## Distribution Agreement

In presenting this thesis or dissertation as a partial fulfillment of the requirements for an advanced degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis or dissertation in whole or in part in all forms of media, now or hereafter known, including display on the world wide web. I understand that I may select some access restrictions as part of the online submission of this thesis or dissertation. I retain all ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

Signature:

_____ _____

Paula E. Jayne Date

U.S. Attitudes toward Adolescent Sexual Activity:
A Feminist Engagement with the Second Demographic Transition

By

Paula E. Jayne
Doctor of Philosophy

Women's Studies

_____

Dr. Pamela Hall
Advisor

_____

Dr. Roger Rochat
Advisor

_____

Dr. Kathryn Yount
Committee Member

Accepted:

_____

Lisa A. Tedesco, Ph.D.
Dean of the James T. Laney School of Graduate Studies

_____

Date

# U.S. Attitudes toward Adolescent Sexual Activity:
# A Feminist Engagement with the Second Demographic Transition

By

Paula E. Jayne
M.A., Emory University, 2008
M.P.H, Rollins School of Public Health, 2007
B.A., Wheaton College, 1994

Advisor: Pamela Hall, Ph.D.
Advisor: Roger Rochat, M.D.

An abstract of
A dissertation submitted to the Faculty of the
James T. Laney School of Graduate Studies of Emory University
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy
in Women's Studies
2010

Abstract
U.S. Attitudes toward Adolescent Sexual Activity:
A Feminist Engagement with the Second Demographic Transition
By Paula E. Jayne

I explore how opinions in the United States differ regarding adolescent sexuality. Given that U.S adolescents currently have the highest rates of sexually transmitted infections and teen pregnancy among high-income countries, continued research on attitudes surrounding adolescent sexuality is essential. My project combines a statistical analysis of the National Survey of Family Growth (NSFG) with a feminist engagement with the theory of the second demographic transition (SDT) to explore predictors of attitudes toward adolescent sexual activity within the United States. The SDT predicts a connection between individuals' decisions regarding fertility and family formation and their social attitudes and behaviors; although not previously applied to attitudes toward adolescent sexuality, the SDT provides a useful framework for this research. I use data from the 2002 National Survey of Family Growth, a recurring multi-stage, cluster sampled, and weighted survey, to explore a nationally representative sample of the attitudes of 15-44 year olds toward adolescent sexual activity in the United States. Exploratory factor analysis and ordinal logistic regression reveals significant relationships between one's age, sex, marital and cohabitation status, age at first sex, age at first birth, number of current children, religious activity and one's attitudes toward adolescent sexual activity. I find that the most important predictor of attitudes toward adolescent sexual activity is the degree of religious commitment. I suggest that in order to decrease unintended pregnancy and sexually transmitted disease among adolescents, it is important that those working toward these goals learn to hold open and honest discussions around sexuality and questions of ethics. These conversations, while not easy, may provide a way to move through the "cultural war" divides suggested by the second demographic transition to find areas of shared concerns. I conclude that in fact there is no way to formulate value-neutral public policy on sexuality, and thus that there is a continued need for public health leaders and religious leaders to bring their unique strengths to a shared table in order to improve the health and sexual well-being of adolescents in the United States.

# U.S. Attitudes toward Adolescent Sexual Activity:
# A Feminist Analysis of the Second Demographic Transition

By

Paula E. Jayne
B.A., M.A., M.P.H.

Advisor: Pamela Hall, Ph.D.
Advisor: Roger Rochat, M.D.

A dissertation submitted to the Faculty of the
James T. Laney School of Graduate Studies of Emory University
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy
in Women's Studies
2010

TABLE OF CONTENTS

TABLES

APPENDICES

# ACKNOWLEDGEMENTS

This project would not exist were it not for the love and support of those around me. The many acts of kindness, intellectual sharpening, encouragement, critique, and thoughtful listening quilted themselves together and provided color and softness to a task which at, at times, can feel quite drear. Although it is impossible to articulate all for which I am grateful, I would like to highlight the contributions of those who stood in the foreground of this project with me.

I would be remiss if I did not begin by thanking my dissertation committee, Drs. Pamela Hall, Roger Rochat, and Kathryn Yount, for their unwavering support of this project. I greatly admire the nuanced and sophisticated way in which Dr. Kathryn Yount approaches research (and remain in awe of her data manipulation skills), and I was thankful to have her thoughtful comments on this work. Dr. Roger Rochat was teacher, internship supervisor, thesis advisor, brainstormer-extraordinaire and friend, and I feel privileged that our academic interests aligned in ways that kept us in contact throughout many years of work. Dr. Pamela Hall consistently encouraged me to push my analysis further, to make connections, and to consider the larger implications of my work. Pam provided deadlines, praise, threats (when appropriate), spot-on aphorisms, and much good guidance and company on this journey. She is a true mentor and a major force behind this project.

Thanks also belong to Dr. Mike Windle of the Behavioral Sciences and Health Education department at the Rollins School of Public Health for his generous assistance and guidance on exploratory factor analysis and to Dr. Cindy Hinton for our "statistics over Sunday brunch" sessions. Ordinal logistic regression is always friendlier over pancakes.

I have been fortunate to be employed in institutions that were supportive of academic research, and I am thankful to my current supervisors Linda Crossett and Lisa Romero for allowing me to take time from work in order to finish this project. Former supervisor Lori Cavagnaro was ever encouraging and Melissa Bolyard showed patience with my many questions on statistics. It is a pleasure to work for women who support and believe in you, and I am thankful for their presence in my life.

My friends and colleagues deserve much praise for the many ways they helped to leaven this process. My thanks go out to Anne Borden for calls and cards and whimsical gifts; to Anne Sinkey, for not being afraid of the dark; to Carin Brown, for twenty-five years of friendship and irreverent laughter; to Kate Sweeney, the best example of 'lifting as we climb' that I know; to Kirsten Rambo, for being an inspiration of social action (and fun); to Suzann, for understanding, courage and good work; to Karen and Bones, for letting me share in your good life, to Trisha Vannatter, for reminders to "study, dance, repeat" in the midst of writing, and to my ORISE fellows, for listening to me when I was stressed and rejoicing with me after I finished.

Finally, I want to thank my family—Joyce and Paul Jayne, Andy and Toby Jayne, Tim and Denise Jayne, and John Walker—for their love and support throughout this process; I would not be who or where I am were it not for you.  I love you.

This work is dedicated to my nieces Leah, Megan, Molly, Lily; to my nephew Sam; and to my "other-niece" Ella Grace, in the hope that those of us who work in the field of adolescent health can learn to talk more openly and honestly around issues of sexuality, to encourage collaborations instead of dissent, and to find ways to listen and offer the information, skills, and support that you need as you grow.

# INTRODUCTION

*To some, sex is a biological imperative: desire embedded in our genetic structure to ensure our species survival. To others, it is sublime: an act of complete trust and commitment with another. To still others, a temptation: tawdry, "of the flesh", and to be resisted. To most of us, sex is something in between: compelling, a chore, a deep sharing, a simple release. Our feelings about sex become even more complex when we consider it in relation to the children and adolescents in our lives. At what age does a child become sexual? When they are born? When they begin to discover the range of physical differences between female and male? When they themselves become capable of reproducing? When they wish to explore their own sexuality? Given that sexuality is a part of being human, why are so many of us uncomfortable with the sexuality of children and young adults? When is it appropriate for adolescents to learn about their sexuality? When is it appropriate for them to share themselves sexually with another person? How do we as adults best provide guidance during this process?*

This paper is concerned with the sexual health of adolescents in the United States, but it deals very little with physical markers of that health or interventions to improve it. Rather it examines one of the underlying conditions of adolescent sexual health: that of attitudes toward adolescent sexuality. Attitudes regarding adolescent sexuality affect multiple levels of sexual health provision, including attitudes underlying the planning, funding, implementation, evaluation, and community acceptance of sexual education, behavioral

interventions, and healthcare delivery for adolescents (Holzner 2004; Berne and Huberman 2000; Pick 2000; Jayne 2007; Hoodfar 1996; Kamaara 1999; Feijoo 2001).

Attitudes toward adolescent sexuality might best be framed by the question of "actual vs. ideal"; that is, how the actual, lived experiences of adolescent sexuality differ from what adults feel would be the ideal for adolescents. Looking at how different key audiences approach the issue of adolescent sexuality may provide some illumination into the potential distance between the two. Researchers and public health scientists tend to start by looking at the actual – asking, for example, what does the national surveillance data reveal about causes of poor health in the population? As will be discussed below, the epidemiologic literature presents a surprisingly bleak picture of US adolescent sexual health. However, looking at rates of disease may be a very different approach than that of a parent or even a policy maker who may be more concerned with "the ideal" of what people wish for adolescents. As will be discussed further, a majority of parents would prefer that their children not be sexually active while a teenager. This is quite different from 'the actual' in which the majority of adults in the US initiate sex before the age of 20 (Wellings 2006).

This chapter briefly lays out the problem of poor sexual health outcomes for US youth, including rates of disease and pregnancy among the US adolescent population; some of the behavioral, structural, and legal factors which seem to contribute; and what we know about adult attitudes toward adolescent sexuality. I will then detail the structure of this research project.

## Setting the Stage: Adolescent Sexual Health in the United States[1]

Given the wealth and the technological health advances of the United States, US adolescents should be among the most reproductively healthy in the world. By this I mean that they should be as free as possible from the undesired health outcomes such as sexually transmitted disease or unintended pregnancy, and they should have affordable and easy access to the health information and services necessary to care for their sexual and reproductive health. Instead, for multiple reasons, they are the most at risk among more developed nations for unintended pregnancy and sexually transmitted diseases, including HIV / AIDS.

Several of these reasons include the lack of affordable and easily accessible health care coverage and contraceptives for teens, federally-mandated misinformation about the efficacy of contraceptives, a view of adolescents as innately irresponsible, and an absence of consistent messages regarding appropriate adolescent sexuality from health organizations, schools, and the media (Brindis 2002; Holzner 2004; Jayne 2007; Abraham 1999). The roots of many of these barriers can be found within societal attitudes about sex and sexuality and the lack of a universal health care system which would allow teens easy and affordable (if not free) access to care and to contraceptives (Lottes 2002; Eng & Butler 1997).

### Teen Sexual Health Indicators

One way to measure US progress in assisting adolescents in staying healthy sexually is to look at common sexual health indicators. Public health has tended, as a field, to focus on the physical health of its populations. This is not because physical health is more important than

[1] Sections of this chapter contain statistics that were previously discussed within my master's thesis, "Permissive and Restrictive Themes in School-based Sexual Education: A Comparative View" (Jayne, 2007). Statistics that are repeated are those which have not been updated within the larger literature within the past three years.

emotional or mental health. Indeed, how an adolescent is taught (in spoken and unspoken ways) to feel and to think about their sexuality may ultimately be more important to their overall sexual health than whether or not they can correctly identify the signs of a STD. Physical health, however, is something that is tangible and is often more immediate in cause, concern, and treatment than, for instance, the social implication of female desire. Below, I give the most recent physical sexual health indicators for adolescents[2] in the United States. When appropriate, I have offered a brief summary of where US teens stand in relation to their peers in other industrialized countries to provide a comparative background.

*Teen Pregnancy and Birth Rate*

Because the majority of adolescent pregnancies are not intended and are therefore often seen to represent a public health "failure" of either structure or individual action, teen pregnancy rates provide an important indicator of the sexual health of teens.[3] Pregnancies to adolescents below the age of 18 can disrupt schooling, potentially affecting the educational and career paths open to teen parents. In addition, mothers under the age of 18 are more likely to be unaware of their pregnancies, receive late or no prenatal care, and to deliver preterm infants, all of which have been linked to increased risk of birth defects and / or to developmental difficulties in infants and children (Gavin et al. 2009; Honein et al. 2001). None of these outcomes are a given, and many can be worked with or prevented, given

[2] A note on nomenclature: The Centers for Disease Control and Prevention typically uses the following guide for what to call teens of certain ages: youth=10-14 years; adolescents=15-19; young adults=20-24 (Gavin et. al. 2009). I utilize a broader use of the terms adolescents and youth to encompass all teens below age 20.

[3] Although 80-88% of U.S. teen pregnancies are not intended, adolescent females in the United States also report a higher rate of wanted pregnancies (18 per 1,000) during their adolescence than do peer industrialized countries (Gavin et.al. 2009; Darroch 2001). The Alan Guttmacher Institute reports that the rate of births to teens in the United States who wanted to become pregnant is higher than the total birthrate of teens in France and Sweden (AGI 2001).

knowledge and strong social programs supporting sexual health, including reproductive health and childcare, for adolescents. However, they represent some of the reasons why high teen pregnancy rates are generally viewed as a negative indicator of adolescent sexual health.

It is discouraging to note that US teens are becoming pregnant at rates two to nine times higher than their peers in other industrialized countries (Brindis 2002; Darroch, Singh, and Frost 2001; Singh and Darroch 2000). The last comparative study of teen *pregnancy* rates used data from the mid-1990's: our rate was 84 per 1,000 females aged 15-19, compared to 46.5 in Canada and Great Britain, 25 in France, and 20 in Sweden (Darroch, Singh, and Frost 2001). *Birth* rates remained similarly high with rates as low as 4.3 in Switzerland (2007), 4.9 per 1000 in Japan (2007), 5.2 in the Netherlands (2007), 5.7 in Denmark (2007), 5.9 in Sweden (2007), 9.1 in Finland (2007) and in Norway (2007), 9.9 in Germany (2007), 10.3 in France (2007), 11.2 in Austria (2007), 13.2 in Spain (2007), 13.3 in Canada (2005), 13.9 in Israel (2007), 15.9 in Australia, 16.4 in Ireland (2006), 21.9 in Belarus (2006) and 41.2 in the US (2004) (UN Yearbook 2010). It is estimated that 831,000 pregnancies occur in the US adolescent population (age 15-19) each year (Eaton 2006). In fact, teen birthrates in the United States remain higher than those in Eastern European countries such as Bosnia, Moldova, and the Ukraine (Singh and Darroch 2000; UN Yearbook 2010).

In a country as large as the United States, national averages sometimes hide regional diversity. However, even if one were to look at birthrates by states, our lowest teen birthrates (18.7 per 1000 in New Hampshire; 20.8 in Vermont, 21.3 in Massachusetts, 23.5 in Connecticut, and 24.9 in New Jersey[4] in 2006) are still two to three times as high as Sweden,

[4] A state comparison also shows clear regional differences with lower birthrates in the Northern states and higher birthrates (sometimes three times higher) in Southern states and the District of Columbia.

France, and Germany and about equal to those of Belarus. Our highest rates (68.4 in Mississippi, 64.1 in New Mexico, 63.1 in Texas, 62.3 in Arkansas, 62.0 in Arizona) are four to fourteen times higher than peer industrialized countries (NCHS 2006; Singh and Darroch 2000). Clearly, adolescents throughout the United States are giving birth at a significantly higher rate than their peers in other industrialized nations.

In addition, racial and ethnic disparities affect which teens are becoming pregnant and the outcomes of those pregnancies. While the 2004 pregnancy rate (per 1000) is 45.2 for white females aged 15-19, it is 128.0 for black females and 132.8 for Hispanic females[5]. In an excellent example of how it is not inherent or genetic traits that cause racial disparities in health, but rather income disparities and racial discrimination within the United States, other countries do not show the same level of discrepancy between racial groups. For example, the mid-1990s pregnancy rate in the UK is very similar between white (15%) and non-white groups (13%) aged 20-24 and widely different in the US whites (17%), Hispanic (33%), and black (37%) populations (Singh, Darroch, and Frost 2001).

*Teen Abortion Rate*

Abortion rates provide another measure of teen sexual and reproductive health by helping researchers understand the true pregnancy rate (rather than simply the birthrate) and by marking teen decision-making regarding pregnancy outcome. A higher teen abortion ratio (i.e., the number of pregnant teens who chose abortion) is considered a sign of positive sexual health, since societal values in many European countries promote that it is not appropriate for

[5] Data is unavailable for American Indian / Alaska Native and Asian / Pacific Islander females aged 15-19 in the United States.

adolescents to parent and therefore an adolescent who chooses to abort is viewed as making a responsible choice (Berne and Huberman 1999; Berne and Huberman 2000). The US is divided in its attitudes toward adolescent sexuality, with a recent New Yorker article on "Red Sex, Blue Sex" commenting that while social liberals are troubled by adolescent childbearing, social conservatives are troubled by teens having sex, but remain "relatively unruffled if a teenager becomes pregnant, as long as she doesn't choose to have an abortion" (Talbot 2008).

This "divide" among the population is reflected in US abortion data for adolescents. It is important to note that data regarding abortions is often difficult to estimate properly since it is not uniformly collected (Straus 2006); thus it is widely assumed that most numbers are underestimates of the true abortion rate. Although the rate of abortion is higher among adolescents in the US than in peer industrialized countries: 29.2 per 1,000 adolescent females aged 15-19 compared to 21.1 for Canada; 18.4 for Great Britain; 17.2 for Sweden; and 10.2 for France (Darroch, Singh, and Frost 2001), we have one of the lowest abortion ratios (Singh and Darroch 2000). Thus, of the US teens who become pregnant, fewer pregnancies end in abortion. While this is partially due to a greater acceptability of teen childbearing and a higher percentage of wanted pregnancies, other factors include restrictive legislation in the United States concerning mandatory waiting periods before abortions, parental notification and consent laws, child protection laws concerning transporting a minor to services, lack of access to abortion services[6], high financial costs, and the lack of governmental coverage of abortion when compared to other industrialized countries (Brindis 2002).

[6] It is estimated that 86% counties in the U.S. have no abortion provider and that there are less than 2000 abortion providers in the entire United States (Finer 2007).

*Rates of Sexually-Transmitted Diseases among Adolescents*

Sexually transmitted disease rates provide another important comparison of reproductive health across nations. Like abortion data, it is generally safe to assume that the actual numbers infected are higher than the published numbers (sometimes by fifty to seventy percent) due to underreporting (Weinstock, Berman, and Cates 2004; Panchaud et al. 2000). It should also be noted that underreporting is partially due to adolescents not knowing that they have been infected, a phenomenon which is discussed below.

Adolescents are almost twice as likely as adults to contract a sexually transmitted infection. Within the United States, an estimated 48% of all new sexually transmitted infections each year are to adolescents and young adults (ages 15-24). In particular, this age group makes up 74% of new chlamydia infections, 74% of new Human Papilloma Virus (HPV) infections, 60% of new gonorrhea infections, 50% of new HIV infections, 40% of new genital herpes infections, and 22% of new syphilis infections, despite the fact that adolescents and young adults are estimated to make up only 25% of the sexually active population (Weinstock 2004). A portion of this phenomenon is due to biology– for example, young women are more susceptible to chlamydia infections due to cervical ectopy[7] which occurs more often during puberty (CDC Special Topics 2006). However, a larger proportion appears related to the lack of availability, affordability, and accessibility of sexual health clinics; the lack of knowledge and support for contraceptive use; and general cultural mores on teen sexuality and childbearing (CDC Special Topics 2006; Panchaud et al. 2000).

[7] Where one to several cells extend from the endometrium to the cervical os. These cells, which are responsible for mucous production within the cervical canal, now increase the amount of mucous at the top of the vagina, providing the bacteria with a prime area for growth. This condition is also more common for women taking the birth control pill and for those who are pregnant (CDC Special Topics 2006).

*Bacterial Infections*

Compared to peer industrialized nations, the United States has one of the highest adolescent rates of the three main bacterial infections: chlamydia, gonorrrhea, and syphilis[8] (Biddlecom 2004; Feijoo 2001). In the mid-1990's (the most recent data available for comparative study), the rate for syphilis in the United States was 6.4 per 100,000 among 15-19 year olds, compared to 2.2 in Germany, 0.6 in Canada and Sweden, and 0.2 in England and Wales. Our gonorrhea rate is 571.8 per 100,000 among 15-19 year olds compared to 76.9 in England & Wales, 59.5 in Canada, 15.0 in Germany, and 1.8 in Sweden. Our chlamydia rate is 1,131.6 per 100,000 among 15-19 year olds, compared to 569.6 in Sweden, 563.3 in Canada, 232.8 in England & Wales, and 55.1 in France (Panchaud et al. 2000).

The best way to detect these often asymptomatic diseases is through regular testing and knowledge of one's own body. Symptoms, when they exist, can be small (rashes or sores that may not hurt and disappear, vaginal or penile discharge, and a burning sensation when urinating) and may not be noticed. It is somewhat ironic that for a country that seems as obsessed with sex as our advertising might make us out to be, few Americans would ever think of doing a self-exam or of teaching adolescents how to monitor their own sexual health. This lack of education, combined with the frequency of no symptoms at all, is reflected in how often adolescents and young adults carry sexually transmitted infections without realizing they do so. The CDC estimates that the majority of cases of chlamydia and roughly half the cases of gonorrhea go undiagnosed (CDC Special Report 2006) and that, between 1997 and 2000, nearly half of all reported syphilis cases were "late latent", meaning that the

[8] These three diseases are used most often as a benchmark because they are nationally notifiable diseases, as well as, in the case of chlamydia and gonorrhea, the most prevalent.

disease had been present for at least a year before being diagnosed (Weinstock, Berman, and Cates 2004).

Ignorance of infection status can have serious effects both for the teen and their partners. While these diseases are curable with antibiotics, they can lead to potentially serious side effects if untreated[9]. The presence of these bacteria infections can also double to quintuple an adolescent's chances of contracting HIV once exposed to the virus (CDC Special Report 2006). In addition, the rise in infertility globally has been largely attributed to the rise in sexually transmitted infections (Brady 2003). Brady supports the expansion of discussions of the benefits of contraceptive use to include the idea of "triple protection" –that which protects not only against pregnancy and sexually transmitted infections, but also against disease-related infertility (a large portion of female infertility). Thus, the prevention and early treatment of bacterial sexually transmitted infections can protect young women's future fertility by not exposing them to side effects that can lead to infertility.

*HIV*

HIV rates for the adult population of the US are higher than most other developed countries. 0.6% of the US population aged 15-49 is currently estimated to be living with HIV compared to 0.4% in Canada and France, 0.2% in the UK, Australia, and Sweden 0.2; and 0.1% in Germany 0.1 (UNAIDS 2008). The disparities are higher among 15-19 year old males: with a

[9] Gonorrhea can cause pelvic inflammatory disease (PID) which can lead to infertility. Chlamydia can lead to infection of the uterus, inflammation of the cervix or pelvis, infertility, and possible complications during pregnancy or childbirth, including spontaneous abortion, ectopic pregnancy, premature delivery and infections during the postpartum period (CDC Trends, 2006; Our Bodies, 1998). Very few cases of syphilis are fatal in developed countries today, but left untreated it can cause damage to the brain, heart, and other organs. Infants born to untreated women are more susceptible to being stillborn, dying soon after birth, and suffering from physical and neurological deformities (CDC Trends, 2006).

rate of 0.14% in Germany, 0.27% in the Netherlands, 0.49% in France, and 0.75% in the US (UNAIDS 2008). A smaller, but similar trend is seen among female 15-19 year olds: with 0.05% in Germany, 0.11% in the Netherlands, and 0.30% in France and the US (Panchaud et al. 2000; Feijoo 2001).

The vast majority of US adolescents aged 10-17 who are living with HIV were infected at birth (perinatally), while young adult (aged 20-24) females were primarily infected by heterosexual intercourse and young adult males were primarily infected by homosexual intercourse (Gavin et al. 2009). Rates of new HIV/AIDS diagnoses among US adolescents aged 15-19 varied widely by sex and race/ethnicity. Among both females and males, black adolescents were overwhelmingly vulnerable. For example, the rate of HIV/ AIDS among US adolescent females ran from a low of 0.9 among Asian / Pacific Islanders to 1.2 in American Indian / Alaskan Natives, 1.6 in whites, 7.2 in Hispanics, and 26.3 in blacks. This means that black females experienced a rate of new HIV / AIDS diagnoses that is three times greater than their Hispanic peers and fourteen times as great as their white peers. Sadly, these rates were doubled among US males aged 15-19 running from a low of 1.9 in Asian / Pacific Islander to a high of 56.0 in black males (National Vital Statistics System, HIV/AIDS reporting system, 2006). Not only are overall rates of HIV infection in the US higher than peer developed nations, but several groups are at disparate risk, due to racial discrimination, income disparity, lack of early diagnosis and treatment often due to difficulty of access to healthcare and to lack of information (Augstine and Bridges 2008).

*Age of Initiation of Sex & Number of Lifetime Partners*

Between 75% – 85% of adolescents around the world have sexual intercourse for the first time before age 20 and the average age at first intercourse in most developed nations is roughly 17 years old (Wellings 2006). The average US teen appears to have sex for the first time at roughly the same age as their peers in more-developed countries (Wellings 2006).[10] This is echoed in national data for US adults: a recent analysis of the last four cycles of the National Survey of Family Growth showed that by age 20, 75% of the American population had premarital sex[11] and by age 30, 93% of the population had premarital sex. Nor is this a recent trend. The same study found that 82% of American women who turned fifteen between 1954-1963 also had premarital sex by age 30 (Finer 2007).

However, both the United States (14%) and Sweden (12%), have a greater percentage of teens under age 14 experiencing sex when compared to Canada, France, and Great Britain (4-9%) (Darroch, Singh, and Frost 2001). In addition, American teens have a greater number of partners. Since sexually transmitted diseases are a multiplicative and not an additive effect[12], the risk of infection given unprotected sex with new partners rises quickly. Forty-four percent of 15-17 year old female adolescents in America report two or more partners in the last year compared to 31% in France and 24% in Canada. The discrepancy is similar for

[10] US teens =17.5 yrs female / 17.3 yrs male with 17.5 for both males and females in Australia, France and Italy; 18.5 in Switzerland (Wellings 2006). Advocates for Youth, a group working specifically with the topic of sexual education, reports that youth in the United States have intercourse for the first time at a slightly earlier age – 15.8 compared to 16.2 in Germany, 16.8 in France, and 17.7 in the Netherlands, based on AGI data from 1994 and the National Household Survey of Teen Sexual Behavior and Contraceptive Use in 1998 (Berne and Huberman 1999). However, more recent sources, including Singh and Darroch's comparative article between five developed countries (2001) find no significant difference at age of onset.

[11] Finer defines premarital sex as vaginal intercourse before the month of marriage or vaginal intercourse before not ever marrying (Finer 2007).

[12] i.e. Theoretically, sleeping with three other people does not simply triple your risk. Instead your risk of contracting disease must take into the account the total number of previous (or concurrent) sexual partners had by the individuals you are intimate with. The level of risk can, of course, be decreased by safer sex precautions such as use of a barrier contraceptive method.

male adolescents of the same age: with 53% in America, 45% in France, and 25% in Canada reporting multiple partners within the past year (Darroch, Singh, and Frost 2001).

*Summary of Sexual Health Statistics for US Teens*

In summary, comparative statistics show that US adolescents are more likely to become pregnant, have higher rates of both abortions and births, are more likely to have sexually transmitted diseases, less likely to use contraception, and have more sexual partners than their counterparts in peer developed nations (Darroch, Singh, and Frost 2001). Given the wealth and resources of the United States, our adolescents should be among the healthiest in the world; instead, they are among the most at risk for STIs and unintended pregnancy within the developed world.

## School-based Sex Education and Values

One clue to US attitudes toward adolescent sexuality might be found in what we as a society allow schools to teach teens about relationships, sex, and sexuality. As of September 2010, the largest proportion of federal dollars supporting "Abstinence Only until Marriage" programs will run out and will not be renewed. However, these programs, which have run since 1996, provide a clear picture of at least some of the attitudes held by those in power toward adolescent sexuality.

"Abstinence Only until Marriage[13]" (AOuM), often referred to simply as "Abstinence Only," refers to a set of funding initiatives for school-based sexual education that emphasize

[13] Although federal definitions of "abstinence" remain undefined, the term is often used as a keyword for

that the best and only truly effective way to prevent pregnancy or disease is to abstain from sex until marriage. "Sex" is never explicitly defined and marriage is presented as the only appropriate endpoint of celibacy (Santelli et al. 2006; Landry, Kaeser, and Richards 1999).

The ideology of AOuM requires little explication; it was stated quite clearly in 1996 through Title V of the Social Security Act. Referred to colloquially as "A-H", the eight key points of AOuM are used to guide what should be, and in some cases, must be taught in federally funded sexual education programs (Table 1.1). There are some points with which experts across the field would have no argument, such as the importance of teaching skills for protecting oneself from unwanted sexual advances and understanding the role of alcohol and drugs in one's decision-making abilities. Other points echo more permissive views, but substitute key concepts. For example, the statement that programs should teach "the importance of attaining self-sufficiency" is close to a more European approach of expecting youth to be financially secure and in a stable union before bearing a child (Berne and Huberman 1999). However, AOuM requires that programs teach that youth be self-sufficient even before having sex. In a generous interpretation, this assumes a link between sex and procreation

**Table 1.1 Abstinence Only Until Marriage Guidelines**

Section 510 of Title V of the Social Security Act mandates that any state receiving Title V funds must adhere to the following guidelines for school-based sex education:

A. Has as its exclusive purpose, teaching the social, psychological, and health gains to be realized by abstaining from sexual activity;
B. Teaches abstinence from sexual activity outside marriage as the expected standard for all school age children;
C. Teaches that abstinence from sexual activity is the only certain way to avoid out-of-wedlock pregnancy, sexually transmitted diseases, and other associated health problems;
D. Teaches that a mutually faithful monogamous relationship in context of marriage is the expected standard of human sexual activity;
E. Teaches that sexual activity outside of the context of marriage is likely to have harmful psychological and physical effects;
F. Teaches that bearing children out-of-wedlock is likely to have harmful consequences for the child, the child's parents, and society;
G. Teaches young people how to reject sexual advances and how alcohol and drug use increases vulnerability to sexual advances; and
H. Teaches the importance of attaining self-sufficiency before engaging in sexual activity.

Source: Section 510 of Title V of the Social Security Act

---

refraining from penetrative penile-vaginal sex.

that fails to acknowledge the highly effective rates of birth control in reducing the risk of pregnancy. Based upon the other points of A-H, however, it becomes clear that sex is presumed to be the right only of those who are fully "self-sufficient", a perhaps uniquely American conception of adulthood. Similarly, while the assertion that "abstinence from sexual activity is the only certain way to avoid out-of-wedlock pregnancy" (C) is technically accurate, a danger in promoting this view to adolescents is that many individuals tend to define sex as "doing '*it*", penetrative penile-vaginal sex. Although far less likely, it is possible to become pregnant if pre-ejaculate or sperm comes in contact with the vagina. What is more likely, however, is that one can contract a sexually transmitted disease without ever "doing it."

From a feminist perspective, the remaining points of AOuM quickly become problematic. The emphasis on marriage as the only appropriate place to be sexually active (B, D, E) ignores the fact that gay and lesbian youth are legally barred from marrying throughout the majority of the United States. It also ignores that many individuals marry later, do not stay married, or never marry at all. It goes further to state that "sexual activity outside the context of marriage is likely to have harmful psychological and physical effects" (B). It should be noted that the physical effects of sex do not change with the signing of the marriage certificate. There is no biological transformation into a being with suddenly-healthy sexual drives or the ability to repel STDs after saying, "I do". The harmful psychological effects have far more to do with how we as a society view, discuss, support (or fail to support) sexuality than any action of an individual.

The flaws in this ideology become even more troubling when one considers the amount of funding the government has invested in AOuM policies – 1 billion, 944 million dollars from 1996-2009. Clearly, the US government has significant investment in the ideas behind Abstinence Only until Marriage (SIECUS, 2009). This money was channeled through three main funding programs, with the addition of several earmarked projects. The first appearance of AOuM dollars can be traced to the 1981 Adolescent Family Life Act, created with the goal of reducing teen pregnancy. This act provided between $10-$13 million dollars a year (for a total of $153 millions dollars from 1996-2009) to states mandating abstinence only until marriage programs (SIECUS 2009; Sonfield and Benson Gold 2001).

A second funding source is Title V, Section 510(b) of the Social Security Act, created in the same 1996 welfare reform bill which created TANF, or Temporary Aid to Needy Families. Providing $87.5 million a year to states from the years 1998-2009 (for a total of just over 1 billion dollars), this bill introduced the eight points (sometimes referred to as 'A – H') of Abstinence Only education, listed in Table 1.1 (SIECUS 2009). The states, which had to match 3 dollars for every 4 provided by the federal government, were allowed some flexibility in how to teach the eight points. While they could not contradict any of the points, they were not required to teach each one in order to receive funding. So, for example, a state may receive the funds and teach that abstinence is the expected norm and the only certain way to avoid pregnancy or disease, but choose not to speak of sex as likely to cause "harmful psychological effects" (Section 510(b)). In FY 2007, however, the rules became more stringent and states which accepted the funding were required to focus AOuM programming not only on tweens and adolescents, but also on individuals aged 12-29

(SIECUS 2009). As of March 2009, Alaska, Arizona, California, Colorado, Connecticut, Delaware, Idaho, Iowa, Kansas, Maine, Massachusetts, Minnesota, Montana, New Jersey, New Mexico, New York, Ohio, Rhode Island, Vermont, Virginia, Wisconsin, and Wyoming have turned down millions of dollars in Title V AOuM funding because they object to the restricted curriculum attached to it (SIECUS 2009).

Proponents of AOuM were quick to catch on that states were taking full advantage of the flexibility allowed by Section 510(b) and, in October 2000, the 'Special Projects of Regional and National Significance-Community-Based Abstinence Education' (SPRANS-CBAE) was introduced. Originally managed by the Maternal and Child Health Bureau, the monies moved to the Administration for Children and Families (ACF) in 2005 where it became known simply as CBAE. This funding to states, which has steadily climbed from $20 million in 2001 to $113 million a year in 2006, 2007, and 2008 before decreasing slightly to $99 million in 2009, mandates that all eight points of A-H must be taught by schools who are recipients of Title V funding, thus removing any state flexibility (SIECUS 2009). It also allows organizations within states to apply directly for money, thus bypassing state approval.

Population Attitudes toward Sexual Education

It is not only concern for health consequences that determines policy but also concern about whether or not it is appropriate for adolescents to be sexual, and, more specifically, to "have sex" that dictate the content delivered under the rubric of "sex education." Fears that speaking to teens about their bodies, relationships, pregnancy, STDs, and contraception will encourage them to have sex are actually not widespread, but they are strong. Thus attitudes

regarding the act of adolescent sex often become entangled with the question of what information should be provided to adolescents about sex and sexuality.

Although many people disagree or remain ambivalent about whether teens should be actively sexual, public opinion about what *information* should be provided to teens has not been reflected in recent national policy (Table 1.2). For example, the 2003 Kaiser Family Foundation survey run by the Kennedy School showed that 98% of Americans supported discussing HIV/AIDS in sex ed classes and 83% supporting discussing how to put on a condom even while 95% felt it appropriate to teach teens how to delay sexual activity. Similarly, a 1998 National Survey of Americans on Sex and Sexual Health found that only 18% of Americans supported teaching the message of Abstinence Only until Marriage and that 81% felt schools should provide information on how to prevent pregnancy and disease in addition to promoting abstinence (Kaiser Family Foundation 2002). Nevertheless, federal funding has, until very recently, continued to support AOuM education in schools.

