly understood in order to utilize the data appropriately? 3) How well does the design of the original study fit with the research questions in secondary analysis? 4) Does the data set have the necessary measures in order to conduct the proposed research study?

The Add Health public use data set was appropriate for the current study because it adequately fit most of the concerns outlined by Hofferth (2005). As mentioned previously, the sample size is appropriate for the study that was conducted, which was 309. Mitchell (1993) specifies that there should be 10 to 20 times as many cases as variables. There are 17 variables, making the parameters for acceptability between 170 and 340 cases, which indicates that the current sample size is adequate. Another rule of thumb is to have at least 15 cases per measured variable or indicator (Stevens, 1996). In the current case, there are 15 indicators, which further supports that the sample size is adequate to perform SEM.

Despite the adequate sample size, it is necessary to again point out that the distribution of the condom use variable was heavily skewed toward no use overall, with the majority of participants reporting that they had not used condoms at first or most recent intercourse. There are only three categories (0-2) and with a mean of 0.45 and standard deviation of 0.08, it appears that the majority of responses are skewed toward 0 (no/no). The addition of Wave 2 did little to improve the size of these groups. Perhaps if

a larger sample size was obtained, more participants would have reported using condoms and subsequently, the original model might have been supported by the results.

It also is necessary to establish that the overall structure of the original Add Health study was correctly interpreted. This is important, because if it was not interpreted correctly, the analyses and conclusions made in the current study may not be accurate. Specifically, the original methods, data collection procedures, and question sequences were correctly understood in order to use the data in a manner consistent with the original researchers' intent. Also, missing data and skip patterns were managed according to researchers' suggestions, as well as ways in which prior studies with somewhat similar objectives handled the data (Bankston and Zhou 2006; Gordon-Larsen et al., 2003; Harker, 2001; Harris, 1999; King, Harris, & Heard, 2004; UNC Population Center, 2009).

In addition, the design of the original study fit with the research questions in secondary analysis. The Add Health data set was developed in response to a mandate from the U.S. Congress to fund a study of adolescent health (UNC Population Center, 2009). One of the major original intents was to gather a nationally-representative data set to explore risk issues, particularly sexual behavior and health issues, in an adolescent sample (UNC Population Center, 2009). In addition, this data set made the study of the well-being of immigrant children and families possible (e.g., Bankston and Zhou 2006; Gordon-Larsen, Harris, Ward, & Popkin, 2003; Harker, 2001; Harris, 1999; King, Harris, & Heard, 2004). Specifically, certain Hispanic groups were over-sampled, thus increasing the number of children in immigrant and first and second-generation families who were selected. The study also was conducted in the 1990s, which reflects the increasing

representation of children from Hispanic families in the United States and diversity in race and ethnicity on a national level.

This data set has all necessary measures to conduct this study, though many of them are actually proxy measures. Although there is no direct measure of the acculturation gap, a contextual approach was used to study this construct in all iterations of the model; a measure of acculturation was constructed using length of time in the U.S. and was related in the models to a measure of generational dissonance for four of the five iterations. A previous study has conceptualized the gap in the same way (Harris, 1999; Harris & Chen, 2004).¹⁴ A latent variable was constructed using both generational dissonance and acculturation measures for the fifth iteration of the model.

There are, however, weaknesses associated with measuring the gap in this way, particularly as it relates to the measure of acculturation. Add Health data does not offer a direct measure of acculturation. Although both mothers and daughters were asked if they were born in the US, only daughters were asked to quantify how long they had spent in the US. Measuring acculturation is a very important component of measuring an acculturation gap and Add Health data only provided direct information from daughters. Therefore, the current study relied on a theoretical premise when conceptualizing the acculturation gap construct. As mentioned in Chapter 4, the acculturation gap hypothesis explains that as children spend more time in the host culture, they become more acculturated than their parents, as well as successive generations are more acculturated than their parents. Although this is the theoretical perspective, a daughters' time spent in

¹⁴ It is important to note, however, that in the Harris and Chen (2004) study, years in the U.S. were categorized into four ordinal variables: <6 years (1); 6-10 years (2); 11-14 years (3); and 15+ years (4). In the current study, the age at arrival of the adolescent was subtracted from the age at the Wave I interview, but was not collapsed into ordinal variables.

the country is not a clear indication that either mother or daughter adhere to the new, host culture. This conceptualization of the acculturation gap lacks input from the mother which would lend support to the premise that there is a gap between mother and daughter. It is plausible that children and/or parents interact or reside in neighborhoods comprised primarily of people from the same ethnic background. Approximating acculturation as a measure of daughter's length of time in the country is therefore, a limitation of this study.

As mentioned previously, approximately 50% of the daughters included in the study were born here and 40% of mothers were born here as well. Examining this relationship further, it appears as though 31% ($n = 96$) of mother and daughter pairs were born in the US. This indicates that a large percentage of mother-daughter pairs may not have had dissimilar acculturation levels because they are first- and second-generation (or third, etc.) immigrants and have both been exposed to US, host culture for similar amounts of time, but the original model and its alternates did not examine this issue. The final model tested attempted to correct for this theoretical assumption by including a measure of language use when conceptualizing acculturation.

In addition, the generational dissonance variable used was a proxy measure as well. This variable was not an established scale with information regarding validity and reliability. Instead, it was used by previous researchers to conceptualize the parental monitoring and conflict behavior within relationships in the family (Harris & Chen, 2004). A score was calculated based on whether adolescents reported the existence or absence of parental monitoring and/or conflict. Conclusions based on this conceptualization of generational dissonance could be tenuous because of the lack of psychometric information available for this variable. In addition and as previously noted,

the construction of this variable included six items addressing parental monitoring and one item addressing conflict. There were 7 items total, and possible scores ranged from 0 to 7. Therefore, although the conceptualization of the generational dissonance variable appears to be theoretically justified, related to the level of daughters' acculturation, and used in previous studies, it is a proxy variable and thus may not precisely measure this underlying theoretical construct.

Previous studies have measured all of the other measures in the study – perceived relationship quality, mothers' comfort level, sexual risk communication, and condom use in the same ways (Bruckner & Bearman, 2005; Bynum & Kotchik, 2006; Eisenberg et al., 2007; Meneses et al., 2006; Sieving et al., 2001). As evidenced by previous research and the explanations offered in Chapter 3, this data set had the necessary measures to conduct the study.

Previous studies have measured all of the other measures in the study – perceived relationship quality, mothers' comfort level, sexual risk communication, and condom use in the same ways (Bruckner & Bearman, 2005; Bynum & Kotchik, 2006; Eisenberg et al., 2007; Meneses et al., 2006; Sieving et al., 2001). As evidenced by previous research and explanations offered in Chapter 3, this data set had the necessary measures to conduct the study.

Additional methodological concerns. All of the measures used in this study were self-report. Individual perceptions and recollections comprise the majority of the data. As a result, data may have been affected by social desirability, in that adolescents and parents may not want to share information that would reflect negatively, particularly since the data used came from the in-home interview. Because participants reported

information to an interviewer, they did not have the anonymity that is typically provided by a written survey. Future research should utilize alternative data collection methods to gather similar data. Perhaps written or web-based survey methodology would permit the participants to feel more comfortable disclosing sensitive information. Qualitative methods such as focus groups or semi-structured interviews may also provide researchers with more information on some of the particularly sensitive issues, such as those relating to sexual behavior.

In addition to this methodological concern, it is important to consider the fact that data were taken from both mothers and daughters who possess a dyadic relationship, as opposed to a single perspective. Becker (1942) classified two persons as a dyad when “intimate, face-to-face relations have persisted over a length of time sufficient for the establishment of a discernable pattern of interacting personalities.” Essentially, two persons compose a dyad when they maintain a personal relationship, marked by interdependence, over an extended period of time (Thompson, & Walker, 1982). Studying this form of interpersonal research presents notable conceptual and methodological challenges. Primarily, dyadic researchers need to consider whether the dyad contains two categorically similar or different individuals, what level of analysis is used, what approach is used, issues of non-independence, choices of a theoretical model, and choosing appropriate statistical tests (Griffin & Gonzalez, 1995).

Dyads can be studied at two levels: the level of the individual, and the level of the relationship (Griffin & Gonzalez, 1995). The relationship can be conceptualized as a pattern that emerges from interacting individuals (Maguire, 1999). There has been significant controversy over how dyadic research should be conducted, e.g. subjective

versus objective reporting, self-report versus observation, which partners should be interviewed, and what survey questions should address (Thompson & Walker, 1982).

Many experts have emphasized the need for family researchers to maximize the number of participants that they study. As with any social psychological research, this strategy is valued for increasing sample size and providing a measure to gauge the accuracy of individual statements.

Additionally, it has been suggested that input is needed from all involved in order to understand the relationship itself (Larson, 1974; Olson and Rabunsky, 1972; Safilios-Rothschild, 1970; Thompson, and Walker, 1982). Thompson and Walker (1982) suggest that this view is somewhat extreme, as the individual, in many cases, can be a rich source of useful information. Regardless, this study may have benefitted from incorporating both mother and daughter perspectives for several of the variables, instead of just being assessed from one perspective. For instance, generational dissonance was only assessed from the perspective of the daughter. This was done because the daughter would ultimately be the most important party (e.g., the one most directly affected by generational dissonance in the relationship) when examining the behavior of interest to this study, namely condom use. Both perspectives, however, may have provided a more complete picture of their relationship.

Another example as to why mother-daughter perspectives would be useful relates to the measure of the acculturation gap. Language use was only collected from adolescent perspective, not from parent perspective as well. This is important because this information provides an important contextual factor in the measurement of acculturation; it is often used in the calculation of acculturation levels and subsequently acculturation

gaps between parent and child (Acculturation and overweight-related behaviors among Hispanic immigrants to the US: the National Longitudinal Study of Adolescent Health). The outcomes of the models examined in the current study may have been different if the acculturation gap was examined from this perspective. Specifically, separating mother-daughter dyads that either both use primarily English or Spanish from those that differ in language use within the dyad may have more accurately captured the acculturation gap and subsequently, the relationships within the model may have been significant and the overall model supported. Future studies should incorporate varied perspectives when studying social and relationship factors that may influence a daughter's sexual behavior.

In addition to all the explanations offered for these results, it may be that the original model and subsequent alternates do not reflect the actual way in which the acculturation gap affects sexual risk communication rates for Hispanic mothers and daughters. In addition, peers may exert a more substantial impact on adolescent sexual development than parents. Research with a Hispanic and African American sample has identified that communication about sex with parents and perceived peer norms about sex were each related to sexual behavior, and communication about condoms and peer norms about condoms were related to condom use behavior (Whitaker & Miller, 2000). For both sex and condom use, the peer norm-behavior relationship was moderated by parental communication; peer norms were more strongly related to behavior among adolescents who had not substantially discussed sex or condoms with a parent (Whitaker & Miller, 2000). Although condom use discussion transpired between the majority of parents and adolescents in the current study, the discussion may not have been substantial. According to social learning theory, in order to be relevant, a model must be socially competent,

powerful, similar, and trustworthy to another individual. Perhaps in the absence of substantial information from parents regarding sexual behavior, peers become the socially competent, powerful, similar, and trustworthy model to the adolescent, and thus exert a stronger influence over adolescents in terms of sexual behavior.

Directions for Future Research

The present study provides several directions for future research. Research studies should reexamine the link between sexual risk communication and condom use among Hispanic adolescents by using a larger sample, where more adolescents were above the average age for first sexual intercourse. This will eliminate the possibility that the relationship between these two variables is confounded by the age of the participants. If the average age of participants approximates the average age of first sexual intercourse, a stronger positive relationship between mother-daughter sexual risk communication and reported condom use may emerge. In fact, future studies should replicate the methods employed in this study using a sample that exclusively has had intercourse. This would let the researcher examine the relationship between sexual risk communication and condom use clearly, without adolescents who have not had intercourse diluting the relationship.

In addition, an alternative method of measuring daughters' acculturation level should be used. Because there are so many ways in which acculturation can be conceptualized, this study should be replicated using one of the alternate methods. Specifically, the Bidimensional Involvement Scale (BIS) or the Bidimensional Acculturation Scale (BAS), both with established reliability and validity, should be used to see if there is a link with generational dissonance (Marin & Gamba, 1996; Martinez,

McClure, & Eddy, 2009; Prado, Huang, Moldonado, Bandiera, Schwartz, la Vega, Brown, & Pantin, 2010; Smokowski, Buchanan, & Bacallo, 2009; Smokowski et al.,2008).¹⁵ As mentioned in Chapter 2, bidimensional acculturation is measured by examining participation in the culture of origin and participation in the host culture. The BAS provides an acculturation score for 2 major cultural dimensions (Hispanic and non-Hispanic domains) by including 12 items (per cultural domain) that measure 3 language-related areas. Establishing a link between generational dissonance and the BAS, coupled with the results obtained in the present study, would provide strong evidence for the acculturation gap hypothesis for Hispanic mother-daughter pairs.

In addition to changing the way in which acculturation was measured, future studies could use a sample that is composed of immigrants who have been in this country for varying amounts of time. The current study sample did not have enough immigrant adolescents who had spent varying amounts of time in the US in order to determine if model outcomes would vary significantly between immigrants and first generation participants. Specifically, although the sample was approximately equally divided between adolescents born in the US and adolescents born in a different country, there is not a lot of diversity among the length of time spent in the US among those adolescents who were not born in the US. Specifically, analyses reveal that almost 80% of the sample had spent over 50% of their lives in the United States. This indicates that the Hispanic adolescents are pretty highly acculturated and therefore, conclusions of the study regarding immigrant adolescents primarily reflect the experience by more highly acculturated adolescents overall. Specific cultural values such as familism and machismo

¹⁵ Based on a literature search, it appears as though the BIS is used more frequently.

may be more salient to the immigrant adolescent who had spent less than 50% of their lives in the US than an immigrant adolescent who had spent more than 50% of their lives in the US or first or second generation adolescent. Therefore, the role that a mother has on her daughter's sexual socialization may be greater as well.

Although the results did not support the particular models examined in the present study, it seems as though acculturation is an important aspect of adolescents' sexual beliefs and development. Clearly, it has a significant effect on dissonance within the family relationship, which has been linked to various risk behavior outcomes. More precise pathways through which this variable affects risk behavior are needed.

In order to establish more precise pathways through which acculturation affects sexual behavior, more contextual variables may further elucidate these relationships in future studies. The current study focused on the quality and nature of individual interactions and communication to determine how the acculturation gap affected sexual risk communication. These micro-level interactions need to be placed in the context of macrolevel structures, such as the social, cultural, and religious environments in which adolescents live and interact.

It seems as though SES and religiosity are both factors that may ultimately influence how the acculturation gap affects the Hispanic mother-daughter relationship, and sexual risk communication and condom use. Research suggests that parental public religiosity curbs the frequency of conversations about sex and birth control (Regnerus, 2005). Estimates of the proportion of Hispanics or Hispanics in the United States who identify as Catholic vary considerably, from slightly over half to 90 percent (e.g., Froehle and Gautier, 2000). Regardless of the exact statistic, however, it is clear that Catholicism

is the predominate religion among Hispanics. Catholic doctrine encourages sexual activity among heterosexual married partners, without use of birth control, such as condoms.

None of the models could be accepted based on the fit statistics associated with them. One reason this may be the case is that religiosity was not factored into the models. Perhaps religiosity, more than the acculturation gap itself, influences sexual risk communication. That is, in situations where the mother displays high levels of religiosity, the acculturation gap may have a stronger effect on relationships within the model, such as perceived relationship quality and sexual risk communication and mothers' comfort level and sexual risk communication. This is because Catholicism dictates sexual behavior practices, and would subsequently influence variables that have been linked to the occurrence of sexual risk communication. Future studies could divide mothers into groups – those with high religiosity and low religiosity - and determine how this affects the outcome of the original model. Perhaps among mothers with high levels of religiosity, the acculturation gap has little effect on the outcome of the model. Among mothers with low levels of religiosity, however, the acculturation gap may have a more significant effect, because there is not an overriding theoretical and moral perspective that dictates sexual risk communication.

In addition, evidence suggests that neighborhood socioeconomic disadvantage is associated with early sexual debut and related outcomes, such as teenage pregnancy, after individual and family background characteristics are taken into account (Baumer & South, 2001; Ramirez-Valles, Zimmerman, & Newcomb, 1998). Perhaps future studies should examine SES to determine if it mediates the impact of the acculturation gap on

sexual communication and behavior. Specifically, the dissonance in the relationship between mother and daughter may be exacerbated by the difficulties associated with economic disadvantage. It seems likely that future research should attempt to incorporate religion and religiosity, as well as neighborhood composition into their models to determine how these factors influence the impact of the acculturation gap on sexual risk communication.

Suggestions for Study Replication. Based on the study results and the limitations discussed, there are sample, design, and measurement strategies that can be endorsed for replications of the current study. The ideal sample for replication of the current study would be to obtain a cross-sectional sample, where mother-daughter pairs are selected for inclusion, stratified by both age and time in the country. Dyads, instead of a random sample of mothers and a random sample of daughters need to be selected, because the pairs will be assessed as possessing a gap or not. Data will be gathered through the CAPI system, where an interviewer presents the questions, but participants will respond to the questions via computer. This will diminish the chances of capturing a social desirability bias in the data, but also ensure that the questions are correctly understood and comprehended by the participant.

In terms of stratification, the age of the daughter in replications of the current study should range from 16 to 18 years old. This would be done because research has established that the median age of intercourse is 17.4 years, and having a sample that brackets this age range would ensure that the majority of participants (at least 50%) are above the median age of intercourse. In addition, research has found that conflict peaks during early adolescence, and therefore, having a sample that ranged in ages from 16 to

18 would decrease the probability that generational dissonance and parent-adolescent age-related conflict would be correlated.

Also, the sample should be stratified by time spent in the country. As mentioned previously, the majority of adolescent participants in the current study had spent over 50% of their lives in the US. Participants should first be stratified based on immigrant status – those where both mother-daughter pairs were born in the US, those who were both born in another country, and those pairs where the mother was born in another country and the daughter was born in the US. Mothers and daughters born in another country should be further stratified, where pairs where the daughter who has spent more than 50% of their lives in the US are chosen, and pairs where the daughter has spent more than 50% of her life in the US are chosen. This will ensure that the following groups are captured in the study: immigrant mother-daughter pairs with little exposure to the host country, immigrant Hispanic mother-daughter pairs with substantial exposure to the host country, first-generation Hispanic pairs, and second-generation Hispanic mother-daughter pairs.