**Table 1.2 Recent Opinion Surveys in the US regarding Sexual Education and Sexual Activity**

| National Survey | Methodology | Main Findings |
|---|---|---|
| 2008 General Social Survey<br><br>http://www.norc.org/GSS+Website/Documentation/ | Conducted since 1972, the General Social Survey is a nationally representative, in-person survey which regularly gathers data on contemporary US attitudes, behaviors, and attributes. The 2008 survey interviewed 2023 adults 18 and older living in the United States. | Although a clear majority of US adults disapproved of sexual activity for 14-16 year olds, 89.1% of American adults supported the provision of sex education in public schools. |
| 2003 Kaiser Family Foundation / National Public Radio / Kennedy School Survey<br><br>http://www.kff.org/kaiserpolls/pomr012904oth.cfm | Nationally-representative telephone survey of 1,759 randomly selected adults in the US and an additional survey of 303 public middle, junior, and senior high schools school principals. The margin of sampling error for the survey is +/-3 percentage points for total respondents, +/-4.7 percentage points for parents, and +/-6 percentage points for principals. Princeton Survey Research | 93% of adults in the United States feel that schools should supply sexual education. 46% feel that schools should discuss both abstinence from sexual activity and provide information on contraception, 36% felt that abstinence was not the most important thing to emphasize and that schools should focus on teaching teens how to make responsible decisions about sex, and 15% felt that schools should only discuss abstinence. When asked about the appropriateness of specific topics, 99% |

| | | |
|---|---|---|
| | Associates conducted the fieldwork for both surveys between September and October 2003 | thought it was appropriate for schools to discuss STD, 98% approved of discussing HIV/ AIDS, 95% waiting to have sex until older, 94% how to be tested for HIV and STD, 93% waiting to have sex until married, 94% how to deal with emotional aspects of being sexually active, 86% how to use and where to purchase contraceptives, and 83% how to put on a condom. |
| 2002 "Engaged Voters" Survey<br><br>http://www.ncsse.com/index.cfm?pageId=937#SFLEA. | The poll was conducted by Lake Snell Perry & Associates and commissioned by the Othmer Institute at Planned Parenthood of NYC. The survey reached 800 active and attentive voters nationwide (400 men and 400 women). The survey was conducted between February 13 and 18, 2002. The margin of error is +/-3.5 percent. | 90% of all respondents agreed that students should receive age-appropriate and medically accurate sex education that begins in the early grades and continues through twelfth grade. |
| 1999 Poll on America's Attitudes toward Sexuality Education. Hickman-Brown Opinion Survey<br><br>http://www.advocatesforyouth.org/index.php?option=com_content&task=view&id=760&Itemid=58 | The findings are based on a national poll conducted by Hickman-Brown Research for Advocates for Youth and SIECUS between February 23 and March 3, 1999 that surveyed 1,050 US adults. The poll has a +/- three percent sampling error. Research also included four focus groups conducted in April 1999 with parents who reside with their school-aged children in Columbia, MD, and Charlotte, NC. | 89% of Americans believe that it is important for young people to have information about contraception and prevention of STDs and that sexuality education programs should focus on how to avoid unintended pregnancies and STDs, including HIV and AIDS. Individuals from all groups, including conservative Christians, support high school and junior high school sexuality education to prevent disease and unintended pregnancy. In addition, more than eight out of every 10 Americans reject the idea that providing such sexuality education encourages sexual activity. |
| Sex in the 90s: 1998 National Survey of Americans on Sex and Sexual Health<br><br>http://www.kff.org/womenshealth/1430-index.cfm | The Kaiser Family Foundation and ABC Television 1998 National Survey of Americans on Sex and Sexual Health is a random-sample telephone survey of 1,204 adults 18 and older living in the United States. It was designed by staff at the Foundation and Princeton Survey Research Associates (PSRA) and conducted by PSRA between April 24 and May 10, 1998. The margin of sampling error is +/-3 percentage points. | 81% of American adults felt that schools should provide information on how to prevent pregnancy and disease in addition to promoting abstinence while only 18% of Americans supported teaching the message of Abstinence Only until Marriage. In addition, 47% felt that children received sexual education too late. When asked whether they believed that children should be provided information on birth control and sexually transmitted disease, 83% believed they should be given the information while14% believed that doing so would encourage their children to have sex. Again, this does not imply that Americans want their children to have sex: 68% felt that high school youth should be encouraged not to have sex before marriage. At the same time, however, 92% of the |

| | | |
|---|---|---|
| | | same respondents felt that high school students should also be encouraged to use contraception if they were sexually active. |

Recent changes in federal policy removing the funding for Abstinence Only Until Marriage programs should help (Boonstra 2010), but given the localized nature of school governance in the US, it remains essential to understand more about attitudes toward adolescent sexuality, especially given what appears to be a large split between more conservative and more liberal approaches to the education of teens.

When looking at research on sexual education policies, it quickly becomes clear that attitudes regarding adolescent sexuality affected every level of sexual education provision. There is a great need to better understand the effect of religious and political conservatism on state policies. In doing so, it may be possible to see greater levels of differentiation among groups that appear on the surface to share the same views, helping researchers who are seeking ways to dialogue with more conservative groups over ways to protect the health of adolescents. Among moderates, it may be most appropriate to look for areas of shared values so that disparate groups can work toward common goals, such as teens who have a healthy sexuality, regardless of how they choose to practice it. This study hopes to tease out this range of responses by utilizing the theory of second demographic transition to understand what factors might predict attitudes toward adolescent sexuality.

## Outline of Dissertation

My dissertation will be comprised of six chapters to be divided as follows: Chapter one will introduce the research question and provide a brief situating of the current health statistics

on adolescent sexual health in the United States today. Chapter two provides a literature review of the second demographic transition and some feminist critiques of the theory. Chapter three will cover research design and methods, including a description of the data source and the rationale for choosing it, descriptive statistics, the specific multivariate analysis used and the rationale for measures chosen. Chapters four and five will cover the results of the analysis and a discussion of these findings. Chapter six will provide a conclusion, including for how we might use this information to improve the sexual health of US adolescents.

## Theoretical Framework

This project is informed by a women's studies and public health perspective and is multi-disciplinary in its theory, methods, and discussion. A women's studies perspective is one that critically explores an issue of inequality with particular attention to the interactions of ideas concerning gender, sexuality, and power, and has as its goal the revealing, protesting, and ameliorating of those structural factors, implicit values, and underlying assumptions which keep women and other oppressed groups from full participation in the larger world. Public health shares some of the same principles of seeking to understand and remove barriers, but does so primarily to improve the health of communities, with a primary focus on physical health. Since my project comes from and speaks to several disciplines, I try to avoid discipline-specific "jargon" and, when feasible, explain both methods and theory so that a non-practitioner could easily follow the arguments given. As such, what may seem elementary and unnecessary to 'spell out' might allow another scholar entré into the project.

Each field brings its own contributions to the project. Public health provides data on the physical reality of adolescent women's sexual health in the United States. It also teaches the methodology of how to analyze data and a wealth of information on how we study complicated social phenomena such as the intersection of beliefs and behaviors. Attitudes about adolescent sexuality are best understood by addressing not only demographic and public health scholarship, but also taking into account feminist theories and research on gender. For example, I provide a critique of the second demographic transition based, in part, on standpoint theory to articulate the concerns of women who may not have an academic voice with which to rebut. Standpoint Theory was originally articulated in 1983 by Nancy Hartsock and was born from the tradition (via Hegel and Marx) that oppressed groups have a unique viewpoint from which to critique and approach structures of power. Liberation theology, as articulated by Paulo Friere in *Pedagogy of the Oppressed*, holds similar ideas. Within the social science, it quickly became a method that foregrounds women's experiences and voices as unique and as essential to a more complete understanding of a given social phenomenon.

In addition, this project benefits from the concept of intersectionality as articulated by Kimberle Crenshaw and Patricia Hill Collins (Collins 1990; Collins 1998; Crenshaw 1989, Crenshaw 1991). Intersectionality provides a theoretical framework to understand the overlapping and intersecting nature of privilege and oppression and was articulated to conceptualize the problem of gender inequalities in relationship with other sets of inequalities, quite different than a focus solely on gender. They pointed out that looking only at sex was a limited and insufficient approach in understanding root causes of inequality

because identities are multiple: a woman is also a specific race, religion, class, sexuality, ability, etc. Although most women in the United States experience some level of disadvantage due to their biological sex, these effects are mediated by other markers of identity: sexuality, class, ability, religion, etc. Acknowledging that these markers affect women and men differently provides an important addition in *how* to understand variation in attitudes about sexuality, something that the SDT also investigates.

## Statement of Positionality

One well-known feminist critique of both the natural and social sciences is that researchers are sometimes taught to present themselves as disinterested observers who report "the facts" without acknowledging how subjective those 'facts' can be (Haraway, 1988; Harding, 1993). A valid question for this project is whether or not it is useful to bring together what might be considered "classically positivist" quantitative research with feminist inquiry. I would argue that it most certainly is if one is willing to suspend the idea that her results are "objective", in the sense that they are free from human bias. Certainly there are standards for how to reduce bias and to conduct research in statistically valid (and ethical) ways. But there is no absolute "neutrality" in research. This expectation is not realistic or even intelligible once we begin to consider what research is and how it proceeds. The questions we choose to investigate, our methods of investigation, the findings we chose to highlight, and our ways of interpreting the data are connected to who we are as individuals and as researchers (Jaggar 1997). Further, in a large scale national survey-based study, there are limitations of funding, survey length, adequate training for those administering the survey, the human interaction in

delivering the survey, the need for survey weighting (having one person represent many), among many others. Each of these represent areas where human beings, each with their own set of personal backgrounds, core beliefs, and underlying assumptions, make decisions about what information will be available for investigation.

Feminist research methods teach that there is no way to avoid the "I" entering the research, but also insists that this does not make research invalid. Indeed, to do otherwise would be to come to a rather paralyzing halt in the seeking of knowledge. Rather, this acknowledgment means that, along with following good scientific methods for reducing as much bias as possible, we should also remember that each author is the creator of the particular story that her research tells. The author, in turn, should work to uncover, acknowledge (even if only to oneself) and examine the particular history, biases, and assumptions she brings to the work. This acknowledgement, although itself a construct, may serve as a beginning of ethical research which also seeks to be emancipatory.

Although my goal is to explore rigorously factual data, my end agenda is to use that information for a political goal: to find ways to argue successfully for more effective sexual health programs in American public schools. My belief, shared with many in the feminist health movement and in the field of public health, is that it is unethical to keep individuals from information that can prevent harm and promote health. This belief may clash with other beliefs of the population I am studying, who I expect to find hold strong beliefs that it is immoral and harmful for adolescents to engage in sexual activity before they are married. Although there is a difference between information and permission, these two often tend to become conflated in discussions around sexual education. This debate over information as

harmful or as helpful is not a new phenomena (Weisman 1998; Morgen 2002; Norsigian 1996), but one that has been particularly strong in the last decade. In fact, under the George W. Bush administration, students actually received less information than their counterparts ten years earlier (Darroch, Landry, and Singh 2000).

One underlying goal of this project is to understand a bit more about the population who strongly believe it is wrong for adolescents to have hetero- or homosexual physical relationships while unmarried. In doing so, no doubt my own biases--which are toward the values of the second demographic transition--will appear. Yet I also hope to question my own values and those which may be implied by the idea of certain groups "transitioning" by applying feminist critical theory.

I do not undertake this project believing that I can change the minds of those who are strongly opposed; rather, my goal is to find a workable solution towards promoting greater sexual health for their youth, especially in regard to school-based sexual education programs. My definition of a positive sexual education program is one that provides adolescents with information, skills, and the ability to think through decisions regarding their sexuality and sexual behavior. Claire Brindis (2002), in a summary of the state of adolescent reproductive health policy in America, reminds us that investing in youth development and mentoring programs is not necessarily controversial and has been proven to be helpful in decreasing teen pregnancy. Even when parents are ambivalent regarding the content of sex ed programs, evidence shows that, "Equally and unambiguously, they supported the provision of life skills education to youth, and the development of negotiation skills, self-esteem and the ability to exercise informed choice" (Cui 2001, 144). The emphasis on teaching youth the concepts of

respect and responsibility in their dating and sexual lives that is promoted by the national youth-serving organization Advocates for Youth might also be a message that would be palatable to both ends of the political spectrum. Such skills and values would not necessarily contradict more conservative beliefs but could foster better health outcomes for adolescents.

## Instrument and Analysis

In order to understand more about attitudes about adolescent sexuality in the United States, I use exploratory factor analysis and ordinal logistic regression to analyze data from the National Survey of Family Growth (NSFG), a nationally-representative fertility survey run through the National Center for Health Statistics. Specifically, the research question centers around whether a person's fertility and family formation decisions can be used to predict to their attitudes concerning adolescent sexuality. I first describe the population who answer the question, "Is it all right for unmarried 16 year olds / 18 year olds to have sexual intercourse if they have strong affection for each other" in terms of their demographics, expressed values, and their own sexual and fertility decisions. Secondly, I conduct an ordinal logistic regression to examine the relationships between demographics, decisions, and attitudes concerning adolescent heterosexual activity.[14] The NSFG is broad in the range of questions it covers and includes variables for gender ideologies,[15] religious background and current practice, and value beliefs (e.g. gay adoption, divorce, and single motherhood), standard demographic markers, and extensive sexual health and fertility data. Together, these

[14] It should be noted that the question specifically addresses female – male intercourse so other forms of sexual activity or sexuality in general are unfortunately not able to be addressed through this research.
[15] e.g. question IH12: "Is it much better for everyone if the man earns the main living and the woman takes care of the home and family?"

variables should allow for a rich analysis of the interplay of one's own fertility behaviors and expressed beliefs regarding adolescent heterosexual activity.

## Research Questions & Hypotheses

The most important purpose of this work is simply to provide more information on populations who would disagree that adolescents have a right to be sexual with a partner once they have reached age eighteen. A secondary concern is to explore whether the theory of the second demographic transition is applicable to attitudes regarding adolescent sex in the US. The SDT provides a useful framework to explore the question of any possible shared characteristics among the population who disagrees that eighteen year olds should be able to have sex with a partner for whom they have strong affection. Thus, many of the specific hypotheses relate directly to those asked by the SDT:

> Hypothesis 1:
> If age at first marriage is related to attitudes about adolescent sex, then a respondent who marries for the first time at a younger age will tend to have a more restrictive attitude toward adolescent sex.

> Hypothesis 2:
> If age at first live birth is related to attitudes regarding adolescent sex, then a respondent who has a child for the first time at a younger age will tend to have a more restrictive attitude toward adolescent sex.

> Hypothesis 3:
> If age at first sex is related to attitudes regarding adolescent sex, then a respondent who has sex for the first time at an older age will tend to have a more restrictive attitude toward adolescent sex.

Hypothesis 4:
If induced abortion is related to attitudes about adolescent sex, then a respondent who has an abortion will tend to have a more permissive attitude toward adolescent sex.

Hypothesis 5:
If cohabitation status is related to attitudes about adolescent sex, then a respondent who has ever cohabited will tend to have a more permissive attitude toward adolescent sex.

Hypothesis 6:
If educational attainment is related to attitudes regarding adolescent sex, then a respondent who has less years of schooling will tend to have a more restrictive attitude toward adolescent sex.

Hypothesis 7:
If degree of religious commitment is related to attitudes regarding adolescent sex, then a respondent who reports a higher degree of religious commitment will tend to have a more restrictive attitude toward adolescent sex.

Hypothesis 8:
If age of respondent is related to attitudes regarding adolescent sex, then a respondent who is older will tend to have a more restrictive attitude toward adolescent sex than those who are younger.

Hypothesis 9:
If parity is related to attitudes regarding adolescent sex, then a respondent with a greater number of children will tend to have a more restrictive attitude toward adolescent sex than those who have fewer children.

## Significance of the Study

This study may be of interest to several areas of research. Demographers may find attitudes toward adolescent sexuality a helpful addition to the literature on the theory of the second demographic transition. Public health workers and scholars working toward reform of

school-based sexual education in the US might be interested in learning more about those populations who disagree that adolescents should engage in sexual activities, even at age eighteen. Finally, the study may be useful to the field of feminist health studies by providing a feminist critique of the second demographic transition and ideologies of how female fertility and family formation may influence attitudes toward adolescent sexuality.

## Conclusion

Understanding the opinions toward adolescent sexuality in the United States is important because attitudes underlie the planning, funding, implementation and evaluation of sexual education, behavioral interventions, and healthcare delivery for the adolescents. Understanding if these individuals tend to come from certain demographic groups or exhibit certain fertility behaviors themselves might shed light on how to argue successfully for sexual health programs that would be acceptable to their belief systems but still provide adolescents the knowledge they need for a healthy sexuality.

# THEORY and LITERATURE REVIEW

The theory of the second demographic transition (SDT), articulated in 1986 by Dirk van de Kaa and Ron Lesthaeghe, provides the theoretical framework to analyze and interpret the question of what influences US attitudes toward adolescent sexuality. The following chapter provides a brief history of the theory of demographic transition in order to understand the possibilities and limitations of the SDT within the disciplinary constraints and history from which it came. The chapter then turns to specifically feminist critiques of the SDT with a goal toward increasing the applicability and usefulness of the theory for answering why people might hold the attitudes they do regarding adolescent sexuality.

Feminist theory is, by its nature, critical theory—one that values not only the answers revealed through research, but also the knowledge gained through the examination of the specific questions we ask. Feminist theory 'looks under the bedskirt', as it were, to question the underpinnings of why certain research questions appear, when and where they do, and who benefits from the production of certain knowledges (Hartsock 1983; Haraway 1980; Collins 1990; Harding 1993; Jaggar 1997). In doing so, it helps to expose the assumptions about power and desire that may be imbedded within ways of studying sexuality and fertility as well as within the attitudes themselves (Martin 1991; Floyd Davis 1992; Inhorn 1994; Ehrenreich and English 1993). Two classic examples include Barker-Benfield's examination of rhetoric used to justify the use (and added expense) of anesthesia in the 19th century as a "kindness" which allowed women to keep their feminine qualities of modesty and decorum during birth (1975), and Emily Martin's exploration of the gendered stereotypes implicit

within the descriptions of the biological process of fertilization found in medical textbooks (1991).

Not simply a matter of a 'less-enlightened' past, twenty-first century theories that surround fertility and family-formation choices may also share gendered, racial, economic, and sexual assumptions that can be explored with the help of feminist theory. Ideally, this type of examination helps to refine existing theories into more questioning, self-aware examinations that shed light on both subject and researcher. It is my hope that the use of both the SDT and feminist theory will lead to more informed, reflexive, and productive conversations regarding adolescent sexual health in the United States.

## Demographic Transition Theory

As a field, demography is interested in marking and understanding movements within populations, and specifically with what influences the increases (through birth and immigration) or decreases (through mortality and emigration) of a given community. While decreases in population through mortality are usually fairly straightforward, the reasons why people willingly limit the number of children they bear has been a topic of great interest and speculation. This interdisciplinary literature has been developing for the past sixty years, and the summary that follows does not seek to represent the full depth of inquiry which has occurred, but instead is intended to provide a simple introduction to the topic.

First Demographic Transition (FDT)

Demographic Transition theory was first articulated between 1920 and 1950 as a way to understand the decrease in fertility rates in parts of Europe beginning at the turn of the 18th century. The theory of demographic transition describes the journey of a population as they moved from high levels of mortality and fertility to lower levels of the same (Thompson 1929; Landry 1934; Carr-Sanders 1936; Notestein 1944). Although articulated generally, the rate at which this process occurred varied within and between countries and at different rates among differing ethnic and linguistic groups (Lesthaeghe and Neels 2002).

The theory offers a method of conceptualizing demographic transition and, in its most generalized form, it visualizes societies progressing through three distinct stages. Societies in the first stage (typically pre-industrial) experience high rates of both births and deaths, which together lead to a type of natural balancing of population size. A society in the second stage begins to see a decrease in mortality; the reasons for the decrease are varied, but often include an increase in knowledge of sanitation and healing, increased food sources, and a decrease in war. At the same time, however, birth rates remain high, leading to a (temporary) increase in population. In the third stage, societies experience a drop in birth rates to match the decreased mortality rates; some proposed reasons for the decline include increases in educational opportunities and employment for women, rise in wages, decrease in subsistence agriculture, and urbanization. This fall in birth rates leads once again to a "steady state" in population size with a birthrate that roughly equals the deathrate.[16] The general move from

[16] This generalized pattern of demographic change was first put forth in the early twentieth century by four separate demographers: Warren Thompson in 1929, Adolphe Landry in 1934, A.M. Carr-Sanders in 1936, Frank Notestein in 1944 (Kirk 1996). This similarity among theorists who did not appear to know of all of the others' work does not necessarily substantiate the theory—certainly there are trends within academic thought that

pre-industrial societies with high rates of both birth and deaths to more industrialized societies with lower rates of births and deaths has been called "classical transition theory" (Greenhalgh 1995) or, to distinguish it from later transitions, "the first demographic transition" (FDT). All countries have begun this process of transition; most industrialized countries have completed it while less economically-developed countries continue to move through the second and third stages (Lesthaeghe 2010).

As will be discussed further with the second demographic transition, critiques of the FDT have charged that it does not adequately describe the non-European world (Teitelbaum 1975). Given that the data available to the original theorists came from European countries or countries with European descendents[17] (Kirk 1996), this critique of eurocentricity seems a valid one, at least in regard to its initial articulation. Even within the European context, however, the original articulation(s) of the demographic transition has explanatory weaknesses which later scholars have explored (Kirk 1996). First, there was little attempt at to explain why countries entered the first stage of transition in Western Europe (although this has been subsequently attributed to a later age at first marriage). Secondly, differences in natural fertility (i.e., fertility that is not constrained by contraception) among communities were not taken into account when anticipating the effects that new technologies may have on a community's fertility. Later research attributed this to differing proportions of fertile women in each community who were in union or married, different breastfeeding practices, and the existence of birth control use among some communities.

---

"enable" everyone to see more similarly. But, it does suggest that these patterns may have been an adequate description of observable changes in the European populations given the data then available.

[17] It should be noted that Thompson looked at India, Russia, and China, but found little evidence in Japan and almost none in Russia or China to suggest that they were moving through similar transitions, at that time.

Third, although classical transition theory posits that decreases in fertility always follow a decrease in mortality, there are several examples of fertility and mortality changing simultaneously or of fertility declining first (Lee 2003). In France, for example, the first demographic transition began much earlier than in peer countries, preceding industrialization or urbanization, and, far from being a result of development or economic growth, began when income levels were declining (Kirk 1996; Lesthaeghe and Neels 2002; Teitelbaum 1975). The large-scale European Fertility Study led by Ansley Coale at the Princeton Office of Population Research found the declines in fertility occurred at different stages of development and were not always strongly tied to socioeconomic conditions (Bongaarts and Watkins 1996; Coale 1986).

Finally, decline in fertility rates was not always tied solely to social and economic modernization (as originally posited by the FDT), but also to the homo- or heterogeneity of cultural or linguistic regions as shown through Lesthaeghe's in-depth study of fertility decline in Belgium communities (Lesthaeghe 1977). His examination of two communities that were geographically close showed varying levels of initial fertility as well as different starting points for fertility decline, despite similar socio-economic status. Instead of being linked to economics, declines were connected to the unique linguistic cultures of the communities: one French speaking (Walloon) and one Dutch (Flemish) (Kirk 1996; Lesthaeghe 1977), facts which suggests that more was in play causally which encouraged families to have fewer children than simply the comparative wealth of a community.

Disciplines such as religion, economics, politics, and history have critiqued and strengthened the description of demographic transition over the last fifty-plus years by

addressing some of the oversights of the original formulation. The field appears to have reached a consensus that population transitions, especially that of fertility, depend upon a different mix of contributing factors in each geographic specificity (Lee 2003). Although past research has indicated a variety of influences to be important in making this transition (including socio-economics, cultural similarities, cessation of war, modernization, and westernization), demographers have, thus far, been unable to predict with any certainty what exact combination of factors are necessary to "flip" a society from high levels of fertility to lower levels (Kirk 1996; Lesthaeghe and Surkyn 2004).

Although the generalized form of the FDT does not fit equally well across every population, culture, or time period, the very idea of the demographic transition acts as a useful generalization. It does so by providing a summary of the processes that happen with specificity (to country / area / language / ethnic / cultural group) in the vast number of nations around the world, at varying rates and with varying starting points. "In simplest terms, the theory has survived because no better theory has emerged to explain demographic behaviour in the modern world" (Kirk 1996). There does not appear to be a question, however, that even without knowing the exact mechanism of change, mortality rates have on the whole decreased and that fertility rates are following throughout much of the world (Lesthaeghe 2010).

The Second Demographic Transition (SDT)

The theory of the second demographic transition (SDT), as articulated by van de Kaa and Lesthaghe in 1986, suggests that many countries have achieved and moved past the low birth

and death rates of the third stage of the FDT to enter into a new type of transition,[18] characterized by:

- a return to later ages at first marriage
- higher rates of divorce
- lower rates of remarriage
- increased cohabitation
- increased extra-marital births,
- later age at first births
- low teen fertility
- higher abortion rates
- more efficient use of contraception
- higher rates of childlessness and
- below-replacement levels of fertility[19].

The theory, which was first used to describe the changes in select parts of Europe, has since been expanded to the United States and to other parts of the industrialized world, including recent work in industrialized Asian countries (Lesthaeghe 2010; Lesthaeghe and Neidert 2006).

*Characteristics and Timing of the SDT*

Markers of the SDT transition appeared in Northern and Central Europe in the mid-1950s, after the end of the baby boom, and have accelerated during the social changes of the 1960's

[18] Although there has been some question whether the SDT can be considered a true transition or simply a continuation of the FDT (Cliquet 1992), Lesthaeghe and Neels (2002) use historical records and attitudinal data to illustrate the that SDT moves in an opposite direction than the FDT in Western Europe (i.e. decrease in cohabitation found in the FDT is reversed in the SDT; high remarriage rates in the FDT change to remaining single after divorce or widowhood; the birthrate falls to and is sustained at below replacement level; rather than having children while at young ages, women postpone birth in the SDT, etc.). They further state that in the fifteen years since the introduction of the theory of the SDT, these trends have remained intact and have spread to other areas and subpopulations (see also Lesthaeghe 2010).

[19] It is important to note that even areas with sub-replacement fertility can experience population stabilization or growth through immigration (Lee 2003). This point has served as the backbone of many of the historical eugenics arguments where fears that a "native" population will dwindle and slowly be replaced by an influx of "outsiders" (who are usually deemed less desirable) bring about propaganda or policy or both to encourage the native population to strengthen its borders through increases in birth and 'disincentives' to the immigration of outsiders.

(Table 2.1). In a period of thirty years roughly spanning 1955 – 1985, these regions saw changes in family formation[20], including an increase in divorce and cohabitation and a change in cohabitation from a 'trial marriage' (preceding marriage to same partner) to an alternative form of couple (cohabitation as its own good) (Pairo 1997). Accordingly, there was an increase in births within cohabitating couples (the term "extra-marital" births, a rhetoric which continues to posit marriage as the norm, is also used to describe this trend). From the mid-1980s to the present time, declines in divorce rates and teen fertility stabilized, and rates of remarriage decreased as alternative forms of partnership increased (i.e. postmarriage cohabitation and living apart together (LAT[21]) arrangements).

**Table 2.1 Approximate Timetable of the Second Demographic Transition in Northern and Central Europe**

| | |
|---|---|
| 1955-1970 | Acceleration in increasing divorce rate<br>Baby boom ends (fertility and marriage duration decline)<br>Decline in age at first marriage stops<br>In some countries, an increase in "shotgun weddings" during the late 1960's |
| 1970-1985 | Cohabitation spread from Nordic countries to other European settings<br>Procreation within cohabiting unions / rate of extramarital births (but not total birthrate) rises<br>Less cohabitation ends in marriage |
| 1985-onward | Plateau in divorce rates<br>Post-marriage cohabitation and Living Alone/Apart Together arrangements (LAT)<br>Increase in fertility after age 30<br>Decline in fertility for teens stops |

Source: Data adapted from Solsona i Pairo 1997.

The SDT focuses on the "triple revolution in the West," which is composed of three different mechanisms of change: (1) structural / political (post-industrialism), (2)

[20] Family formation is used here to signify how one creates a "household": how one makes choices about who to be in partnership with, as well as, but not necessarily, choices regarding the bearing and rearing of children.
[21] Living Alone or Apart Together (LAT) is defined as being in a committed relationship but having separate living quarters (Bennett 2007). LAT arrangements include those who are "gladly apart", the "regretfully apart" (those who would prefer to live together, but do not due to work or family obligations), and the "undecidedly apart" (those who are committed, but have not yet made a living arrangement decision) (Roseneil 2006).

contraceptive technology (increased availability of information and different, user-friendly forms of contraceptives), and (3) sexual / cultural (a change in values which turn more towards self-expression than survival) (Lesthaeghe and Neels 2002). Although certainly all are important, it is this last—the change in values—which is the most relevant for this current research on attitudes toward adolescent sexuality.

*Values and the Second Demographic Transition*

Changes in fertility and partnership formation could be (and has been) seen simply as a continuation of the first demographic transition (Cliquet 1991). However, one important way in which the theory of the second demographic transition expands on the ideas of the FDT is by emphasizing the connection between these demographic changes and changing cultural, political, and religious values within Western Europe (Lesthaghe, Niedert, and Willaert 2007).

The first demographic transition focused on those values considered necessary to ensure survival– including a focus on meeting basic physiological needs, economic security, a heavy reliance on various types of social networks, what might be called traditional life course transitions (an expected movement into marriage followed by childbearing), and strong adherence to sex role assignments. The values of the FDT are well-represented by the bottom tiers of Abraham Maslow's "hierarchy of needs", often represented as a pyramid moving from basic biological necessities and the need for security at the bottom levels to higher order needs such as the need for love and belonging, esteem in the middle and, at the very top, the need for self-actualization (Maslow 1943). Maslow theorized that only as

individuals were able to feel secure about basic needs would they be able to develop and explore their own potential, creativity, and ability to question accepted norms.

In contrast to the FDT, the second demographic transition moves beyond what Maslow has termed "survival values" to instead privilege tolerance, expression, and self-actualization; individual autonomy in areas of ethics, economics, and society; rejection of authority; a concept of the future as "open"; non-traditional definitions of family and success; and more gender-egalitarian values (Lesthaeghe and Neidert 2006). This "silent revolution" (Inglehart 1971) is seen as underlying the fundamental shift in family formation in the West since the 1950's.

*The Second Demographic Transition and Worldview*

The second demographic transition predicts a connection between how people think about gender, family, religion, politics, and how they choose to form their own families. It is further grounded in an assumption that multiple value changes connect to a worldview, even if not a completely coherent one, that affects how a person chooses to form her family and / or reproduce. "Worldviews" are taken to be networks of beliefs and values which holistically may impact actions and decisions. It is certainly possible to hold divergent views on any number of topics (e.g. murder is wrong, but war can be right), and therefore there are no guarantees that because a person believes in X, they will behave in Y. Nevertheless, the SDT assumes that actions and life-decisions are connected to beliefs which harmonize with them, and that people act within a context of meaning that comes from the construction of a worldview. In this sense, there is assumed to be some real coherence between beliefs and

values and practical effects or outcomes. It remains a question, however, as to how extensive this coherence is or the most precise measures to approximate it.

Kristin Luker's (1984) work on activists both for and against legalized abortion is illustrative of the usefulness of the concept of worldviews. Luker posits that views on abortion are simply "the tip of the iceberg," helping us to see through one belief to an entire worldview. This worldview is a

> "internally coherent and mutually shared view of the world that is tacit, never fully articulated, and, most importantly, completely at odds with the world view held by their opponents…An interesting characteristic of a world view, however, is that the values located within it are so deep and so dear to us that we find it hard to imagine that we even have a "world view"–to us it is just reality—or that anyone else could not share it. By definition, those areas covered by a "world view" are those parts of life we take for granted, never imagine questioning, and cannot envision decent, moral people not sharing" (Luker 1984, 158-159).

It is this inability to put oneself in another's ideological shoes that Luker feels keeps the two groups, admittedly drawn from the extremes, from productive discussion around their common issue. Instead, both sides feel beleaguered and defensive by what they see as troubling changes in the world around them. This sense that attack is coming in large and small ways from the larger society produces a feeling that one's very being–the essential beliefs that cause everything else to make sense—are being threatened.

This "divide," as it were, between two dominant and opposing worldviews seems to be especially strong in the United States (as captured by the oft-used terms "culture war" or "red and blue states") and is related to beliefs about gender, sexuality, and the family. Within school-based sexual education debates, for example, it materializes as the often non-transversable division between those who promote Abstinence Only until Marriage programs and those who advocate for more comprehensive sexual education. Thus, it was of interest to

demographic transition theorists to see if the SDT could be applicable to the US, or if "American exceptionalism" would present a different case.

*Second Demographic Transition in the United States*

In April 2007, Ron Lesthaeghe, Lisa Neidert, and Didier Willaert presented research exploring the relationship(s) between fertility, family-formation behavior, and voting behaviors at a conference on "The Christian Conservative Movement and American Democracy[22]." They utilized the theory of the second demographic transition as a framework for understanding how values in general, and voting behavior in particular, relate to fertility and family formation decisions. Findings from their research suggested that counties in America whose populations voted for George W. Bush in the 2004 election tended, on average, to remain within the first demographic transition. This was illustrated by an earlier age of first marriage, earlier age of first childbirth, higher percentage of adolescent childbearing, and higher total children (parity). Many of these same characteristics may be found in the population that holds more restrictive attitudes toward adolescent sexuality.

Those who voted against George W. Bush, however, were well described by the second demographic transition with higher rates of cohabitation, sub-replacement fertility, and abortion, later ages at first marriage and first childbirth, and lower teen fertility[23].

---

[22] The Christian Conservative Movement and American Democracy conference was held April 27-29, 2007 in New York and was co-organized by Drs. Steven Brint of University of California, Riverside and Dr. Jean Reith Schroedel of Claremont Graduate School.

[23] Interestingly, Lesthaeghe found that divorce rates were not positively correlated with the SDT in the United States although they are predictive in Western Europe. He credits this to two factors: that rates for divorce in the U.S. began to rise in the 1940's (earlier than in Europe) and that states who are predominantly Catholic kept the overall divorce rate lower (Lesthaeghe and Niedert 2007).

As Lesthaeghe documented in the FDT, differences in economics, regions, and cultural groups affect the rate at which the SDT occurs within different populations in the US. Because the US has a greater amount of regional, economic, and ethnic heterogeneity than most European countries, however, Lesthaghe and Neidert found a divergence in the demographic transitions of two populations with one group moving solidly into the SDT while other groups struggled to attain the low birth rates of the final stages of the first transition. Lesthaeghe and Neidert labeled the population still within the FDT "vulnerable women and children[24]" and provided markers of membership: high teenage fertility (among black & white), high non-marital fertility, high divorce, and grandparental households responsible for grandchildren. Thus, while the majority of the American population moved slowly toward a second demographic shift (with higher rates of cohabitation, higher age at first marriage, childbirth, higher rates of abortion, etc), there were "pockets" of accelerated transition toward the SDT as well as pockets of those who remained firmly within the FDT (Lesthaeghe and Neidert 2006).

### Usefulness of the Second Demographic Transition to this project

Use of the SDT helps analysts connect fertility and family structure decisions to possible worldviews. Thus, understanding who cohabits and who does not, who marries in their early

[24] The language of "vulnerable" populations tends to be a health-based one: meaning that a population is determined through research to be more likely to experience a negative health outcome. It is not necessarily meant as a pejorative term although these groups are also often thought of as "high risk", which carries more of a connotation of personal choice – e.g. the decision to smoke. The rhetoric of "vulnerable" and "high risk" can be viewed as somewhat problematic given that these populations are often made vulnerable through structural inequality. Because structural inequality is often beyond the control of public health professionals, however, they tend to focus on "reducing the risk" for populations known to be "vulnerable" to disease. Thus, in this example, women who have more children out of legal marriage are considered to be "vulnerable"; regardless of the fact that they might be barred from legal marriage to their partner. In my opinion, this does not invalidate the idea of using "vulnerable" populations as a comparison group, but the language should also lead us to ask why certain groups are more likely to find themselves in a vulnerable position.

twenties, who never marries, who has four children and who has one, can, according to the SDT, be tied to beliefs regarding gendered and sexual social issues such as abortion and gay adoption. The SDT provides one way to examine whether the assumptions that seem 'natural' to make about populations who might oppose adolescent sexuality: that they are politically and religiously conservative, that they have larger family sizes, a lower level of higher education, and that they tend to conform to social norms regarding an 'ideal' life course are indeed reflected in their stated attitudes If we accept the assumption that behaviors and values are connected, our research question concerning attitudes toward adolescent sexual activity can be explored by looking at which of the markers of the second demographic transition influence attitudes and to what extent.

Even critics of the SDT acknowledge its usefulness as both a methodological tool and a unifying framework for understanding the interplay between beliefs and fertility and family formation behavior (Kirk 1996). Like any theory, however, it is not without its potential drawbacks or limits. The original articulation of the SDT does not appear to be overtly prescriptive (calling for certain behavior) or proscriptive (calling for other behavior to be forbidden or rejected), but rather descriptive, an articulation of what is seen. As with any description, however, what is "seen" often depends on the observer and the particular context(s) of both actor and object. Put simply, what we see is at least partially determined by who we are; this is not something to be mistrusted as much as acknowledged and accounted for. The concept of the second demographic transition, like any theory, comes from a particular discourse with particular biases and aims which can be outlined and discussed. I offer, in what follows, a few critiques in an attempt to elicit the assumptions at

work in the SDT, assumptions which themselves may express beliefs and be imbedded in worldviews they are seeking to represent and describe. Even that which describes is rich in assumptions (Martin 1991).

This type of work is also necessary because theories seldom remain apolitical. Given the history of eugenics in the United States especially, any idea which seeks to look at the fertility decisions of certain groups in comparison with the fertility decisions of "other" groups *should* be held to rigorous inquiry since "scientific" theories of fertility have historically been connected to theories of race that provided the basis for policies of colonialism, slavery, sterilization campaigns, and other abuses of human rights (Ross 1998). Members of populations that have historically been denigrated by such theories tend to be especially suspicious of theories and policies regarding fertility decisions, and rightly so. One has only to look at the recent billboard campaign in Georgia comparing abortion provision for African American women to eugenics (Dewan 2010) or to listen to groups decrying the decrease of white populations through the "demographic winter"[25] to see the troubled past of population science having very real repercussions today (Joyce 2006).

I would like to sketch three interconnected concerns that I see in the use of the SDT for a feminist project: (1) the potential for the SDT to be read as a progress narrative; (2) the

[25] The term "demographic winter" has been used to represent the idea that failure of "Europeans" (read: whites) to reproduce themselves will eventually lead to a collapse of, without putting too fine a point on it, civilization as it is currently known. It presents arguments against the disintegration of the nuclear, traditional family seen in the increased rates of cohabitation, divorce, single parenting, and the decision to not have children (often blaming it on selfishness of potential parents). It also usually contains the idea (explicitly stated or not) that the wrong groups are reproducing and that not enough of the "right" babies being born. For examples of these arguments, one might view the trailers for the films "Demographic Winter: The Decline of the Human Family" and its sequel, "Demographic Bomb: Demography is Destiny" (http://www.demographicwinter.com/index.html) or read more about the Quiverful Movement which sees children as "arrows for the war" against the ungodly (Joyce 2006) or explore the rhetoric around immigration reform.

implicit presentation of larger family sizes as pathology; and (3) the question of "choice" vs. structural inequality. In conclusion, I will also speak briefly about what is excluded when using the SDT as a theoretical framework for this particular research project.