Since the crux of this project is to explore the effect of the acculturation process, in terms of the acculturation gap, on risk behavior outcomes for Hispanic female adolescents. It is therefore necessary to use a rigorous conceptualization of acculturation, as well as measure the acculturation gap in an appropriate way. Acculturation would be assessed using the widely known and well-validated BIS to independently assess parent and youth acculturation levels (Szapocznik et al., 1980). Although this scale was developed 30 years ago, it is still extensively used (Martinez, McClure, & Eddy, 2009; Prado, Huang, Moldonado, Bandiera, Schwartz, la Vega, Brown, & Pantin, 2010;

Smokowski, Buchanan, & Bacallo, 2009; Smokowski et al., 2008). Although many acculturation measures assume that increments of involvement in American host culture entail corresponding decrements of involvement in traditional culture, this measure is able to partial out “Hispanicism” and “Americanism” and “biculturalism” as unique dimensions. Measuring acculturation using identity, behavioral, and language information will help to parse adherence to heritage and host culture from immigrant status, which was captured in the present study.

Both mothers and daughters will complete this survey and then “Americanism” and “Hispanicism” scores will be calculated. As mentioned earlier, calculating an acculturation gap has three primary methods: match vs. mismatch, difference scores, and an interaction measurement. The interaction measurement would be used, where possible combinations of parent-child acculturation are calculated. Specifically, this approach makes the following designations: parent low, child high on American acculturation, both parent and child high, both parent and child low, and parent high, child low on American acculturation (Birman, 2005). The sample will then be divided into one of the four interaction designations for both the Hispanicism and Americanism designations.

Information regarding generational dissonance will also be measured from both mother and daughter perspectives. Characteristics of the parent–child relationship would be assessed using the Parent Environment Questionnaire (PEQ) at both intake and follow-up. The PEQ measures conflict, parent involvement, regard for parent, regard for child, and parental structure (monitoring). Each question is answered on a 4-point scale and the accumulated score offers a detailed assessment of the parent-child dyadic relationship, instead of simply being assessed from only one perspective. The PEQ was developed

because the standard self-report measures of family climate available at the time the MTFS was started (e.g., the Family Environment Scale; Moos & Moos, 1986) typically sought to assess overall family climate rather than the specific dyadic relationships that exist within a family. The PEQ scales were organized around the two broad dimensions of parent– child relationships that have been found in previous research:

nurturance/warmth versus conflict, and control. Internal consistency is acceptable (alphas ranging from .69 to .82). This survey will be used because it is a multidimensional assessment of parent-child dissonance and has been rigorously tested for psychometric properties. Unlike the current study, it balances the number of questions between parental monitoring and conflict, and also includes an assessment of involvement by the parent and regard for the parent. It offers a more rigorous and complete assessment of the dissonance between parent and child.

As evidenced by results of the current study, the constructs “mothers’ comfort level discussing sex” and “sexual risk communication between mother and daughter” are adequately measured by questions within the Add Health data set. Therefore, the measures used in the current study would be used in a future replication study as well. Specifically, information regarding mothers’ comfort level discussing sex will be assessed from the perspective of the mother and information regarding sexual risk communication will be assessed from the perspective of the daughter. Sexual risk communication will only be assessed from the perspective of the daughter because the theoretical explanation underlying the acculturation gap hypothesis is that mother’s role as relevant model to her daughter is eroded through the acculturation process; therefore, it is critical to understand the level of communication that is recognized and internalized by

the daughter. An independent assessment of how much communication actually occurs is not necessary. In addition to these measures, religiosity and SES should also be assessed and differences among the different groups should be assessed for these factors. As mentioned in the previous section, religiosity and SES may affect the level of dissonance and sexual risk communication within the mother-daughter relationship among mothers and daughters with different types of acculturation gaps.

Differences in dissonance, mothers' comfort level, and sexual risk communication between the four acculturation gap groups for Americanism will be assessed. In addition, differences will be assessed for the same variables among the acculturation gap groups for Hispanicism. Additionally, based on the literature reviewed, it seems as though the model tested in the current study is most applicable to one particular acculturation gap interaction group - parent low on Americanism acculturation, child high on Americanism acculturation – because after living in the US and growing accustomed to US culture, a mother may not be perceived as relevant or competent to her daughter with regard sexual risk behavior.

As mentioned earlier in this chapter, major limitations in the current study center on the conceptualization and measurement of acculturation and the acculturation gap hypothesis. Acculturation is a complex issue that cannot necessarily be captured by a measure of daughters' time spend in the country. Behavioral and cultural dimensions need to be measured when examining acculturation. Likewise, the acculturation gap between mother and daughter implicitly suggests that both mother and daughter will provide information in order to calculate that gap. Such a research design would be able to assess the level of bidimensional acculturation by both parent and child, and also

determine how well they match on these separate acculturation scales. This would result in a more accurate assessment of acculturation, as well as the acculturation gap. In addition, a different measure of generational dissonance would be used, one in which several dimensions of dissonance are captured. By limiting the age range of participants, researchers also could decrease the probability that age will confound the relationship between acculturation level and dissonance in the mother-daughter relationship, while still focusing on the developmental period of most interest to health promotion researchers and educators working on this topic.

Conclusions

Overall, the original model and alternates were not supported by significant fit statistics. Despite the outcomes, the results do provide some insight into certain relationships for Hispanic adolescents. Specifically, the acculturation gap hypothesis appears to be plausible for this subpopulation; as Hispanic adolescents spend more time in the U.S., dissonance in the relationship with their mothers' increases. In addition, sexual risk communication appears dependent on the degree to which Hispanic adolescent mothers experience comfort in discussing these topics. More research is needed, however, to determine what combination of risk and protective factors ultimately lead to condom use among these subpopulations. Future studies should focus on different ways of conceptualizing and measuring the variables in this study, as well as determining the impact that peers and neighborhood composition may have on this process. Current study results underscore the importance of the Hispanic mother-daughter relationship and how acculturation may impact this relationship. Programming efforts targeting sexual risk behavior among Hispanic adolescents should recognize the importance and role of

the mother in Hispanic culture, capitalizing on the strength of this relationship when planning prevention activities.

References

- Abraido-Lanza, A.F., Armbrister, A.N., Florez, K.R., & Aguirre, A.N. (2006). Toward a theory driven model of acculturation in public health research. *American Journal of Public Health, 92*, 1342-1346.
- Adesman, A., Greenburg, D., Pratt, S., Robb, A., Goodman, D., & Montano, C.B. (2008). Early to late adolescence: Issues and challenges in the management of ADHD. *Medscape CME*.
- Aseltine, R.H. (1995). A reconsideration of parental and peer influences on adolescent deviance. *Journal of Health and Social Behavior, 36*, 103-121
- Allison, B. (1999, June). Parent-adolescent conflict in early adolescence: Implications for Family and Consumer Sciences Education. Poster session presented at the annual meeting of the American Association of Family and Consumer Sciences, Seattle, WA.
- American Psychological Association (2002). *Publication manual of the American Psychological Association*. Washington, DC: APA.
- Austin, S.B., Ziyadeh, N.J., Corliss, H.L., Rosario, M., Wypij, D., Haines, J., Camargo, C.A., & Field, A.E. (2009). Sexual orientation disparities in purging and binge eating from early to late adolescence. *Journal of Adolescent Health, in press*.
- Avirez, D. & Bean, F.D. (1976). The Mexican American family. In C.H. Mindel & R.N. Haberstein (Eds.), *Ethnic families in America* (pp. 271-291) New York: Elsevier.
- Ajzen, I., & Fishbein, M. (2005). The influence of attitudes on behavior. In Albarracin, D., Johnson, BT., Zanna MP. (Eds.), *The Handbook of Attitudes*, Lawrence Erlbaum Associates.

- Bachman, J.G., Wallace, J.M., O'Malley, P.M., Johnston, L.D., Kurth, C.L., & Neighbors, H.L. (1991). Racial/ethnic differences in smoking, drinking, and illicit drug use among American high school seniors, 1976-89. *American Journal of Public Health, 81*, 372-377.
- Bagozzi, R.P. & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science, 16*, 74-94.
- Baldwin, S.E. & Baronoski, M.V. (1990). Family interactions and sex education in the home. *Adolescence, 25*, 573-582.
- Bandura, A. (1973). *Aggression: A Social Learning Analysis*. Englewood Cliffs, NJ: Prentice-Hill.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191-215.
- Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs, N.J.: Prentice Hall.
- Bandura, A., Ross, D., & Ross, S.A. (1961). Transmission of aggression through imitation of aggressive models. *Journal of Abnormal Social Psychology, 63*, 575-582.
- Bankston, C.L. & Zhou, M. (2006). Being well vs. doing well: Self-esteem and school performance among immigrant and nonimmigrant racial and ethnic groups. *International Migration Review, 36*, 389-415.
- Baron, R.A. & Richardson, D.R. (1994). *Human Aggression*. New York: Springer Publishing.