Given its focus on moving beyond the values of the first demographic transition, the SDT can easily be read as a progress narrative, where development to the "next stage" is viewed as superior to the first and as a moral or ethical good. Although there is academic and policy activity around how to address the different population composition resulting from the SDT (e.g. "the graying of America"), movement to the SDT with its net decrease in human population seems to be viewed as a superior stage of development and an overall good for individuals (who are more free to focus on "higher order" needs), the nation (who can focus resources on improving quality of life), and the planet (whose resources can be used at a more sustainable level).

If population decrease is accepted as a natural good, then groups who 'fail' to transition become important beyond their role in strengthening a statistical model. Although the authors of the original articulation of the SDT never point to those who remain within the FDT as failing, it is not difficult to see where others might. It is readily apparent that these groupings are strongly informed by economic class and race / ethnicity. Although the association between "less developed" populations and "non-white" or "non-western" populations has a long history, it is an especially pertinent one within the United States given the large disparities in wealth and continued racial discrimination among its citizens. That Lesthaeghe and Niedert limited part of their analysis to non-Hispanic whites to control for the effects of race/ ethnicity makes it clear that it is not simply choices of individuals that

determine whether or not one will "advance" to the SDT. Rather, persistent structural inequality, along with ideological differences (such as the value of larger families, see below) become an important part in predicting what groups might be labeled as "succeeding" or "failing."

A subsequent question / danger in narratives of progress is what one is to do with the populations who have failed to change. The question of why certain groups move forward has the potential to move beyond a neutral description of a social phenomenon into goal-oriented action: how do we bring those who are 'lagging behind' to an acceptable level of development? This becomes apparent when one takes even a brief closer look at the history of demography and its use in population policies. Perhaps not surprisingly, demography has been of interest to, and influenced by, the field of economics, specifically the concept of "rational actors" (most notably, Gary Becker and his "New Household Economics" 1960, 1991) and has been intimately connected to population policies (Greenhalgh 1995):

> "However, the two groups [demography and economics] differ in the significance they attach to cultural constraints versus rational choice in explaining fertility behavior. . . . The differences in their policy recommendations arise from these diverging preoccupations so that transition theorists have sought to promote the idea and practice of family planning methods as enabling conscious choice as an aspect of reproductive behavior, while economists have prioritized the creation of economic incentives which promote lower fertility preferences and outcomes" (Kabeer 1996, 10).

Clearly, the difference between increasing one's options and 'encouraging' one's cooperation is an essential one; the first increases freedom and choice while the latter attempts to limit both, often through economic incentives to "choose" one option over another. For example, this difference can be seen between policies which provide information, access, and programs

regarding sexual health to all youth and policies that encourage the sponsoring of long-acting reversible contraceptive methods for "high-risk" (read: African-American and Latina) youth. Clearly, the potential exists to truly assist populations, but "help" should be carefully monitored to keep the expressed needs of the populations paramount.

Even given the important difference between increasing options and coercing choices however, it is important to note that the goal of both often remains the same: assisting, as it were, all cultures to achieve smaller family sizes through increased "development", often through plans for modernization or democratization. Those who resist this movement toward smaller family sizes are often seen as aberrant and in need of intervention.

Feminist demographers have commented on the underlying assumption within the larger field of demography that women who have been provided with the proper education appear naturally to want fewer children (Janssens 2007; Dygert 2000; Kabeer 1996). In an article discussing fertility, culture, and Mexican American women, feminist critic Dygert indicts population science for viewing large families as pathological. Not stopping there, she also points out that although western feminists have expanded the debate and discourse surrounding fertility control, too often it is through the lens of increasing access to birth control methods: "most importantly, the focus on male control of female bodies within the private sphere has made it difficult, if not impossible, for mainstream feminists in the United States to consider that women might actually want more than 2.2 children" (Dygert 2000, 2).

Here is where a feminist lens becomes especially useful since it urges scholars, myself included, to push beyond what can be widely-accepted discourse (e.g. that smaller families are a more responsible choice) or personal beliefs (e.g. that children have a better chance of

quality experiences within a smaller family) to examine the underlying assumptions of the worldview at work—that poverty and limited options are due to individual choices and not connected to larger social forces.

Dygert goes on to argue that systematic inequalities and not one's family size are to blame for food shortages, the lack of a livable minimum wage, limits in affordable and safe housing, and access to resources such as clean water or education. Thus, while using sub-replacement family size as a marker of a successful transition into the SDT is methodologically useful, it can also represent a specific way of envisioning that which is ideal and holds real implications for the lived experiences of individuals, families, and communities.

In this section, I have spoken about two different uses of the word "choice" thus far: the "choice" that is not a choice (e.g. federal subsidizing of Depo-Provera or sterilization for low-income populations) and a choice that truly does broaden options, but still promotes one outcome over another (e.g. the promotion of a variety of birth control options rather than the promotion of low-cost daycare, flexible work schedules and family leave in addition to contraceptive choices), I would like to look at one further concept of choice – one that I think approximates whether a choice is a genuine one—and that is the opportunity to decline the services offered.

Lesthaeghe and Niedert's two categories of SDT vs. "vulnerable women and children" may provide a nice example of this choice to decline. It may well be that some individuals may remain in the first demographic transition due to lack of opportunity and some may remain *despite* the opportunity. For example, there are many in the US population for whom

abortion is not readily available due to lack of geographic availability, lack of insurance coverage, cost of the procedure, anti-abortion stigma in their communities or families, or because of logistical difficulties (time away from work, paying for a hotel room or childcare) in states where a 24 hour waiting period is mandated. Then there are populations for whom availability (financial or geographic) is open, but they chose not to use abortion as an option to prevent childbirth, usually due to a belief that abortion is the equivalent of murder, and thus morally wrong (Luker 1984). Within Lesthaeghe and Niedert's analysis, both of these populations would fall into the dichotomous category of choosing not to abort, but for very different reasons. The authors have provided some of this distinction by noting that populations seem to fall into four groups when markers of the SDT and vulnerable women and children are graphed. It seems important to continue to tease out which groups are not able to access services or opportunities due to structural constraints and which groups have open access in a material sense, but choose not to participate. One first group deserves social justice – the fighting for equal access to services so that they can truly move into a position of choosing while research with the second group could focus on better understanding and clarifying for others the reasons why they make the choices they do.

### What is missed within the theoretical framework of the SDT?

The use of the SDT is both appropriate and useful given my data set and research question, but my decision to utilize both have shaped this project in specific ways. I would like to note briefly a few of the valuable discussions around adolescent sexuality that slip out of frame when focusing on this approach. This is intended in part to illustrate that even a well-

conceived and well-implemented research agenda must, by its very plan, always omit or "miss" some perspectives.

Feminist projects value the personal as well as the analytic and are ever aware of the danger of misrepresenting the subject of study, the real people whose lives we re-present. Choosing to work with nationally-representative quantitative data greatly limits the ability to hear the voices of adolescents themselves. Although 15-19 year olds are included within the dataset, and are in fact oversampled to make sure that sub-analyses on their experiences can occur, there is simply no way to ask about the qualitative experiences they have. We cannot find out how adolescents feel about sexuality in general, and their own sexuality in particular, nor about how the gendered and social roles prescribed for young women and men affect how they view their bodies, dating, or potential partners. We cannot ask how they process the squeamishness so many adults show around sexuality, how they understand the silences about the healthiness of desire, or how they process the social costs to those who do exhibit desire, especially if they are female. We can answer whether or not adolescents themselves approve or disapprove of adolescent sexual activity, but not how they process or experience sexuality.

Nor can this lens help us explore how parents process and make sense of the sexuality of their children. Although this research will document whether parents tend to be more accepting or more restricting of adolescent sexuality, it does not allow us to understand how they came to these decisions or why they believe what they do. It does not answer whether their view is one with which they have struggled or whether it is one they accepted as a given and did not question. Nor does it provide information whether parents feel or speak

differently dependent on the sex of their child; do parents want different things for their daughters than they want for their sons when it comes to sexuality? Although we have some proxies (e.g. a measure of religious attendance), we have no direct articulation of whether parents formed their opinions based on their religion beliefs, a view of adolescents as developmentally immature, their own positive or negative sexual experiences, or any other number of influences.

Access to health information, especially concerning one's own body, has been an essential part of the feminist health movement over the last century in the United States. Viewing knowledge as liberatory and not as something which corrupts, feminist activists have continually pushed for greater access to education for women and other groups who have traditionally been barred from it. Although the information gained through this research project will be used to argue for greater access to health information for adolescents, this particular project does not deepen our understanding of the politics of promoting healthy sexuality for adolescents. Clearly, youth-serving organizations have their own views of what is healthy for adolescents which affects the information and services they offer. An exploration of how youth are often caught between the politics of the right and the left and the issue of local control of schools would be a valuable addition to a discussion on how to improve the sexual health of adolescents.

This research also does not add to cultural critiques of dominant messages surround adolescent sexuality; these messages are most often directed to female adolescents who often carry the burden of our society's conflicted relationships with sexuality. Conceptions of gender, power, and sexuality are writ large on the bodies of adolescent girls, and we punish

them harshly when they step out of line. The rhetoric regarding the "epidemic" of teen pregnancy in the United States, for example, has tended to depict teen mothers as a particular type of failure – one that predicts bleak possibilities for their educational and career opportunities and the less-than-ideal outcomes for children. While I would agree that teen parenthood has the possibility to limit lifepaths for young women, the dominant rhetoric excludes other ways of understanding the choice of adolescent motherhood. Rarely is there mention of the joy a young mother might take in her child or around community support of young parents.

All of these topics would increase understanding of attitudes toward adolescent sexuality, something that is essential to changing the sexual health outcomes of US youth. Nevertheless, the use of the theoretical framework of the second demographic transition and the data of the National Survey of Family Growth does allow a targeting of groups for more in-depth research. Knowing who approves or disapproves of the sexual activity of older teens provides a useful place to support further inquiry.

# RESEARCH DESIGN and METHODOLOGY

This chapter discusses the methods used to explore what characteristics or behaviors of an individual are related to their attitude concerning the acceptability of unmarried adolescent sexual activity. Using data from the National Survey of Family Growth (NSFG, Primary Investigators: US Department of Health and Human Services and the National Center for Health Statistics), a nationally-representative fertility survey run through the National Center for Health Statistics, I use exploratory factor analysis and ordinal logistical regression to examine the relationships between demographics, decisions, and attitudes concerning unmarried adolescent sexual activity. This chapter discusses the study design and methodology in depth and is organized into the following sections: (1) Introduction to the Data Source, (2) Selection of Participants, (3) Data Collection, (4) Instrumentation, and (5) Data Analysis.

## Introduction of Data Source

The National Survey of Family Growth (NSFG) is a sex-stratified, multistage area probability sample of household populations aged 15 – 44 years which is used in academic, governmental, and private settings to provide information, to form policy, and to plan health and social service programs (Groves et al. 2005). As a nationally representative survey, the NSFG covers all fifty states and Washington D.C. with the design of the survey specifically intended to provide representative data for the nation as a whole. The NSFG has run since the early 1970s, with cycles in 1973, 1976, 1982, 1988, 1995 and 2002. The seventh cycle began in June

2006 and marks the beginning of a rolling survey where research, analysis, and publication will occur continuously. The data from the 2006 survey is anticipated to be available in spring 2010.

This project deals specifically with data from the sixth cycle (2002), the most recent available and the only cycle thus far to contain questions on attitudes about adolescent sexuality. The largest survey to date with 12,571 respondents, the 2002 cycle was also the first to include male respondents (n=4928) as well as female (n=7643). Although core questions remained the same through all five cycles, several topics have been added as researchers became aware of their importance to fertility. In the sixth cycle, along with standard questions regarding sexual activity, contraception, childbearing, and partner status, questions about sexually transmitted infections, attitudes toward gender and sex roles, and the ways in which fathers interact with their children were also included (Groves et al. 2005). Additional variables include whether or not the respondent feels it appropriate for unmarried teens to have heterosexual intercourse, multiple measures of religious affiliation and value statements, and multiple measures of sexual decision making and behavior. The range of questions and variables make the NSFG an ideal survey to examine if the tie between beliefs and fertility behaviors suggested by the second demographic transition (Lesthaeghe and Neidert 2009, 2006, 2005; Lesthaeghe and Surkyn 2004; van de Kaa 2002) will be echoed in opinions regarding the appropriateness of unmarried adolescent heterosexual activity.[26]

[26] Please see Appendix A for a discussion of other national surveys in the United States which deal with adolescent sexuality or reproduction and why I felt the NSFG was the most appropriate data source given my research question.

## Selection of Participants

The NSFG was designed as a fertility survey meant to provide national level data on topics that affect birthrate such as contraception, abortion, birth and adoption, infertility, family formation, and sexuality and therefore samples individuals of average reproductive age, 15 – 44 years old. The NSFG is stratified by sex and oversampled[27] the following populations in order to have sufficient numbers to conduct comparative analyses: women, adolescents aged 15-19; young adults aged 20-24, and Americans of African and Hispanic descent (Groves et al. 2005). For a detailed description of the sampling procedure, please see Appendix B.

The final sample of the NSFG resulted in a total of 12,571 completed interviews with a response rate of 80% for the females, 78% for the males, and 80% for adolescents 15-19 (Groves et al. 2005). The 12,571 participants include 7,643 total women, 4,928 total men, of whom 2,460 were

**Table 3-1: Descriptive Statistics of Sample (n=12,571)**

| Variable | Mean or % |
|---|---|
| Age | 30 yrs. |
| Sex | |
| Female | 50% |
| Male | 50% |
| Race & Ethnicity | |
| Hispanic | 16% |
| Non-Hispanic Black | 13% |
| Non-Hispanic White | 66% |
| "Other" | 6% |
| Avg.% of Federal Poverty Level | 277% |
| Education | |
| Did not graduate HS | 22% |
| HS graduate | 30% |
| Some College | 20% |
| College Degree | 20% |
| Advanced Degree | 6% |
| Ever Married | 54% |
| Ever Cohabited | 49% |
| Ever Married or Cohabited | 70% |
| Current Marital Status | |
| Married | 44% |
| Never Married | 46% |
| Widowed, Divorced, Separated | 10% |
| Have given birth to child | 53% |
| % of those ever preg who induced abortion at least once | 21% |
| Urban /Rural | |
| MSA, central city | 49% |
| MSA, other | 33% |
| Non MSA | 18% |
| Current Religious Affiliation | |
| Protestant | 47% |
| Catholic | 29% |
| No religion | 16% |
| Other religion | 8% |

[27] One of the strengths of quantitative research is that it allows a researcher to test whether one group is statistically different than another; for example, are college-educated women more likely than women with a high school diploma to believe that gay marriage should be legalized? To answer these questions accurately, however, it is necessary to meet mathematical requirements regarding the minimum number in each subgroup (e.g. college-educated women) within the statistical analysis. "Oversampling" allows a researcher to recruit more members from subpopulations they wish to study so that there can be sufficient numbers for statistical analysis. This has been especially important to researchers wishing to study the effects of race and ethnicity since the largest minority groups in the United States, non-Hispanic blacks and Hispanics, still only make up roughly 13% and 16% of the US population.

black women and men, 2,712 were Hispanic women and men, and 2,271 were adolescents. The initial goal of 12,500 interviews was determined based on cost and on interviewer availability and was met, as were the subgoals of 2000 interviews each to be conducted with adolescents, black, and Hispanic populations. A minimum requirement of 7,500 interviews with females was also met (Lepkowski et al. 2006).

Racial identity and Hispanic ethnicity were measured according to United States Census definitions with 66% non-Hispanic white, 16% Hispanic, 13% non-Hispanic black, and 6% non-Hispanic "other." At the time of the survey, 44% of the population were married, 46% were never married, and 10% were widowed, divorced, or separated. Fifty-four percent had ever married, 49% had ever cohabited, 70% had ever married or cohabited and 53% had given birth to a child. Of those who had ever experienced a pregnancy, 21% reported they had induced abortion at least once. In regard to the highest level of education achieved at the time of the survey, 22% percent of the population had not or had not yet graduated from high school, while 30% were high school graduates (or received their GED), 20% attended but did not graduate from college, 20% received their bachelor's or associate's degree, and 6% received a master's, professional, or doctoral degree. Residentially, 49% lived in a central city, 33% lived in a suburb, and 18% lived in non-metropolitan areas. Religious affiliation included 47% Protestant, 29% Catholic, 16% non-religion, and 8% non-Christian religions.

### Data Collection

The actual data collection was done in-person and in several phases by over 200 female interviewers between mid-March 2002 and February 2003. These interviewers were trained

and assigned to team leaders who provided guidance throughout the data collection period. The entire interviewing process was also aided by software packages (SurveyTrak, WebTrak, and TLTrak) where records and comments concerning each household contact or interview were entered and centralized for a team leader to review, allowing the process to be recorded and easily responded to. This iterative process allowed for adjustments—such as the sampling of one demographic group over another at the household level—to happen as necessary throughout the interviewing (Groves et al. 2005).

Contacting the Household

Each selected household ("sampling line") received through the mail an introductory letter and materials explaining the survey in both English and Spanish (Appendix C). Interviewers then went to the household in person. If an individual answered the door and were willing to participate, the interviewer administered a short screening survey which determined 1) if there were eligible members in the household and 2) which household member would be selected to interview. If there were no appropriate household members, the interviewer thanked them for their time and moved to the next house on the list. If the household member selected were home and willing to participate at that time, the interview took place. If no one answered the door, interviewers left a letter stating that they had been there and would return. If the selected household member was not home, the interviewers scheduled a convenient time to return. Respondents were given information about the survey, were assured that they were not required to take part in this study and that their responses would be kept confidential. To honor this agreement, some of the identifying markers (such as the

geographical location of the respondent) have been removed from the data set made available to public researchers. If they agreed to participate, respondents were asked to sign a consent form (Appendix D). Participants under the age of 18 were also required to obtain the written consent of their guardians before the interview took place (Groves et al. 2005).

Interviews

The face-to-face interviews, which averaged 80 minutes in length for females and 60 minutes for males[28], were completed with the assistance of laptop computers in a procedure known as CAPI (Computer Assisted Personal Interviews). In addition, questions where respondents might be hesitant to answer (such as number of sexual partners or history of sexually transmitted infections) were conducted via audio computer-assisted self-interview (ACASI). ACASI allows respondents to enter their answers to sensitive questions directly into the computer without verbalizing answers to the interviewer, increasing the chances that the answers given were accurate and not tailored to appear more socially acceptable. Because interview answers were entered directly into a laptop, each completed survey was easily uploaded to one central database (Groves et al. 2005).

## Instrumentation

Survey Construction

The initial survey was based on the five previous NSFG surveys and modified in several ways

[28] Although the majority of the survey questions were the same for both females and males, females were also asked additional questions, including those regarding pregnancy and birth. Thus, interviews lasted an average of 20 minutes longer for females. Respondents were offered a forty dollar incentive payment for completing the interview.

at different stages in the testing process. First, because cycle six was the first year that men were included in the survey, the questions were altered or added to also accommodate male respondents. The initial survey was then pre-tested on a small population and was determined to be too long for most respondents (resulting in a low response rate) and the design too complex for all interviewers to master during their relatively short training period of approximately one week. The final survey was made shorter and more simple and then retested successfully. Secondly, the survey was translated into Spanish. Care was taken that the Spanish version was translated by and understandable to Spanish speakers from Puerto Rico, Mexico, and South America. Once the survey was translated and finalized, it was entered into Blaise, a computer survey program that allows for "smart surveying", automatically skipping questions not applicable to the respondent, changing wording to fit the respondent when necessary, and tagging inconsistent responses (Groves et al. 2005).

Measures

The NSFG contains only closed-ended questions with continuous variables that run through an ordered range (e.g., age at the time of the survey= '15', '16', '17' , '18'), categorical variables that are "grouped" into categories (e.g., age at time of survey= '15-19', '20-24', etc., or types of birth control: 1=oral contraceptives, 2=male condom, 3=IUD), and dichotomous responses variables that only have two answer choices (i.e., most commonly "yes" or "no") along with a small series of Likert scales (1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree) to measure attitudes toward selected topics.

## Data Analysis

This research project explores the question of what characteristics or behaviors of an individual might be related to their attitude concerning the acceptability of unmarried adolescent sexual activity. Independent variables were chosen based on research on the second demographic transition. The number of independent variables with a high internal level of correlation (i.e., how related the variables were to each other) were reduced through exploratory factor analysis in order to create a stronger model. Results were then tested against the outcome variable, measuring the change, if any, in attitudes toward unmarried adolescent sexual activity dependent on the age of the adolescent. Ordinal logistic regression was used to account for the ranked categorical nature of the outcome variable and allows us to test the relationship of each independent variable to the outcome variable, while controlling for the effects of all other independent variables in the model.

The analysis was run on SAS and on MPlus to account for the complex survey design of the dataset. SAS is well-equipped to run regression analyses for a large sample size and the survey commands correct for the design effect of clustering, stratification, and post-stratification weighting utilized in the National Survey of Family Growth (Siller and Tompkins 2005). SAS, however, is not well-equipped to properly account for the mix of ordinal and dichotomous independent variables during data reduction so MPlus was utilized for the exploratory factor analysis (EFA).

Variables

*Dependent Variable*

The dependent outcome variable measures the respondent's attitude about adolescent sexual activity and whether it changes depending on the age of the adolescent. It does so by combining two individual questions where respondents were asked to give their opinion on the statements: (1) "It is all right for unmarried 16 year olds to have sexual intercourse[29] if they have strong affection for each other" and (2) "It is all right for unmarried 18 year olds to have sexual intercourse if they have strong affection for each other." Answer choices included: strongly agree (SA)=1, agree (A)=2, disagree (D)=3, strongly disagree (SD)=4. Thus, the higher the score, the more likely the respondent is to disagree that adolescent sexual activity is acceptable. For those not ready to express an opinion, alternative answer choices included: I don't know=8, refused=9, and if the respondent insisted, neither agree nor disagree (N)=5.

**Table 3-2: Combined Scale for Dependent Variable**

| | Age 16 | Age 18 | % of total | |
|---|---|---|---|---|
| Neutral or Positive at both ages | Strongly Agree | Strongly Agree | 1.02 | 17.8% n=2350 |
| | Agree | Strongly Agree | 2.53 | |
| | Neutral | Strongly Agree | 0.13 | |
| | Agree | Agree | 12.48 | |
| | Neutral | Agree | 1.01 | |
| "Swing Vote" | Disagree | Strongly Agree | 1.33 | 38.1% n=4750 |
| | Disagree | Agree | 28.24 | |
| | Strongly Disagree | Strongly Agree | 0.77 | |
| | Strongly Disagree | Agree | 7.39 | |
| Negative at both ages | Disagree | Disagree | 14.5 | 42.1% n=5072 |
| | Strongly Disagree | Disagree | 14.98 | |
| | Strongly Disagree | Strongly Disagree | 12.16 | |

In order to capture the change or consistency in attitudes between the two ages, the

[29] No definition of sexual intercourse was provided within the wording of the question so respondents were left to define the term for themselves.

scales for age 16 and age 18 were combined to create an ordinal variable (Table 3-2; see Appendix E for the percent distributions for the original 2 questions). The new outcome variable measuring change or consistency in attitude contains three categories:

1. "Consistently disapproving": disapproving at both ages (n=5072, 42.06%).
2. "Swing vote" which marks a change from disapproving at age 16 to approving at age 18 (n=4750, 38.10%), and
3. "Consistently approving": neutral or approving at age 16 and approving at age 18 (n=2350, 17.82%),

The regression analysis was modeled with "consistently disapproving" as the reference category so that higher scores meant a given subpopulation was more likely to disapprove and lower scores meant a subpopulation was less likely to consistently disapprove of adolescent sexual activity.

Three groups of individuals were dropped from the analysis due to their responses to the questions listed above. First, all 'refused' and "don't know' responses (unweighted n=26) were dropped in order to include only those participants who stated an opinion regarding adolescent sexual activity. Second, an initial fourth category, "undecided," captured those who were neutral, disagreed, or strongly disagreed at age 16 and were neutral at age 18. When looked at through stratified analysis, these answers seemed to legitimately constitute a separate category, sometimes grouping well with the approval group, sometimes with the disapproving group, and sometimes with neither. Given the small number of individuals within this category (n=266, 2.0% of the sample), however, it was not possible to include them as a separate category in the analysis. They were dropped entirely rather than artificially attributing their neutrality to either approval or disapproval[30]. Finally, those who

[30] A discussion of the "Undecided" group is included within the frequency analysis in the findings chapter.

provided answer combinations which suggested a misunderstanding of the question (i.e answer combinations which expressed that sex is acceptable for younger adolescents [age 16], but unacceptable for older adolescents [age 18]) (n=107) were dropped from the analysis. All excluded answers accounted for less than 3% of the data, leaving 97% (n=12,172) of the total respondent population (n=12,571) eligible for further analysis.

*Independent Variables*

Independent variables chosen for the final analysis included markers of the second demographic transition such as whether the respondent ever married, ever had a biological child, ever cohabited, degree of religious commitment, level of education, and whether or not children under the age of 18 live in the respondent's household. Variables for age and Census-defined race or ethnicity are also included (see Appendix F for a table of variables with description and measures). Independent variables which were not included in the final analysis, but which were included in initial analyses as further markers of the second demographic transition include age at first marriage, age at first childbirth, respondent's income, and whether or not the respondent have ever had an abortion. The reasons why these variables were excluded from the final analysis are varied and are detailed within the findings and discussion chapters.

*Marital and Birth Status*

The valuing and the stability of the marital home is a key difference between the first and second demographic transitions. While marriage and then family was a cornerstone of the FDT, flexibility of partnering and parenting arrangements characterize the SDT (Lesthaeghe

and Neidert 2007; Lesthaeghe and Surkyn 2004; van de Kaa 2002). Several markers are used to capture a respondent's status in regard to marriage and childbirth, including whether or not s/he ever married and / or had a biological child, the age at which s/he did so, and how many children under the age of 18 currently reside in the household (see Appendix F for detailed measures).

Whether the respondent has ever married (1=yes, 2=no) is a simplistic marker in some ways since it does not capture whether the respondent has since divorced, was married multiple times, or cohabited before or since marriage; nevertheless, it does mark a willingness to enter into marriage at least once. Age at first marriage (1= under 20 years, 2=20-24, 3=25-29, 4=30-34, 5=35-44) is also an important marker of the SDT since later ages at first marriage typically represent a willing postponement of what might be considered a traditional (relative to the last 200 years) lifecourse of earlier marriage and subsequent childbearing (Lee 2003). Both the lower bounds (<15 and 15-19) and the upper bounds (35-39 and 40-44) of this variable had small percentages and were collapsed in order to have sufficient cell sizes for the regression analysis.

The variable measuring whether or not a respondent has ever borne or fathered a biological child (1=yes, 2=no) is slightly more telling, since the majority of biological parents go on to raise their children, a significant investment of time, finances, and care. Age at first childbirth (1= under 15 years, 2= 15-19, 3=20-24, 4=25-29 5=30-34 6=35-44) is also included since later ages have also been shown to be indicative of a shift to the SDT (van de Kaa, 2002).

Biological parenting is not the only way to parent, however, and to capture this, a variable for the number of children under age 18 present in the home ranging from 0 to 4 and

above (reverse coded: 1=4 and above, 2=3 children, 3=2 children, 2=1 child, and 1=no children) is included. This variable accounts for any child currently living in the home of the respondent including children who are adopted, fostered, and the children of relatives, among others. It also provides a measure of family size, important because sub-replacement fertility rates are one indicator of SDT progress within more developed countries (Lesthaeghe and Neidert 2007; Lesthaeghe and Surkyn 2004; van de Kaa 2002).

*Cohabitation and Abortion*

The willingness to have an abortion and / or to cohabitate with a sexual partner either before or instead of marriage represents an indicator of change from the first demographic transition, which emphasized the stability of marriage for subsequent childbearing (van de Kaa 2002). Therefore, a dichotomous variable for whether the respondent (or their sexual partner) ever aborted a child they conceived (1=no, 2=yes) or cohabited (1=no, 2=yes) was included in the initial analysis.

*Age at First Sex*

A majority of those aged 15-44 in the United States in 2002 who had sexual intercourse did so for the first time between the ages of 15-19 (65.2%), with the remainder before age 15 (17.1%) and between ages 20-24 (13.8%); a very small percentage did not initiate sex until age 25 or later (3.9%). Because the attitudes of those who had not yet had sex (12.4% of total sample, n=1677) are an important part of attitudes toward adolescent sexual activity, I changed the variable from ranked (ordinal) to unranked (categorical) and included the

population who reported not yet having sex (reverse coded: 1= not yet had sex, 2=25-44, 3= 20-24, 4=15-19, 5=under 15 years). Of the sample who had sex, so few did so for the first time after the age of 25 (3.9%, n=421) that they were grouped into one category in order to have sufficient cell size for the regression analysis (Peduzzi et al. 1996).

*Education*

The level of education, especially among women, has been crucial to the ideas of demographic transition since it makes the postponement of marriage and childbearing feasible for a larger section of the population. It has served as both as an indicator of progress (showing X% of women were literate or had finished high school, for example) and as an essential prerequisite for the second demographic transition where educated women act as "demographic innovators" (Kabeer 1996, 9). Therefore, a variable is included for education level (1=less than high school, 2=high school diploma or GED, 3=some college or associate degree, 5=bachelor's degree, 6=master's, doctorate, or professional degree).

*Religion*

The presence of a larger "religious right" in the United States compared to peer developed nations has been partially credited for why some parts of the US are not making the transition to the SDT (Lesthaeghe and Neidert 2008). Therefore, it is appropriate to include multiple measures of religion in the analysis, including: current religious affiliation (1=Protestant, 2=Catholic, 3= other religions[31], 4=no religion), importance of religion in one's daily life

[31] Unfortunately, there is no information available on the specific faith groups that made up "other religion" so there is no way to tease out results on Judaism or Islam, for example. Please note however that the variable used as

(1=very important, 2=somewhat important,3=not important), and the level of attendance at religious services (1=more than once a week, 2=once a week, 3=1-3 times per month, 4=less than once a month, 5=never).

*Additional Demographic Variables*

Finally, variables are included for the sex of the respondent (1=female, 2=male), age of respondent at time of survey (1= 15-19 years, 2=20-24, 3=25-29, 4=30-34, 5=35-39, 6=40-44), place of residence (1=metropolitan, central city, 2=metro, non-central city, 3=non-metropolitan), and race/ethnicity (1=Hispanic, 2=Non-Hispanic white, 3=Non-Hispanic black, 4=Non-Hispanic other). The categories for race/ethnicity come directly from the US Census; however there is no additional information offered in the public use dataset on which racial groups make up "Non-Hispanic Other." While this is understandable from a sample size argument (there would not be sufficient numbers of these populations to use them in most statistical analyses), it is still somewhat troubling to collapse a large range of cultural histories into one rather-poorly named category. Because of this, results based on this category cannot be accorded much weight.

## Analysis

*Exploratory Factor Analysis*

This study looks at several measures of reproductive and family formation decisions to examine the relationships between demographics, decisions, and attitudes concerning

---

a proxy for degree of religious commitment in this analysis does not specify attendance at Christian services, but rather any religious service. People of faiths other than Christian are still included as part of the sample.

unmarried adolescent sexual activity. Because of the ties between sexuality, fertility, and partnering, there was concern that variables measuring these behaviors were highly correlated and would disrupt the model if included together. Exploratory factor analysis (EFA) is used as a data reduction tool in order to examine the relationship between fertility and family formation decisions and an individual's attitudes about adolescent sex.[32] EFA is a method of reducing a large number of variables that appear to share some common elements into one or more "factors." For example, one could combine multiple measures of economic and social status, such as "highest level of completed educational level", "household income", "insurance status", "type of residence", "type of profession", etc. into a factor called socio-economic status which would then serve as a single variable in subsequent analyses. Grouping the variables into factors accomplishes several tasks: 1) it reduces the amount of covariance between variables which appear to actually be measuring the same underlying concept, and 2) helps to reveal the presence of any underlying concepts so that the researcher can then determine what phenomena they might be describing (Hatcher, 1994). This research primarily uses EFA for the first task.

My method of analysis is slightly different than that of the recent research by Lesthaeghe and Neidert (2007). The authors used principle components analysis (PCA), a type of factor analysis, to reduce nineteen demographic variables to 2 components which they called indicators of 'postponement' and 'vulnerable women and children'. They worked with county level data; thus each variable of interest was measured as a percentage of the total

[32] It is entirely possible that what someone thought or thinks about adolescent sex will also affect their age at first intercourse (Meier 2003; Thornton, Camburn, and Hill 1989), but since the attitudes are measured "now" and first sex (for the majority of the respondents) happened sometime in the past, I am making a time-based assumption that behaviors preceded the current attitude concerning adolescent sexuality, and am thus treating this relationship as a uni-directional one for the purposes of this analysis.

county (e.g., percent of births to women aged 25-30; percent of grandparents raising grandchildren, etc). Because each variable was the same level of measurement, it was fairly easy to then group them into factors, or in this case, principle components.

The NSFG, however, is an individual-level survey and is not meant to be representative of communities or even states, but rather representative of the nation as a whole. The strength is that individual outliers are not "folded-in" to the dominant answer from their communities; which is helpful when one explores a complicated question such as how one's fertility and family formation decisions might affect attitudes, especially toward the sexuality of adolescents. The difficulty is that there is no given unit to serve as denominator for each answer. Rather than multiple and comparable denominators (for each county), the NSFG has only one denominator (the nation). For this reason, in this analysis, factor analysis is used primarily to reduce groups of variables that share high levels of correlation (in this case, level of attendance at religious services, current religious affiliation, the importance of religion in one's daily life and whether one ever married, ever had a biological child, and the number of children under 18 currently residing in the respondent's household) to factors ("religiousity" and "life events") which then serve as single representative variables within the regression analysis. For a more detailed explanation of how factor analysis sorts a list of independent variables into appropriate factors, please see Appendix G. The results of the factor analysis are included within the Findings chapter.

*Ordinal Logistic Regression*

Like simple frequencies, correlation, and factor analysis, regression analysis explores the

relationships between a set of independent variables and an outcome of interest, the "outcome" or "dependent" variable. Unlike a simple frequency which "counts" the number of datapoints in each category, regression calculates how much of an impact each independent variable has on the outcome variable, or, in more statistical language, the amount of variance in the outcome variable explained by each of the independent variables, after controlling for the effect of all other independent variables.

Due to the ranked categorical nature of my outcome variable, I used ordinal logistic regression with a proportional-odds model which assumes that the outcome variable, although divided into categories, functions as a continuous variable with fairly equal distance between each category. The proportional odds model uses the formula (UCLA 2010):

$$\text{logit}(\theta_i) = \alpha_i + x\beta.$$

Given the cumulative logits:

$$\text{logit}(\theta_1) = \log(\theta_1/(1 - \theta_1)) = \log(\pi_1/(\pi_2 + \pi_3))$$
$$\text{logit}(\theta_2) = \log(\theta_2/(1 - \theta_2)) = \log((\pi_1 + \pi_2)/\pi_3)$$

where:
$\theta_1 = \pi_1$, probability of 'Consistently Disagree',
$\theta_2 = \pi_1 + \pi_2$, probability of 'Consistently Disagree or Swing Vote' (aka probability of NOT Consistently Agree)

$\pi_1$ = probability of 'Consistently Disagree',
$\pi_2$ = probability of 'Swing Vote',
$\pi_3$ = probability of 'ConsistentlyAgree',

Based on the research literature, my findings from preliminary correlation analyses, and the exploratory factor analyses I conducted, the final ordinal logistic regression contained the following independent variables: the representative degree of religious commitment variable: level of attendance at religious services; the representative 'life events' variable:

number of children under 18 currently residing in the household; age at first sex; ever cohabitation; education level; current age of respondent; race / ethnicity; and metro status tested against the three-levels of the outcome variable which combined the Likert scales of respondent's level of approval toward adolescent sexual activity at age 16 and at age 18. Thus the final proportional odds model is:

> Log odds of the probability of attitudes toward adolescent sexuality being $\theta_i$ (i=1 (consistently disagreeing) or 2 (NOT consistently agreeing)= $\alpha_i$ + $\beta_1$level of religious attendance + $\beta_2$number of children under 18 currently residing in the household + $\beta_3$cohabitation status + $\beta_4$age at first sexual intercourse + $\beta_5$current age of respondent + $\beta_6$highest completed level of education + $\beta_7$ metro residential status + $\beta_8$sex of respondent + $\beta_9$ethnicity / race of respondent, with $\beta_x$ standing in for the parameter estimates of the independent variables.

In the next chapter, I provide results for the ordinal logistic regression testing of the relationship between markers of the second demographic transition and attitudes about adolescent sexuality. As previously stated, I suspect that the population who consistently disagree that it is appropriate even for 18 year olds to have sex are a fairly specific group. I am especially interested in this group given that the belief that it is inappropriate for adolescents to have sex at any age drives much of the prohibition of comprehensive sexual education in public schools. Attitudes about adolescent sexuality have a large impact on public policy and health outcomes for American teens, and, as such, deserve our attention.

# FINDINGS

The purpose of this study is to better understand attitudes toward adolescent sexual activity held by those in the United States. Specifically, I examine whether or not a relationship exists between one's behaviors regarding family formation and fertility decisions and stated opinions regarding unmarried adolescent sexual activity. This chapter examines the potential interactions of the independent variables and the attitudes toward unmarried adolescent sexual activity in four ways: (1) a simple stratified frequency analysis which provides a count of which groups disagree or agree that adolescents should have sex, (2) a correlation analysis which looks at the trends of the interaction between independent variable as a whole ("age at first sex") and dependent variables, (3) an exploratory factor analysis to reduce the number of variables which share high covariance, and (4) the regression analysis which looks at the relationship between each level of the independent variable ("age 15-19 at first sex", "age 20-24 at first sex", etc) and the outcome variable, accounting for the effect that all other independent variables have on this relationship.

## Stratified Analysis of Independent Variables by Outcome Variable

This section of the chapter provides frequencies of the independent variables run against a four-level outcome variable for consistency of attitudes about adolescent sexual activity (1=consistently disapprove , 2= "swing vote", 3= undecided, 4=consistently approve). These findings are a simple count of the number of individuals in each category who held one opinion about adolescent sexual activity vs. another and provide a rough sketch of the

potential relationship between the independent variables and how one thinks about adolescent sexual activity.

Unless otherwise noted, all chi-square test results were significant at the p=<.001 level, meaning that the differences in opinion between the groups (e.g. female vs. male, or college-degree vs. high school diploma) are statistically significant ones. Although significant, these results should be read with some caution, given that frequency analysis does not account for the interplay between independent variables and does not indicate direction or magnitude of the relationship. Nevertheless, it provides an initial indication that the variables are related in some way. It also may provide a lay audience entré to the data in a way that more complicated analyses may not and, for this reason, it is worth including here.

The outcome variable is a composite of how a person's attitude about the acceptability of adolescent sexual activity changes depending on the age of the adolescent. Overall, 17.8% of the US population aged 15-44 were "consistently positive" (i.e. positive or neutral about adolescents having sex with someone they had strong affection for at age16 and positive about adolescents having sex with someone they had strong affection for at age18); 38.1% had "swing votes" (i.e. moved from disapproving of the same for 16 year olds to approving for 18 year olds); 2.0% were "undecided" (i.e. disapproving at age 16 and neutral at age 18[33]), and 42.1% were "consistently disapproving" (i.e. disapproving of adolescent sexual activity at age 16 and age 18). Overall, 55.9% of the surveyed population aged 15-44 agreed that it was acceptable for 18 year olds to have sex with someone for whom they had strong affection, 2.0% were undecided, and 42.1% disagreed.

[33] Please note that while I include the "undecided" category (when they are notable) within the stratified analysis for comparison, they represent only 2% of the study population and did not contain sufficient cell size numbers to be included in the regression analysis.

Sex of Respondent

50.2% of the survey population are female and 49.8% are male. Although roughly 38% of both females and males moved from disapproving to approving and 2% who remained undecided, there were sex-based differences with men more likely to consistently approve (14.4% female, 21.3% male) and women more likely to consistently disapprove (46.5% female, 37.6% male).

Age of Respondent

In general, the older a respondent was, the more likely she was to be disapproving of adolescent sexual activity. The percentage of consistent disapproval started at 35.1% among 15-19 year olds, a slight dip to 31.24% at 20-24, then a steady climb from 38.26% among 25-29, 43.9% among 30-34, 51% among 35-39, and 50.7% among 40-44 year olds. Consistent approval followed a similar but opposite trend where age of respondent had a negative relationship with consistent approval with 34.3% of 15-19 year olds approving of adolescent sex at ages 16 and 18; this number dropped to 24.6% for those 20-24 years old, 20.5% for those 25-29 years old, 13.4% for those 30-34 years old, 8.9% for those 35-39 years old, and 7.5% for those 40-44 years old. The "swing vote" category hovered around 40% among all age groups, except for those aged 15-19 where it made up 29.9% of the population.

Age at First Sex

Among the survey population who had had sex at least once by the time of the survey, 78.7% had done so by age 18. 17.1% had sex for the first time before age 15, 65.2% between ages

15-19, 13.8% between 20-24, 3.1% between 25-29, and 0.8% after the age of 30. There was a clear relationship between how old a respondent was the first time s/he had sexual intercourse and their approval or disapproval of adolescent sexual activity. Those who first had sex before age 15 had the largest percentage of consistently positive attitudes at 25.4%, dropping to 18.7% for those who first had sex before age 20, 8.4% before age 24, 6.5% before age 30, and 4.7% for those who had sex for the first time after age 30. The consistently disapproving category, however, had a large divide at age 20: with disapproval rates of 32.6% and 35.4% for those who had first sex before age 15 or before ages 15-19. The disapproval rate rose quickly for those who had first sex after age 20: 63.0% of those who first had sex between ages 20-24 and 76.5% of those who first had sex after age 25 consistently disapproved of adolescent sexual activity. There was a similar divide in the "swing vote" category: with 40.9% and 43.6% of those who first had sex before age 15 and age 20 switching from disapproval at age 16 to approval at age 18. This percent drops to rates in the middle to high 20% for the other age categories.

Ever married vs. Never married

Among the survey population, 45.5% had married and 54.5% had never married. 27.5% of those who never married were consistently approving of adolescent sexual activity compared to 9.7% of those who had ever married. Almost identical numbers of never and ever married fell into the "swing vote" category (38.6% and 37.7%, respectively). There were slightly more undecided among the ever married group (2.4% compared to 1.6% among never married), and a large difference among the consistently disapproving category with 32.3% of never

married and 50.2% of ever married consistently disapproving of adolescent sexual activity, regardless of the age of the adolescent.

Age at First Marriage

Of the population who ever married, 19.4% did so before age 20, 42.7% between ages 20-24, 26.0% between 25-29, 8.9% between 30-34, 2.6% between 35-39, and 0.3% between 40-44. The relationship between whether or not one married and her opinions on adolescent sex appears fairly clear, but the effect of what age one is when she first marries, although significant ($p=0.0298$), is less so. In fact, the percentage of those who were consistently disapproving stayed fairly constant across all age categories: 54.0% of whose who married before age 20, 52.4% of those who married between 20-24, 46.0% of those between 25-29, 45.1% of those between 30-34 and 45.9% of those who married between 35-39 were consistently disapproving. "Swing votes" were also fairly consistent across age categories at 36.0% for those who married before age 20, 36.4% between 20-24, 40.0% between 24-29 and 38.2% between 30-34, before rising to 47.5% for those who married between 35-39. Consistently approving rates were lower among "ever married" than among other groups, but still showed an age effect: 8.5% of those who married before age 20 consistently approved of adolescent sexual activity compared to 9.0% of those who married between 20-24, 11.3% of those who married between 25-29, and 12.3% of those who married between 30-34. Those who were undecided had a steady climb as age at first marriage increased: 1.6% for first

marriage before age 20, 2.2% between ages 20 and 24, 2.8% between age 25-29, and 4.4% between ages 30-34.[34]

Abortion

Of those within the sample who ever had a completed pregnancy (56.1%), 21.3% ever had an abortion while 78.8% had not. 18.0% of those who had ever had an abortion consistently agreed that adolescent sexual activity was acceptable compared to 10.3% of those who never had an abortion. Similarly, 50.0% of those who never aborted consistently disagreed that adolescent sex was acceptable compared to 34.2% of those who had ever aborted; swing votes were closer but still showed a difference (abortion 45.3% vs. no abortion 37.5%). There were similar percentages of undecided among those who aborted (2.5%) and those who had not (2.2%). Overall then, 63.3% of those who had had an abortion agreed that it was acceptable for an 18 year old to have sex with someone for whom they had strong affection compared to 47.8% of those who had not had an abortion. These percentages changed little when the respondent had one (64.5% overall approval / 32.4% disapproval) or two abortions (63.7% overall approval / 35.5% disapproval), but did become more disapproving at 3 or more abortions (53.5% overall approval / 43.6% disapproval).

Biological children

52.6% of respondents had given birth or fathered a biological child; 47.4% had not. The experience of having a child is associated with one's attitudes toward adolescent sexual

[34] Age at first marriage categories 35-39years (0.7% undecided) and 40-44 years (0.4% undecided) each had less than 5 respondents in the undecided category.

activity. 9.5% of those who ever had a biological child agreed that adolescent sexual activity was acceptable at ages 16 and ages 18 compared to 27% of those who never had a biological child. Similar percentages switched their votes (ever had a child, 38.9%; never had a child, 37.2%) and were undecided (ever child, 2.3%; never child, 1.7%), but there was a difference again in the consistently disapproving category with 49.3% of those who ever had a child consistently disapproving of adolescent sexual activity compared to 34.1% of those who never had a biological child.

Age at First Live Birth

Among those who had a child, consistently positive attitudes ran cleanly along a U-shaped curve with highs of 17.9% and 17.1% for those who had a child before age 15 or after age 35 with the middle age categories as follows: first childbirth between ages 15-19, 12.7% approval; between ages 20-24, 9.0% approval; between ages 25-29, 6.2% approval; between 30-34, 9.0% approval. A similar but inverse U-shaped curve occurred for consistent disapproval. Those who had their first child before they turned fifteen held relatively low rates of consistent disapproval at 28.0%, rising to 46.9% for those who had their first child between the ages of 15-19, 51.5% for 20-24, 52.7% for 25-29, then falling again with 46.1% for 30-34, and 39.9% for 35-39. In addition, the percentage for those who disapproved of adolescent sexual activity at age 16 but were undecided at age 18 was relatively high at 5.5% (n=25) for those who had their first live birth between the ages of 30-34, compared to under 2.0% for all other age categories.

Number of children in the household

The variable "number of children in the household" measures the number of children under the age of 18 who reside in the respondent's household, regardless of whether they are biological, adopted, step-children, the children of relatives or any other child who resides with the respondent. 51.8% of the sample did not have any children residing in their household, 18.3% had 1 child, 18.4% had 2 children, 8.0% had 3 children, 2.4% had 4 children, and 1.1% had 5 or more children residing in their household[35]. Approval or disapproval of adolescent sexual activity does seem to be affected by the number of children in the respondent's household. 25.1% of those respondents who had no children in their household consistently approved of adolescent sexual activity compared to 13.6% of those with 1 child, 8.6% with 2 children, 5.9% of those with 3 children, 7.6% of those with 4 children, and 5.9% of those with 5 or more children. The "swing vote" seemed to be fairly equally represented by 37.6% of those with no children, 37.1% of those with 1 child, 40.9% of those with 2 children, and 39.6% of those with 3 children. Those with 4 or 5 children were slightly less likely to choose this category, with 34.0% and 32.7% respectively. They were, however, more likely to be consistently disapproving: 60.2% of those with 5 or more children expressed a consistent disapproval for adolescent sexual activity compared to 56.5% of those with 4 children, 52.9% of those with 3 children, 47.8% of those with 2 children, 47% of those with 1 child, and 35.5% of those with no children.

[35]Although one might assume that this question implies the number of children living with the respondent at the time of the survey, the question itself does not specify this. Nor do we know what percentage of the time the child lives with the respondent. Regardless of this imprecision, there appears to remain a relationship between the number of children in a household and the respondent's attitude toward adolescent sexual activity at age 16 and at age 18. Please note that although the results here report on those with 5 or more children, this category was collapsed into the 4 or more category in order to have sufficient cell sizes in all categories of the regression analysis.

Cohabitation

49.4% of survey population had ever cohabited compared to 50.6% of their peers who did not. Both populations held similar percentages of consistently approving (16.5% for cohabited vs. 19.1% for non-cohabited) and undecided (2.2% ever cohabited vs. 1.9% never cohabited) but a larger difference in the consistently disapproving category (36.4% for cohabited, 47.6% for non-cohabited) and in the "swing vote" category (44.9% for cohabited vs. 47.6% for non-cohabited).

Membership in Organized Religion

83.6% of the sample reported belonging to an organized religious group. Although this categorization of religion makes no distinction between different faiths or the range of beliefs within each faith, it is linked to attitudes toward adolescent sexuality. Those who did consider themselves religious held a constant disapproval of unmarried adolescent sexual activity of 46.2%, compared to 20.7% for those who did not identify as religious. The consistently approving category followed a similar trend with 31.7% of those who were not religious compared to 15.1% of those who were approving of adolescent sexual activity. The "swing vote" category was closer with 45.7% of those who were not religious compared to 36.6% of those who were and there was almost no difference among the undecided (2.0% religious, 1.9% non-religious). Looking at overall approval rates (i.e., combining consistent approval with "swing vote"), 77.4% of those who were not religious agreed that it was ok for an unmarried eighteen year old to have sex with someone they had strong affection for compared to 51.7% of those who reported as religious.

Type of Christianity

28.8% of respondents report their current religious affiliation as Catholic, 47.3% as Protestant, 7.5% as other non-Christian religion[36], and 16.4% report having no current religious affiliation. As with the other religion indicators, the specific type of Christianity does appear to have a relationship with attitudes toward adolescent sexual activity. Of those who reported an affiliation with Protestantism, 53.8% consistently disapproved of adolescent sexual activity, regardless of the age of the adolescent. This compared to 38.1% of other religion, 35.8% of Catholics, and 20.7% of those reporting no religious affiliation. The non-religious and Catholic had similar percentages of swing votes (45.7% and 44.5%, respectively) as did Protestant and other (32.0% and 35.4%, respectively). Catholic and Protestant clustered a bit more on whether they consistently agreed that adolescent sexual activity was acceptable (17.5% and 12.3%, respectively) compared to "other" religions (24.1%) and the non-religious (31.7%). Overall, then, 77.4% of the non-religious, 62.1% of Catholics, 59.4% of other religions, and 44.3% of Protestants agreed that sexual activity for unmarried 18 year olds was acceptable provided they had strong affection for their partner.

Fundamentalism

The NSFG also asked individuals how they would define their type of religion with the question, "which of these do you consider yourself to be, if any?" 30.7% of the sample identified as born-again Christian, 1.6% as charismatic, 1.9% as evangelical, 1.1% as fundamentalist, and 64% as none of the above. Although the majority of respondents do not

[36] As stated within the methods chapter, there is unfortunately no further information available on the specific faith groups that made up "other religion." Christianity, both Catholic and Protestant, is the only religious group for which we have specific information.

identify with any of these labels, this question does help us understand a bit better the attitudes of different subgroups among Protestants toward adolescent sexual activity. Levels of consistent disapproval are higher among born-again Christians (65.8%) and evangelicals (69.5%) than among charismatics (41.3%), fundamentalists (39.4%), and those who do not identify under any of the above categories (38.5%). Born-again Christians and evangelicals also have a lower percent of "swing votes" (25.2% and 24.0%, respectively) than other types of Christians: charismatic (42.6%), fundamentalist (48.1%) and other (43.2%). Those who identified as fundamentalist were actually more likely to consistently approve of adolescent sex (12.5%) than were born-again Christians (9.0%) and evangelicals (6.5%), although less likely to approve than charismatics (16.0%) and those who did not identify under any of the provided labels (18.3%).

Importance of Religion

Because religion can be a cultural as well as a chosen identity, simply identifying with a particular religion does not necessarily mean that its set of given beliefs hold much sway in a person's life. Therefore, the NSFG also includes several measures of what is known in the social sciences as "religiosity" (i.e., the intensity of one's beliefs and religious practices). Because the term religiosity can carry a pejorative tone (i.e., excessive or affected piety) to those in the religious community however, I chose to use the descriptive phrase, "degree of religious commitment."

How important a respondent feels religion is in their daily lives is one measure of religious commitment. Within the survey population, 44.1% reported religion to be very

important in their daily lives, 31.9% somewhat important, and 24% not important. The survey question did not define religion as any specific faith, but simply asked whether or not an individual feels that "religion" is important to their daily lives. Although the term religion encompasses a wide range of views (even within the same faith tradition), this broad term is linked to attitudes on adolescent sexual behavior. There were very small differences among those who remained undecided depending on the importance of religion in their daily lives (2.2% very important, 1.9% somewhat important and 1.6% not important) but clear relationships existed for the consistently approving and the consistently disapproving categories. Of those who reported that religion was very important in their daily lives, 9.5% consistently approved of adolescent sexual activity compared to 19.6% of those who felt religion was somewhat important and to 30.8% for those who did not feel that religion was important to their daily lives. "Swing votes" were divided with similar values for "somewhat important" (45.4%) and "not important" (47.3%) and a lower value for "very important" (27.9%). Consistently disapproving attitudes ran in the opposite direction with 20.3% of those for whom religion was not important in their daily lives expressing consistent disapproval for adolescent sexual activity at any age. This rises to 33.0% for those who considered religion to be somewhat important, and 60.4% for those for whom religion was very important in their daily lives. Combining "swing votes" and consistently positive, 37.4% of those who felt religion was very important in their daily lives felt that it was acceptable for an eighteen year old to have sex with someone for whom they had strong affection, compared to 65.0% of those who felt religion was somewhat important and 78.1% of those who felt religion was not important in their daily lives.

Attendance at Religious Services

Another way to capture how large an impact organized religion may have on the life of a respondent is to ask how often s/he attends religious services. 10.5% of respondents attended services more than once a week, 20.4% attended once a week, 16.3% attended one to three times a month, 27.6% attended less than once a month, and 25.1% never attended religious services. As service attendance increased, so did the level of disapproval of adolescent sexual activity. For those who attended services more than once a week, 80.6% were consistently disapproving of adolescent sexual activity. This decreased to 59% for those who attended once a week, 44.1% for 1-3 times a month, 31.4% for less than once a month, and 22.7% for those who never attended services. The categories of consistently approving had a similar pattern: with 5.4% of those who attended services more than once a week showing consistent approval compared to 8.6% of those who attended once a week, 15.7% for 1-3 times a month, 20.7% for less than once a month, and 28.8% for those never attending services. Level of attendance also affected whether or not one was likely to change her vote (i.e. "swing vote") from disapproval at age 16 to approval at age 18. Of those who attended services more than once a week, only 12.7% changed their opinion dependent on the age of the adolescent compared to 30.7% for those attending once a week, 38.4% for 1-3 times a month, 45.4% for less than once a month, and 46.4% for those who never attended services. Combining "swing votes" and consistently positive, 18.3% of those who attended services more than once a week felt that it was acceptable for an unmarried eighteen year old to have sex with someone for whom they had strong affection, compared to 39.3% of those who attended services once a week, 54.1% of those who attended 1-3 times a month, 66.1% of

those who attended less than 1 a month, and 75.2% of those who never attended religious services.

Religious Attendance at Age 14

The survey asked all respondents who were less than 25 years old at the time of the survey how often they attended religious services when they were fourteen. Due to the exclusion of those older than 25 (about 60% of the survey sample), this variable was not included within the final regression analysis. Nevertheless, it remains an interesting one to explore through stratified analysis. A similar trend between current attendance and attitudes toward adolescent sexual activity is also reflected in the respondent's level of attendance at religious services at age 14. Of those who attended services more than once a week as a teenager, 56.6% were consistently disapproving of adolescent sex, compared to 38.8% of those who attended once a week, 26.5% of those who attended 1-3 times a month, 20.8% of those attending less than once a month, and 15.6% of those who never attended services. Approval of adolescent sexual activity rose as religious service attendance decreased. Consistent levels of approval started at a low of 16.5% among those who attended services more than once a week as a teen, then rose steadily to 24.3% for once a week attendance, 35.0% for 1-3 times a month attendance, 35.7% for less than once a month, and 46.7% for those who never attended services at age 14. There was less of a difference within the "swing vote" category with an expected low of 26.9% among those who attended services more than once a week and a high of 43% among those who attended less than once a month at age 14.

Educational Attainment

The highest achieved level of education at the time of the survey was as follows: 22.1% had not graduated from high school, 29.8% obtained a high school diploma, 27.4% had some college or an associate's degree, 14.7% had a bachelor's degree, and 6.0% had a master's, a professional degree, or a Ph.D. Differences in educational attainment do not appear to affect the percentage of consistent disapproval of adolescent sexual activity which held remarkably steady at 39.9% among those with no high school diploma, 42.5% high school diploma, 42.6% some college, 43.2% bachelor's degree, and 42.7% for advanced degree. Consistent approval varied only slightly with a low of 14.6% for those with a high school diploma and a high of 24.7% for those without a high school diploma with a slow rise in between (some college, 15.7%; bachelor's, 16.5%, and advanced degree at 21.2%). The "swing vote" was also fairly evenly distributed with 34.4% in both the not graduated from high school and advanced degrees categories, 36.7% in college degree, 39.6% in some college, and 40.9% in high school diploma. It is worth noting, however, that if one breaks down the final category into its component parts, those who received their doctorate (n=54) were more likely to consistently agree (26.0%) than those with their master's (n=463) (19.8%) or those with a professional degree (n= 152) (23.3%). They were also more likely to "swing vote" (44.8%) than master's (32.2%) or a professional degrees (36.9%) and less likely to consistently disagree (26.8%) compared to both master's (46.3%) and professional (38.1%) degrees.

Race / Ethnicity of Respondent

Within the three major racial and ethnic groups included in the survey, there was little difference in those who consistently agreed: 18.0% of Hispanics, 18.2% of non-Hispanic whites, and 16.5% of and non-Hispanic blacks. Hispanics were slightly less likely to be undecided (1.8%) compared to non-Hispanic whites (2.1%) and non-Hispanic blacks (2.3%). A greater percentage of non-Hispanic blacks fell into the consistently disapproving category with 45.7% compared to 40.7% of Hispanics and 40.6% of non-Hispanic whites. A smaller percentage of non-Hispanic blacks were part of the "swing vote": 35.4% compared to 39.1% of non-Hispanic whites and 39.5% of Hispanics. Although only 5.8% of the sample, "other" racial groups held a higher level of disapproval (54.4%), a lower level of "swing votes" (28.8%) and undecided (0.9%), and a similar level of consistent approval (15.9%) when compared to the three specified groups.

Metro Status

The NSFG follows the Census in dividing the country into areas known as metropolitan statistical areas (MSA) as one way to measure whether a person lives in an area that is more or less densely populated. There were three designations: MSA, central city (a core urban area of 50,000 or more population[37]), MSA (urban core of at least 10,000 but less than 50,000), and non-MSA (no urban core or a core of less than 10,000). 33.3% of the sample lived in a

[37] These definitions come directly from the US Census : "A metro area contains a core urban area of 50,000 or more population and surrounding counties that , and a micro area contains an urban core of at least 10,000 (but less than 50,000) population. Each metro or micro area consists of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core" (US Census, 2009).

central city MSA, 48.1 % lived in a non-central city MSA, and 18.1% lived in a non-MSA. There appeared to be little relation of this measure of metro status and attitudes toward adolescent sexual activity with fairly similar percentages of people in non-central city MSAs (16.5%) and non-MSAs (15.3%) consistently agreeing that adolescent sexual activity was acceptable compared to those in central city MSAs (21.1%). There was more of a difference in those who consistently disagreed (39.0% of central city MSAs, 41.3% of non-central city MSAs, and 49.6% of non-MSAs), and in those who switched their opinion from disagreeing at age 16 to agreeing at age 18 (37.7% for central city MSAs, 40.2% for non-central city MSA, and 33.4% of non-MSAs). Combining the two MSA categories and creating a dichotomous MSA / non-MSA variable did not add much illumination: 18.4% of those in an MSA compared to 15.3% of those in a non-MSA agreed that adolescent sexual activity was acceptable at ages 16 and ages 18; 40.4% in a MSA compared to 49.6% of those in a non-MSA disagreed that adolescent sexual activity was acceptable at either age 16 or age 18; and 39.1% of those in a MSA compared to 33.4% in a non-MSA changed their opinion depending on the age of the adolescent.

### Correlation Analysis

A second way to understand the data is to look at the magnitude and direction of the association between the independent variables themselves and between the independent variables and the dependent variable. This was especially important given that many of the independent variables that the second demographic transition suggested would be important could easily be related to each other (e.g., age at first marriage and age at first child) and to

include highly correlated variables within the regression analysis would distort the findings. I ran a zero-order correlation matrix of my independent variables, the composite outcome variable, and its two component variables: attitudes toward adolescent sex at age 16 and at age 18 (Appendix I). I include both Spearman's and Pearson's correlations since some of the frequencies seem to suggest a potential non-linear relationship. The correlation analysis provided a preliminary exploration of the associations between the variables the second demographic transition literature suggested may be important, including which groups of variables had sufficient correlation to move forward to the exploratory factor analysis.

It should be noted that one of the reasons that correlation analysis alone is insufficient to judge relationships between independent and outcome variables is because correlation analysis tests the trend of the entire range of answers for each independent variable rather than testing the relationship of each level of the answer range to the outcome variable. For example, correlation analysis measures the trend of educational experience and does not find a strong association between the range of educational experiences and attitudes. Although significant, it is very weakly correlated at 0.0378. But in the regression analysis, there is a significant and meaningful difference in one's odds of being more disapproving based on her level of education when compared to a referent category. Therefore, although many of the independent variables appear to have only a weak correlation with the outcome variable, they were carried forward to exploratory factor analysis (where appropriate) and the regression analysis based on their significance in the literature.

Associations between Independent Variables and the Outcome Variable

Included below is the table of the correlations between all independent variables and the four level composite outcome variable (Table 4-1). On the left of the table are the independent variables that the literature suggested might play a role in either the second demographic transition or in affecting attitudes toward adolescent sexuality (e.g., age at first sex, age at first marriage, age at first childbirth, etc.).

One can read the output in several ways. The first is the p-value level of significance, which in simplistic terms, measures how likely it is that we can safely reject the null hypothesis which states that there is not a relationship between the independent and dependent variables. P-values are usually considered significant (statistically meaningful) at 0.05 or 0.01, and highly significant at 0.005 or 0.001. At a p-value of 0.05, we are saying, "We are 95% certain that we can reject the idea that there is no relationship between these two variables." Unless listed, all p-values were highly significant at <.0001, which is not unexpected given the size of my sample. A second way to read the output is to look at the direction of the relationship which is indicated by the negative or (implicit) positive sign in front of the correlation coefficient. For example, the negative sign in front of the age at first marriage coefficient indicates that the later one married, the more likely it is that s/he will have a consistently permissive attitude toward adolescent sexual activity. Both indicators must be read together to present a more accurate picture of the data. Finally, one can look at the correlation coefficient which measures the strength of the relationship between the two variables. If you square the correlation coefficient, you will get the coefficient of determination which can be multiplied by 100 to arrive at the amount of variation in the

dependent variable caused by the independent variable. For example, the correlation coefficient for age at first sex for those under age 30 is 0.2897; the coefficient of determination ($0.2897^2$) is 0.0839; and the amount of variance in attitude it accounts for is (0.0839 x 100) is roughly 8%.

The original four level outcome variable was used in the correlation analysis where 1=consistently approving, 2="swing vote", 3=undecided, and 4=consistently disapproving so that a positive score means that one is more likely to approve. Age, income, education, and number of children in the household were ordered with the lowest score coded = 1; dichotomous variables were ranked 1=yes to 2=no; religious variables ran from more religious to less.

**Table 4-1: Correlations between Independent Variables and 4-level composite measure of Attitudes Toward Adolescent Sexual Activity**

| Independent Variable | Female & Male | | Female | Male | Female & Male | |
|---|---|---|---|---|---|---|
| | All Ages (Pearson) | All Ages (Spearman) | All Ages | All Ages | Age =<29 | Age=>30 |
| Age @ First Sex | 0.2104 | 0.2138 | 0.2277 | 0.1927 | 0.2506 | 0.1462 |
| Age @ First Marriage | -0.0550 | -0.0276 (p=0.356) | -0.0264 (p=0.09) | -0.0619 (p=0.010) | 0.0253 (p=0.326) | -0.0863 |
| Age @ First Live Birth | 0.0146 (p=0.255) | 0.0695 | 0.0612 | -0.0184 (p=0.448) | 0.1308 | -0.0851 |
| Ever Married? | -0.2275 | -0.2198 | -0.1941 | -0.2482 | -0.1749 | -0.1208 |
| Ever biological child? | -0.2035 | -0.2006 | -0.1875 | -0.2001 | -0.0949 | -0.1632 |
| % of Fed Poverty Level | -0.0520 | -0.0493 | -0.0408 | -0.0468 (p=0.001) | -0.0598 | -0.1038 |
| Total Income | 0.0097 (p=0.279) | -0.0041 (p=0.645) | 0.0075 (p=0.512) | 0.0244 (p=0.089) | -0.0108 (p=0.386) | -0.0346 (p=0.008) |
| Highest Level of Edu | 0.0378 | 0.0491 | 0.0475 | 0.0220 p=0.123 | 0.0021 (p=0.867) | -0.0316 (p=0.015) |
| Importance of religion to R | -0.3528 | -0.3312 | -0.3466 | -0.3419 | -0.3618 | -0.3338 |
| How often R attends religious services | -0.3653 | -0.3491 | -0.3508 | -0.3674 | -0.4041 | -0.3283 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Does R consider herself religious? | -0.2108 | -0.2000 | -0.1991 | -0.2124 | -0.2106 | -0.2050 |
| Ever Cohabitation | 0.0812 | 0.0510 | 0.1049 | 0.0613 | 0.1327 | 0.1530 |
| Ever Abortion | 0.1399 | 0.1092 | 0.1394 | 0.1525 | 0.1182 | 0.1539 |
| Number of chldn in R's household | 0.1756 | 0.1973 | 0.1583 | 0.1762 | 0.0886 | 0.1359 |
| Metro | 0.0350 | 0.0062 (p=0.489) | 0.0215 | 0.0517 (p=.0003) | 0.0238 (p=0.055) | 0.0568 |
| Racial / Ethnic background of R | 0.0539 | 0.0308 (p=0.001) | 0.0419 | 0.0614 | 0.0077 (p=0.537) | 0.1049 |
| R's age | 0.2016 | 0.2109 | 0.2168 | 0.1867 | 0.0701 | 0.0759 |
| R's sex | -0.1045 | -0.1501 | N/A | N/A | -0.0940 | -0.1151 |
| R's attitude re: adolescent sex @ age 16 | 0.7260 | 0.7281 | 0.7195 | 0.7273 | 0.7703 | 0.6497 |
| R's attitude about adolescent sex @ age 18 | 0.9192 | 0.8859 | 0.9204 | 0.9168 | 0.9094 | 0.9277 |

*Four-level outcome variable with its component parts*

To confirm that the combination of the two variables (attitudes toward the sexual activity of sixteen year olds and attitudes toward the sexual activity of eighteen year olds) adequately represented the two original variables, the correlation between the three were examined. The four level composite variable (consistently disapproving, undecided, "swing vote", and consistently approving) used in the stratified analysis and in the correlation analyses, had a correlation of -0.7260 with attitudes toward 16 year olds and -0.9192 with attitudes toward 18 year olds which accurately reflects the fact that that composite variable privileges the attitudes toward 18 year olds by using that response to order the composite variable categories. The 3-level combined score used in the regression analysis (consistently disapproving, "swing vote", and consistently approving) had a correlation of -0.8197 with attitudes toward the sexual activity of sixteen year olds, and a correlation of -0.8538 with attitudes toward the sexual activity of eighteen year olds.

*Correlations between Independent Variables*

Those independent variables with higher levels of correlation were carried forward to the exploratory factor analysis and are discussed below.

## Exploratory Factor Analysis

Two different exploratory factor analyses (Appendix J) were run using MPlus, a program capable of accounting for the complex survey design of the sample and the particular mix of dichotomous and categorical variables tested.

First Exploratory Factor Analysis

The first exploratory factor analysis (Table 4.2) included 9 variables and was found to have an optimal 3 factor solution with oblique rotation (CFI=0.98, RMSEA=0.043) with the following divisions: Factor 1: age at first sex, age at first marriage, and age at first live birth; Factor 2: Percentage of poverty level, total household income of the respondent, and the highest completed education level of the respondent; and Factor 3: how important religion was in the respondent's daily life, how often the respondent attended religious services, and the type of religion that R would consider herself.

**Table 4.2 First Exploratory Factor Analysis**

| | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| Age @ 1st Sex | **0.353** | -0.001 | -0.160 |
| Age @ 1st Marriage | **0.658** | -0.227 | 0.021 |
| Age @ 1st Live Birth | **0.881** | 0.021 | -0.018 |
| % of Poverty level | 0.019 | **0.907** | 0.056 |
| Total Income of R. | -0.228 | **1.061** | 0.002 |
| Highest completed level of education | 0.239 | **0.382** | -0.042 |
| How impt religion is in R's daily life | -0.008 | 0.043 | **0.962** |
| How often R attends religious services | 0.026 | -0.038 | **0.629** |
| What type of religion would R consider herself? | 0.000 | -0.018 | **0.679** |

The correlation matrix for these variables (Appendix K) shows a higher level of

correlation among the variables that successfully factored. For example, age at first sex has a correlation of 0.3142 with age at first marriage, and 0.37765 with age at first child, while age at first marriage and age at first childbirth have a correlation of 0.5673. In comparison, age at first sex has, for example, a correlation of -0.014 with poverty level or -0.0971 with professed religious status. These higher levels of correlation within the proposed group provided sufficient reason to test the possible relationship through a factor analysis; the nine variables did factor as expected based on the correlation analysis and are detailed below.

*Factor 1: "Postponement"*

Although research on the second demographic transition suggests that the age at which one marries or has their first child is a marker of social attitudes, specifically voting behavior (Lesthaeghe and Neidert, 2009, 2006, 2005), that does not appear to be the case with attitudes toward adolescent sexual activity, at least within the correlation analysis. When the analysis was limited to those 30 and above, age at first marriage, age at first live childbirth, and age at first sex did factor (with factor loadings of 0.658, 0.881, and 0.353, respectively), but the correlation between age at first marriage (-0.054, p=<.0001) and age at first childbirth (0.019, p=<.1353) and the outcome variable measuring consistency of attitudes toward adolescent sexual activity were quite low and the resulting factor "postponement," which consisted of the summation of the z-scores of the three variables, was insignificant in the initial regression analysis. Because of this, the "postponement" factor was not included in the final analysis. Age at first sex, however had a stronger correlation (-0.206, p=<.0001) and was used in the regression analysis as a single independent variable.

*Factor 2: Socio-economic Status (SES)*

Educational attainment for women is an underlying component to the postponement of marriage and fertility of the second demographic transition. Educational attainment is often linked to one's economic level, however, so in order to test the effect on attitude toward adolescent sex, three variables measuring socio-economic status (SES) were included in the first factor analysis: educational attainment, respondent's income, and the level of the federal poverty level of the household income at the time of the survey. The three variables successfully factored (with factor loadings of 0.382, 1.061, and 0.907, respectively) but the resulting factor "SES," which consisted of the summation of the z-scores of the three variables, was insignificant in the initial regression analysis. Testing the individual components showed that income and percent of federal poverty level were not significantly related to attitudes toward adolescent sexual activity, but that education level was. Thus, the combined factor score was dropped and education was included as an independent variable in the final analysis.

*Factor 3: Degree of Religious Commitment*

The NSFG contains several measures of religious identity and activity, both currently and at younger ages. As might be expected, there was a high level of correlation between these measures (Appendix K) and they factored neatly through EFA. Current religious affiliation, importance of religion in the respondent's daily life, and the level of attendance at religious services had factor loadings of 0.679, 0.962, and 0629, respectively and this factor moved forward to the regression analysis.

Second Exploratory Factor Analysis

Given that only one factor from the first EFA carried forward to the regression analysis, a second, revised EFA was conducted (Table 4.3). The second exploratory factor analysis included nine variables (religious affiliation, level of attendance, importance of religion, ever married, ever had a biological child, number of children in household, ever abortion, ever cohabitation, and age at first sex) and found an optimal two-factor solution with oblique rotation (CFI=0.998, RMSEA=0.036). The degree of religious commitment factor remained as listed above, and a second factor "life events" was created.

**Table 4.3 Second Exploratory Factor Analysis**

| | Final EFA | | Rejected EFA | | |
|---|---|---|---|---|---|
| | Factor 1 | Factor 2 | Factor 1 | Factor 2 | Factor 3 |
| How impt religion is in R's daily life | **0.949** | 0.002 | 0.941 | -0.017 | 0.007 |
| How often R attends religious services | **0.673** | 0.003 | 0.590 | 0.017 | 0.261 |
| What type of religion would R consider herself? | **0.629** | -0.008 | 0.645 | -0.026 | -0.022 |
| Ever married | 0.021 | **0.648** | 0.064 | 0.650 | -0.077 |
| Ever had a biological child | -0.024 | **0.943** | -0.003 | 0.919 | 0.012 |
| Number of children in household | 0.018 | **0.720** | -0.006 | 0.742 | 0.105 |
| Ever abortion | NA | NA | 0.004 | -0.329 | 0.582 |
| Ever cohabitation | NA | NA | -0.026 | -0.146 | 0.267 |
| Age at first sex | NA | NA | 0.004 | -0.403 | 0.455 |

*Life Events*

Rather than the age at which one marries or bears a child, it is the fact that one does so at all that is correlated with attitudes toward adolescent sexual activity (correlation of -0.246 and -0.226, respectively). Because the level of correlation between "ever married", "ever had a biological child", and a third variable, "number of children under age 18 who currently live in the respondent's household," was high enough to affect the regression analysis, the three variables were included in a second exploratory factor analysis and found to factor with

loadings of 0.648, 0.943, and 0.720, respectively.