- Barrett, M. (2006). *Children's Knowledge, Beliefs and Feelings about Nations and National Groups*. New York, NY: Taylor & Francis Psychology Press.
- Bates, L. W. & Joubert, C. E. (1993). Source of sex education in relation to self esteem and attitudes towards AIDS precautions among college students. *Psychological Report, 72*, 603-606
- Baumeister, L.M., Flores, E., & Marin, B.V. (1995). Sex information given to Latina adolescents by parents. *Health Education Research, 10*, 233-239.
- Bearman, P. S., Jones, J., & Udry, J. R. (1997). The National Longitudinal Study of Adolescent Health: Research design. Retrieved January 20, 2009 from <http://www.cpc.unc.edu/addhlth>.
- Beauvais, F. & Oetting, E. R. (1986). Drug use in an alternative high school. *Journal of Drug Education, 16*, 3-50.
- Becerra, J.E., Hogue, C.J., Atrash, H.K., Perez, N. (1991). Infant mortality among Hispanics: A portrait of heterogeneity. *Journal of the American Medical Association, 265*, 217-221.
- Becker, H. & Useem, R. (1942). Sociological analysis of the dyad. *American Sociological Review, 7*, 13-26.
- Berkowitz, L. (1993). *Towards a General Theory of Anger and Emotional Aggression*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Berndt, T.J. (1982). The features and effects of friendships in early adolescence. *Child Development, 53*, 1447-1460.
- Berry, J.W. (1997). Immigration, acculturation, and adaptation. *Applied Psychology: An International Review, 46*, 5-33.

Berry, J.W. & Sam. D. (1996). Acculturation and adaptation. In J.W. Berry. M.H. Segall
&

C. Kagitcibasi (Eds.). *Handbook of Cross-Cultural Psychology. Vol. 3. Social Behavior
And Applicarions*. Boston: Allyn & Bacon.

Birman, D. (2006). Acculturation gap and family adjustment: Findings with Soviet
Jewish refugees in the United States and implications for measurement. *Journal of
Cross-Cultural Psychology, 37*, 568-591.

Blomstedt, Y., Hylander, I., & Sundquist, J. (2007). Self-reported integration as a proxy
for acculturation: A qualitative study. *Nursing Research, 56*, 63-69.

Bollen, K.A. & Long, J.S. (1992). Tests for structural equation models. *Sociological
Methods & Research, 21*, 123-282.

Boomsma, A. (1983). *On the Robustness of LISREL (Maximum Likelihood Estimation)
against Small Size and Non-normality*. Amsterdam: Sociometric Research
Foundation.

Bradford, K., Vaughn, L.T., & Barber, B.K. (2008). Where there is conflict: Interparental
conflict, parent-child conflict, and youth problem behaviors. *Journal of Family
Issues, 15*, 147-150.

Boyd-Franklin, N. & Garcia-Preto, N. (1994). Family therapy: The cases of African
American
and Hispanic women. In L. Comas-Diaz & B. Greene (Eds.), *Women of color:
Integrating ethnic and gender identities in psychotherapy*. New York: Guilford.

Bruckner, H. & Bearman, P. (2005). After the promise: The STD consequences of
virginity pledges. *Journal of Adolescent Health, 36*, 271-278.

- Buhi, E. & Goodson, P. (2007). Predictors of Adolescent Sexual Behavior and Intention: A Theory-Guided Systematic Review. *Journal of Adolescent Health, 40*, 4-21.
- Buki, L.P., Ma, T.C., & Strom, R.D. (2003). Chinese immigrant mothers of adolescents: Self-perceptions of acculturation effects on parenting. *Cultural Diversity and Ethnic Minority Psychology, 9*, 127-140.
- Burgess, V., Dziegielewska, S.F., & Green, C.E. (2005). Improving comfort about sex communication between parents and their adolescents: Practice-based research within a teen sexuality group. *Brief Treatment and Crisis Intervention, 5*, 379–390.
- Burnham, M. A., Hough, R. L., Karno, M., Escobar, J. I., & Telles, C. A. (1987). Acculturation and lifetime prevalence of psychiatric disorders among Mexican Americans in Los Angeles. *Journal of Health and Social Behavior, 28*, 89-102.
- Bynum, M. S., & Kotchick, B. A. (2006). Mother-adolescent relationship quality and autonomy as predictors of psychosocial adjustment in African American adolescents. *Journal of Child and Family Studies, 15*, 528-541.
- Cabassa, L.J. (2003). Measuring acculturation: Where we are and where we need to go. Cabassa, L.J. (2003). Measuring acculturation: Where we are and where we need to go. *Hispanic Journal of Behavioral Sciences, 25*, 127-146.
- Caldwell, L.M., Beutler, L.E., Ross, S.A., & Silver, N.C. (2006). Brief report: An examination of the relationships between parental monitoring, self-esteem, and delinquency among Mexican American male adolescents. *Journal of Adolescence, 29*, 459-464.

- Casper, L. M. (1990). Does family interaction prevent adolescent pregnancy? *Family Planning Perspectives*, 22, 109–114.
- Centers for Disease Control and Prevention. (2002). Sexually transmitted diseases treatment guidelines. *Morbidity and Mortality Weekly Report*, 51, RR-6.
- Centers for Disease Control and Prevention. (2004). Youth risk behavior surveillance summary – United States. *Morbidity and Mortality Weekly Report*, 53-55.
- Centers for Disease Control and Prevention. (2009). Youth risk behavior surveillance: United States, 2009. Retrieved on August 11, 2010 from <http://www.cdc.gov/HealthyYouth/healthtopics/disparities.htm>.
- Chin, W. W. (1998). Issues and opinion on structural equation modeling, *MIS Quarterly*, 22, 7-16.
- Clark-Lempers, D., Lempers, J. & Ho, C., (1991). Early, middle, and late adolescents' perception of their relationships with significant others. *Journal of Adolescent Research* 6, 296-315.
- Chantala, K. & Tabor, J. (1999). Strategies to perform a design-based analysis using the Add Health Data. Carolina Population Center, University of North Carolina at Chapel Hill.
- Coatsworth, J. D., Pantin, H., & Szapocznik, J. (2002). Familias Unidas: A family-centered ecodevelopmental intervention to reduce risk for conduct problems and substance use among Hispanic adolescents. *Clinical Child and Family Psychology Review*, 5, 113-132.
- Cohen, L. (1979). Culture, disease, and stress among Latino immigrants. Washington, DC: Smithsonian Institution.

- Cohen, J. & Cohen, P. (1983). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*. Hillsdale, NJ: Erlbaum Associates.
- Collins, L. M., & Horn, J. L. (1991). *Best methods for the analysis of change*. Washington, DC: American Psychological Association.
- Cooley, C. (2001). The relationship between familism and child maltreatment in Latino and Anglo families. *Child Maltreatment*, 6, 130-142.
- Coronado, G.D., Thompson, B., McLerran, D., Schwartz, S.M., & Koepsell, T.D. (2005). A short acculturation scale for Mexican American populations. *Ethnicity & Disease*, 15, 53-62.
- Cortes, D.E. (1995). Variations in familism in two generations of Puerto Ricans. *Hispanic Journal of Behavioral Sciences*, 17, 249-256.
- Cotterell, J. L. (1992). The relation of attachments and supports to adolescent wellbeing and school adjustment. *Journal of Adolescent Research*, 7, 28-42.
- Cronbach, L. J., & Furby, L. (1970). How should we measure “change”—or should we? *Psychological Bulletin*, 74, 8–80.
- Cummings, E.M. & Davies, P. (2009). Emotional security as a regulatory process in normal development and the development of psychopathology. *Development and Psychopathology*, 8, 123-139.
- DeLa Torre, M. (2009). *Hispanic American Religious Cultures*. Westport, CT: Greenwood Publishing Group.
- Dilworth-Anderson, P. & Marshall, S. (1996). *Handbook of Social Support and the Family*. New York, NY: Springer Press.

- Driscoll AK, Briggs MA, Brindis CD, Yankah E. (2001). Adolescent Latino reproductive health: A review of the literature. *Hispanic Journal of Behavioral Sciences*, 23, 255–326.
- Dutta-Bergman, M. (2005). Idiocentrism, involvement, and health appeals: A social-psychological framework. *Southern Communication Journal*, 70, 46-55.
- Eisenberg, M.E., Sieving, R.E., Bearinger, L.H., Swain, C., Resnick, M.D. (2006) Parents' communication with adolescents about sexual behavior: A missed opportunity for prevention? *Journal of Youth and Adolescence*, 35, 893-902.
- Farver, J.K., Narang, S.K., & Bhadha, B.R. (2002). East meets west: Ethnic identity, acculturation, and conflict in Asian Indian families. *Journal of Family Psychology*, 16, 338-350.
- Fiese, B. H. (1992). Dimensions of family rituals across two generations: Relation to adolescent identity. *Family Process*, 31, 151–162.
- Ford, K. & Norris, A. (1993). Urban Hispanic adolescents and young adults: Relationship of acculturation to sexual behavior. *Journal of Sex Research*, 30, 316-323.
- Ford, K., Rubenstein, S., & Norris, A. (1994). Sexual behavior and condom use among urban, low-income African American and Hispanic youth. *AIDS Education and Prevention*, 6, 219-229.
- Fox, G.L. (1981). The family's role in adolescent sexual behavior. Teenage pregnancy in a family context. New Perspectives on Policy. Presented in 1979 in Washington, D.C., at the George Washington Univ., Institute for Educational Leadership, Family Impact Seminar.