Because abortion, cohabitation, and age at first sex variables could conceivably be related to one's degree of religious commitment or to life-course decisions, those three variables were also included in the EFA to test whether or not they factored under either the "life events" or "degree of religious commitment" groupings; they did not (Table 3-4). Although abortion and age at first sex grouped together well, cohabitation was too weak to justify a third factor. Instead, cohabitation and age at first sex were included in the regression analysis as independent variables.

Because the testing of relationships between the different levels of a categorical variable provides more information than a simple combined score (which functions as a dichotomous variable in the regression analysis), representative variables from the degree of religious commitment and the life events factors were chosen to stand-in for their family of variables. Level of attendance at religious services was chosen from the degree of religious commitment factor and number of children under age 18 residing in the household was chosen from the life events factor. Alternate regression analyses were run, substituting the other variables from each family to confirm that the results were similar.

### Ordinal Logistic Regression Analysis

Ordinal logistic regression was used to look at the relationship between the following independent variables: level of attendance at religious services, number of children under 18 currently residing in the household, age at first sex, ever cohabitation, education level, current age of respondent, race / ethnicity, and metro status tested and the three-levels of the

outcome variable which combined the Likert scales of respondent's level of approval toward adolescent sexual activity at age 16 and at age 18. The regression analysis was modeled with "consistently disapproving" (i.e., disapproving of adolescent sex at age 16 and again at age 18) as the reference category so that higher scores meant a given subpopulation was more likely to disapprove and lower scores meant a subpopulation was less likely to consistently disapprove of adolescent sexual activity.

Due to the ranked categorical nature of my outcome variable, I used ordinal logistic regression with a proportional-odds model (Appendix L). Although the model failed the proportionality assumption, which is not uncommon given the large size of the NSFG sample (UCLA, 2010), I tested the multinomial model and found similar results (please see Appendix M for the results of the generalized logit regression). The results of the simpler proportional odds model are thus presented.

Race and Ethnicity and attitudes toward adolescent sexual activity

Categorizing race and ethnicity as Hispanic, non-Hispanic white (NHW), non-Hispanic black (NHB), and other showed only slight difference in attitudes toward adolescent sexual activity when controlling for religion, age, sex, number of children in household, cohabitation, completed education, metro status, and age at first sex. When the analysis was run using NHW as the reference category, the only highly significant result was that 'others' were 1.398 times more likely to disapprove than NHW ($p=0.0013$). A slight difference was noted between NHW and NHB with NHB populations 1.116 times more likely to disapprove than whites ($p=0.0859$). When the analysis was run using Hispanic as the reference category,

'other' was 1.522 times more likely to disapprove (p=<.0001), and NHB was 1.216 times more likely to disapprove (p=.0112). Again, there was no significant difference between Hispanic and NHW (p=.2274).

Cohabitation and attitudes toward adolescent sexual activity

Within the sample, those who had never lived with a sexual partner outside of marriage were 1.164 times more likely to consistently disapprove of adolescent sexual activity than those who had ever cohabited (p=0.0151).

Metro Status and attitudes toward adolescent sexual activity

Compared to those who lived in a "MSA, central city," those who lived in a "non-MSA" were 1.370 times more likely to consistently disagree that unmarried adolescent sexual activity was appropriate at either age 16 or age 18 (p=0.0002). There was no significant difference in attitudes between "MSA, central city" and "MSA, non-central city" (p=0.1570).

Sex of Respondent and attitudes toward adolescent sexual activity

Findings indicate that females were 1.364 times more likely to consistently disagree that unmarried adolescent sexual activity was appropriate at either age 16 or age 18 than were males (p=<.0001).

Highest completed educational level and attitudes toward adolescent sexual activity

Compared to those who had completed a master's, doctoral, or professional degree, those with lower levels of education were more likely to consistently disagree that it was "all right" for

unmarried 16 or 18 year olds to be sexually active. Those with less than a high school degree were 1.737 times more likely to disagree (p=<.001), those with a high school diploma were 1.913 times more likely to disagree (p=<.001), those with an associates or with some college were 1.766 times more likely to disagree (p=<.001), and those with a college degree were 1.302 times more likely to disagree (p=.0523) than those who had a master's, doctoral, or professional degree.

Age of Respondent and attitudes toward adolescent sexual activity

Compared to those who were 15-19 years old at the time of the survey, the older the respondent, the more likely they were to consistently disapprove of adolescent sexual activity. 20-24 year olds were 2.499 times more likely to disagree that it was acceptable for adolescents to be sexually active, 25-29 year olds were 3.496 times more likely to disagree, 30-34 year olds were 4.563 times more likely to disagree, 35-39 year olds were 6.212 times more likely to disagree, and 40-44 year olds were 6.109 times more likely to disagree that sexual activity was appropriate for unmarried adolescents than were the adolescents themselves (ages 15-19). All findings were highly significant at p=.0001.

Age at first sexual intercourse and attitudes toward adolescent sexual activity

Compared with those who had sexual intercourse for the first time between the ages of 15-19, groups who were older the first time they had intercourse were more likely to disapprove of adolescent sexual activity than groups that were younger at first intercourse who were less likely to disapprove of adolescent sexual activity. Those who were 20-24 at first intercourse were 2.366 times more likely to disagree, those who were 25 or older at first intercourse were

2.711 times more likely to disagree, and those who had not yet had sex by the time of the survey were 4.780 times more likely to disagree (all p=<.0001). In comparison, those who had sex for the first time before age 15[38] were 0.864 times less likely to disagree than those who were 15-19 at first intercourse (p=0.0463).

Number of Children under 18 years old in Respondent's Household and attitudes toward adolescent activity

Respondents who had at least one child or adolescent in their household were more likely to disapprove of adolescent sexual activity than those who did not have any children under the age of 18 living in their household. In particular, those with 1 child under the age of 18 in their household were 1.482 times more likely to disapprove, those with 2 children were 1.481 times more likely to disapprove, those with 3 children were 1.712 times more likely to disapprove, and those with 4 or more children were 1.614 times more likely to disapprove than those with no children under the age of 18 in their household. The p-value for 4 or more children was 0.0109; all others were <.0001.

Attendance at Religious Services and attitudes toward adolescent sexual activity

Compared to those who never attended religious services, those who attended religious services were more likely to disapprove of unmarried adolescent sexual activity. Those who attended services less than once a month were 1.395 times more likely to disapprove, those

[38] Although it may seem that the number of youth who had sexual intercourse for the first time before the age of 15 should be too low to be statistically relevant, they actually make up 17.1% of the population (n=2026), a compelling reminder that a large percentage of the US population becomes sexually active at a fairly young age.

who attended 1-3 times a month were 2.153 times more likely to disapprove, those who attended once a week were 3.558 times more likely to disapprove, and those who attended religious services more than once a week were 10.084 times more likely to disapprove of adolescent sexual activity than those who never attended services (all p-values=<.0001).

## Conclusion

Within the regression analysis, all groups have members who consistently disagree that it is acceptable for adolescents to be sexually active. However, individuals in the following groups are independently more likely to disapprove: those who attend religious services more frequently, those who are married, those who have a biological child, those who have more children in their household, those who are female, those with lower levels of education, those who had sex for the first time after age 20, and those who are older.

# DISCUSSION

This research project tested whether the theory of the second demographic transition, which connects changes in fertility and family formation to social values, provided a useful framework to examine US attitudes toward adolescent sexual activity. This chapter will cover the way in which findings upheld the second demographic transition (SDT), the ways in which it differed, findings which were particularly interesting, and the limitations of the study.

## The use of the SDT to examine attitudes toward adolescent sexual activity

First, this research helps to support the second demographic transition's assertion that the fertility and family formation decisions of individuals are related to their social values, and that the SDT is a useful framework for understanding how those in the United States think about adolescent sexual behavior. That is, that those attributes which mark the SDT, namely whether one marries or has children, whether one has cohabited or has had an abortion, the number of children one has, and one's level of religious commitment, are indeed predictive of attitudes toward adolescent sexual activity.

My project is different from that of Lesthaeghe and Neidert in several ways which affect the comparison between the two. First, although my project uses exploratory factor analysis, it does so mainly as a tool for data reduction and not primarily to capture an underlying latent variable in the same way that the SDT does. Rather I test the components that Lesthaeghe and Neidert found to be representative of the SDT in an ordinal logistic regression. This approach prohibits me from commenting on the cohesiveness of the separate

variables in representing the SDT, but it does allow me to tease apart the separate effects for each component. Thus I am able to say, for example, that individuals who have three children in their household are 1.7 times more likely to be disapproving of adolescent sexual activity than those who have no children in their household, regardless of their degree of religious commitment, educational level, or age. I find this level of specificity useful given my desire to learn more about who is more likely to disapprove of adolescent sexuality. While it may be less useful to those who are looking for evidence of larger-scale social changes, it is at least suggestive of possible connections between choices and worldviews.

Secondly, the National Survey of Family Growth (NSFG) is a household-level survey and captures the unique experiences of individuals. Although one may question the validity of "weighting data"—the process of then using a single person to represent several hundred or thousand others as the NSFG does, the data collected is still based on the self-report of an actual person. The data are not aggregate statistics for a person's county or state; they are simply a record of one person's experience. In addition, the outcome variable is a direct measure of a person's attitude on a very specific topic: "is it all right for unmarried eighteen year olds to have sexual intercourse if they have strong affection for each other?" This type of direct measure is of utmost service in an investigation of how fertility and family formation decisions and behaviors relate to attitudes surrounding adolescent sexual activity because it does not require the use of a proxy measure (such as a behavior like voting) to arrive at the specific attitude of interest.

Because of the differences in scale, question, and approach, to say nothing of methodological expertise, between my research and that of Lesthaeghe and Neidert, it does

not come as a surprise that there were a few differences in what this research found to be significant. Nevertheless, the basic premise of the SDT—that fertility and family formation decisions do have a relationship with social attitudes—was fully supported. Furthermore, the SDT provided a highly useful frame for this analysis.

Findings regarding the usefulness of the SDT

The SDT would predict that those who are more permissive toward adolescent sexual activity are those who were more highly educated, who married later or not at all, had fewer children or none at all, and had higher rates of cohabitation. This is borne out in the regression analysis, with each of these significantly related to being more approving of adolescent sexual activity, although not always strongly so. Those who we might naturally expect to be more disapproving: those who are embedded in a more traditional (and, it should be noted, no longer average) life-course of postponing sex until their twenties, earlier ages of marriage and childbearing, and consistent church attendance are indeed more disapproving of adolescent sexual activity. Those who are more disapproving of adolescent sexual activity have the following characteristics:

- They are more likely to say that religion is "very important" in their daily lives
- They are more likely to attend religious services more than one a week
- They are more likely to be married
- They are more likely to have a biological child
- They are more likely to have a larger family size
- They are more likely to live in a non-metropolitan area
- They are more likely to be older – in fact, the older the respondent, the more likely they are to disapprove.
- They are more likely to have sexually debuted after age 20 or they have not yet had what they would define as sexual intercourse.
- They are less likely to have a master's, Ph.D., or professional degree

In the following pages, I will discuss those findings of interest, focusing on the strongest finding – that of religious affiliation. I start by looking at the two measures whose findings were a bit unexpected: age at first marriage & cohabitation, before turning to those variables which were significant, but were not included in the final analysis for various reasons: age at first childbirth and abortion. Although the majority of the findings followed expectations, I note those of special interest and then focus on the most significant factor: that of degree of religious commitment.

## Unexpected Results

### Age at First Marriage vs. Ever Married

Age at first marriage was not as neatly related to attitudes toward adolescent sexual activity as might have been predicted by the SDT. Although the correlation between age at first marriage and attitudes was significant, it was weak (0.0539, p=<.0001). An initial run of the regression analysis using age at first marriage as the representative of the "life events" factor showed few significant relationships, regardless of the referent category used. The one finding which is consistently significant (that the 10.6% of the survey population who marry before age 20 are more likely to disapprove) is in line with the SDT that those who marry earlier tend toward more conservative attitudes. In comparison, the correlation between whether someone ever married and their attitudes toward adolescent sexual activity was significant and much stronger (-0.2458, p=<.0001). Given an increasing trend to cohabitate or to remain single rather than marry, combined with the relative youth of my population, it may be that it is simply whether or not one marries at all that is a more appropriate measure

of one's attitude toward adolescent sexuality.

Cohabitation and attitudes toward adolescent sexual activity

Given that cohabitation is one of the markers of a transition to the SDT, it is somewhat surprising that, although significant, cohabitation had such a weak effect on a person's attitudes toward adolescent sexual activity. It was certainly not due to a lack of numbers – 49.4% of the sample had lived together with a sexual partner outside of marriage at least once. However, in the United States, the act of cohabitation has been shown to be often tied to being less well off economically (Smock & Manning, 2004) and it may well be that those who cohabit are equally divided between those who prefer to cohabit and those who cohabit because it is economically advantageous to do so. We know from Lesthaeghe and Niedert's work on US voting behavior that the category of "vulnerable women and children" captures measures of economic inequality and is more aligned with qualities of the first demographic transition rather than the second, and so it may make sense that within the US context, cohabitation does not follow as neatly as some of the other divides in regard to this particular attitudinal question.

**Measures which were significant but were not included in the final analysis**

Abortion

The SDT would predict that those who had an abortion would be more likely to hold more liberal attitudes and this was the case with attitudes toward adolescent sexuality. When

controlling for all other variables[39], whether or not the respondent (or the respondent's partner) ever chose to have an abortion is significantly related to attitudes toward adolescent sexual activity. Those who never aborted a pregnancy were 1.5 times more likely to consistently disagree with teen sexual activity than those who ever decided to abort a pregnancy or those who had a partner who aborted a pregnancy. Although significant, abortion was not included in the final model, however, because to do so would have excluded from the analysis anyone who had never been pregnant. Because this research is interested in the effect of second demographic transition changes on social attitudes, I decided that excluding those who had never been pregnant or whose partner had never been pregnant (nearly half the population) would have been counterproductive to the larger analysis.

Age at first childbirth

The SDT would predict with those who are younger at first childbirth would exhibit more conservative attitudes toward adolescent sexual activity and the findings of this research support this premise. However, within the correlation analysis, age at first childbirth was not significantly correlated with attitudes toward adolescent sexual activity ($p=0.1413$), and I initially (and erroneously) concluded that there was not a relationship between the two. Instead, the data was not well measured by correlation since it ran in a U-shaped curve with higher approval at both extremes of age. An initial regression using age at first childbirth in place of the "life events" representative, number of children in the household, showed a statistically significant and meaningful relationship between age at first childbirth and

[39] For this particular analysis, the variables controlled for included: age, sex, race & ethnicity, level of attendance at religious services, number of children in the household, cohabitation status, and education level.

attitudes toward adolescent sexual activity. When using the age group 25-29 as the referent category, those who were 15-19 at their first childbirth were 1.370 times more likely to disapprove and those who were 20-24 were 1.252 times more likely to disapprove. There was no significant difference between 25-29 year olds and 30-34 year olds in approval, but those who were 35 years or older at their first birth were less likely to disapprove (OR=0.458, 95% CI [0.292-0.720]). The variable however only looks at those who had given birth, and I chose a different variable to represent childbearing and raising: the number of children in a household, which also helped to capture the SDT measure of sub-replacement fertility.

## Findings of Interest

Race and Ethnicity and attitudes toward adolescent sexual activity

Far too often, race is used as a proxy for income or education in public health surveys; this does not mean that the role of race should not be examined. Indeed, given persistent disparities in health outcomes, it remains important to look for unique contributions of race even after controlling for other variables. In this particular research, if race was to function as a proxy, I would have expected it to serve as a proxy for religion with blacks more likely to be Protestant (thus, more disapproving) and Hispanics more likely to be Catholic (thus, less disapproving) and whites to be split between the two religions. Thus, the fact that there is little of meaningful difference between non-Hispanic white, non-Hispanic black, and Hispanics after controlling for all other factors is not surprising.

That said, it is a bit frustrating that our only significant result within race and ethnicity is one that cannot be explored further given the limitations of the survey question

which only recorded race/ethnicity if one were non-Hispanic white, non-Hispanic black, or Hispanic/Latino. Granted, these three categories cover the majority of the US population and the planners of the NSFG went to some trouble to make sure that both NHB and Hispanic populations were surveyed in sufficient numbers to keep them in the analysis. How to measure "other" racial categories in a meaningful way is nevertheless a question that future surveys should consider measuring in more detail given the changing demographics of the US. Because "other" is a composite category which combines many different groups (most in numbers too small to be statistically meaningful in an analysis of this type), there is little to be said on the matter beyond this: even after controlling for level of educational attainment, degree of religious commitment, age of respondent, marital status, and family size, there remains a significant difference between those who are white, black, or Hispanic and between other racial and ethnic groups in the US with the latter more likely to be disapproving of adolescent sexual activity. Given the still small numbers of "other" groups in the US, researchers interested might turn to qualitative research or smaller scale community surveys to better explore the link between attitudes regarding adolescent sexual activity and non-majority ethnic and racial groups in the US.

Metro Status and attitudes toward adolescent sexual activity

Findings that those who live in non-MSAs tend to be a bit more conservative than those who live in MSAs are not surprising, but there was also no difference in attitudes toward adolescent sexual activity between those who lived in a central-city MSA and those who lived in a non-central city MSA. Some of this lack of difference may be due to the increasing

urbanization even of suburban area, but it is worth noting that circumstantial evidence suggests that "metro" was perhaps not a solid measure of geographic differences. Although this data has been publicly available since 2006 and used by NSFG researchers before that, an error mistakenly coding "MSA, central city" as "MSA, non-central city" was only found and reported within the last few months. This is perhaps why several statisticians that I spoke with while conducting this research mentioned that they found this particular measure to be less useful than others in capturing differences based on geography. Regional differences (north, south, west, etc) may have been more telling, but the NSFG was designed to provide representative data for the nation as a whole, and not for regions and thus, I decided to use the given measure of population-density rather than create a measure that did not well represent the survey design. This resulted in data that I think does not capture any regional difference which might exist, beyond those that would be captured by the variables used: the sex, age, race/ethnicity, educational level, and level of degree of religious commitment of the respondent as well as their marital and fertility status.

Highest completed educational level and attitudes toward adolescent sexual activity

The educational level of the respondent showed little effect on attitudes toward adolescent sexual activity between those who attended some college or received an associates' degree, those with a high school diploma, and those who had not graduated high school. There was a slight difference for those who graduated with a bachelor's degree, but a larger effect of education for those who achieved post-baccalaureate degrees. So while these findings follow a general trend of higher levels of education indicating a propensity toward more

liberal attitudes, it truly is *higher* education that makes a difference. In fact, those with doctoral degrees were the most likely to approve of adolescent sexual activity.

Sex of Respondent and attitudes toward adolescent sexual activity

It is perhaps not surprising that women of all ages, religious affiliation, education levels, relationship status, etc. hold more conservative attitudes toward young women and men being sexual, given that the rewards of sexuality for women are consistently downplayed while the dangers are as easily accessed as the nearest crime drama, Women have reason to be conservative toward sex since their sexuality is used to justify multiple levels of abuse and crime against them. Many women hold highly convoluted relationships with their bodies; it is difficult to fully enjoy sensuality in its broadest sense if one cannot feel at home in the physical form she inhabits. Nor is female sensuality especially encouraged. If desire is covered in sexual education classes, it is typically male desire that should be controlled (by women); the possibility that women can thoroughly enjoy sex is almost never discussed. Young women are taught that they are the guardians – it is up to them to protect their virtue. Even birth control responsibility falls heavily on the female, with the vast majority of birth control options being materials that women need to consume, insert, or embed, all of which can have serious side effects. Is it any wonder then that women might hold a slightly more cautious attitude regarding sexual activity being a positive thing for adolescents?

**Religion and attitudes toward adolescent sexual activity**

I found the most compelling findings of this analysis to be those around degree of religious commitment. It is certainly not a new finding that those who are strongly religious have

higher rates of disapproval around unmarried sexual activity, but it can be a useful one especially when looking specifically at how to address the poor sexual health outcomes of US youth. I find it useful, in part, because it substantiates a view that is often assumed to be a given: that degree of religious commitment tends to be linked to conservatism around issues of sexuality, especially for adolescents. This was clearly borne out by the data.

Who are the religious within our sample?

The only religious group we have specific information on is that of Christianity. Within our sample population, 28.8% of respondents report their current religious affiliation as Catholic, 47.3% as Protestant, 7.5% as other non-Christian religion, and 16.4% report having no current religious affiliation. As stated within the methods chapter, there is unfortunately no further information available on the specific faith groups that made up "other religion." The Census reports that other religions in the United States are most likely to be Jewish (1.7%), Buddhist (0.7%), and Muslim (0.6%), but we do not know whether or not these populations are represented within our sample.

Lesthaeghe examines the effect of Mormon affiliation within his analyses on the SDT; unfortunately, the NSFG does not contain a category for Mormonism. Methodologically, they might be most likely to be contained within the "Protestant – Other Denomination" category since the "other" category was reserved for specifically non-Christian, but we have no way to identify how many, if any, of the Protestant categories were Mormon. The lack of data on other religions is regrettable since they may have distinct views on adolescent sexuality that it would be interesting to compare in substance and effect to Christianity. One

advantage of using attendance at religious services as our representative variable for degree of religious commitment is that it is asked of the full population; thus it includes the 7.5% of the US population who identify as religious, but not Christian.

Religious attendance and attitudes

The strongest relationship between a respondent's behavior and disapproval of adolescent sexual activity within the analysis is located with those who attend religious services more than once a week (Table 5.1). Although they make up only 10.5% of the survey population, they are 10.1 times more likely to disapprove of adolescent sexual activity than those who never attend services. Using those who attend services once a week as the referent category, those who attend more often are still 2.834 times more likely to disapprove of adolescent sexual activity. It may be safe to say that those who attend services more than once a week hold especially strong views on adolescent sexual activity, even after controlling for the effects of marital status, the number of children in their household, their educational attainment, their age, sex, and race/ethnicity, whether they lived in a metropolitan area, and whether they have ever cohabited.

**Table 5.1 Level of Attendance at Religious Services**

| Level of attendance at religious services | Odds Ratio: X times more likely to disagree | % of survey population |
|---|---|---|
| More than once a week | 10.084 | 10.5% |
| Once a week | 3.558 | 20.4% |
| 1-3 times a month | 2.153 | 16.3% |
| Less than once a month | 1.395 | 27.3% |
| Never | Reference category | 25.1% |

Why would something that seems to be fairly common sense be of use? First, as stated above, it is helpful to test the assumptions we carry. The data support that those who

have higher levels of degree of religious commitment, as shown through level of attendance at services, are more likely to be disapproving of adolescent sexual activity. Second, it is useful because religion can play a large role in the lives of adolescents and thus, it is important to understand the beliefs of those who are more highly religious. Third, and perhaps most importantly, it is useful because religions can be a positive force for sexual health for adolescents. Although many faith traditions would not support adolescent sexual activity, there is no need to believe that adolescents should be having sex in order to promote a positive view of sexuality. It is entirely possible to believe that sex belongs in a committed relationship, but that it is a positive thing deserving of respect and requiring responsibility; religions can be a powerful force for helping adolescents feel positive about their bodies and their ability to reason through decisions around sex. But a divide often seems to exist between religious leaders and public health officials--perhaps understandably given that much of the impetus for the harmful tenets of the Abstinence Only until Marriage doctrine came from the religious right and that many religious leaders feel that the public health emphasis on "disease-reduction" ignores moral considerations of whether or not teens should be sexually active. Data shows the substantial influence of religious belief and practice on attitudes toward adolescent sexuality. This would suggest the need for public health officials to engage with religious leaders to impact the sexual health of adolescents. This point is taken up again in the conclusion to this paper.

A Note on Nomenclature

Although those on the left of the political spectrum frequently use the word "fundamentalism" to describe an extreme of conservative belief, only 1.0% of the survey

population self-identifies as fundamentalist (in addition, 1.9% identify as evangelical, 1.6% as charismatic, 30.7% born-again, and 64.4% do not identify with any of the above categories). Thus "fundamentalist" may be a term applied to a group only from the outside, and not as a self-description. Even more interesting, those who self-identify as fundamentalist do not seem to be associated with more negative attitudes toward adolescent sexual activity: 12.2% of those who self-identified as fundamentalist were consistently approving of adolescent sexual activity compared to 8.9% of born-again Christians and 6.3% of evangelicals; 47.1% of fundamentalists were disapproving of sexual activity at age sixteen, but approving at age eighteen, compared to 24.9% of those who identified as born-again Christian and 23.2% of evangelicals; and 38.6% of fundamentalists consistently disapproved of adolescent sexual activity compared to 64.9% of born-again Christians and 67.4% of evangelicals. Instead, fundamentalists appear to share the views of those who did not identify with any of the offered categories, who were 37.7% disapproving, 42.2% swing votes, and 17.9% approving of adolescent sexual activity. Thus, those who self-identify as born-again (30.7% of survey population) and evangelical (1.6%) are more disapproving of adolescent sexual activity than are those who self-identify as fundamental. Rather than talking about "fundamentalist Christians" as those who are more extreme in their disapproval of X (here, adolescent sexual activity), it may be more appropriate to use the term "born-again" Christians.

## Limitations

### Limitations in the Content of the Survey

While the data in the NSFG matches my research question well, there are several important limitations regarding the content of the information available to us through the survey. The

NSFG addresses physical health and outcomes, but it does not address emotional or mental health in regard to sexuality, fertility, or family formation. Therefore, we lack information on how participants feel or think about their own sexuality and sexual behaviors; this is a major limitation for those who seek a fuller understanding of why individuals might make the choices they do.

What we have instead, however, are a small set of questions asking participants to address how they think others should conduct themselves. Within this small set of questions lies our outcome variable: whether or not the respondent thinks it right that unmarried adolescents have sexual intercourse with a member of the opposite sex. Perhaps the most important limitation of this particular question is that we have no way of knowing who the respondent is envisioning as actor within the confines of the question. One possible assumption might be that they are looking back on their own lives and envisioning their own adolescent selves. If they are parents or have loved ones who are adolescents, they might also be envisioning those adolescents. It seems likely that there may be an assumption of heterosexuality for the actor in question. We also do not know whether the respondent is envisioning a female, a male, or a couple. All of these matter – in terms of interpreting what reasons are behind judgments about the sexual activity of adolescents and how these judgments may connect with others. Future NSFG questions of this type might be more useful if they specify the sex of the adolescent[40] (i.e. do you think it is acceptable for a sixteen year old female to have sex; do you think it is acceptable for a sixteen year old male?).

[40] In fact, the pretest of Cycle 6 of the NSFG did contain sex-specific questions along with a question regarding adolescents who were aged 14. That is, they contained questions that asked, "Is it ok for an unmarried 14 year old female to have sexual intercourse?" It would appear that this level of specificity was one of the items cut in order to make the survey shorter.

Nevertheless, the NSFG is in the unique position of combining individual's self-reports of both attitudes and fertility decisions, and even with the limitations noted it provides an opportunity to study the relationship(s) between them.

Two more limitations of the survey are offered as asides. First, my original research interest on adolescents and sexual education was dropped when I realized that although the NSFG contains several questions on sexual education, there is limited data collected on what type of formal sexual education adolescents receive in school and no information on the way or tone in which the topics were discussed. Given the highly localized nature of school-based sexual education courses, this type of information would provide an important contribution to existing data sources on sexual education. Secondly, I wonder if it might be a possibility for the NSFG to be weighted not only for national analysis, but also for regional analyses. The weighting procedure is a mathematical formula and would not require collecting any additional data (although it may well affect the sampling strategy), but I do not have the statistical expertise to know whether or not this might be feasible. If not, given the difficulty encountered with the variable for metro status, the NSFG might consider using a different method of measuring the type of location of respondents.

Limitation in the Analysis

While it has some important limitations, the NSFG holds a wealth of information on sexual and reproductive decisions, as well as information on partnering and family formation. For anyone interested in the types of questions embodied by the theory of the second demographic transition, there is much more that could be done with this dataset. Accessing

this information is always, of course, a matter of asking the data the correct questions, supported by appropriate statistical skills. It would be beneficial for large public health organizations, such as the Centers for Disease Control and Prevention, to increase their use of these datasets for more complicated analyses than they currently do. Given the amount of resources spent in planning, collecting, cleaning, and presenting large national surveys, it makes sense to mine the data for all they are worth. With the acknowledgement that there will always be more questions to be asked than can feasibly be included on one survey, even small changes (such as including the sex of the adolescent, in our attitude questions) can open up new areas of research.

A second limitation in the analysis come from a decision I made to attempt to keep the sample in the regression analysis as widely representative as possible, therefore I chose variables that did not systematically exclude large groups of individuals. This decision was based more on substantive reasons concerning the representative nature of the remaining sample rather than a methodological one of small number sizes. For example, although level of attendance at religious services at age 14 was significantly correlated with one's attitude toward adolescent sexual activity (0.288), I did not include it within the final analysis because only those who were below the age of 25 at the time of the survey were asked the question (possibly to reduce recall bias). If I had included the variable for religious attendance at age 14, I would have lost the response of all those who were older than 25. The same reasoning led me to exclude variables for whether or not the respondent had ever had an abortion and the age at first childbirth from the analysis, although both were significantly correlated with the outcome variable and would have provided useful information. Future studies might

consider exploring the relationship between level of religious attendance at younger ages and current attitudes. Stratified analysis of this variable (discussed in the findings section) does suggest a potential relationship between attendance at younger ages and attitudes toward adolescent sex.

# CONCLUSION

Questions lingering from a previous research paper comparing school-based sexual education programs internationally gave birth to this project. The most important theme which emerged from that work was how attitudes regarding adolescent sexuality affected every level of sexual education including planning, funding, implementation, teacher preparedness, and community acceptance of sexual education (Holzner 2004; Berne and Huberman 2000; Pick 2000; Hoodfar 1996; Kamaara 1999; Feijoo 2001). I theorized that when it came to adolescent sexual health, the United States often had more in common with developing and transitioning countries than with fellow industrialized nations. I noted this in three key areas: (1) adolescent sexual health indicators (i.e. rates of pregnancy, abortion, and sexually transmitted infections); (2) the content of U.S. school-based sexual education programs (largely abstinence-based with a lack of emphasis on contraceptives or lifeskills); and (3) the provision of our sexual education programs (lack of structured training for teachers, fractured delivery system, and widely varying quality of instruction) (Jayne 2007). My research illustrated that it is not only concern for health consequences that determines policy, but also concern about whether or not it is appropriate for adolescents to be sexual, and, more specifically, to "have sex" that dictate the content delivered under the rubric of "sex education." Thus, ethical judgments involving conceptions of values are part of sexual health policy. These judgments derive from several points of origin in our culture. Perhaps the best response to this realization should be a simple acknowledgement that this is so, and a frank engagement with these questions of value.

Broadening from school-based sex education to the wide array of programs, services, and policies around adolescent sexual health, one can still see the far-reaching effects that the attitudes of adults have on the sexual lives of adolescents. From parental consent laws to policies not allowing adolescents to purchase emergency contraceptive pills over the counter (or at all, should that particular pharmacist refuse), parents who do not speak openly with their children regarding their expectations around sexual behavior, schools that segregate parenting teens into special classrooms, youth pastors who preach sexuality as a temptation of the flesh rather than as a God-given gift, school boards who vote against providing referrals to "reproductive health care", to a country that mandates teaching youth that any sex before marriage is likely to have "harmful physical and psychological effects," the feelings that individual adults hold about whether or not it is proper for adolescents to be sexual *matter* to the health and well-being of our adolescents.

I raised a question in the introduction of this dissertation regarding how we as adults can best support adolescents in the process of becoming a sexually healthy individual. There is no one answer to that question, but it includes a fight for a nation that supports the rights of adolescents to receive medically accurate information about their bodies and their fertility as well as to obtain the contraception and care services appropriate to them. As I write this, the healthcare reform bill is in the final hours of being passed; that battle represents a necessary but incomplete first step to allowing more Americans access to affordable care. The Stupak Amendment and its rallying cry against the provision of abortion services serves as a vivid reminder of the barriers placed in the path of women and youth who seek access to a full range of contraceptive services.

Regardless of whether one believes either that the US fits neatly into the "red state, blue state" divide or that the tensions run more along a continuum, there are populations who hold widely divergent views on what adolescents should be taught and granted in regard to their sexuality. Part of these tensions come from how different groups view adolescents in a developmental sense: whether we see them as emerging adults who should be taught critical thinking and decision making skills, and provided with resources and information or if we see them as beings who have not yet reached a developmental stage of responsibility and who need to be carefully protected, even from themselves. Although it is beyond the scope of this project to explore the historical rhetoric surrounding the concept of childhood, (even if only within the relatively recent history of the United States), it may suffice to state that adolescents were not always viewed as beings incapable of responsible action. Advocates for Youth, an non-governmental national organization that has done extensive comparative work surrounding adolescent sexual health talks often about the values of "rights, respect, and responsibility" that European countries hold toward their youth.

The dichotomy which exists between the morally-based fight for "abstinence only until marriage" and the public-health call for "comprehensive sexual education" is, in some important ways, a less than useful one. There can be substantial common ground between these "camps." Although I do not share the underlying values of the Abstinence Only Until Marriage policy, I understand and agree with proponents of AOuM when they charge that a public-health emphasis on disease reduction all too often silences the important emotional, inter-relational, and ethical considerations of sharing oneself sexually with another. There needs to be a middle ground that talks about sexuality as first and foremost belonging to the

individual. Imagine the power of a program that taught adolescent girls that their sexuality belonged to them – that taking joy in one's body and one's physicality and one's ability to feel pleasure was their right. None of that requires promoting sexual activity for adolescents, but it does require a change in attitude toward the sexuality of adolescents. The Religious Institute on Sexual Morality, Justice, and Healing, a multi-faith organization that calls on spiritual leaders to recognize the need to address sexuality and sexual health, provides a definition of quality sexual education which may help us find this middle ground. They ask public health and religious leaders alike to promote programs that:

- "Emphasize responsibility, rights, ethics, and justice.
- Teach that decisions about sexual behaviors should be based on moral and ethical values, as well as considerations of physical and emotional health.
- Affirm the goodness of sexuality while acknowledging its risks and dangers.
- Introduces with respect the differing sides of controversial sexual issues.
- Affirm the dignity and worth of all persons.
- Teach that sexuality includes physical, ethical, social, psychological, emotional, and spiritual dimensions.
- Complement the education provided by parents and faith communities.
- Publicly identifies the values that underline the program" (Religious Institute, 2002).

A national organization that seeks to foster partnerships between diverse audiences on the issue of adolescent pregnancy, The National Campaign to Prevent Teen Pregnancy has also published a number of resources for faith communities. Acknowledging the important role that religion plays in the lives of many youth, the National Campaign encourages faith leaders to work with their congregations to support youth and address teen pregnancy. They ask adults to start by getting to know youth culture—which means spending time with actual adolescents. A highly significant finding in this research was that the older the respondent, the more likely they were to disapprove of adolescent sexual activity. Encouraging cross-

generational communication may not change the minds of older adults, nor does it need to, but it can help them to understand the realities of adolescent lives. As a bonus, youth thrive when they feel connected to adults. They may also learn how sexuality is not the province of youth alone but an important and sustained activity through life. This is a valuable perspective.

Indeed, for adolescents to be healthy sexually, they need support and guidance from the adults in their lives—this includes parents, family, teachers, coaches, and religious and community leaders, among others. Teens are overwhelmed with sexual messages from the media and the larger society; it is appropriate that they also receive information and care from trusted adults. Given how charged sexuality can be and how few of us received training in how to be comfortable or make sense of it, it can be very difficult to envision speaking to the adolescents in our lives about sexuality. Stories abound of how awkward "The Talk" was between children and parents, and perhaps a first step would be for adults to become more comfortable with our own sexuality. One place to start might be by examining the scripts we were taught about sexuality: the words used by our parents or teachers in explaining sex or pregnancy or dating, the topics they addressed or shied away from, how they talked about what it meant to be female or male and remembering how we felt through it all. Remembering what was helpful, awkward, confusing, reassuring in what others told us might guide how we interact with the adolescents in our own lives.

It may also be important to remember that genuine choice includes the ability to say no to what others may wish for you. Teens may not always take the paths that adults think are best – whether through sexual activity or declining to go to college or preferring to vote

for the opposition. Perhaps the best gift we could give our adolescents, especially older adolescents, is the ability to critically examine the choices in front of them, making sure, through education and practice, that they have the necessary information, resources, and the decision-making skills to be the architect of their own lives.

Bibliography

Abma, JC, GM Martinez, WD Mosher, BS Dawson. 2004. Teenagers in the United States: Sexual Activity, Contraceptive Use, and Childbearing, 2002. National Center for Health Statistics Vital Health Stat 23(24).

Abraham, Clara and Derek Wight. (1996). Developing HIV-preventive Behavioural Interventions for Young People in Scotland. *International Journal of STD & AIDS* 7 Suppl 2, 39-42.

Alan Guttmacher Institute. 2001. Can More Progress be Made? Teenage Sexual and Reproductive Behavior in Developed Countries. http://www.guttmacher.org/pubs/eurosynth_rpt.pdf [accessed February 5, 2007].

Asian Communities for Reproductive Justice. 2007. A New Vision for Advancing our Movement for Reproductive Health, Reproductive Rights, and Reproductive Justice 2005 www.sistersong.net/documents/ACRJ_Reproductive_Justice_Paper.pdf. [accessed February 5, 2007].

Barker-Benfield, Ben. 1975. Sexual Surgery in Late Nineteenth Century America. *International Journal of Health Service*. 5(2):279-88.

Barlow, Anne, and Rebecca Probert. 2004. Regulating Marriage and Cohabitation: Changing Family Values and Policies in Europe and North America—An Introductory Critique. *Law & Policy* 26 (1):1-11.

Bennett, Rosemary. 2007. Couples that live apart....stay together. *The Times Online,* May 12, 2007.

Berne, Linda and Barbara Huberman. 1999. European Approaches to Adolescent Sexual Behavior and Responsibility. http://www.advocatesforyouth.org/index.php?option=com_content &task=view&id=402&Itemid=177 [accessed, April 11, 2010].

Berne, Linda, and Barbara Huberman. 2000. Lessons learned: European Approaches to Adolescent Sexual Behavior and Responsibility. *Journal of Sex Education & Therapy* 25 (2-3):189-199.

Biddlecom, Ann E. 2004. Trends in Sexual Behaviours and Infections among Young People in the United States. *Sexually Transmitted Infections* 80 (SupplII): ii74-ii79.

Bleakley, Amy, Michael Hennessy, and Martin Fishbein. 2006. Public Opinion on Sex Education in US Schools. *Archives of Pediatric and Adolescent Medicine* 160:1151-1156.

Bongaarts, John and Susan Cotts Watkins. 1996. Social Interactions and Contemporary Fertility Transitions. *Population and Development Review* 22 (4):639-682.

Boonstra, Heather. 2010. Key Questions for Consideration as a New Federal Teen Pregnancy Prevention Initiative is Implemented. *Guttmacher Policy Review* 13:1.

Brady, Martha. 2003. Preventing Sexually Transmitted Infections and Unintended Pregnancy, and Safeguarding Fertility: Triple Protection Needs of Young Women. *Reproductive Health Matters* 11 (22):134 - 141.

Brindis, Claire. 2002. Advancing the Adolescent Reproductive Health Policy Agenda: Issues for the Coming Decade. *Journal of Adolescent Health* 31 (6 Suppl):296-309.

Bumpass, Larry, and Hsien-Hen Lu. 2000. Trends in Cohabitation and Implications for Children's Family Contexts in the United States. *Population Studies* 54 (1):29-41.

Caldwell, John C. 1976. Toward A Restatement of Demographic Transition Theory. *Population and Development Review* 2 (3/4):321-366.

Calzo, Jerel P. and L. Monique Ward. 2009. Contributions of Parents, Peers, and Media to Attitudes toward Homosexuality: Investigating Sex and Ethnic Differences. *Journal of Homosexuality* 56 (8):1101-1116.

The Centers for Disease Control. 2006. Trends in Reportable Sexually Transmitted Diseases in the United States, 2005: National Surveillance Data for Chlamydia, Gonorrhea, and Syphilis.

Cliquet, Robert. 1991. The Second Demographic Transition: Fact or Fiction? In *Council of Europe Population Studies* nr.23. Strasbourg: Council of Europe.

Coale, Ansley and Roy Treadway. 1986. A summary of the changing distribution of overall fertility, marital fertility, and the proportion married in the provinces of Europe. *The Decline of Fertility in Europe,* edited by A. Coale. Princeton: Princeton University Press.

Hill Collins, Patricia. 1990. *Black Feminist Thought: Knowledge, Consciousness, and the Politics of Empowerment*. Great Britain: Routledge.

Crenshaw, Kimberle. 1989. Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Policies. *University of Chicago Legal Forum* 139.

____ 1991. Mapping the Margins: Intersectionality, Identity Politics, and Violence Against Women of Color. *Stanford Law Review* 43:6, 1241-1299.

Cui, Nian, Minxiang Li, & Ersheng Gao. 2001. Views of Chinese parents on the provision of contraception to unmarried youth. *Reproductive Health Matters* 9(17), 137-145.

Darroch, Jacqueline, David Landry, Susheela Singh. 2000. Changing Emphases in Sexuality Education in U.S. Public Secondary Schools, 1988-1999. *Family Planning Perspectives* 32 (5):204-211+265.

Darroch, Jacqueline, Susheela Singh, and Jennifer Frost. 2001. Differences in Teenage Pregnancy Rates among Five Developed Countries: The Roles of Sexual Activity and Contraceptive Use. *Family Planning Perspectives* 33 (6):244-281.

Dewan, Shalia. 2010. To Court Blacks, Foes of Abortion Make Racial Case. *The New York Times*, February 26. http://www.nytimes.com/2010/02/27/us/27race.html [accessed March 3, 2010].

Dittus, Patricia J. and James Jaccard. 2000. Adolescents' perceptions of maternal disapproval of sex: relationship to sexual outcomes. *Journal of Adolescent Health* 26 (4):268-278.

Eaton, Daniel, et.al. 2006. Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance – United States, 2005. Surveillance Summaries, June 9, 2006. Morbidity and Mortality Weekly Review 55(No. SS-5).

Edgardh, Karin. 2002. Adolescent Sexual Health in Sweden. *Sexually Transmitted Infections* 78 (5):352-356.

Thomas Eng and William T. Butler. 1997. *The Hidden Epidemic: Confronting Sexually Transmitted Diseases.* Washington D.C.: National Academy of Sciences.

Ehrenreich, Barbara & Deidre English. 1993. Complaints and Disorders: The Sexual Politics of Sickness. New York: The Feminist Press at City University of New York.

Feijoo, Ammie. 2001. Adolescent Sexual Health in Europe and the U.S.: Why the Difference? http://www.advocatesforyouth.org/index.php?option=com_content&task=view&id=419&Itemid=177 [accessed April 6, 2007].

Finer, Lawrence. 2007. Trends in Premarital Sex in the United States, 1954 - 2003. *Public Health Reports* 122 (1):73-78.

Finer, Lawrence and S.K. Henshaw, (2003). Abortion Incidence and Services in the United States in 2000. *Perspectives on Sexual and Reproductive Health*, 35(1), 6-15.

Floyd Davis, Robbie. 1992. *Birth as an American Rite of Passage*. Los Angeles: University of California Press.

Foulkes, Risha, Raquel Donoso, Beth Fredrick, Jennifer Frost, and Susheela Singh. 2005. Opportunities for action: addressing Latina sexual and reproductive health. *Perspectives on Sexual & Reproductive Health* 37 (1):39-44.

Gavin, Lori. et.al. 2009. Sexual and Reproductive Health of Persons Aged 10-24 Years, United States, 2002-2007. Morbidity and Mortality Weekly Reports Surveillance Summaries. July 17, 2009. 58 (SS 06), 1-58.

Greenhalgh, Susan. 1995. Anthropology Theorizes Reproduction: Integrating Practice, Political Economic, and Feminist Perspectives. In *Situating Fertility: Anthropology and Demographic Inquiry* Ed. S. Greenhalgh. Cambridge University Press.

Groves RM, Benson G, Mosher WD, et al. 2005. Plan and operation of cycle 6 of the National Survey of Family Growth. National Center for Health Statistics. Vital Health Stat 1(42).

Hamilton, Brady E., Joyce A. Martin and Stephanie J. Ventura. 2005. Births: Preliminary Data for 2005. National Center for Health Statistics.

Haraway, Donna. 1988. Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective. *Feminist Studies* 14: 3, 575-599.

Harding, Sandra. 1993. Rethinking Standpoint Epistemology: What is Strong Objectivity? *Feminist Epistemologies.* Ed. Linda Alcoff and Elizabeth Potter. London: Routledge, 49-82.

Hartsock, Nancy 1983. The Feminist Standpoint: Developing the Ground for a Specifically Feminist Historical Materialism. *Discovering Reality: Feminist Perspectives on Epistemology, Metaphysics, Methodology, and the Philosophy of Science.* Sandra Harding and Merrill Hintikka. Dordrecht: D. Reidel, 283-310.

Hoffman, S.D., (2006) By the Numbers: The Public Costs of Adolescent Childbearing. The National Campaign to Prevent Teen Pregnancy. Washington, DC.

Holder, David W., Robert H. DuRant, Treniece L. Harris, Jessica Henderson Daniel, Dawn Obeidallah, and Elizabeth Goodman. 2000. The association between adolescent spirituality and voluntary sexual activity. *Journal of Adolescent Health* 26 (4):295-302.

Holzner, Brigitte M. and Dédé Oetomo. 2004. Youth, Sexuality and Sex Education Messages in Indonesia: Issues of Desire and Control. *Reproductive Health Matters* 12(23), 40-49.

Honein, M.A, L.J. Paulozzi, M.L. Watkins. Maternal Smoking and the Validity of Birth Certificate Data for Effect Estimation. *Public Health Reports,* July-August 2001. Vol. 116, 327-335.

Hoodfar, Homa. 1996. Bargaining with Fundamentalism: Women and the Politics of Population Control in Iran. *Reproductive Health Matters* 8:30-40.

Inglehart, R. 1971. The Silent Revolution in Europe: Intergenerational Change in Post-Industrial Societies. *The American Political Science* Review 65 (4):991-1017.

Inhorn, Marcia. 1994. Quest for Conception: Gender, Infertility, and Egyptian Medical Traditions. USA: University of Pennsylvania Press.

Jaccard, James, Patricia J. Dittus, and Vivian V. Gordon. 1996. Maternal Correlates of Adolescent Sexual and Contraceptive Behavior. *Family Planning Perspectives* 28 (4):159-185.

———. 1998. Parent-Adolescent Congruency in Reports of Adolescent Sexual Behavior and in Communications about Sexual Behavior. *Child Development* 69 (1):247-261.

Jaggar, Alison M. 1999. Feminist Ethics in *The Blackwell Guide to Ethical Theory*. Ed. Hugh LaFollette. Blackwell Publishing. 26 November 2007. www.blackwellreference.com/subscriber/tocnode?id=g97806212001199_chunk_g978063120119919. Accessed May 10, 2008.

Janssens, Angélique. 2007. 'Were women present at the demographic transition?' A question revisited. *The History of the Family* 12 (1):43-49.

Jayne, Paula. 2007. Restrictive and Permissive Themes in School-Based Sexual Education: A Comparative View. Master's Thesis, Rollins School of Public Health.

Jones, Elise, Jacqueline Darroch Forrest, Noreen Goldman, Stanley Henshaw, Richard Lincoln, Jeannie Rosoff, Charles Westoff, and Deirdre Wulf. 1986. Teenage pregnancy in industrialized countries. New Haven, CT: Yale University Press.

Joyce, Kathryn. 2006. Arrows for the war. *The Nation.* November 27. http://www.thenation.com/doc/20061127/joyce [accessed December 18, 2007].

Kabeer, Naila. 1996. *Gender, Demographic Transition and the Economics of Family Size: Population Policy for a Human-Center Development.* Occasional Paper 7 June 1996. Geneva: United Nations Research Institute for Social Development.

The Henry J. Kaiser Family Foundation. 2002. Sex Education in the U.S.: Policy and Politics: Issue Update. http://www.kff.org/youthhivstds/upload/Sex-Education-in-the-U-S-Policy-and-Politics.pdf [accessed March 3, 2007].

Kamaara, E. 1999. Reproductive and Sexual Health Problems of Adolescent Girls in Kenya: A Challenge to the Church. *Reproductive Health Matters* 7(14), 130-133.

Kirby, Douglas. 2001. Understanding What Works and What Doesn't in Reducing Adolescent Sexual Risk-Taking. *Family Planning Perspectives* 33 (6):276-281.

Kirk, Dudley. 1996. Demographic Transition Theory. *Population Studies* 50 (3):361-387.

Lammers, Cristina, Marjorie Ireland, Michael Resnick, and Robert Blum. 2000. Influences on adolescents' decision to postpone onset of sexual intercourse: a survival analysis of virginity among youths aged 13 to 18 years. *Journal of Adolescent Health* 26 (1):42-48.

Landry, David, Jacqueline Darroch, Susheela Singh, and Jenny Higgins. 2003. Factors Associated with the Content of Sex Education in U.S. Public Secondary Schools. *Perspectives of Sexual and Reproductive Health* 35 (6):261-269.

Landry, David J., Lisa Kaeser, Cory L. Richards. 1999. Abstinence Promotion and the Provision of Information About Contraception in Public School District Sexuality Education Policies. *Family Planning Perspectives* 31 (6):280-286.

Lee, Ronald. 2003. The Demographic Transition: Three Centuries of Fundamental Change. *Journal of Economic Perspectives* 17 (4):167-190.

Lefkowitz, Eva S., Meghan M. Gillen, Cindy L. Shearer, and Tanya L. Boone. 2004. Religiosity, Sexual Behaviors, and Sexual Attitudes during Emerging Adulthood. *The Journal of Sex Research* 41 (2):150-159.

Lepkowski JM, WD Mosher, Davis KE, et al. National Survey of Family Growth, Cycle 6: Sample design, weighting, imputation, and variance estimation. National Center for Health Statistics. Vital Health Stat 2(142). 2006.

Lesthaeghe, Ron. 1977. The Decline of Belgian Fertility. Princeton: Princeton University Press.

———. 2010. The Unfolding Story of the Second Demographic Transition. In *Fertility in the History of the 20th Century - Trends, Theories, Public Discourses, and Policies*. Akademia Leopoldina and Berlin-Brandenburgische Akademie: Royal Belgian Academy of Sciences.

Lesthaeghe, Ronald and K. Neels. 2002. From the First to the Second Demographic Transition: An Interpretation of the Spatial Continuity of Demographic Innovation in

France, Belgium and Switzerland. *European Journal of Population / Revue Européenne de Démographie* 18 (4):325-360.

Lesthaeghe, Ronald and Lisa Neidert. 2006. The Second Demographic Transition in the United States: Exception or Textbook Example? *Population and Development Review* 32 (4):669-698.

Lesthaeghe, Ronald and Lisa Neidert. 2009. US Presidential Elections and the Spatial Pattern of the American Second Demographic Transition. *Population and Development Review* 35 (2):391-400.

Lesthaeghe, R., and J. Surkyn. 2004. When History moves on: the Foundations and Diffusion of a Second Demographic Transition. *Seminar on Ideational Perspectives on International Family Change.* Ann Arbor, MI: Population Studies Center, Institute for Social Research (ISR).

Lesthaeghe, Ron and Lisa Neidert. 2008. Voting and Families: America's Second Demographic Transition. *New Geography* (December 11), http://www.newgeography.com/content/00461-voting-and-families-america%E2%80%99s-second-demographic-transition [accessed, February 2009].

Lottes, Ilsa L. 2002. Sexual Health Policies in Other Industrialized Countries: Are There Lessons for the United States? *The Journal of Sex Research* 39 (1):79-83.

Luker, Kristin. 1984. Abortion and the Politics of Motherhood. Berkley: University of California Press.

Martin, Emily. 1991. *The Woman in the Body: A Cultural Analysis of Reproduction*. Boston: Beacon Press.

Maslow, Abraham H. 1943. A Theory of Human Motivation. *Psychological Review* 50:370-396.

Meier, Ann M. 2003. Adolescents' Transition to First Intercourse, Religiosity, and Attitudes about Sex. *Social Forces* 81 (3):1031-1052.

Morgen, Sandra. 2002. Into Our Own Hands: The Women's Health Movement in the United States, 1969-1990. NJ: Rutgers University Press.

Norsigian, Judy. 1996. The Women's Health Movement in the United States. In *Man-Made Medicine: Women's Health, Public Policy, and Reform*, 79-98. North Carolina: Duke University Press.

Solsona i Pairo, Montserrat. 1997. The Second Demographic Transition from a Gender Perspective: The Case of Catalonia in *Women and Families: Evolution of the Status of Women as a Factor and Consequence of Changes in Family Dynamics*, ed. Maria Eugenia Cosio-Zavala, 171-192. Paris: Committee for International Cooperation in National Research in Demography (CICRED).

Panchaud, Christine, Susheela Singh, Dina Feivelson, Jacqueline E. Darroch. 2000. Sexually Transmitted Diseases Among Adolescents in Developed Countries. *Family Planning Perspectives* 32 (1):24-32.

Peduzzi P, J Concato, E Kemper, TR Holford, AR Feinstein. 1996. A simulation study of the number of events per variable in logistic regression analysis. *Journal of Clinical Epidemiology* 49, 1373-9.

Pick, Susan, Martha Givaudan, and J. Brown. 2000. Quietly working for school-based sexuality education in Mexico: Strategies for advocacy. *Reproductive Health Matters* 8 (16):92-102.

Pick, Susan, Martha Givaudan, Ype H. Poortinga. 2003. Sexuality and Life Skills Education: A Multistrategy Intervention in Mexico. *American Psychologist* 58 (3):230-234.

The Religious Institute on Sexual Morality, Justice, and Healing. 2002. The Open Letter to Religious Leaders about Sex Education. http://www.religiousinstitute.org/sites/default/files/open_letters/sexeduopenletter.pdf [accessed, April 11, 2010].

Roseneil, Sasha. 2006. On Not Living with a Partner: Unpicking Coupledom and Cohabitation. *Sociological Research Online* 11 (3).

Ross, Loretta J. 1993. "African-American Women and Abortion: 1800-1970." In Theorizing Black Feminisms: The Visionary Pragmatism of Black Women, eds. Stanlie M. James and Abena P.A. Busia.New York: Routledge.

Santelli, John, Mary A. Ott, Maureen Lyon, Jennifer Rogers, Daniel Summers, Rebecca Schleifer. 2006. Abstinence and abstinence-only education: a review of U.S. policies and programs. *Journal of Adolescent Health* 38 (1):72-81.

Santelli, John, Brian Morrow, John Anderson, Laura Duberstein Lindberg. 2006. Contraceptive Use and Pregnancy Risk Among U.S. High School Students, 1991-2003. *Perspectives on Sexual and Reproductive Health* 38 (2):106-111.

Schulte, Lisa J., and Juan Battle. 2004. The Relative Importance of Ethnicity and Religion in Predicting Attitudes Towards Gays and Lesbians. *Journal of Homosexuality* 47 (2):127-142.

Sexuality Information & Education Council of the United States. 2009. Sexuality Education and Abstinence-Only-Until-Marriage Programs in the States: An Overview for Fiscal Year 2008. http://www.siecus.org/index.cfm?fuseaction=Page.viewPage&pageId=487&parentID=478 [accessed, April 11, 2010].

Siller, Arlene B. and Linda Tompkins. 2005.The Big Four: Analyzing Complex Sample Survey Data Using SAS®, SPSS®, STATA®, and SUDAAN®. Paper 172-31 2005 U.S. Department of Health and Human Services, Centers for Disease Control and Prevention,National Center for Health Statistics http://www2.sas.com/proceedings/sugi31/172-31.pdf [accessed February 1, 2010].

Singh, Susheela and Jacqueline Darroch. 2000. Adolescent Pregnancy and Childbearing: Levels and Trends in Developed Countries. *Family Planning Perspectives* 32 (1):14-23.

Singh, Susheela, Jacqueline Darroch, Jennifer Frost, and the Study Team. 2001. Socioeconomic Disadvantage and Adolescent Women's Sexual and Reproductive Behavior: the Case of Five Developed Countries. *Family Planning Perspectives* 33 (6):251-258.

Singh, Susheela, Jacqueline E. Darroch, and Jennifer J. Frost. 2001. Socioeconomic Disadvantage and Adolescent Women's Sexual and Reproductive Behavior: The Case of Five Developed Countries. *Family Planning Perspectives* 33 (6):251-289.

Smith, Christian. 2003. Research Note: Religious Participation and Parental Moral Expectations and Supervision of American Youth. *Review of Religious Research* 44 (4):414-424.

Smock, Pamela J., and Wendy D. Manning. 2004. Living Together Unmarried in the United States: Demographic Perspectives and Implications for Family Policy. *Law & Policy* 26 (1):87-117.

Sonfield, Adam, Rachel Benson Gold. 2001. States' Implementation of the Section 510 Abstinence Education Program, FY 1999. *Family Planning Perspectives* 33 (4):166-171.

Statistical Computing Seminars: Introduction to SAS proc logistic. UCLA: Academic Technology Services, Statistical Consulting Group. http://www.ats.ucla.edu/stat/sas/seminars/sas_logistic/logistic1.htm (accessed February 23, 2010).

Stephens, Dionne P. and Layli Phillips. 2005. Integrating Black feminist thought into conceptual frameworks of African American adolescent women's sexual scripting processes. *Sexualities, Evolution and Gender* 7(1): 37–55.

Strauss, L.T., Gamble, S.B., Parker, W.Y., Cook, D.A., Zane, S.B., Hamdan, S. Abortion Surveillance—United States, 2003. MMWR Surveillance Summaries. November 24, 2006 / 55(SS11): 1-32

Suellentrop, Katherine. 2006. Science Says: The Public Costs of Teen Childbearing. National Campaign to Reduce Teen Pregnancy Policy Brief 30.

Talbot, Margaret. 2008. Red Sex, Blue Sex: Why Do So Many Evangelical Teen-agers Become Pregnant? *New Yorker* (November). http://www.newyorker.com/reporting/2008/11/03/081103fa_fact_talbot [accessed, March 3, 2009].

Teitelbaum, Michael. 1975. Relevance of Demographic Transition Theory for Developing Countries. *Science* 188 (4187):420-425.

Thornton, Arland, William G. Axinn, and Daniel H. Hill. 1992. Reciprocal Effects of Religiosity, Cohabitation, and Marriage. *The American Journal of Sociology* 98 (3):628-651.

Thornton, Arland and Donald Camburn. 1989. Religious Participation and Adolescent Sexual Behavior and Attitudes. *Journal of Marriage and Family* 51 (3):641-653.

van de Kaa, Dirk. 2002. The Idea of a Second Demographic Transition in Industrialized Countries. Paper presented at the Sixth Welfare Policy Seminar of the National Institute of Population and Social Security, Tokyo, Japan, 29 January 2002.

Weinstock, Hillard, Stuart Berman, and Willard Cates, Jr. 2004. Sexually Transmitted Diseases Among American Youth: Incidence and Prevalence Estimates, 2000. *Perspectives on Sexual and Reproductive Health* 36 (1):6-12.

Wellings, Kaye, Martine Collumbien, Emma Slaymaker, Susheela Singh, Zoe Hodges, Dhaval Patel, Nathalie Bajos. 2006. Sexual Behavior in Context: A Global Perspective. *Lancet* 368:1706-1728.

Weisman, Carol S. 1998. *Women's Health Care: Activist Traditions and Institutional Change.* Maryland: The Johns Hopkins University Press.

Williams, Henrietta and Sandra Davidson. 2004. Improving adolescent sexual and reproductive health. A view from Australia: learning from world's best practice. *Sexual Health* 1 (2):95-105.

# Appendix A

National Adolescent Health Surveys in the United States

Several nationally representative surveys deal with the topic of adolescent sexuality or sexual education. The ones which are specifically health-based and directed by the Division of Adolescent and School Health at the Centers for Disease Control and Prevention (CDC) include School Health Profiles (Profiles), School Health Policies and Programs Survey (SHPPS), Youth Risk Behavior Surveillance System (YRBSS). In addition, the General Social Survey is run by the National Opinion Research Center. I provide a brief description of each survey, discussing those aspects which are most applicable to adolescent sexual health as a way to "map" the nationally representative data available on this topic.

The first three surveys on the list deal specifically with adolescent health. The first, Profiles, looks at school-based health information, gathering data not only on what topics are taught[41], but in what type of classes (physical education vs. social sciences, etc) they were covered, certification of teachers, whether the teacher received training in both content and pedagogical methods (e.g. group discussion vs. lecture, etc.), and whether teachers are interested in further professional development in sexual health topics. Each school receives

[41] Applicable questions to the lead health instructor include whether or not the following topics were covered that year: Abstinence as the most effective method to avoid pregnancy, HIV, and STDs; how to correctly use a condom; Condom efficacy, that is, how well condoms work and do not work; risks associated with having multiple sexual partners; social or cultural influences on sexual behavior; how to prevent HIV infection; how HIV is transmitted; how HIV affects the human body; influence of alcohol and other drugs on HIV-related risk behaviors; how to find valid information or services related to HIV or HIV testing; and compassion for persons living with HIV or AIDS. The Principal survey asks about a) who coordinates the health education program at their school and b) whether or not newly hired staff need to be certified / licensed, etc and c) if there is more than one group who makes decisions about the health policy at that school (Grunbaum, et al., 2005).

two surveys: one for the principal and one for the lead health educator. The survey is limited by lack of direct data from the students themselves, depending instead on teacher and principal report (no triangulation seems available to see if the teacher is correctly reporting what has been covered). There is also limited data on actual content of courses and no markers for beliefs about sexuality. Although not ultimately useful for this project, the Profiles survey has been valuable in documenting what sexual health topics are reported as taught in schools across the nation.

The second survey, School Health Policies and Programs (SHPPS) is limited to eight topics and covers four administrative levels by sending surveys to the state, district, school, and classroom for elementary, junior, and senior high schools. As one of the eight topics, "health education" covers the prevention of HIV, pregnancy, and STI among other subjects. SHHPS has been helpful to researchers in many ways, one of which is to illustrate the localized nature of sexual education policy in America. For example, the SHPPS 2000 survey shows that although only 49% of states had a policy requiring that schools teach students methods to prevent pregnancy, the number was much higher at the district level at 83%; these numbers rose to 58% and 86% respectively in 2006 (CDC, 2006). The health education questions also highlight the importance of language and the particular politics and economics that surround different terms. For example, since information about condoms can assist in reducing the risk of HIV, STIs, and pregnancy simultaneously, one might expect a high level of similarity between states that mandate that schools cover the individual topics HIV, STI, and pregnancy. However, this is often not the case. SHHPS 2000 data shows that only 49% of states had policies on pregnancy prevention, while 63% had policies on STI prevention,

and 73% on HIV prevention. Run every six years, SHHPS provides longitudinal data which highlights the trends of health education provision.

Unlike Profiles and SHHPS, the Youth Risk Behavior Surveillance System (YRBSS) collects data directly from adolescents themselves. A survey administered on the national and state level (along with specialized groups such as the Navajo Nation, middle schools, or alternative schools), YRBSS is designed to measure risk behaviors in public and private high school students. One of the largest focus areas is risk behaviors leading to unintended pregnancy or sexually transmitted infections, including HIV. In the 2007 national survey, there were seven questions on sexual and risk behaviors.[42] The YRBS provides information such as these statistics: 87% of high school students report receiving some sort of information about HIV infection during school and 35% of high school girls and 33% of boys report having had sexual intercourse within the last three months. There are no questions on feelings, thoughts, or beliefs about sexuality or sexual behavior, any measure of pleasure / desire for sex beyond one question on sexual assault, or any questions that captures those who would not define their sexual behaviors as "sexual intercourse". Like SHPPS and Profiles, YRBSS is designed to collect broad, but important markers that influence adolescent health. Depth is often sacrificed in order to collect information on selected topics in an amount of time that makes schools and individuals willing to complete the survey. As a governmental agency, the Division of Adolescent and School Health may also be subject to the political

[42] The seven questions included: "have you ever had sexual intercourse?"; age at first sex; total number of lifetime partners; number of partners within the last three months; use of alcohol or drugs before last intercourse; condom use during last intercourse; method of birth control during last intercourse. Other applicable questions include: "have you ever been taught about AIDS or HIV infection in school"; "During the past 12 months, did your boyfriend or girlfriend ever hit, slap, or physically hurt you on purpose?" and "Have you ever been physically forced to have sexual intercourse when you did not want to?" (CDC, 2007).

agenda of the current administration. It is feasible that keeping the questions as broad (and as bland) as possible allows the same survey to be administered throughout administration changes. Not having to change the way questions are worded allows for direct comparison of the same information over several years, providing valuable longitudinal data that assists in marking trends and measuring the effectiveness of programs.

One non-physical health based survey which contains data pertinent to the study of attitudes toward adolescent sexuality is the General Social Survey (GSS) from the National Opinion Research Center (NORC). The GSS, which has run since 1972 and measures demographics and attitudes within the United States, contains questions on whether or not adolescents should receive sexual education and on whether extra-marital sex is wrong in general and wrong for adolescents in particular (NORC, 2007). The GSS also contains a wealth of variables on religious identity, beliefs, and practices. However, while it contains some variables on fertility behaviors, it does not contain the level of detail needed to replicate Lesthaeghe's analysis. For this reason, although the GSS is superior in measuring religious affiliation and in measuring general attitudes, I have chosen to analyze the NSFG which contains all the measures that Lesthaeghe presents as important to understanding the Second Demographic Transition.

# Appendix B

National Survey of Family Growth Sampling

The following outlines the four stages of sampling undertaken by the 2002 National Survey of Family Growth, acknowledging that this is an overview, not an exhaustive discussion of the methodology of the survey sampling.

*Stage One: Dividing the Nation*

Nationally representative surveys present data for the nation as a whole. They do this not by surveying each person in the US (clearly, quite impractical), but by randomly surveying many different groups of people who then represent those who are not surveyed, making the data generalizable to the entire population (Daniel, 2005). The United States encompasses a large and varied landmass; therefore, one important way to keep the sample representative is to make sure that each geographic area of the US is covered. Thus, the first stage of sampling divided the United States into 2,402 sections known as primary sampling units (PSUs). Because experiences in the same geographic region can also differ widely, these PSUs were then further divided into three strata: large metropolitan areas, metropolitan areas, and nonmetropolitan areas. Clearly some of these strata had more residents than others, so to keep the strata comparable, the smaller areas were grouped together by population size and geographical region to form sampling units. The largest metropolitan areas had sufficient population density to form their own sampling unit ("self-representing" or SR PSUs) (Lepkowski et al., 2006).

A second way to make a survey representative is to ensure that each major racial and ethnic group[43] is included. The procedure of choosing representatives from the different PSUs was actually conducted twice: once to provide a national sample (n=110 PSUs) and a second time to provide an accurate sample of Hispanic populations within the United States (n=39 PSUs which overlapped with the national sample plus 11 additional PSUs) resulting in a final total of 121 PSUs (please see Appendix H for a visual explanation of this process) (Lepkowski et al., 2006). Further sampling done by race and ethnicity is detailed below.

*Stage Two: Blocks and Segments*

Each of the 121 PSUs was then divided into U.S. Census defined blocks. Because blocks had varying numbers of households, smaller blocks that were geographically close to each other were combined into "segments" containing a minimum of 75 urban households or 50 rural households. Each of these blocks and segments were then divided into four domains according to the Census-defined racial and ethnic makeup of the unit: 1) Less than 10% black or Hispanic ("Nonminority"); 2) More than 10% black and less than 10% Hispanic; 3) More than 10% Hispanic and less than 10% black; 4) More than 10% of Black and more than 10% Hispanic. Blocks were then chosen from each of these four domains in percentages that would allow sufficient population sizes for analysis of underrepresented populations. Thus, the sampling rate for domain two ("black") was 80% higher than domain one ("white"), and the sampling rates for domains three ("Hispanic") and four ("black" and "Hispanic") were 110% higher than domain one ("white"). This oversampling provides for a sufficient population size for black and Hispanic populations, which allows for more accurate

[43] The NSFG follows the rather crude categorization of the U.S. Census which uses the word "race" to refer to 'color' (black or white or "other") while ethnicity refers only to whether or not a person considers themselves Hispanic.

generalizations from the data. Overall, a total of 1,414 blocks and segments were selected from the 121 PSUs by use of a sampling interval. Experienced field agents were sent to each selected block / segment to record the house number and street name of all housing units in a given block on a handwritten form which was later keyed into the computer system. If a block contained an invalid housing unit, such as a prison or a college dormitory (i.e. not a household), that segment was excluded from the final analysis, leaving a total of 1,384 segments (Lepkowski et al., 2006).

*Stage Three: Choosing Households ("Sampling Lines")*

Individual households (or sampling lines) in each block / segment were chosen systematically using a calculated probability of selection based on the target sampling rates. Within their own domains, each household had an equal chance of being chosen. Additional sampling lines, were chosen from domains two, three, and four in order to oversample for black and Hispanic respondents. There were a total of 74,132 individual households chosen from 1,384 segments; these were interviewed in two phases as a way to monitor costs and sample sizes (Lepkowski et al., 2006).

*Stage Four: Interview Selection*

More detail on the interview stage follows under the procedures section, but a brief summary of how individuals were chosen is provided here. Once a house ("sampling line") had been selected, an interviewer asked the adult of the house to list all inhabitants of the household who were between the ages of 15-44. The sex, age group, and racial/ethnic background of each inhabitant was entered into the surveying software available on the laptop computers used by the interviewers. The surveying software then selected a participant from the list of

eligible adults in the home. Use of the computer program to determine which eligible adult was to be interviewed allowed for different probabilities of selection across age, sex, race and ethnicity groups. It was at this stage that women and adolescents were oversampled by being given a higher probability of being selected (Lepkowski et al., 2006).

# Appendix C

Survey Introduction Letters

(Groves, Benson, and Mosher, 2005)



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control
and Prevention

National Center for Health Statistics
6525 Belcrest Road, Room 1140
Hyattsville, Maryland 20782

From the Director of the National Center for Health Statistics

My agency, part of the Department of Health and Human Services, needs your help.

We are carrying out an important research study called the National Survey of Family Growth, which gathers information on schooling, work, marriage and divorce, having and raising children, and medical care. We are asking a scientifically chosen sample of Americans to participate in a short interview to be conducted by the highly respected University of Michigan Survey Research Center.

In a few days, a female interviewer on the staff of the University of Michigan, specially trained for this survey, will visit your home to see if you or someone in your household is eligible for the survey. Her visit will take only about 5 minutes, and any adult in the home can answer.

If someone in your household is chosen to take part in the study, the interviewer will explain in more detail what the study is about and answer any questions you or the selected person may have about the study. She will ask the selected person for an interview that will take 60-80 minutes.

Your help in this study is very important and completely voluntary. Your interviewer will arrange the interview whenever it is convenient for you. Interviewers work 7 days a week, including evenings. Also, if someone in your household is selected for the study and is able to take part, that person will receive $40 as a token of our appreciation.

Please be absolutely assured that the facts you provide will be kept strictly confidential, as required by Federal law (Section 308(d) of the Public Health Service Act (42 USC 242M) and the Privacy Act of 1974 (5 USC 552a)). The information you provide will be grouped with information from other people in the survey, and reported as percentages, totals, and averages. No individual person or family will ever be identified. You may skip any of the questions you wish.

If you have any questions about the study, please refer to the enclosed brochure, ask your interviewer, visit the survey's web site at: http://www.cdc.gov/nchs/nsfg.htm, or call Dr. Joyce Abma or Dr. William Mosher (Toll-Free) at: 1-866-227-8347. If you have questions about your rights as a respondent, you may call the Institutional Review Board at: 1-800-223-8118. To contact your interviewer, please call Chris Moore (Toll-Free) at: 1-866-764-5454, anytime Monday - Thursday 9am-9pm, Friday 9am-5pm, or Saturday 12pm-4pm (EST). On behalf of the National Center for Health Statistics, I thank you for your help with this important study.

Sincerely,

Edward J. Sondik, Ph.D.
Director, National Center for Health Statistics
http://www.cdc.gov/nchs

NSFG2100

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control
and Prevention

National Center for Health Statistics
6525 Belcrest Road, Room 1140
Hyattsville, Maryland 20782

Estimado Señor/Estimada Señora,

NECESITAMOS SU AYUDA para un estudio especial, la Encuesta Nacional de Crecimiento Familiar del Centro Nacional para Estadísticas de la Salud, una agencia del Departamento de Salud y Servicios Humanos de los Estados Unidos. En este estudio, entrevistadoras especialmente entrenadas visitarán a una muestra nacional de hogares para hacer preguntas acerca de educación, trabajo, matrimonios y divorcios, vida familiar, experiencias sexuales, embarazos y atención médica. La información se utiliza para programas que proporcionan servicios de salud y educación sobre salud para hombres, mujeres y familias en los Estados Unidos.

Nos estamos dirigiendo a usted porque su dirección resultó seleccionada por métodos científicos para ser parte de este estudio. Para hacer las entrevistas, hemos escogido al Centro de Encuestas de la Universidad de Michigan, una institución muy respetada que se dedica a la investigación y educación. Dentro de unos días, una entrevistadora de la Universidad de Michigan visitará su hogar para determinar si hay alguna persona elegible para la encuesta. Eso tomará solamente unos 5 minutos. Uno de los miembros del hogar que sea elegible puede resultar seleccionado para la entrevista que tomará entre 60 y 80 minutos. Su ayuda en este estudio es completamente voluntaria pero es muy importante, en parte porque cada persona entrevistada representa a unas 6,000 personas más. Sabemos que hoy en día la gente está muy ocupada; por eso su entrevistadora fijará la fecha y el horario de la entrevista de acuerdo a lo que le resulte conveniente a la persona seleccionada. Además, el miembro de su hogar que sea seleccionado recibirá $40 como muestra de nuestro agradecimiento por su participación en el estudio.

Los datos que usted nos dé se mantendrán de manera estrictamente confidencial, como lo exige la ley (Sección 308(d) del Código de los Estados Unidos, 42 USC 242M and 5 USC 552a). La información que usted nos proporcione se agrupará con la que obtengamos de otros participantes en la encuesta, y se publicará en porcentajes, totales y promedios. No se identificará a ninguna persona ni familia. La información que usted nos dé en esta encuesta no se dará a conocer a otras agencias del gobierno de ninguna manera que permita identificarlo(la) a usted. Para la mayoría de las personas, la entrevista es interesante y placentera, pero si hay alguna pregunta que a usted le resulte delicada, puede dejarla sin contestar. Su decisión de participar o no participar en el estudio no afectará ningún beneficio que usted reciba, ni ahora ni en el futuro.