- Fox, G. L., & Inazu, J. K. (1980). Patterns and outcomes of mother-daughter communication about sexuality. *Journal of Social Issues, 36*, 7–29.
- Franklin, C. & Corcoran, J. (2000). Preventing adolescent pregnancy: A review of programs and practices. *Social Work, 45*, 40-52.
- Froehle, B. & Gautier, M. (2000). *Catholicism USA: A Portrait of the Catholic Church in the United States*. Maryknoll, New York: Orbis Books.
- Fuligni, A.J. (1997). The academic achievement of adolescents from immigrant families: The role of family background, attitudes, and behavior. *Child Development, 68*, 351-363.
- Furman, W. & Buhrmester, D. (1992). Age and sex differences in perceptions of networks of personal relationships. *Child Development, 63*, 103-115.
- Gagnon, J.H. (1990). The explicit and implicit use of the scripting perspective in sex research. *Annual Review of Sex Research, 1*, 1-10.
- Galambos, N. L., & Almeida, D. M. (1992). Does parent-adolescent conflict increase in early adolescence? *Journal of Marriage and the Family, 54*, 737-747.
- Garcia-Preto, N. (2004). *Ethnicity and Family Therapy*. New York, NY: The Guilford Press.
- Garnage, J. & Weerahandi, S. (1998). Size performance of some tests in one-way anova. *Communications in Statistics, 27*, 625-640.
- Garson, D.G. (1998). Structural equation modeling: StatNotes, from North Carolina State University. Accessed January 23, 2010 from <http://faculty.chass.ncsu.edu/garson/PA765/structur.htm>.

- Gecas, V. & Seff, M.A. (1990). Families and adolescents: A review of the 1980s. *Journal of Marriage and the Family*, 52, 941-958.
- Gil, A.G. & Vega, W.A. (1996). A model for explaining drug use behavior among Hispanic adolescents. *Drugs & Society*, 14, 57-74.
- Gil, A.G., Vega, W.A., & Dimas, J. (1994). Acculturative stress and personal adjustment among Hispanic adolescents. *Journal of Community Psychology*, 22, 43-54.
- Gil, A.G., Wagner, E.F., & Vega, W.A. (2000). Acculturation, familism, and alcohol use among Latino adolescent males: Longitudinal relations. *Journal of Community Psychology*, 28, 443-458.
- Glazer, N. & Moynihan, D.P. (1963). *Beyond the Melting Pot: The Negroes, Puerto Ricans, Jews, Italians, and Irish of New York City*. Cambridge: MIT Press.
- Gordon, M. (1964). Assimilation in America: Theory and reality. In A. Aguirre & E. Baker (Eds.), *Notable selections in race and ethnicity* (pp. 91-101). Guilford, CT: Dushkin.
- Gordon-Larsen, P., Harris, K.M., Ward, D.S., & Popkin, B.M. (2003). Acculturation and overweight-related behaviors among Hispanic immigrants to the US: The National Longitudinal Study of Adolescent Health. *Social Science & Medicine*, 57, 2023-2034.
- Graff, H.J. (1985). Early adolescence in antebellum America: The remaking of growing up. *Journal of Early Adolescence*, 5, 411-427.
- Griffin, K.W., Botvin, G. J., Scheier, L. M., Diaz, T., & Miller, N. L. (2000). Parenting practices as predictors of substance use, delinquency, and aggression among

urban minority youth: Moderating effects of family structure and gender.

Psychology of Addictive Behaviors, 14, 174–184.

Griffin, D. & Gonzalez, R. (1995). Correlation models for dyad-level models: Models for the exchangeable case. *Psychological Bulletin*, 118, 430-439.

Grusec, J.E. (1992). Social learning theory and developmental psychology: The legacies of Robert Sears and Albert Bandura. *Developmental Psychology*, 28, 776-786.

Guzman, B. (2001). *The Hispanic Population: US Census Brief*.

Hahn, H.C., Lahiff, M., & Guterman, N.B. (2003). Acculturation and parental attachment in Asian Americans' alcohol use. *Journal of Adolescent Health*, 33, 119-129.

Hahn, R. (1995). *Sickness and Healing: An Anthropological Perspective*. Yale University Press, New Haven, CT.

Hahn, R.A. & Stroup, D.F. (2002). Race and ethnicity in public health surveillance: Criteria for the scientific use of social categories. *Public Health Reports*, 109, 7–15.

Hanson, S., Myers, D., & Ginsburg, A. (1987). The role of responsibility and knowledge in reducing teenage out-of-wedlock childbearing. *Journal of Marriage and the Family*, 49, 241 –251.

Hanson, W.B., Paskett, E.D., & Carter, L.J. (1999). The Adolescent Sexual Activity Index (ASAI): A standardized strategy for measuring interpersonal heterosexual behaviors among youth. *Health Education Research*, 14, 485-490.

Harker, K. (2001). Immigrant generation, assimilation, and adolescent psychological well-being. *Social Forces*, 79, 969-1004.

- Harris, K.M., Tucker Halpern, C., Entzel, P., Tabor, J., Bearman, P.S., & Udry, J.R. (1998). The National Longitudinal Study of Adolescent Health: Research Design [WWW document]. Retrieved on January 27, 2009 at <http://www.cpc.unc.edu/projects/addhealth/design>.
- Harris, K.M. (1999). The health status and risk behavior of adolescents in immigrant families. In: D. Hernandez, Editor, *Children of immigrants: Health, adjustment, and public assistance*, National Academy Press, Washington, DC, pp. 286–347.
- Harris, K.M. & Chen, P. (2004). The acculturation of parent-child relations in immigrant families. Paper presented at the Annual Meetings of the Population Association of America, April 1-3, 2004, Boston, MA.
- Hawkins, J. D., & Weis, J. G. (1985). The social development model: An integrated approach to delinquency prevention. *Journal of Primary Prevention*, 6, 73-97.
- Heck, J.E., Franco, R., Jurkowski, J.M., & Gorin, S.S. (2008). Awareness of genetic testing for cancer among United States Hispanics: The role of acculturation. *Community Genetics*, 11, 36-42.
- Hepburn, E. (1983). A three-level model of parent–daughter communication about sexual topics. *Adolescence*, 71, 523–34.
- Hernandez, S. A., Cohen, J. F., & Garcia, H. L. (2000). Hispanic acculturation: Conceptual and modeling issues. *Journal of Applied Business Research*, 16, 73-82.
- Hernandez, D.J. & Charney, E. (1998). *From Generation to Generation: The Health and Well-Being of Children in Immigrant Families*. Washington, DC: National Academies Press.

- Hofferth, S.L. (2005). Secondary data analysis in family research. *Journal of Marriage and Family*, 67, 891-907.
- Holmbeck, G. N., & Hill, J. P. (1991). Conflictive engagement, positive affect, and menarche in families with seventh-grade girls. *Child Development*, 62, 1030-1048.
- Holtzman, L., & Rubinson, M. (1995). Parent and peer communication effects on AIDS-related behavior among U.S. high school students. *Family Planning Perspectives*, 27, 235–268.
- Hu, L.T. & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1-55.
- Huesmann, L.R., Moise, J.F., & Podolski, C.L. (1997). The effects of media violence on the development of antisocial behavior. In D. Stoff, J. Breiling & Master (Eds.) *Handbook of Antisocial Behavior* (pp. 181– 193). New York: John Wiley & Sons.
- Hunt, L.M., Schneider, S., Comer, B. (2004). Should acculturation be a variable in health research? A critical review of research on US Hispanics. *Social Science & Medicine*, 59, 973-986.
- Hutchinson, M.K. (2002). Sexual risk communication with mothers and fathers. *Family Relations*, 51, 238-247.
- Hutchinson, M.K., & Cooney, T. (1998). Parent-teen sexual risk communication: Implications for intervention. *Family Relations*, 47, 185-194.
- Hutchinson, M.K., Jemmott, J.B., Jemmott, L.S., Braverman, P., & Fong, G. (2002). Mother-daughter communication about condoms: Influence on unprotected sexual

intercourse among urban adolescent females. *Annals of Behavioral Medicine*, 24, 289.

Hutchinson, M., Jemmott, J., Sweet-Jemmott, L., Braverman, P. & Fong, G. (2003). The role of mother-daughter sexual risk communication in reducing sexual risk behaviors among urban adolescent females: A prospective study. *Journal of Adolescent Health*, 33, 98-107.

Isen, A.M. (1984). Towards understanding the role of affect in cognition. In R.S. Wyer & T.K. Srull (Eds.), *Handbook of Social Cognition* (Vol.3, pp. 179-236). Hillsdale, NJ: Erlbaum.

Jaccard, J., Dittus, P.J., & Gordon, V.W. (1998). Maternal correlates of adolescent sexual and contraceptive behavior. *Family Planning Perspectives*, 28, 159-185.

Jessor, S., & Jessor, R. (1975). Transition from virginity to nonvirginity among youth: A study over time. *Developmental Psychology*, 11, 473 - 484.

Jessor, R., Donovan, J. E., & Costa, F. M. (1991). *Beyond adolescence: Problem behavior and young adult development*. New York: Cambridge University Press.

Kaplan, C.P., Erickson, P.I., Juarez-Reyes, M. (2002). Acculturation, gender role orientation, and reproductive risk-taking behavior among Latina adolescent family planning clinics. *Journal of Adolescent Research*, 17, 103-121.

Kenny, D. A. (1996). Models of nonindependence in dyadic research. *Journal of Social and Personal Relationships*, 13, 279-294.