En el folleto adjunto encontrará más información. Si tiene alguna pregunta sobre el estudio, puede hacérsela a su entrevistadora, o visitar la página de la encuesta en Internet en http://www.cdc.gov/nchs/nsfg.htm, o llamar a la Dra. Gladys Martínez (ella habla español) al teléfono gratuito 1-866-227-8347. Si tiene alguna pregunta sobre sus derechos como participante en una encuesta, puede llamar al Comité de Revisión Institucional al teléfono gratuito 1-800-223-8118. El Comité de Revisión Institucional es un comité de revisión independiente en el Centro Nacional para Estadísticas de la Salud, que protege los intereses de las personas que participan en estudios. Si necesita cambiar la cita de su entrevista, por favor llame a nuestro número de teléfono gratuito, 1-800-706-2100, del Instituto de Investigación Social de la Universidad de Michigan. El Centro Nacional para Estadísticas de la Salud de los Estados Unidos le agradece su asistencia con este importante estudio.

Le saluda atentamente,

Edward J. Sondik, Ph.D.
Director, Centro Nacional
para Estadísticas de la Salud
http://www.cdc.gov/nchs

# Appendix D

Consent Forms

(Groves, Benson, and Mosher, 2005)





DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control
and Prevention

National Center for Health Statistics
6525 Belcrest Road, Room 1140
Hyattsville, Maryland 20782

**ADULT'S PERMISSION FOR INTERVIEW**

The interview is part of the National Survey of Family Growth, conducted for the U.S. Department of Health and Human Services, by the University of Michigan. The survey includes questions on schooling, work, marriage and divorce, family life, sexual experience, pregnancy, and medical care. The information will be used for programs providing health education and health care in the U.S. The interviewer will only ask questions that relate to your own experience. The interview lasts an average of 60-80 minutes.

You will be part of a scientifically selected sample of people, and represent over 6,000 others across the country. Your participation is very important and will help the study results to be accurate for all people like yourself in the United States. For your help in being part of this study, you will receive a $40 token of appreciation.

By law, the information each person gives is strictly confidential, and is used only for statistical research. To protect the confidentiality of your answers, it is important to do the interview in a private setting.

Agreeing or refusing to be in the survey has no effect at all on any benefits you get now or in the future. For most people, the survey is interesting and enjoyable, but if you find any of the questions to be sensitive for you, you don't have to answer them, and you may stop at any time. If you have questions about your rights as a respondent, you may call the Chair of the Institutional Review Board at: 1-800-223-8118. The Institutional Review Board is an independent review board at the National Center for Health Statistics that protects the interests of people who take part in studies. If you have other questions about the survey, you may call Dr. William Mosher or Dr. Joyce Abma (Toll-Free) at NCHS at: 1-866-227-8347.

**Thank you** again for being part of our survey.

_____ Respondent's Name (PLEASE PRINT)

_ _ _ _ _ _ _ _ _ - _ _ Sample ID

_____ Respondent's Signature

___/___/_____ Date

_____ Interviewer's Signature

___/___/_____ Date

_____

*The respondent has read the letter about NSFG or I have read the letter to the respondent. The respondent has given oral permission to be interviewed, but refuses to sign the consent form.*

_____ Interviewer's Signature

___/___/_____ Date

Page 68 □ Series 1, No. 42

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control
and Prevention

National Center for Health Statistics
6525 Belcrest Road, Room 1140
Hyattsville, Maryland 20782

## PARENT'S/GUARDIAN'S PERMISSION FOR INTERVIEW

The interview is part of the National Survey of Family Growth, conducted for the U.S. Department of Health and Human Services by the University of Michigan. The survey includes questions on schooling, work, marriage and divorce, family life, sexual experience, pregnancy, and medical care. The information will be used for programs providing health education and health care in the U.S. The interviewer will only ask questions that relate to your son or daughter's own experience. The interview lasts an average of 60 minutes for teenagers.

Your son or daughter will be part of a scientifically selected sample of young people that will represent the 20 million teenagers in the United States. His or her participation is very important and will help the study results to be accurate for all teenagers.

By law, the information each person gives is strictly confidential, and is used only for statistical research. To protect the confidentiality of your answers, it is important to do the interview in private.

Giving your permission does not mean that your son or daughter has to do the interview. Your consent just means that we have your permission to ask him or her for the interview. Your son or daughter is free to decide to do the interview or not. Agreeing or refusing to do the interview has no effect at all on any benefits you or your teenager get now. For most people, the survey is interesting and enjoyable, but if he or she finds any question to be sensitive, he or she doesn't have to answer, and may stop at any time. If you have questions about your son or daughter's rights as a respondent, you may call the Institutional Review Board, or IRB, at: 1-800-223-8118. The IRB is an independent review board at the National Center for Health Statistics that protects the interests of people who take part in studies. If you have other questions about the survey, you may call Dr. William Mosher or Dr. Joyce Abma (Toll-Free) at NCHS at: 1-866-227-8347.

You may ask my son or daughter if he or she wants to take part in the survey.

_____
Parent's Name (PLEASE PRINT)

_____ ___/___/_____
Parent's/Guardian's Signature Date

_____ _____ - __
Son or Daughter's Name (PLEASE PRINT) Sample ID

NSFG2260

Appendix E:

Percent Distributions of Original Survey Questions on Attitudes toward Adolescent Sexual Activity

The SAS System
The SURVEYFREQ Procedure
Data Summary

| | |
|---|---|
| Number of Strata | 84 |
| Number of Clusters | 168 |
| Number of Observations | 12571 |
| Sum of Weights | |

**Q3713: "It is all right for unmarried 16 year olds to have sexual intercourse if they have strong affection for each other."**

| Answer Choice | Sample Frequency | Weighted Frequency | Std Dev of Wgt Freq | Percent | Std Err of Percent |
|---|---|---|---|---|---|
| Strongly Agree | 191 | 1612409 | 169660 | 1.3140 | 0.1239 |
| Agree | 2037 | 18736709 | 938125 | 15.2694 | 0.5455 |
| Disagree | 5766 | 55845808 | 1559507 | 45.5112 | 0.6642 |
| Strongly Disagree | 4349 | 44244499 | 1308911 | 36.0568 | 0.6400 |
| Neither Agree nor Disagree | 211 | 2054756 | 212209 | 1.6745 | 0.1563 |
| I don't know | 11 | 150471 | 66995 | 0.1226 | 0.0546 |
| Refused | 6 | 63084 | 30394 | 0.0514 | 0.0247 |
| TOTAL: | 12571 | 122707736 | 3268096 | 100.00 | |

**Q3714: "It is all right for unmarried 18 year olds to have sexual intercourse if they have strong affection for each other."**

| Answer Choice | Sample Frequency | Weighted Frequency | Std Dev of Wgt Freq | Percent | Std Err of Percent |
|---|---|---|---|---|---|
| Strongly Agree | 794 | 7093646 | 491658 | 5.7809 | 0.3144 |
| Agree | 6257 | 60460026 | 1923517 | 49.2716 | 0.7147 |
| Disagree | 3705 | 36653899 | 1184948 | 29.8709 | 0.7790 |
| Strongly Disagree | 1449 | 15167406 | 813497 | 12.3606 | 0.5583 |
| Neither Agree nor Disagree | 344 | 3077767 | 307255 | 2.5082 | 0.2528 |
| I don't know | 13 | 158400 | 67340 | 0.1291 | 0.0549 |
| Refused | 9 | 96591 | 33328 | 0.0787 | 0.0272 |
| TOTAL: | 12571 | 122707736 | 3268096 | 100.00 | |

**Appe**

## ndix F:
Chart of Independent Variables

| Variable | Description | Measure |
|---|---|---|
| Age at first sex (age1sex) | Measures the very first time a person had sexual intercourse with a member of the opposite sex | 1 = Under 15 Years<br>2 = 15-19 Years<br>3 = 20-24 Years<br>4 = 25-29 Years<br>5 = 30-44 Years |
| Age at first sex, inclusive (age1sex_ny) | Measures the very first time a person had sexual intercourse with a member of the opposite sex, and includes those who have not yet had sexual intercourse | 1 = Never<br>2 = 25+ Years<br>3 = 20-24 Years<br>4 = 15-19 Years<br>5 = <15 Years |
| Ever Cohabitation (cohever_r) | Measure of whether a respondent has ever lived with a partner without being married to him or her | 1 = No<br>2 = Yes |
| Ever Married (evrmarry_r) | Measure of whether a respondent reports ever having been married | 1 = Yes<br>2 = No |
| Age at first marriage (age1mar_c) | Measures the age at first marriage | 1 = <20 Years<br>2 = 20-24 Years<br>3 = 25-29 Years<br>4 = 30-34 Years<br>5 = 35-44 Years |
| Age at first marriage, inclusive (age1mar_ny) | Measures the age at first marriage, including those who have not or not yet married | 1 = Never<br>2 = 35+ Years<br>3 = 30-34 Years<br>4 = 25-29 Years<br>5 = 20-24 Years<br>6 = <20 Years |
| Ever had a biological child (biopare) | Whether the respondent has ever had a biological child | 1 = Yes<br>2 = No |
| Age at first childbirth (age1babe_c) | Age at first completed pregnancy (note: not at first pregnancy, but at first pregnancy carried to term). | 1 = Under 15 Years<br>2 = 15-19 Years<br>3 = 20-24 Years<br>4 = 25-29 Years<br>5 = 30-34 Years<br>6 = 35-44 Years |
| Age at first childbirth, inclusive (age1babe_ny) | Age at first completed pregnancy (note: not at first pregnancy, but at first pregnancy carried to term), and includes those who never had a biological child | 1 = Never<br>2 = 35+ Years<br>3 = 30-34 Years<br>4 = 25-29 Years<br>5 = 20-24 Years<br>6 = 15-19 Years<br>7 = Under 15 Years |

| | | |
|---|---|---|
| Number of children in household (numkdhh_4) | Rather than using the variable for the number of biological children a respondent has had, this variable accounts for any child 18 years old or younger that the respondent is currently living with (which would include adopted, foster, children of relatives, etc) | 1 = 4 Children Or More<br>2 = 3 Children<br>3 = 2 Children<br>4 = 1 Child<br>5 = No Children |
| Abortion (abort) | Whether a respondent reports having ever had an abortion (if female) or had a partner who chose abortion (if male) | 1 = No<br>2 = Yes |
| Age (age_y) | Age of Respondent at time of interview. | 1 = 15-19 Years<br>2 = 20-24 Years<br>3 = 25-29 Years<br>4 = 30-34 Years<br>5 = 35-39 Years<br>6 = 40-44 Years |
| Education (edu_r) | Highest degree achieved by respondent | 1 = less than high school<br>2 = high school diploma or GED<br>3 = some college or associate's degree<br>4 = bachelor's degree<br>5 = master's, doctoral, or professional degree |
| Race / Ethnicity (hisprace) | Census-defined categories of race and ethnicity | 1 = Hispanic<br>2 = Non-Hispanic white<br>3 = Non-Hispanic black<br>4 = Non-Hispanic other |
| Economic Status | Percent of Federal Poverty Level (poverty) | 1 = 0-99 % of Poverty Level<br>2= 100-199 % of Poverty Level<br>3 = 200-299% of Poverty Level<br>4 = 300-399% of Poverty Level<br>5 = 400-499% of Poverty Level<br>6 = 500 % of Poverty Level + |
| | Household Income (income) | 1=<$5000, 2=$5000-$7499, 3=$7500-$9999, 4=$10,000-$12,499, 5=$12,500-$14,999, 6=$15,000-$19,999, 7=$20,000-$24,999, 8=$25,000-$29,999, 9=$30,000-$34,999, 10=$35,000-$39,999, 11=$40,000-$49,999, 12=$50,000-$59,000, 13=$60,000-$74,999, 14=$75,000 or greater |
| Religion | | |
| Current Affiliation | Measures Respondent's report of current religious affiliation (specific) (relcurr) | 1 = No Religion<br>2 = Catholic<br>3 = Baptist/Southern Baptist<br>4 = Methodist, Lutheran, Presbyterian, Episcopal, Church Of Christ<br>5 = Fundamentalist Protestant<br>6 = Other Protestant Denomination |

| | | |
|---|---|---|
| | | 7 = Protestant-No Specific Denomination<br>8 = Other Non-Christian Religion |
| | Measures Respondent's report of current religious affiliation (grouped) (religion_r) | 1 = Protestant<br>2 = Catholic<br>3 = Other Religions<br>4 = No Religion |
| | Measure of type of Protestant denomination<br>(fundam) | 1 = A Born Again Christian<br>2 = A Charismatic<br>3 = An Evangelical<br>4 = A Fundamentalist<br>5 = None Of The Above |
| Current Importance (reldlife_c) | Measure of how important Respondent feels religion is to their current lives | 1 = Very Important<br>2 = Somewhat Important<br>3 = Not Important |
| Current Attendance (attndnow_c) | How often the Respondent attends worship services currently | 1 = More Than Once A Week<br>2 = Once A Week<br>3 = 1-3 Times Per Month<br>4 = Less Than Once A Month<br>5 = Never |
| Childhood Attendance (attnd14) | How often the Respondent attended worship services at age 14 | 1 = More Than Once A Week<br>2 = Once A Week<br>3 = 1-3 Times Per Month<br>4 = Less Than Once A Month<br>5 = Never |

# Appendix G

## The Sorting of Variables into Factors in Exploratory Factor Analysis

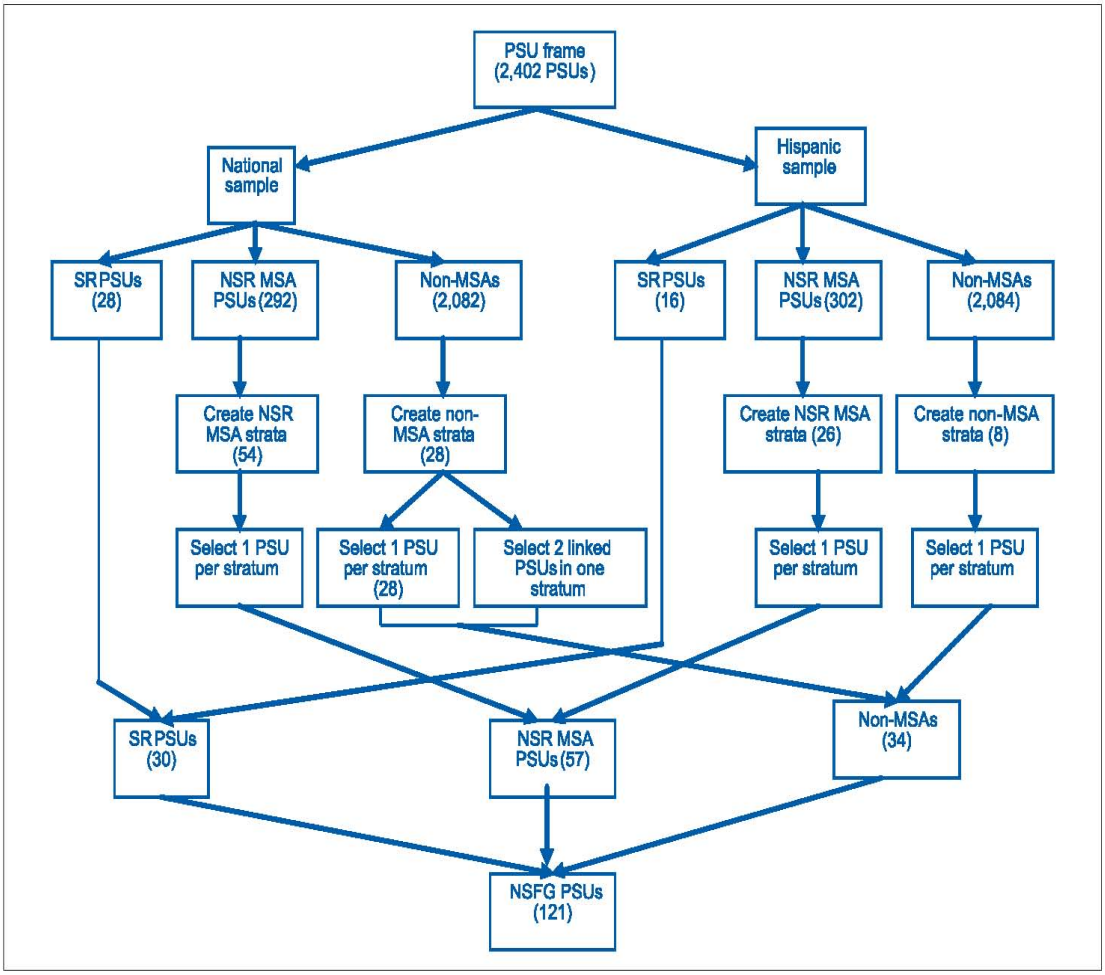
Although a fairly simple set of commands will run a factor analysis in statistical analysis software packages, it is important to understand the procedure itself so that one knows how to properly interpret the results. The factor analysis command compares the list of variables and, unless it is commanded otherwise, pulls out a number of factors equal to the number of variables being analyzed (12 variables = 12 factors) and provides the factor loading value for each variable for each factor. The first factor will account for the greatest amount of common variance; the second factor will account for the greatest amount of remaining variance; and so forth. The researcher is then called upon to apply judgment. First, it is important to determine which variables legitimately "belong" within a given factor. Items that exhibited factor loadings of a set value (usually 0.35- 0.40 or greater) are considered proof that that variable actually "belongs" under that factor. Secondly, it is important to determine the number of total factors which are meaningful. Three common ways of determining the proper number of factors to be extracted include the Scree test (Cattell, 1966), the proportion of variance accounted for, and the utilization of the researcher's judgment regarding the nature of the factor (e.g. if the variables loading on a factor seem to reflect a certain concept). Regardless of the numbers of factors decided upon, each individual factor must have at least three variables that significantly load on it. Once the number of factors is chosen, the equation is rotated in order to be more easily interpreted. There are two main types of rotations that can be performed: orthogonal (used when factors are not correlated with each

other) and oblique (when factors are correlated with each other). Because many of the variables in this analysis are closely tied to one another, oblique rotation was used. Once rotated, the results are interpreted and factor scores are assigned to each subject which can then be used as predictor scores in any other analyses such as a regression (Hatcher, 1994).

## Appendix H

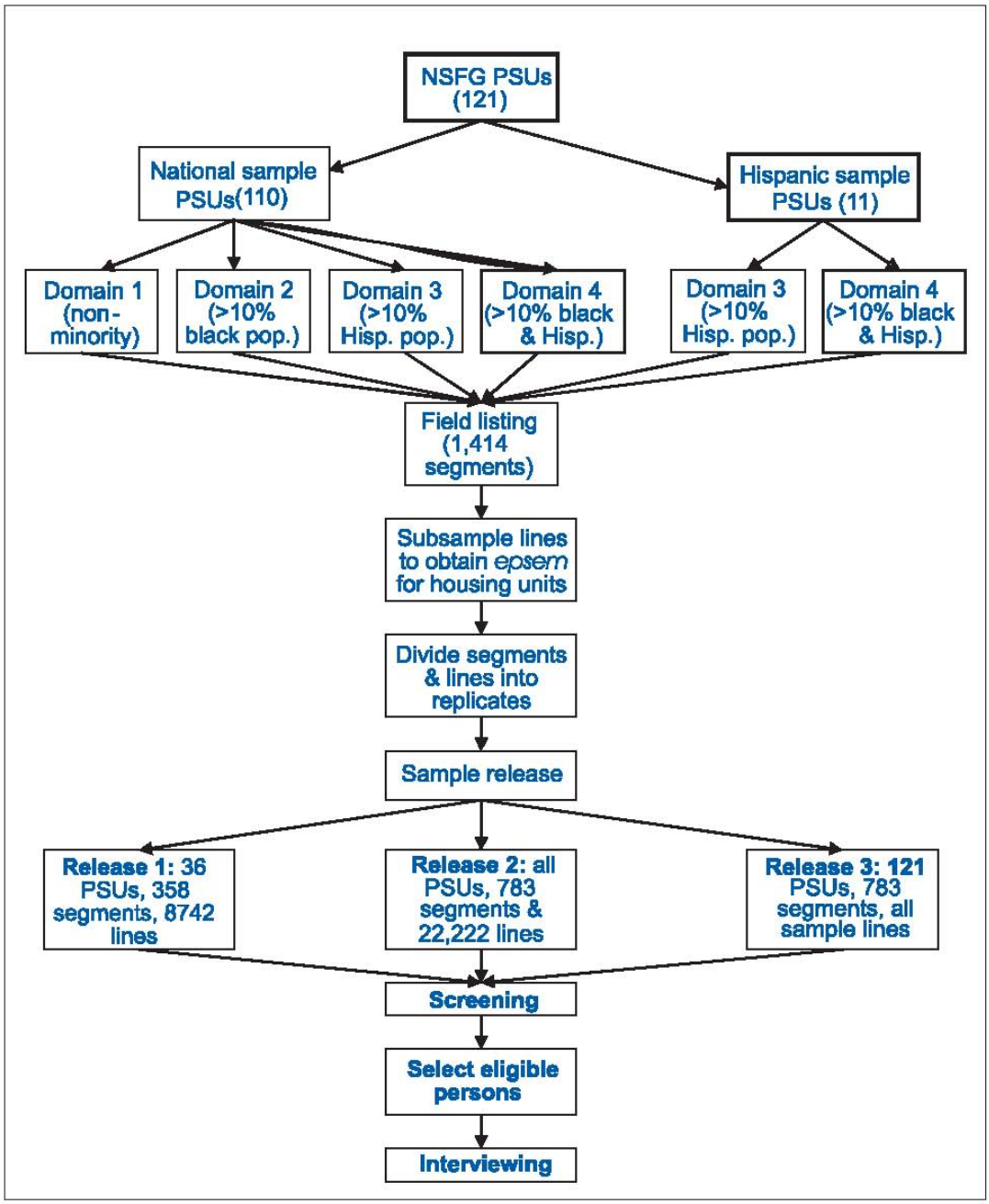
NSFG Sampling Frame – Stage One
(Lepowski, Mosher, and Davis, 2006)





**Appendix H** (con.)
NSFG Sampling Stages Two – Four
(Lepowski, Mosher, and Davis, 2006)





# Appendix I

## Correlation Matrix of Potential Independent Variables

The SAS System
The CORR Procedure
Weight Variable: FINALWGT

Simple Statistics

| Variable | N | Mean | Std Dev | Sum | Minimum | Maximum |
|---|---|---|---|---|---|---|
| age1sex | 10892 | 2.05600 | 71.54614 | 220884771 | 1.00000 | 7.00000 |
| age1mar | 5879 | 3.33200 | 106.19413 | 222618638 | 1.00000 | 7.00000 |
| age1babe | 6144 | 3.36611 | 113.48321 | 217089324 | 1.00000 | 7.00000 |
| EVRMARRY | 12571 | 0.54455 | 49.20479 | 66820829 | 0 | 1.00000 |
| biopare | 12571 | 0.52650 | 49.33188 | 64605233 | 0 | 1.00000 |
| POVERTY | 12571 | 277.19500 | 15510 | 3.4014E10 | 7.00000 | 500.00000 |
| TOTINCR | 12571 | 9.48296 | 373.61786 | 1163633051 | 1.00000 | 14.00000 |
| HIEDUC | 12571 | 9.36260 | 230.12517 | 1148863093 | 5.00000 | 15.00000 |
| reldlife_c | 12546 | 1.79760 | 79.08848 | 220237085 | 1.00000 | 3.00000 |
| ATTNDNOW | 12571 | 3.37484 | 133.69474 | 414118984 | 1.00000 | 9.00000 |
| religion_d | 12571 | 1.16376 | 36.56225 | 142801797 | 1.00000 | 2.00000 |
| RELIGION | 12571 | 2.45993 | 84.19594 | 301852641 | 1.00000 | 4.00000 |
| COHEVER | 12571 | 1.50574 | 49.39804 | 184765646 | 1.00000 | 2.00000 |
| abort | 7135 | 1.78808 | 41.33063 | 130473770 | 1.00000 | 2.00000 |
| int18 | 12571 | 1.66851 | 46.51109 | 204739434 | 1.00000 | 2.00000 |
| mompd | 12463 | 1.46819 | 49.35612 | 179008551 | 1.00000 | 2.00000 |
| NUMKDHH | 12571 | 0.94275 | 117.54248 | 115682227 | 0 | 5.00000 |
| METRO | 12571 | 1.69625 | 74.87935 | 208142417 | 1.00000 | 3.00000 |
| DADDEGRE | 11758 | 2.63133 | 147.89357 | 304741353 | 1.00000 | 9.00000 |
| MOMDEGRE | 12495 | 2.47258 | 129.70187 | 302045397 | 1.00000 | 9.00000 |
| HISPRACE | 12571 | 2.08858 | 70.68037 | 256284970 | 1.00000 | 4.00000 |
| AGE_R | 12571 | 29.90043 | 864.08835 | 3669013955 | 15.00000 | 45.00000 |
| sex_r | 12571 | 1.49831 | 49.40101 | 183854758 | 1.00000 | 2.00000 |
| att | 12438 | 2.68312 | 117.52917 | 325963097 | 1.00000 | 4.00000 |
| att2 | 12438 | 1.42059 | 48.78984 | 172583101 | 1.00000 | 2.00000 |
| att3 | 12438 | 2.47595 | 102.37859 | 300794714 | 1.00000 | 4.00000 |
| sxok16_c | 12554 | 3.99901 | 103.99403 | 489855824 | 1.00000 | 5.00000 |
| sxok18_c | 12549 | 2.93746 | 121.64501 | 359699627 | 1.00000 | 5.00000 |

Correlation Matrix of Potential Independent Variables (con.)

The SAS System
The CORR Procedure
Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

| | age1sex | age1mar | age1babe | EVRMARRY | biopare | POVERTY | TOTINCR |
|---|---|---|---|---|---|---|---|
| age1sex | 1.00000 | 0.22138 | 0.34119 | 0.13785 | -0.03175 | 0.10834 | 0.09961 |
| | <.0001 | <.0001 | <.0001 | 0.0009 | <.0001 | <.0001 | |
| | 10892 | 5877 | 6143 | 10892 | 10892 | 10892 | 10892 |
| age1mar | 0.22138 | 1.00000 | 0.56228 | . | -0.19387 | 0.18840 | 0.14108 |
| | <.0001 | | <.0001 | . | <.0001 | <.0001 | <.0001 |
| | 5877 | 5879 | 4651 | 5879 | 5879 | 5879 | 5879 |
| age1babe | 0.34119 | 0.56228 | 1.00000 | 0.21973 | -0.03350 | 0.33808 | 0.31503 |
| | <.0001 | <.0001 | | <.0001 | 0.0086 | <.0001 | <.0001 |
| | 6143 | 4651 | 6144 | 6144 | 6144 | 6144 | 6144 |
| EVRMARRY | 0.13785 | . | 0.21973 | 1.00000 | 0.61082 | 0.10360 | 0.18319 |
| | <.0001 | . | <.0001 | | <.0001 | <.0001 | <.0001 |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |
| biopare | -0.03175 | -0.19387 | -0.03350 | 0.61082 | 1.00000 | -0.13177 | -0.00082 |
| | 0.0009 | <.0001 | 0.0086 | <.0001 | | <.0001 | 0.9269 |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |
| POVERTY | 0.10834 | 0.18840 | 0.33808 | 0.10360 | -0.13177 | 1.00000 | 0.89242 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | | <.0001 |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |
| TOTINCR | 0.09961 | 0.14108 | 0.31503 | 0.18319 | -0.00082 | 0.89242 | 1.00000 |
| | <.0001 | <.0001 | <.0001 | <.0001 | 0.9269 | <.0001 | |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |
| HIEDUC | 0.24329 | 0.24693 | 0.41809 | 0.25666 | 0.06247 | 0.39751 | 0.31156 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |
| reldlife_c | | | | | | | |
| | -0.12537 | 0.05090 | 0.00377 | -0.13290 | -0.14834 | 0.12510 | 0.05926 |
| | <.0001 | <.0001 | 0.7679 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 10869 | 5864 | 6132 | 12546 | 12546 | 12546 | 12546 |
| ATTNDNOW | | | | | | | |
| | -0.18318 | 0.03838 | -0.05597 | -0.10705 | -0.08853 | 0.06907 | -0.01206 |
| | <.0001 | 0.0032 | <.0001 | <.0001 | <.0001 | <.0001 | 0.1763 |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |
| religion_d | | | | | | | |
| | -0.08534 | 0.01607 | -0.04221 | -0.09386 | -0.08553 | 0.05030 | -0.00067 |
| | <.0001 | 0.2179 | 0.0009 | <.0001 | <.0001 | <.0001 | 0.9405 |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |

Correlation Matrix of Potential Independent Variables (con.)

| | HIEDUC | reldlife_c | ATTNDNOW | religion_d | RELIGION | COHEVER | abort |
|---|---|---|---|---|---|---|---|
| age1sex | 0.24329 | -0.12537 | -0.18318 | -0.08534 | 0.06345 | 0.20644 | 0.16101 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 10892 | 10869 | 10892 | 10892 | 10892 | 10892 | 7134 |
| age1mar | 0.24693 | 0.05090 | 0.03838 | 0.01607 | -0.00977 | -0.08657 | -0.08844 |
| | <.0001 | <.0001 | 0.0032 | 0.2179 | 0.4538 | <.0001 | <.0001 |
| | 5879 | 5864 | 5879 | 5879 | 5879 | 5879 | 5022 |
| age1babe | 0.41809 | 0.00377 | -0.05597 | -0.04221 | 0.05064 | 0.10351 | -0.00647 |
| | <.0001 | 0.7679 | <.0001 | 0.0009 | <.0001 | <.0001 | 0.6120 |
| | 6144 | 6132 | 6144 | 6144 | 6144 | 6144 | 6144 |
| EVRMARRY | 0.25666 | -0.13290 | -0.10705 | -0.09386 | 0.07586 | -0.26953 | 0.13421 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |
| biopare | 0.06247 | -0.14834 | -0.08853 | -0.08553 | 0.04703 | -0.32660 | 0.26017 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |
| POVERTY | 0.39751 | 0.12510 | 0.06907 | 0.05030 | -0.01810 | -0.01995 | -0.10358 |
| | <.0001 | <.0001 | <.0001 | <.0001 | 0.0425 | 0.0253 | <.0001 |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |
| TOTINCR | 0.31156 | 0.05926 | -0.01206 | -0.00067 | 0.00768 | 0.00542 | -0.04929 |
| | <.0001 | <.0001 | 0.1763 | 0.9405 | 0.3893 | 0.5437 | <.0001 |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |
| HIEDUC | 1.00000 | 0.02015 | -0.00151 | -0.00686 | 0.06008 | -0.09479 | -0.07257 |
| | 0.0240 | 0.8657 | 0.4419 | <.0001 | <.0001 | <.0001 | |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |
| reldlife_c | | | | | | | |
| | 0.02015 | 1.00000 | 0.63314 | 0.65814 | -0.52631 | -0.13105 | -0.10506 |
| | 0.0240 | | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12546 | 12546 | 12546 | 12546 | 12546 | 12546 | 7119 |
| ATTNDNOW | | | | | | | |
| | -0.00151 | 0.63314 | 1.00000 | 0.41639 | -0.33297 | -0.23373 | -0.14254 |
| | 0.8657 | <.0001 | | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |
| religion_d | | | | | | | |
| | -0.00686 | 0.65814 | 0.41639 | 1.00000 | -0.75813 | -0.10846 | -0.06388 |
| | 0.4419 | <.0001 | <.0001 | | <.0001 | <.0001 | <.0001 |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |

Correlation Matrix of Potential Independent Variables (con.)

The CORR Procedure
Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

| | int18 | mompd | NUMKDHH | METRO | DADDEGRE | MOMDEGRE | HISPRACE |
|---|---|---|---|---|---|---|---|
| age1sex | 0.17116 | -0.12174 | 0.00778 | -0.04903 | 0.04361 | 0.00493 | -0.00626 |
| | <.0001 | <.0001 | 0.4167 | <.0001 | <.0001 | 0.6081 | 0.5134 |
| | 10892 | 10795 | 10892 | 10892 | 10156 | 10820 | 10892 |
| age1mar | 0.05821 | -0.04523 | -0.09247 | -0.07035 | 0.05786 | 0.09529 | 0.08876 |
| | <.0001 | 0.0006 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 5879 | 5830 | 5879 | 5879 | 5543 | 5838 | 5879 |
| age1babe | 0.18284 | -0.08711 | -0.00674 | -0.07954 | 0.07931 | 0.11260 | 0.00133 |
| | <.0001 | <.0001 | 0.5974 | <.0001 | <.0001 | <.0001 | 0.9168 |
| | 6144 | 6080 | 6144 | 6144 | 5692 | 6095 | 6144 |
| EVRMARRY | 0.07610 | -0.12051 | 0.47157 | -0.02160 | -0.07947 | -0.10820 | -0.06416 |
| | <.0001 | <.0001 | <.0001 | 0.0154 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |
| biopare | 0.00787 | -0.07238 | 0.67774 | -0.00852 | -0.13093 | -0.16469 | -0.03622 |
| | 0.3776 | <.0001 | <.0001 | 0.3392 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |
| POVERTY | 0.11115 | -0.03059 | -0.21184 | -0.13559 | 0.15209 | 0.15908 | 0.02829 |
| | <.0001 | 0.0006 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0015 |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |
| TOTINCR | 0.12424 | -0.04518 | 0.02030 | -0.15379 | 0.12518 | 0.12694 | 0.00565 |
| | <.0001 | <.0001 | 0.0229 | <.0001 | <.0001 | <.0001 | 0.5268 |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |
| HIEDUC | 0.13409 | -0.02859 | 0.04045 | -0.07118 | 0.14421 | 0.15330 | 0.12725 |
| | <.0001 | 0.0014 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |
| reldlife_c | | | | | | | |
| | -0.04853 | 0.00872 | -0.14539 | -0.04250 | 0.06583 | 0.06718 | -0.06138 |
| | <.0001 | 0.3310 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12546 | 12439 | 12546 | 12546 | 11736 | 12471 | 12546 |
| ATTNDNOW | | | | | | | |
| | -0.07201 | 0.02363 | -0.12696 | -0.04578 | 0.01798 | 0.01992 | -0.05024 |
| | <.0001 | 0.0083 | <.0001 | <.0001 | 0.0512 | 0.0260 | <.0001 |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |
| religion_d | | | | | | | |
| | -0.06949 | 0.01626 | -0.09365 | -0.01226 | 0.03417 | 0.02399 | -0.00522 |
| | <.0001 | 0.0695 | <.0001 | 0.1692 | 0.0002 | 0.0073 | 0.5584 |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |

Correlation Matrix of Potential Independent Variables (con.)

The SAS System
The CORR Procedure
Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

| | AGE_R | sex_r | att | att2 | att3 | sxok16_c | sxok18_c |
|---|---|---|---|---|---|---|---|
| age1sex | 0.16236 | -0.02575 | 0.21040 | 0.19884 | 0.19941 | 0.17410 | 0.22196 |
| | <.0001 | 0.0072 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 10892 | 10892 | 10780 | 10780 | 10780 | 10880 | 10877 |
| age1mar | 0.18366 | 0.19101 | -0.05495 | -0.05891 | -0.09423 | -0.01316 | -0.06131 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.3133 | <.0001 |
| | 5879 | 5879 | 5820 | 5820 | 5820 | 5870 | 5869 |
| age1babe | 0.32221 | 0.18702 | 0.01460 | -0.00185 | -0.02719 | 0.04262 | 0.00222 |
| | <.0001 | <.0001 | 0.2552 | 0.8853 | 0.0341 | 0.0008 | 0.8619 |
| | 6144 | 6144 | 6076 | 6076 | 6076 | 6135 | 6133 |
| EVRMARRY | 0.61537 | -0.07612 | 0.22754 | 0.18015 | 0.22514 | 0.26430 | 0.19439 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |
| biopare | 0.54896 | -0.11544 | 0.20354 | 0.15385 | 0.21868 | 0.24347 | 0.16364 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |
| POVERTY | 0.14960 | 0.08369 | -0.05203 | -0.05713 | -0.06426 | -0.02108 | -0.05966 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0182 | <.0001 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |
| TOTINCR | 0.14463 | 0.05880 | 0.00971 | 0.00281 | -0.00362 | 0.03071 | 0.00423 |
| | <.0001 | <.0001 | 0.2790 | 0.7540 | 0.6866 | 0.0006 | 0.6353 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |
| HIEDUC | 0.36068 | -0.03080 | 0.03779 | 0.01621 | 0.04173 | 0.07867 | 0.02630 |
| | <.0001 | 0.0006 | <.0001 | 0.0707 | <.0001 | <.0001 | 0.0032 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |
| reldlife_c | -0.07582 | 0.12752 | -0.35278 | -0.33680 | -0.34874 | -0.27097 | -0.36655 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12546 | 12546 | 12417 | 12417 | 12417 | 12532 | 12527 |
| ATTNDNOW | -0.02129 | 0.09309 | -0.36527 | -0.36477 | -0.35531 | -0.25901 | -0.39440 |
| | 0.0170 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |
| religion_d | -0.03569 | 0.06115 | -0.21076 | -0.19115 | -0.20669 | -0.17760 | -0.20746 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |

Correlation Matrix of Potential Independent Variables (con.)