Kessler, R.C., McGonagle, K.A., Zhao, S., Nelson, C.B., Hughes, M., Eshleman, S., Wittchen, H.U., & Kendler, K.S. (1994). Lifetime and 12-month prevalence of

- DSM-II-R psychiatric disorders in the United States: Results from the National Comorbidity Study. *Archives of General Psychiatry*, 51, 71-73.
- Kim, S.Y., Chen, Q., Li, J., Huang, X., & Moon, U.J. (2009). Parent-child acculturation, parenting, and adolescent depressive symptoms in Chinese immigrant families. *Journal of Family Psychology*, 23, 426-437.
- King, V., Harris, K.M., & Heard, H.E. (2004). Racial and ethnic diversity in nonresident father involvement. *Journal of Marriage and Family*, 66, 1-21.
- King, B., & Lorusso, J. (1997). Discussions in the home about sex: Different recollections by parents and children. *Journal of Sex & Marital Therapy*, 23, 52–60.
- Kirby, D. & Miller, K.C. (2002). Interventions designed to promote parent-teen communication about sexuality. *New Directions for Child and Adolescent Development*, 97, 93-111.
- Kline, R. B. (1998). *Principles and practice of structural equation modeling*. NY: Guilford Press.
- Knight, G. P., & Kagan, S. Development of prosocial and competitive behaviors in Anglo- American and Mexican-American children. *Child Development* ,48, 1385-1394.
- Knight, G.P., Kagan, S., Nelson, W., & Gumbiner, J. (1978). Acculturation of second- and third-generation Mexican American children: Field independence, locus of control, self-esteem, and school achievement. *Journal of Cross-Cultural Psychology*, 9, 87-97.

- Korzenny, F. & Korzenny, B.A. (2005). *Hispanic Marketing: A Cultural Perspective*. New York, NY: Elsevier Science.
- Kupek, E. (2006). Beyond logistic regression: Structural equations modeling for binary and its application to investigating unobserved confounders. *BMC Medical Research Methodology*, *15*, 6-13.
- Lahiff, M. & Barreto, R.M. (2006). Asian American adolescents' first sexual intercourse: Gender and acculturation differences. *Perspectives on Sexual and Reproductive Health*, *38*, 28-36.
- LaPiere, R.T. (1934). Attitudes vs. action. *Social Forces*, *13*, 230-237.
- Lara, M., Gamboa, C., Kahramanian, M., Morales, L.S., & Bautista, D.E. (2005). Acculturation and Latino health in the United States: A review of the literature and its sociopolitical context. *Annual Review of Public Health*, *26*, 367-397.
- Larson, L.E. (1974). System and subsystem perception of family roles. *Journal of Marriage and the Family*, *36*, 123-138.
- Lau, A.S., McCabe, K.M., Yeh, M., Garland, A.F., Wood, P.A., & Hough, R.L. (2005). The acculturation gap-distress hypothesis among high-risk Mexican American families. *Journal of Family Psychology*, *19*, 367-375.
- Leaper, C. & Valin, D. (1996). Predictors of Mexican American mothers' and fathers' attitudes toward gender equality. *Hispanic Journal of Behavioral Sciences*, *18*, 343-355.
- Leclare, F.B., Jensen, L., & Biddlecom, A.E. (1994). Health care utilization, family context, and adaptation among immigrants to the United States. *Journal of Health and Social Behavior*, *35*, 370-384.

- Lescano, C.M., Vazquez, E.A., Brown, L.K., Litvin, E.B., & Pugatch, D. (2006). Condom use with “casual” and “main” partners: What’s in a name? *Journal of Adolescent Health, 39*, 443.e1-443.e7.
- Li, R., Shirng-Wern, T., Shockley, K., Stylianou, I.M., Wergdal, J., Paigen, B., et al. (2006). Structural model analysis of multiple quantitative traits. *PLOS Genetics, 2*, 1046-1057.
- Lipsitt, L.P., Kail, R.V., Spiker, C.C., & Reese, H.W. (2005). *Advances in Child Development and Behavior*. New York, NY: Academic Press.
- Litrownik, A.J., Elder, J.P., Campbell, N.R., Ayala, G.X., Slymen, D.J., Parra-Medina, D., ... & Lovato, C. (2000). Evaluation of a tobacco and alcohol use prevention program for Hispanic migrant adolescents: Promoting the protective factor of parent-child communication. *Preventive Medicine, 31*, 124-133.
- Luster, T., & Small, S. A. (1994). Factors associated with sexual risk-taking behaviors among adolescents. *Journal of Marriage and the Family, 56*, 622–632.
- Madsen, W. (1964). *Mexican-American of South Texas*. New York: Holt, Rinehart, & Winston.
- Maguire, M. C. (1999). Treating the dyad as the unit of analysis: A primer on three analytic approaches. *Journal of Marriage and the Family, 61*, 213-230.
- Mannino, F.V. & Shore, M.F. (1976). Perceptions of social supports by Spanish-speaking youth with implications for program development. *The Journal of School Health, 46*, 471-474.
- Manz, C.C. & Sims, H.P. (1981). Vicarious learning: The influence of modeling on organizational behavior. *Academy of Management Review, 6*, 105-110.

- Marin, B.V., Tschann, J.M., Gomez, C.A., & Kegeles, S.M. (1993). Acculturation and gender differences in sexual attitudes and behaviors: Hispanic vs. non-Hispanic White unmarried adults. *American Journal of Public Health, 83*, 1759-1761.
- Marín, G., & Marín, B. (1991). *Research with Hispanic Populations*. Newbury Park CA: Sage Publications.
- Maruyama, G.M. (1998). *Basics of Structural Equation Modeling*. Thousand Oaks, CA: SAGE Publications, Inc.
- Maternal Child & Health Bureau. (2002). *Developing adolescents: A reference for professionals*. Washington, DC: American Psychological Association Publications.
- Matsueda, R.L. & Heimer, K. (1997). A Symbolic Interactionist theory of role transitions, role commitments, and delinquency. In T.P. Thornberry (Ed.), *Advances in Criminological Theory, Vol 7*. (pp. 163-213). New Brunswick, NJ: Transaction.
- Mayo, Y. (1997). Machismo, fatherhood, and the Latino family: Understanding the concept. *Journal of Multicultural Social Work, 5*, 49-61.
- McCullagh, P. (1987). Model similarity effects on motor performance. *Journal of Sport Psychology, 9*, 249-260.
- McDonald, R.P., and Ho, M. H. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods, 7*, 64-82.
- McKee, M. D., Karasz, A., & Weber, C. (2004). Health care seeking among urban minority adolescent girls: The crisis at sexual debut. *Annals of Family Medicine, 2*, 549-554.

- McNeely, C.A., Shew, M., Beuhring, T., Sieving, R., Miller B., & R.W. Blum (2002) Mothers' influence on adolescents' sexual debut. *Journal of Adolescent Health, 31*, 256-265.
- Merali, N. (2002). Perceived versus actual parent-adolescent assimilation disparity among Hispanic refugee families. *International Journal for the Advancement of Counseling, 24*, 57-68.
- Mendoza, R. H. (1989). An empirical scale to measure type and degree of acculturation in Mexican-American adolescents and adults. *Journal of Cross-Cultural Psychology, 20*, 372–385.
- Meneses, L.M., Orrell-Valente, J.K., Guendelman, S.R., Oman, D., Irwin, C.E., Jr. (2006). Racial/ethnic differences in mother-daughter communication about sex. *Journal of Adolescent Health. 39*, 128–131
- Miller, K., Levin, M., Whitaker, D., & Xu, X. (1998). Patterns of condom use among adolescents: The impact of mother-adolescent communication. *American Journal of Public Health, 88*, 1542–1544.
- Miranda, M. (1980). The family natural support system in Hispanic communities. In R. Valle & W. Vega (Eds.), *Hispanic natural support systems: Mental health promotion perspectives*. Sacramento, CA: State Department of Mental Health.
- Mischel, W. (2007). Toward a cognitive social learning reconceptualization of personality. In Y. Schoda, Cervone, D., & Downey, G. (Eds.) *Persons in Context*. New York, NY: Guilford Press.

- Mischel, W., & Grusec, J. (1966). Determinants of the rehearsal transmission of the neutral and aversive behaviors. *Journal of Personality and Social Psychology*, 3, 197-205.
- Mitchell, R. J. (1993). Path analysis: Pollination. In S.M. Schneider & J. Gurevitch, (Eds). *Design and analysis of ecological experiments*. NY: Chapman and Hall.
- Moore, J.W. (1970). *Mexican-American*. Englewood Cliffs, N.J.: Prentice Hall.
- Moore, K., Peterson, J., & Furstenberg, F. (1986). Parental attitudes and the occurrence of early sexual activity. *Journal of Marriage and the Family*, 48, 777-782.
- Mosher, W.D., Martinez, G.M., Chandra, A., Abma, J.C., & Willson, S.J. (2004). Use of contraception and use of family planning services in the United States. Retrieved from <http://images.ibsys.com/2005/0104/4047555.pdf> on January 26, 2009.
- Nadeem, E., & Romo, L. F. (2008). Low-income Latina mothers' expectations for their pregnant daughters' autonomy and interdependence. *Journal of Research on Adolescence*, 18(2), 215–238.
- Nadeem, E., Romo, L.F., & Sigman, M. (2006). Knowledge about condoms among low-income pregnant Latina adolescents in relation to explicit maternal discussion of contraceptives. *Journal of Adolescent Health*, 39, e119.9-e119.15.
- Nadeem, E., Romo, L. F., Sigman, M., Lefkowitz, E. S., & Au, T. K. (2007). The validity of observational measures in detecting optimal maternal communication styles: Evidence from European Americans and Latinos. *Journal of Research on Adolescence*, 17, 153-168.

National Campaign to Prevent Teen Pregnancy (2003). National data: Fact sheet.

Retrieved on May 18, 2008 from

<http://www.thenationalcampaign.org/resources/fact-sheets.aspx>.

Nappi, C.M., Thakral., C.Kapungu, C., Donenberg, G.R., DiClemente, R., & Brown, L.

(2008). Parental monitoring as a moderator of the effect of family sexual communication on sexual risk behavior among adolescents in psychiatric care.

AIDS and Behavior, 13, 1012-1020.

Negy C, Woods DJ. 1992. The importance of acculturation in understanding research

with Hispanic-Americans. *Hispanic Journal of Behavioral Sciences, 14*, 224-47

Norris, A.E. & Ford, K. (1992). Condom use by low-income African American and

Hispanic youth with a well-known partner: Integrating the Health Belief Model,

Theory of Reasoned Action, and the Construct Accessibility Model. *Journal of*

Applied Social Psychology, 25, 1801-1830.

Olmeda, E.L. & Padilla, A.M. (1978). Empirical construction and validation of a measure

of acculturation of Mexican Americans. *Journal of Social Psychology, 105*, 179-

187.

Olson, D.H. & Rabunsky, C. (1972). Validity of four measures of family power. *Journal*

of Marriage and the Family, 34, 224-234

O'Sullivan, L.F., Meyer-Bahlberg, H.F., & Watkins, X. (2001). Mother-daughter

communication about sex among urban African American and Latino families.

Journal of Adolescent Health, 16, 269-272.

- Padilla, A.M. & Baird, T.L. (1991). Mexican-American adolescent sexuality and sexual knowledge: An exploratory study. *Hispanic Journal of Behavioral Sciences, 13*, 95-104.
- Padilla, E.R. & O'Grady, K.E. (1987). Sexuality among Mexican Americans: A case of sexual stereotyping. *Journal of Personality and Social Psychology, 52*, 5-10.
- Paikoff, R.L. & Brooks-Gunn, J. (1991). Do parent-child relationships change during puberty? *Psychological Bulletin, 110*, 47-66.
- Palumbo, F.A. & Teich, I. (2004). Market segmentation based on level of acculturation. *Marketing Intelligence & Planning, 22*, 472-484.
- Paradise, L.V., Conway, B.S., & NcZweig, J. (1986). Effects of expert and referent influence, physical attractiveness, and gender on perceptions of counselor attributes. *Journal of Counseling Psychology, 33*, 16-22.
- Patterson, G. R., DeBaryshe, B. D., & Ramsey, E. (1989). A developmental perspective on antisocial behavior. *American Psychologist, 44*, 329-335.
- Penasola, F. (1968). Mexican family roles. *Journal of Marriage and the Family, 30*, 680-689.
- Peragallo, N.P. (1996). Latino women and AIDS risk. *Public Health Nursing, 13*, 217-222.
- Petty, R.E. & Cacioppo, J.T. (1986). *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*. New York: Springer-Verlag.
- Pew Charitable Trust. (2008). Statistical portrait of Hispanics in the United States, 2008. Retrieved on June 1, 2010 at <http://pewhispanic.org/factsheets/factsheet.php?FactsheetID=58>.

- Pick, S., & Palos, P. A. (1995). Impact of the family on the sex lives of adolescents. *Adolescence, 30*, 667–675.
- Popkin, B.M. & Udry, J.R. (1998). Adolescent obesity increases significantly in second and third generation U.S. immigrants: The National Longitudinal Study of Adolescent Health. *The Journal of Nutrition, 128*, 701-706.
- Portes, A. & Rumbaut, R.G. (2001). *Legacies: The Story of the Immigrant Second Generation*. Berkeley: University of California Press.
- Prado, G., Szapocznik, J., Maldonado-Molina, M.M., Schwartz, S.J., & Pantin, H. (2008). Drug use/abuse prevalence, etiology, prevention and treatment in Hispanic adolescents: A cultural perspective. *Journal of Drug Issues, 38*, 5-36.
- Raffaelli, M. & Ontai, L.L. (2004). Gender socialization in Latino/a families: Results from two retrospective studies. *Sex Roles, 50*, 287-299.
- Ramirez, R.R. & de la Cruz, G.P. (2003). *The Hispanic Population in the United States*. Washington DC: Current Population Report, U.S. Department of Commerce.
- Ramirez-Valles, J., Zimmerman, M., & Newcomb, M. (1998). Sexual risk behavior among youth: Modeling the influence of prosocial activities and socioeconomic factors. *Journal of Health and Social Behavior, 39*, 237-253.
- Rapkin, A.J. & Erickson, P.I. (1990). Differences in knowledge of and risk factors for AIDS. *AIDS, 4*, 889-899.
- Redfield, R., Linton, R., Herskovits, M.J. (1936) Memorandum for the study of acculturation. *American Anthropologist, 38*, 149-152.

- Regnerus, M.D. (2005). Talking about sex: Religion and patterns of parent-child communication about sex and contraception. *The Sociological Quarterly*, 46, 79-105.
- Resnick, M.D., Bearman, P.S., Blum, R.W., Bauman, K.E., Harris, K.M., Jones, J.,...& Udry, J.R. (1997). Protecting adolescents from harm: Findings from the National Longitudinal Study of Adolescent Health. *Journal of American Medical Association*, 278, 823-832.
- Rick, K. & Forward, J. (1992). Acculturation and perceived generational differences among Hmong youth. *Journal of Cross-Cultural Psychology*, 23, 85-94.
- Roberts, T.A., Klein, J.D., Fisher, S. (2003). Longitudinal effect of intimate partner abuse on high-risk behavior among adolescents. *Archives of Pediatric Adolescent Medicine*, 157, 875-81.
- Rodriguez, N., Mira, C.M., Paez, N.D., & Myers, H. (2007). Exploring the complexities of familism and acculturation: Central constructs for people of Mexican Origin. *American Journal of Community Psychology*, 12, 61-77.
- Rodriguez, J. M., & Kosloski, K. (1998). The impact of acculturation on attitudinal familism in a community of Puerto Rican Americans. *Hispanic Journal of Behavioral Sciences*, 20, 375-390.
- Romo, L. F., Lefkowitz, E. S., Sigman, M., Au, T. K. (2002). A longitudinal study of maternal messages about dating and sexuality and their influence on Latino adolescents. *Journal of Adolescent Health*, 31, 59 – 69.

- Rogler, L.H. & Cooney, R.S. (1984). *Puerto Rican families in New York City: Intergenerational processes*. Maplewood, NJ: Waterfront.
- Rosenstock, I.M., Strecher, V.J., & Becker, M.H. (1988). Social learning theory and the health belief model. *Health Education & Behavior, 15*, 175-183.
- Rudmin, F.L. (2003). Critical history of the acculturation psychology of assimilation, separation, integration, & marginalization. *Review of General Psychology, 7*, 3-37.
- Rueschenberg, E & Buriel, R. (1989). Mexican American family functioning and acculturation: A family systems perspective. *Hispanic Journal of Behavioral Sciences, 11*, 232-244.
- Rumbaut, R.G. (1994). The crucible within: Ethnic identity, self-esteem, and segmented assimilation among children of immigrants. *International Migration Review, 28*, 748-794.
- Ryder, A.G., Alden, L.E., & Paulhus, D.L. (2000). Is acculturation unidimensional or bidimensional? A head-to-head comparison in the prediction of personality, self-identity, and adjustment. *Journal of Personality and Social Psychology, 79*, 49-65.
- Sabogal, F., Perez-Stable, E.J., Otero-Sabogal, R., & Hiatt, R.A. (1995). Gender, ethnic, and acculturation differences in sexual behaviors: Hispanic and Non-Hispanic Whites. *Hispanic Journal of Behavioral Sciences, 17*, 139-159.
- Safilios-Rothschild, C. (1970). The study of family power structure: A review 1960-1969. *Journal of Marriage and the Family, 31*, 290-301.

- Samaniego, R.Y. & Gonzales, N.A. (1999). Multiple mediators of the effects of acculturation status on delinquency for Mexican American adolescents. *American Journal of Community Psychology, 27*, 189-210.
- Schumacker, R. E. & Lomax, R. G. (2004). *A Beginner' Guide to Structural Equation Modeling* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Scott, C.S., Shifman, L., Orr, L., Owen, R.G., & Fawcett. (1988). Hispanic and Black American adolescents' beliefs relating to sexuality and contraception. *Adolescence, 23*, 667-688.
- Scribner, R. & Dwyer, J.H. (1989). Acculturation and low birth-weight among Latinos in the Hispanic HANES. *American Journal of Public Health, 79*, 1263-1267.
- Sieving, R. E., Beurhing, T., Resnick, M. D., Bearinger, L. H., Shew, M., Ireland, M., et al. (2001). Development of adolescent self-report measures from the national longitudinal study of adolescent health. *Journal of Adolescent Health, 28*, 73-81.
- Sena-Rivera, J. (1976). Casa and familia: An alternative model of the traditional extended family-A report on exploratory investigation. Paper presented at the annual meeting of the American Sociological Association, New York.
- Shah, F., & Zelnik, M. (1981). Parent and peer influence on sexual behavior, contraceptive use and pregnancy experience of young women. *Journal of Marriage and the Family, 43*, 339-348.
- Smetana, J., & Asquith, P. (1994). Adolescents' and parents' conceptions of parental authority and personal autonomy. *Child Development, 65*, 1147-1162.
- Smith, J.P. & Edmonston, B. (1997). *The New Americans: Economic, Demographic, and Fiscal Effects of Immigration*. Washington, DC: National Academies Press.

- Smokowski, P.R. & Bacallao, M.L. (2006). Acculturation and aggression in Latino adolescents: A structural model focusing on cultural risk factors and assets. *Journal of Abnormal Child Psychology*, *34*, 657-671.
- South, S.J. & Baumer, E.P. (2001). Community effects on the resolution of adolescent premarital pregnancy. *Journal of Family Issues*, *22*, 1025-1043.
- Springer, A.E., Lewis, K., Kelder, S.H., Fernandez, M.E., Barroso, C.S., & Hoelscher, D.M.. (2009). Physical activity participation by parental language use in 4th, 8th and 11th grade students in Texas, USA. *Journal of Immigrant and Minority Health* [Epub ahead of print].
- Steenkamp, J.B.E.M. & van Trijp, H.C.M. (1991). The use of lisrel in validating marketing constructs. *International Journal of Research in Marketing*, *8*, 283-299.
- Steinberg, L. D. (1988). Reciprocal relation between parent-child distance and pubertal maturation. *Developmental Psychology*, *24*, 122-128.
- Steinberg, L. (2001). We know some things: Parent-adolescent relationships in retrospect and prospect. *Journal of Research on Adolescence*, *11*, 1-19.
- Sterling, S.P. & Sadler, L.S. (2009). Contraceptive use among adolescent Latinas living in the United States: The impact of culture and acculturation. *Journal of Pediatric Health Care*, *23*, 19-28.
- Stevens, J. (1996). *Applied multivariate statistics for the social sciences*. Mahwah, NJ: Lawrence Erlbaum Publishers.
- Suarez-Orozco, C. & Suarez-Orozco, M. (2001). *Children of Immigration*. Cambridge: Harvard University Press.

- Sue, S. (1999). Science, ethnicity, and bias: Where have we gone wrong. *American Psychologist*, 54, 1070-1077.
- Supple, A., W. Aquilino, & D. Wright. (1999). Collecting sensitive self-report data with laptop computers: Impact on the response tendencies of adolescents in a home interview. *Journal of Research on Adolescence*, 9, 467-488.
- Sutton, S. (2006). Predicting and explaining intentions and behavior: How well are we doing? *Journal of Applied Social Psychology*, 28, 1317-1338.
- Szapocznik, J., Scopetta, M.A., & King, O.E. (1978). Theory and practice in matching treatment to the special characteristics and problems of Cuban immigrants. *Journal of Community Psychology*, 6, 112-122.
- Szapocznik, J., & Hernandez, R. (1988). The Cuban American family. In C. H. Mindel, R. W. Habenstein, & R. Wright (Eds.), *Ethnic families in America* (pp. 160–172). New York: Elsevier Press.
- Szapocznik, J. & Kurtines, W. (1980). Acculturation, biculturalism, and adjustment among Cuban Americans. In J. Padilla (Ed.), *Acculturation*. Boulder, CO: Westview Press.
- Szapocznik, J., & Williams, R.A. (2000). Brief strategic family therapy: Twenty-five years of interplay among theory, research and practice in adolescent behavior problems and drug abuse. *Clinical Child and Family Psychology Review*, 3 (2), 117-135.
- Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics*. New York: Harper Collins.

- Taraneh, S., Stovel, K., Holmes, K. (2007). Association between condom use at sexual debut and subsequent sexual trajectories: A longitudinal study using biomarkers. *American Journal of Public Health, 97*, 1090-1095.
- Tardiff CY, Geva E. (2006). The link between acculturation disparity and conflict among Chinese Canadian immigrant mother-adolescent dyads. *Journal of Cross-Cultural Psychology, 37*, 191–211.
- Thompson, L. & Walker, A.J. (1982). The dyad as a unit of analysis: Conceptual and methodological issues. *Journal of Marriage and the Family, 44*, 889-890.
- Torres-Stone, R.A. & Meyler, D. (2007). Identifying potential risk and protective factors among Non-Metropolitan Latino youth: Cultural implications for substance use research, *Journal of Immigrant and Minority Health, 9*, 95–107.
- Triandis, H.C., Marin, G., Betancourt, H., Lisansky, J., & Chang, B. (1982). Dimensions of familism among Hispanic and mainstream Navy recruits. Technical Report No. 14, Department of Psychology, University of Illinois, Champaign.
- Tschann, J. M., Adler, N. E., Millstein, S. G., Gurvey, J. E., & Ellen, J. M. (2002). Relative power between sexual partners and condom use among adolescents. *Journal of Adolescent Health, 31*(1), 17-25.
- Udry, R.J. (1998). The National Longitudinal Study of Adolescent Health (Add Health), Waves I & II, 1994-1996. Retrieved on January 20, 2009 from <http://www.disc.wisc.edu/codebooks/qg067001-2-1.pdf>.
- Unger, J.B. (2000). Acculturation and attitudes about contraceptive use among Latina women. *Health Care for Women International, 21*, 235-249.

- Unger, J.B., Ritt-Olson, A., Soto, D.W., & Baezconde-Garbanati, L. (2007). Parent-child acculturation discrepancies as a risk factor for substance abuse among Hispanic adolescents in Southern California. *Journal of Immigrant and Minority Health, 11*, 149-157.
- UNC Population Center. (2009). Add Health Data. Accessed January 22, 2009 from <http://www.cpc.unc.edu/projects/addhealth/data>.
- United States Census Bureau (2008). Facts for Features. Retrieved on January 26, 2009 from http://www.census.gov/Press-Release/www/releases/archives/facts_for_features_special_editions/002270.html
- Valente, T.W. & Davis, R.L. (1999). Accelerating the diffusion of innovations using opinion leaders. *The Annals of American Academy of Political and Social Science, 566*, 55–67.
- Valle, R. & Martinez, C. (1980). Natural networks among Mexicano elderly in the United States: Implications for mental health. In M.R. Miranda & R.A. Ruiz (Eds.), *Chicano aging and mental health*. Washington, DC: U.S. Government Printing Office.
- vanDick, R. & Wagner, U. (2001). Stress and strain in teaching: A structural equation approach. *British Journal of Educational Psychology, 71*, 243-259.
- Wall, J.A., Power, T.G., & Arbona, C. (1993). Susceptibility to antisocial peer pressure and its relation to acculturation in Mexican-American. *Journal of Adolescent Research, 8*, 403-418.

- Wallace, L., Keil, M., & Rai, A. (2004). How software project risk affects project performance: An investigation of the dimensions of risk and an exploratory model. *Decision Sciences, 35*, 289-321.
- Wann, D.L. & Brewer, K. (1998). Observational learning effectiveness as a function of model characteristics: Investigating the importance of social power. *Social Behavior and Personality, 26*, 1-10.
- Waters, M. (1994). Ethnic and racial identities of second-generation Black immigrants in New York City. In A. Portes, *The New Second Generation* (pp. 171-198). New York: Russell Sage Foundation.
- Wells, B. E., & Twenge, J. M. (2005). Changes in young people's sexual behavior and attitudes, 1943-1999: A cross-temporal analysis. *Review of General Psychology, 9*(3), 249-261.
- Welte, J.W. & Barnes, G.M. (1995) Alcohol and other drug use among Hispanics in New York State. *Alcoholism: Clinical and Experimental Research, 19*, 1061-1066.
- Whitaker, D.J. (1999). Teenage partners' communication about sexual risk and condom use: The importance of parent-teenager discussion. *Family Planning Perspectives, 31*, 117-121.
- Whitaker, D.J. & Miller, K.S. (2000). Parent-adolescent discussions about sex and condoms: Impact on peer influences of sexual risk behavior. *Journal of Adolescent Research, 15*, 251-273.
- Wilcove, G.L., Schwerin, M.J., & Wolosin, D.G. (2003). An exploratory model of quality of life in the US Navy. *Military Psychology, 23*, 215-221.

- Wills, T.A. & Vaughn, R. (1989). Social support and substance use in early adolescence. *Journal of Behavioral Medicine, 12*, 321-339.
- Windle M. (2000). A latent growth curve model of delinquent activity among adolescents. *Applied Developmental Science, 4*, 193–207.
- Wingood G.M. & DiClemente, R.J. (2000). Application of the theory of gender and power to examine HIV-related exposures, risk factors, and effective interventions for women. *Health Education & Behavior, 27*, 539–565
- Yarber, W. L., Greer, J. M. (1986). The relationship between the sexual attitudes of parents and their college daughters' or sons' sexual attitudes and sexual behavior. *Journal of School Health, 56*, 68–72
- Zapata, J., & Katims, D.S. (1994). Antecedents of substance use among Mexican-American school-age children. *Journal of Drug Education, 24*, 233–251.
- Zea, M.C., Asner-Self, K.K., Birman, D., & Buki, L.P. (2003). The abbreviated multidimensional acculturation scale: Empirical validation with two Latino/Latina samples. *Cultural Diversity and Ethnic Minority Psychology, 9*, 107-126.
- Zhou, M. (1997). Growing up American: The challenge confronting immigrant children and children of immigrants. *Annual Review of Sociology, 23*, 63-95.
- Zhou, M. (2001). *Ethnicities: Children of Immigrants in America*. Berkeley, CA: University of California Press.
- Zhou, M. & Bankston, C.L. (1998). *Growing Up American: How Vietnamese Children Adapt to Life in the United States*. New York: Russell Sage Foundation.

Zimmerman, B.J. & Koussa, R. (1979). Social influences on children's toy preferences: Effects of model rewardingness and affect. *Contemporary Educational*

Psychology, 4, 55-66.

Zwillinger, D. (1995). *Standard mathematical tables and formulae*. Oxford: Chapman & Hall.