The SAS System
The CORR Procedure
Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

| | age1sex | age1mar | age1babe | EVRMARRY | biopare | POVERTY | TOTINCR |
|---|---|---|---|---|---|---|---|
| RELIGION | 0.06345 | -0.00977 | 0.05064 | 0.07586 | 0.04703 | -0.01810 | 0.00768 |
| | <.0001 | 0.4538 | <.0001 | <.0001 | <.0001 | 0.0425 | 0.3893 |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |
| COHEVER | 0.20644 | -0.08657 | 0.10351 | -0.26953 | -0.32660 | -0.01995 | 0.00542 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.0253 | 0.5437 |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |
| abort | 0.16101 | -0.08844 | -0.00647 | 0.13421 | 0.26017 | -0.10358 | -0.04929 |
| | <.0001 | <.0001 | 0.6120 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 7134 | 5022 | 6144 | 7135 | 7135 | 7135 | 7135 |
| int18 | 0.17116 | 0.05821 | 0.18284 | 0.07610 | 0.00787 | 0.11115 | 0.12424 |
| | <.0001 | <.0001 | <.0001 | <.0001 | 0.3776 | <.0001 | <.0001 |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |
| mompd | -0.12174 | -0.04523 | -0.08711 | -0.12051 | -0.07238 | -0.03059 | -0.04518 |
| | <.0001 | 0.0006 | <.0001 | <.0001 | <.0001 | 0.0006 | <.0001 |
| | 10795 | 5830 | 6080 | 12463 | 12463 | 12463 | 12463 |
| NUMKDHH | 0.00778 | -0.09247 | -0.00674 | 0.47157 | 0.67774 | -0.21184 | 0.02030 |
| | 0.4167 | <.0001 | 0.5974 | <.0001 | <.0001 | <.0001 | 0.0229 |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |
| METRO | -0.04903 | -0.07035 | -0.07954 | -0.02160 | -0.00852 | -0.13559 | -0.15379 |
| | <.0001 | <.0001 | <.0001 | 0.0154 | 0.3392 | <.0001 | <.0001 |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |
| DADDEGRE | 0.04361 | 0.05786 | 0.07931 | -0.07947 | -0.13093 | 0.15209 | 0.12518 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 10156 | 5543 | 5692 | 11758 | 11758 | 11758 | 11758 |
| MOMDEGRE | 0.00493 | 0.09529 | 0.11260 | -0.10820 | -0.16469 | 0.15908 | 0.12694 |
| | 0.6081 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 10820 | 5838 | 6095 | 12495 | 12495 | 12495 | 12495 |
| HISPRACE | -0.00626 | 0.08876 | 0.00133 | -0.06416 | -0.03622 | 0.02829 | 0.00565 |
| | 0.5134 | <.0001 | 0.9168 | <.0001 | <.0001 | 0.0015 | 0.5268 |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |
| AGE_R | 0.16236 | 0.18366 | 0.32221 | 0.61537 | 0.54896 | 0.14960 | 0.14463 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |

Correlation Matrix of Potential Independent Variables (con.)

The SAS System
The CORR Procedure
Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

| | HIEDUC | reldlife_c | ATTNDNOW | religion_d | RELIGION | COHEVER | abort |
|---|---|---|---|---|---|---|---|
| RELIGION | 0.06008 | -0.52631 | -0.33297 | -0.75813 | 1.00000 | 0.08532 | 0.02941 |
| | <.0001 | <.0001 | <.0001 | <.0001 | | <.0001 | 0.0130 |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |
| COHEVER | -0.09479 | -0.13105 | -0.23373 | -0.10846 | 0.08532 | 1.00000 | 0.15391 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | | <.0001 |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |
| abort | -0.07257 | -0.10506 | -0.14254 | -0.06388 | 0.02941 | 0.15391 | 1.00000 |
| | <.0001 | <.0001 | <.0001 | <.0001 | 0.0130 | <.0001 | |
| | 7135 | 7119 | 7135 | 7135 | 7135 | 7135 | 7135 |
| int18 | 0.13409 | -0.04853 | -0.07201 | -0.06949 | 0.02533 | 0.10432 | 0.06574 |
| | <.0001 | <.0001 | <.0001 | <.0001 | 0.0045 | <.0001 | <.0001 |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |
| mompd | -0.02859 | 0.00872 | 0.02363 | 0.01626 | 0.01634 | -0.01874 | -0.04902 |
| | 0.0014 | 0.3310 | 0.0083 | 0.0695 | 0.0682 | 0.0365 | <.0001 |
| | 12463 | 12439 | 12463 | 12463 | 12463 | 12463 | 7061 |
| NUMKDHH | 0.04045 | -0.14539 | -0.12696 | -0.09365 | 0.04871 | -0.21242 | 0.11342 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |
| METRO | -0.07118 | -0.04250 | -0.04578 | -0.01226 | 0.05690 | 0.02100 | 0.08005 |
| | <.0001 | <.0001 | <.0001 | 0.1692 | <.0001 | 0.0185 | <.0001 |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |
| DADDEGRE | 0.14421 | 0.06583 | 0.01798 | 0.03417 | 0.02778 | 0.06067 | -0.07619 |
| | <.0001 | <.0001 | 0.0512 | 0.0002 | 0.0026 | <.0001 | <.0001 |
| | 11758 | 11736 | 11758 | 11758 | 11758 | 11758 | 6611 |
| MOMDEGRE | 0.15330 | 0.06718 | 0.01992 | 0.02399 | 0.03706 | 0.07953 | -0.06999 |
| | <.0001 | <.0001 | 0.0260 | 0.0073 | <.0001 | <.0001 | <.0001 |
| | 12495 | 12471 | 12495 | 12495 | 12495 | 12495 | 7079 |
| HISPRACE | 0.12725 | -0.06138 | -0.05024 | -0.00522 | 0.20629 | 0.00630 | -0.06868 |
| | <.0001 | <.0001 | <.0001 | 0.5584 | <.0001 | 0.4797 | <.0001 |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |
| AGE_R | 0.36068 | -0.07582 | -0.02129 | -0.03569 | 0.02827 | -0.33707 | -0.01643 |
| | <.0001 | <.0001 | 0.0170 | <.0001 | 0.0015 | <.0001 | 0.1652 |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |

Correlation Matrix of Potential Independent Variables (con.)

The SAS System
The CORR Procedure
Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

| | int18 | mompd | NUMKDHH | METRO | DADDEGRE | MOMDEGRE | HISPRACE |
|---|---|---|---|---|---|---|---|
| RELIGION | 0.02533 | 0.01634 | 0.04871 | 0.05690 | 0.02778 | 0.03706 | 0.20629 |
| | 0.0045 | 0.0682 | <.0001 | <.0001 | 0.0026 | <.0001 | <.0001 |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |
| COHEVER | 0.10432 | -0.01874 | -0.21242 | 0.02100 | 0.06067 | 0.07953 | 0.00630 |
| | <.0001 | 0.0365 | <.0001 | 0.0185 | <.0001 | <.0001 | 0.4797 |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |
| abort | 0.06574 | -0.04902 | 0.11342 | 0.08005 | -0.07619 | -0.06999 | -0.06868 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 7135 | 7061 | 7135 | 7135 | 6611 | 7079 | 7135 |
| int18 | 1.00000 | -0.19480 | 0.01806 | -0.02179 | -0.00314 | 0.01112 | -0.05573 |
| | | <.0001 | 0.0428 | 0.0146 | 0.7339 | 0.2138 | <.0001 |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |
| mompd | -0.19480 | 1.00000 | -0.07870 | 0.01434 | 0.03211 | 0.08963 | 0.11107 |
| | <.0001 | | <.0001 | 0.1094 | 0.0005 | <.0001 | <.0001 |
| | 12463 | 12463 | 12463 | 12463 | 11670 | 12463 | 12463 |
| NUMKDHH | 0.01806 | -0.07870 | 1.00000 | -0.00687 | -0.10971 | -0.13439 | -0.03926 |
| | 0.0428 | <.0001 | | 0.4410 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |
| METRO | -0.02179 | 0.01434 | -0.00687 | 1.00000 | -0.05326 | -0.03145 | 0.06360 |
| | 0.0146 | 0.1094 | 0.4410 | | <.0001 | 0.0004 | <.0001 |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |
| DADDEGRE | -0.00314 | 0.03211 | -0.10971 | -0.05326 | 1.00000 | 0.44259 | 0.11962 |
| | 0.7339 | 0.0005 | <.0001 | <.0001 | | <.0001 | <.0001 |
| | 11758 | 11670 | 11758 | 11758 | 11758 | 11700 | 11758 |
| MOMDEGRE | 0.01112 | 0.08963 | -0.13439 | -0.03145 | 0.44259 | 1.00000 | 0.12745 |
| | 0.2138 | <.0001 | <.0001 | 0.0004 | <.0001 | | <.0001 |
| | 12495 | 12463 | 12495 | 12495 | 11700 | 12495 | 12495 |
| HISPRACE | -0.05573 | 0.11107 | -0.03926 | 0.06360 | 0.11962 | 0.12745 | 1.00000 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |
| AGE_R | 0.11035 | -0.15765 | 0.39625 | -0.02738 | -0.08654 | -0.12531 | -0.00263 |
| | <.0001 | <.0001 | <.0001 | 0.0021 | <.0001 | <.0001 | 0.7677 |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |

Correlation Matrix of Potential Independent Variables (con.)

The SAS System
The CORR Procedure
Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

| | AGE_R | sex_r | att | att2 | att3 | sxok16_c | sxok18_c |
|---|---|---|---|---|---|---|---|
| RELIGION | 0.02827 | -0.03507 | 0.20735 | 0.20168 | 0.18847 | 0.15541 | 0.21388 |
| | 0.0015 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |
| COHEVER | -0.33707 | 0.01198 | 0.08120 | 0.11265 | 0.06910 | -0.00982 | 0.11791 |
| | <.0001 | 0.1794 | <.0001 | <.0001 | <.0001 | 0.2712 | <.0001 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |
| abort | -0.01643 | 0.05136 | 0.13988 | 0.12978 | 0.11895 | 0.10495 | 0.13828 |
| | 0.1652 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 7135 | 7135 | 7058 | 7058 | 7058 | 7125 | 7123 |
| int18 | 0.11035 | 0.03354 | 0.06543 | 0.05577 | 0.05685 | 0.07293 | 0.05997 |
| | <.0001 | 0.0002 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |
| mompd | -0.15765 | -0.01256 | -0.05480 | -0.04400 | -0.04602 | -0.06111 | -0.04928 |
| | <.0001 | 0.1609 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12463 | 12463 | 12331 | 12331 | 12331 | 12446 | 12441 |
| NUMKDHH | 0.39625 | -0.10060 | 0.17562 | 0.13670 | 0.18817 | 0.20966 | 0.15197 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |
| METRO | -0.02738 | 0.01275 | 0.03509 | 0.04572 | 0.02351 | -0.00061 | 0.03626 |
| | 0.0021 | 0.1529 | <.0001 | <.0001 | 0.0087 | 0.9459 | <.0001 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |
| DADDEGRE | -0.08654 | -0.00637 | -0.05155 | -0.03226 | -0.04294 | -0.07212 | -0.02951 |
| | <.0001 | 0.4897 | <.0001 | 0.0005 | <.0001 | <.0001 | 0.0014 |
| | 11758 | 11758 | 11634 | 11634 | 11634 | 11742 | 11738 |
| MOMDEGRE | -0.12531 | 0.04723 | -0.06488 | -0.04653 | -0.07455 | -0.08436 | -0.04333 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12495 | 12495 | 12363 | 12363 | 12363 | 12478 | 12473 |
| HISPRACE | -0.00263 | -0.02097 | 0.05396 | 0.05978 | 0.04940 | 0.02391 | 0.06103 |
| | 0.7677 | 0.0187 | <.0001 | <.0001 | <.0001 | 0.0074 | <.0001 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |
| AGE_R | 1.00000 | -0.00832 | 0.20156 | 0.14329 | 0.20042 | 0.26614 | 0.15157 |
| | | 0.3507 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |

Correlation Matrix of Potential Independent Variables (con.)

| | age1sex | age1mar | age1babe | EVRMARRY | biopare | POVERTY | TOTINCR |
|---|---|---|---|---|---|---|---|
| sex_r | -0.02575 | 0.19101 | 0.18702 | -0.07612 | -0.11544 | 0.08369 | 0.05880 |
| | 0.0072 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 10892 | 5879 | 6144 | 12571 | 12571 | 12571 | 12571 |
| att | 0.21040 | -0.05495 | 0.01460 | 0.22754 | 0.20354 | -0.05203 | 0.00971 |
| | <.0001 | <.0001 | 0.2552 | <.0001 | <.0001 | <.0001 | 0.2790 |
| | 10780 | 5820 | 6076 | 12438 | 12438 | 12438 | 12438 |
| att2 | 0.19884 | -0.05891 | -0.00185 | 0.18015 | 0.15385 | -0.05713 | 0.00281 |
| | <.0001 | <.0001 | 0.8853 | <.0001 | <.0001 | <.0001 | 0.7540 |
| | 10780 | 5820 | 6076 | 12438 | 12438 | 12438 | 12438 |
| att3 | 0.19941 | -0.09423 | -0.02719 | 0.22514 | 0.21868 | -0.06426 | -0.00362 |
| | <.0001 | <.0001 | 0.0341 | <.0001 | <.0001 | <.0001 | 0.6866 |
| | 10780 | 5820 | 6076 | 12438 | 12438 | 12438 | 12438 |
| sxok16_c | 0.17410 | -0.01316 | 0.04262 | 0.26430 | 0.24347 | -0.02108 | 0.03071 |
| | <.0001 | 0.3133 | 0.0008 | <.0001 | <.0001 | 0.0182 | 0.0006 |
| | 10880 | 5870 | 6135 | 12554 | 12554 | 12554 | 12554 |
| sxok18_c | 0.22196 | -0.06131 | 0.00222 | 0.19439 | 0.16364 | -0.05966 | 0.00423 |
| | <.0001 | <.0001 | 0.8619 | <.0001 | <.0001 | <.0001 | 0.6353 |
| | 10877 | 5869 | 6133 | 12549 | 12549 | 12549 | 12549 |

| | HIEDUC | reldlife_c | ATTNDNOW | religion_d | RELIGION | COHEVER | abort |
|---|---|---|---|---|---|---|---|
| sex_r | -0.03080 | 0.12752 | 0.09309 | 0.06115 | -0.03507 | 0.01198 | 0.05136 |
| | 0.0006 | <.0001 | <.0001 | <.0001 | <.0001 | 0.1794 | <.0001 |
| | 12571 | 12546 | 12571 | 12571 | 12571 | 12571 | 7135 |
| att | 0.03779 | -0.35278 | -0.36527 | -0.21076 | 0.20735 | 0.08120 | 0.13988 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12438 | 12417 | 12438 | 12438 | 12438 | 12438 | 7058 |
| att2 | 0.01621 | -0.33680 | -0.36477 | -0.19115 | 0.20168 | 0.11265 | 0.12978 |
| | 0.0707 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12438 | 12417 | 12438 | 12438 | 12438 | 12438 | 7058 |
| att3 | 0.04173 | -0.34874 | -0.35531 | -0.20669 | 0.18847 | 0.06910 | 0.11895 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12438 | 12417 | 12438 | 12438 | 12438 | 12438 | 7058 |
| sxok16_c | 0.07867 | -0.27097 | -0.25901 | -0.17760 | 0.15541 | -0.00982 | 0.10495 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | 0.2712 | <.0001 |
| | 12554 | 12532 | 12554 | 12554 | 12554 | 12554 | 7125 |
| sxok18_c | 0.02630 | -0.36655 | -0.39440 | -0.20746 | 0.21388 | 0.11791 | 0.13828 |
| | 0.0032 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12549 | 12527 | 12549 | 12549 | 12549 | 12549 | 7123 |

Correlation Matrix of Potential Independent Variables (con.)

| | int18 | mompd | NUMKDHH | METRO | DADDEGRE | MOMDEGRE | HISPRACE |
|---|---|---|---|---|---|---|---|
| sex_r | 0.03354 | -0.01256 | -0.10060 | 0.01275 | -0.00637 | 0.04723 | -0.02097 |
| | 0.0002 | 0.1609 | <.0001 | 0.1529 | 0.4897 | <.0001 | 0.0187 |
| | 12571 | 12463 | 12571 | 12571 | 11758 | 12495 | 12571 |
| att | 0.06543 | -0.05480 | 0.17562 | 0.03509 | -0.05155 | -0.06488 | 0.05396 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12438 | 12331 | 12438 | 12438 | 11634 | 12363 | 12438 |
| att2 | 0.05577 | -0.04400 | 0.13670 | 0.04572 | -0.03226 | -0.04653 | 0.05978 |
| | <.0001 | <.0001 | <.0001 | <.0001 | 0.0005 | <.0001 | <.0001 |
| | 12438 | 12331 | 12438 | 12438 | 11634 | 12363 | 12438 |
| att3 | 0.05685 | -0.04602 | 0.18817 | 0.02351 | -0.04294 | -0.07455 | 0.04940 |
| | <.0001 | <.0001 | <.0001 | 0.0087 | <.0001 | <.0001 | <.0001 |
| | 12438 | 12331 | 12438 | 12438 | 11634 | 12363 | 12438 |
| sxok16_c | 0.07293 | -0.06111 | 0.20966 | -0.00061 | -0.07212 | -0.08436 | 0.02391 |
| | <.0001 | <.0001 | <.0001 | 0.9459 | <.0001 | <.0001 | 0.0074 |
| | 12554 | 12446 | 12554 | 12554 | 11742 | 12478 | 12554 |
| sxok18_c | 0.05997 | -0.04928 | 0.15197 | 0.03626 | -0.02951 | -0.04333 | 0.06103 |
| | <.0001 | <.0001 | <.0001 | <.0001 | 0.0014 | <.0001 | <.0001 |
| | 12549 | 12441 | 12549 | 12549 | 11738 | 12473 | 12549 |

| | AGE_R | sex_r | att | att2 | att3 | sxok16_c | sxok18_c |
|---|---|---|---|---|---|---|---|
| sex_r | -0.00832 | 1.00000 | -0.10454 | -0.09091 | -0.30135 | -0.10388 | -0.11069 |
| | 0.3507 | | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 12571 | 12438 | 12438 | 12438 | 12554 | 12549 |
| att | 0.20156 | -0.10454 | 1.00000 | 0.94351 | 0.94287 | 0.72601 | 0.91916 |
| | <.0001 | <.0001 | | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12438 | 12438 | 12438 | 12438 | 12438 | 12438 | 12438 |
| att2 | 0.14329 | -0.09091 | 0.94351 | 1.00000 | 0.88781 | 0.52354 | 0.94275 |
| | <.0001 | <.0001 | <.0001 | | <.0001 | <.0001 | <.0001 |
| | 12438 | 12438 | 12438 | 12438 | 12438 | 12438 | 12438 |
| att3 | 0.20042 | -0.30135 | 0.94287 | 0.88781 | 1.00000 | 0.72261 | 0.86117 |
| | <.0001 | <.0001 | <.0001 | <.0001 | | <.0001 | <.0001 |
| | 12438 | 12438 | 12438 | 12438 | 12438 | 12438 | 12438 |
| sxok16_c | 0.26614 | -0.10388 | 0.72601 | 0.52354 | 0.72261 | 1.00000 | 0.55811 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | | <.0001 |
| | 12554 | 12554 | 12438 | 12438 | 12438 | 12554 | 12545 |
| sxok18_c | 0.15157 | -0.11069 | 0.91916 | 0.94275 | 0.86117 | 0.55811 | 1.00000 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 | |
| | 12549 | 12549 | 12438 | 12438 | 12438 | 12545 | 12549 |

## Appendix J

Two Exploratory Factor Analyses

**FIRST EXPLORATORY FACTOR ANALYSIS WITH 3 FACTOR(S):**
**"Postponement", "SES", "Religion"**

TESTS OF MODEL FIT

Chi-Square Test of Model Fit

| | |
|---|---|
| Value | 144.499* |
| Degrees of Freedom | 12 |
| P-Value | 0.0000 |

Chi-Square Test of Model Fit for the Baseline Model

| | |
|---|---|
| Value | 8772.078 |
| Degrees of Freedom | 36 |
| P-Value | 0.0000 |

RMSEA (Root Mean Square Error Of Approximation)

| | |
|---|---|
| **Estimate** | **0.043** |
| 90 Percent C.I. | 0.037 0.049 |
| Probability RMSEA <= .05 | 0.966 |

CFI/TLI

| | |
|---|---|
| **CFI** | **0.985** |
| TLI | 0.954 |

SRMR (Standardized Root Mean Square Residual)

| | |
|---|---|
| Value | 0.019 |

GEOMIN ROTATED LOADINGS

| | 1 | 2 | 3 |
|---|---|---|---|
| AGE1SEX | **0.353** | -0.001 | -0.160 |
| AGE1MAR | **0.658** | -0.227 | 0.021 |
| AGE1BABY | **0.881** | 0.021 | -0.018 |
| POVERTY | 0.019 | **0.907** | 0.056 |
| TOTINCR | -0.228 | **1.061** | 0.002 |
| HIEDUC | 0.239 | **0.382** | -0.042 |
| RELDLIFE | -0.008 | 0.043 | **0.962** |
| ATTNDNOW | 0.026 | -0.038 | **0.629** |
| RELIGION | 0.000 | -0.018 | **0.679** |

GEOMIN FACTOR CORRELATIONS

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | 1.000 | | |
| 2 | 0.390 | 1.000 | |
| 3 | 0.178 | 0.072 | 1.000 |

## SECOND EXPLORATORY FACTOR ANALYSIS WITH "RELIGION" & "LIFEEVENTS"

TESTS OF MODEL FIT

Chi-Square Test of Model Fit

| | |
|---|---|
| Value | 69.681 |
| Degrees of Freedom | 4 |
| P-Value | 0.0000 |

Chi-Square Test of Model Fit for the Baseline Model

| | |
|---|---|
| Value | 26326.415 |
| Degrees of Freedom | 15 |
| P-Value | 0.0000 |

CFI/TLI

| | |
|---|---|
| **CFI** | **0.998** |
| TLI | 0.991 |

RMSEA (Root Mean Square Error Of Approximation)

| | | |
|---|---|---|
| **Estimate** | **0.036** | |
| 90 Percent C.I. | 0.029 | 0.044 |
| Probability RMSEA <= .05 | 0.999 | |

SRMR (Standardized Root Mean Square Residual)

| | |
|---|---|
| Value | 0.007 |

GEOMIN ROTATED LOADINGS

| | 1 | 2 |
|---|---|---|
| EVRMARRY | **0.648** | 0.021 |
| BIOPARE | **0.943** | -0.024 |
| NUMKDHH | **0.720** | 0.018 |
| RELDLIFE | 0.002 | **0.949** |
| ATTEND | 0.003 | **0.673** |
| PROTEST | -0.008 | **0.629** |

GEOMIN FACTOR CORRELATIONS

| | 1 | 2 |
|---|---|---|
| 1 | 1.000 | |
| 2 | 0.189 | 1.000 |

# Appendix J

## Correlation Matrices for Exploratory Factor Analysis Variables

### First Exploratory Factor Analysis

9 Variables: age1sex age1mar age1babe POVERTY TOTINCR HIEDUC reldlife_c ATTNDNOW RELIGION

Weight Variable: FINALWGT

Simple Statistics

| Variable | N | Mean | Std Dev | Sum | Minimum | Maximum |
|---|---|---|---|---|---|---|
| age1sex | 10894 | 2.05643 | 71.65771 | 220955859 | 1.00000 | 7.00000 |
| age1mar | 5879 | 3.33200 | 106.19413 | 222618638 | 1.00000 | 7.00000 |
| age1babe | 6144 | 3.36611 | 113.48321 | 217089324 | 1.00000 | 7.00000 |
| POVERTY | 12571 | 277.19500 | 15510 | 3.4014E10 | 7.00000 | 500.00000 |
| TOTINCR | 12571 | 9.48296 | 373.61786 | 1163633051 | 1.00000 | 14.00000 |
| HIEDUC | 12571 | 9.36260 | 230.12517 | 1148863093 | 5.00000 | 15.00000 |
| reldlife_c | 12546 | 1.79760 | 79.08848 | 220237085 | 1.00000 | 3.00000 |
| ATTNDNOW | 12571 | 3.37484 | 133.69474 | 414118984 | 1.00000 | 9.00000 |
| RELIGION | 12571 | 2.45993 | 84.19594 | 301852641 | 1.00000 | 4.00000 |

Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

| | **age1sex** | **age1mar** | **age1babe** | **POVERTY** | **TOTINCR** |
|---|---|---|---|---|---|
| age1sex | 1.00000 | 0.22316 | 0.34262 | 0.10815 | 0.09945 |
| | | <.0001 | <.0001 | <.0001 | <.0001 |
| | 10894 | 5879 | 6144 | 10894 | 10894 |
| age1mar | 0.22316 | 1.00000 | 0.56228 | 0.18840 | 0.14108 |
| | <.0001 | | <.0001 | <.0001 | <.0001 |
| | 5879 | 5879 | 4651 | 5879 | 5879 |
| age1babe | 0.34262 | 0.56228 | 1.00000 | 0.33808 | 0.31503 |
| | <.0001 | <.0001 | | <.0001 | <.0001 |
| | 6144 | 4651 | 6144 | 6144 | 6144 |
| POVERTY | 0.10815 | 0.18840 | 0.33808 | 1.00000 | 0.89242 |
| | <.0001 | <.0001 | <.0001 | | <.0001 |
| | 10894 | 5879 | 6144 | 12571 | 12571 |
| TOTINCR | 0.09945 | 0.14108 | 0.31503 | 0.89242 | 1.00000 |
| | <.0001 | <.0001 | <.0001 | <.0001 | |
| | 10894 | 5879 | 6144 | 12571 | 12571 |
| HIEDUC | 0.24190 | 0.24693 | 0.41809 | 0.39751 | 0.31156 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 10894 | 5879 | 6144 | 12571 | 12571 |

| | age1sex | age1mar | age1babe | POVERTY | TOTINCR |
|---|---|---|---|---|---|
| reldlife_c | -0.12480 | 0.05090 | 0.00377 | 0.12510 | 0.05926 |
| | <.0001 | <.0001 | 0.7679 | <.0001 | <.0001 |
| | 10871 | 5864 | 6132 | 12546 | 12546 |
| ATTNDNOW | -0.18248 | 0.03838 | -0.05597 | 0.06907 | -0.01206 |
| | <.0001 | 0.0032 | <.0001 | <.0001 | 0.1763 |
| | 10894 | 5879 | 6144 | 12571 | 12571 |
| RELIGION | 0.06381 | -0.00977 | 0.05064 | -0.01810 | 0.00768 |
| | <.0001 | 0.4538 | <.0001 | 0.0425 | 0.3893 |
| | 10894 | 5879 | 6144 | 12571 | 12571 |

| | HIEDUC | reldlife_c | ATTNDNOW | RELIGION |
|---|---|---|---|---|
| age1sex | 0.24190 | -0.12480 | -0.18248 | 0.06381 |
| | <.0001 | <.0001 | <.0001 | <.0001 |
| | 10894 | 10871 | 10894 | 10894 |
| age1mar | 0.24693 | 0.05090 | 0.03838 | -0.00977 |
| | <.0001 | <.0001 | 0.0032 | 0.4538 |
| | 5879 | 5864 | 5879 | 5879 |
| age1babe | 0.41809 | 0.00377 | -0.05597 | 0.05064 |
| | <.0001 | 0.7679 | <.0001 | <.0001 |
| | 6144 | 6132 | 6144 | 6144 |
| POVERTY | 0.39751 | 0.12510 | 0.06907 | -0.01810 |
| | <.0001 | <.0001 | <.0001 | 0.0425 |
| | 12571 | 12546 | 12571 | 12571 |
| TOTINCR | 0.31156 | 0.05926 | -0.01206 | 0.00768 |
| | <.0001 | <.0001 | 0.1763 | 0.3893 |
| | 12571 | 12546 | 12571 | 12571 |
| HIEDUC | 1.00000 | 0.02015 | -0.00151 | 0.06008 |
| | | 0.0240 | 0.8657 | <.0001 |
| | 12571 | 12546 | 12571 | 12571 |
| reldlife_c | 0.02015 | 1.00000 | 0.63314 | -0.52631 |
| | 0.0240 | | <.0001 | <.0001 |
| | 12546 | 12546 | 12546 | 12546 |
| ATTNDNOW | -0.00151 | 0.63314 | 1.00000 | -0.33297 |
| | 0.8657 | <.0001 | | <.0001 |
| | 12571 | 12546 | 12571 | 12571 |
| RELIGION | 0.06008 | -0.52631 | -0.33297 | 1.00000 |
| | <.0001 | <.0001 | <.0001 | |
| | 12571 | 12546 | 12571 | 12571 |

# Second Exploratory Factor Analysis

The CORR Procedure

9 Variables: reldlife_c ATTNDNOW RELIGION EVRMARRY biopare NUMKDHH abort COHEVER age1sex

Weight Variable: FINALWGT

Simple Statistics

| Variable | N | Mean | Std Dev | Sum | Minimum | Maximum |
|---|---|---|---|---|---|---|
| reldlife_c | 12546 | 1.79760 | 79.08848 | 220237085 | 1.00000 | 3.00000 |
| ATTNDNOW | 12571 | 3.37484 | 133.69474 | 414118984 | 1.00000 | 9.00000 |
| RELIGION | 12571 | 2.45993 | 84.19594 | 301852641 | 1.00000 | 4.00000 |
| EVRMARRY | 12571 | 0.54455 | 49.20479 | 66820829 | 0 | 1.00000 |
| biopare | 12571 | 0.52650 | 49.33188 | 64605233 | 0 | 1.00000 |
| NUMKDHH | 12571 | 0.94275 | 117.54248 | 115682227 | 0 | 5.00000 |
| abort | 7135 | 1.78808 | 41.33063 | 130473770 | 1.00000 | 2.00000 |
| COHEVER | 12571 | 1.50574 | 49.39804 | 184765646 | 1.00000 | 2.00000 |
| age1sex | 10894 | 2.05643 | 71.65771 | 220955859 | 1.00000 | 7.00000 |

Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

| | reldlife_c | ATTNDNOW | RELIGION | EVRMARRY | biopare |
|---|---|---|---|---|---|
| reldlife_c | 1.00000 | 0.63314 | -0.52631 | -0.13290 | -0.14834 |
| | | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12546 | 12546 | 12546 | 12546 | 12546 |
| ATTNDNOW | 0.63314 | 1.00000 | -0.33297 | -0.10705 | -0.08853 |
| | <.0001 | | <.0001 | <.0001 | <.0001 |
| | 12546 | 12571 | 12571 | 12571 | 12571 |
| RELIGION | -0.52631 | -0.33297 | 1.00000 | 0.07586 | 0.04703 |
| | <.0001 | <.0001 | | <.0001 | <.0001 |
| | 12546 | 12571 | 12571 | 12571 | 12571 |
| EVRMARRY | -0.13290 | -0.10705 | 0.07586 | 1.00000 | 0.61082 |
| | <.0001 | <.0001 | <.0001 | | <.0001 |
| | 12546 | 12571 | 12571 | 12571 | 12571 |
| biopare | -0.14834 | -0.08853 | 0.04703 | 0.61082 | 1.00000 |
| | <.0001 | <.0001 | <.0001 | <.0001 | |
| | 12546 | 12571 | 12571 | 12571 | 12571 |
| NUMKDHH | -0.14539 | -0.12696 | 0.04871 | 0.47157 | 0.67774 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12546 | 12571 | 12571 | 12571 | 12571 |

| | reldlife_c | ATTNDNOW | RELIGION | EVRMARRY | biopare |
|---|---|---|---|---|---|
| abort | -0.10506 | -0.14254 | 0.02941 | 0.13421 | 0.26017 |
| | <.0001 | <.0001 | 0.0130 | <.0001 | <.0001 |
| | 7119 | 7135 | 7135 | 7135 | 7135 |
| COHEVER | -0.13105 | -0.23373 | 0.08532 | -0.26953 | -0.32660 |
| | <.0001 | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12546 | 12571 | 12571 | 12571 | 12571 |
| age1sex | -0.12480 | -0.18248 | 0.06381 | 0.13809 | -0.03157 |
| | <.0001 | <.0001 | <.0001 | <.0001 | 0.0010 |
| | 10871 | 10894 | 10894 | 10894 | 10894 |

| | NUMKDHH | abort | COHEVER | age1sex |
|---|---|---|---|---|
| reldlife_c | -0.14539 | -0.10506 | -0.13105 | -0.12480 |
| | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12546 | 7119 | 12546 | 10871 |
| ATTNDNOW | -0.12696 | -0.14254 | -0.23373 | -0.18248 |
| | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 7135 | 12571 | 10894 |
| RELIGION | 0.04871 | 0.02941 | 0.08532 | 0.06381 |
| | <.0001 | 0.0130 | <.0001 | <.0001 |
| | 12571 | 7135 | 12571 | 10894 |
| EVRMARRY | 0.47157 | 0.13421 | -0.26953 | 0.13809 |
| | <.0001 | <.0001 | <.0001 | <.0001 |
| | 12571 | 7135 | 12571 | 10894 |
| biopare | 0.67774 | 0.26017 | -0.32660 | -0.03157 |
| | <.0001 | <.0001 | <.0001 | 0.0010 |
| | 12571 | 7135 | 12571 | 10894 |
| NUMKDHH | 1.00000 | 0.11342 | -0.21242 | 0.00759 |
| | | <.0001 | <.0001 | 0.4283 |
| | 12571 | 7135 | 12571 | 10894 |
| abort | 0.11342 | 1.00000 | 0.15391 | 0.16106 |
| | <.0001 | | <.0001 | <.0001 |
| | 7135 | 7135 | 7135 | 7135 |
| COHEVER | -0.21242 | 0.15391 | 1.00000 | 0.20677 |
| | <.0001 | <.0001 | | <.0001 |
| | 12571 | 7135 | 12571 | 10894 |
| age1sex | 0.00759 | 0.16106 | 0.20677 | 1.00000 |
| | 0.4283 | <.0001 | <.0001 | |
| 10894 | 7135 | 10894 | 10894 | |

# Appendix L

## Ordinal Logistic Regression Output

The SURVEYLOGISTIC Procedure
Model Information

| | |
|---|---|
| Data Set | WORK.COMBINED |
| Response Variable | att_3 |
| Number of Response Levels | 3 |
| Stratum Variable | SEST |
| Number of Strata | 84 |
| Cluster Variable | SECU_R |
| Number of Clusters | 168 |
| Weight Variable | FINALWGT |
| Model | Cumulative Logit |
| Optimization Technique | Fisher's Scoring |
| Variance Adjustment | Degrees of Freedom (DF) |

| | |
|---|---|
| Number of Observations Read | 12571 |
| Number of Observations Used | 12154 |
| Sum of Weights Read | 1.2271E8 |
| Sum of Weights Used | 1.1881E8 |

Response Profile

| Ordered Value | att_3 | Total Frequency | Total Weight |
|---|---|---|---|
| 1 | 1 | 5061 | 51012467 |
| 2 | 2 | 4745 | 46155745 |
| 3 | 3 | 2348 | 21639130 |

Probabilities modeled are cumulated over the lower Ordered Values.

NOTE: 417 observations were deleted due to missing values for the response or explanatory variables.

Class Level Information

| Class | Value | Design Variables | | | |
|---|---|---|---|---|---|
| attndnow_c | 1 | 1 | 0 | 0 | 0 |
| | 2 | 0 | 1 | 0 | 0 |
| | 3 | 0 | 0 | 1 | 0 |
| | 4 | 0 | 0 | 0 | 1 |
| | 5 | 0 | 0 | 0 | 0 |
| numkdhh_4 | 1 | 1 | 0 | 0 | 0 |
| | 2 | 0 | 1 | 0 | 0 |
| | 3 | 0 | 0 | 1 | 0 |
| | 4 | 0 | 0 | 0 | 1 |

The SURVEYLOGISTIC Procedure

Class Level Information

| Class | Value | Design Variables | | | |
|---|---|---|---|---|---|
| | 5 | 0 | 0 | 0 | 0 |
| age_y | 1 | 0 | 0 | 0 | 0 | 0 |
| | 2 | 1 | 0 | 0 | 0 | 0 |
| | 3 | 0 | 1 | 0 | 0 | 0 |
| | 4 | 0 | 0 | 1 | 0 | 0 |
| | 5 | 0 | 0 | 0 | 1 | 0 |
| | 6 | 0 | 0 | 0 | 0 | 1 |
| HISPRACE | 1 | 1 | 0 | 0 | | |
| | 2 | 0 | 0 | 0 | | |
| | 3 | 0 | 1 | 0 | | |
| | 4 | 0 | 0 | 1 | | |
| age1sex_ny | 1 | 1 | 0 | 0 | 0 | |
| | 2 | 0 | 1 | 0 | 0 | |
| | 3 | 0 | 0 | 1 | 0 | |
| | 4 | 0 | 0 | 0 | 0 | |
| | 5 | 0 | 0 | 0 | 1 | |
| COHEVER | 1 | 0 | | | | |
| | 2 | 1 | | | | |
| sex_r | 1 | 1 | | | | |
| | 2 | 0 | | | | |
| edu_r | 1 | 1 | 0 | 0 | 0 | |
| | 2 | 0 | 1 | 0 | 0 | |
| | 3 | 0 | 0 | 1 | 0 | |
| | 4 | 0 | 0 | 0 | 1 | |
| | 5 | 0 | 0 | 0 | 0 | |
| metro_c | 1 | 0 | 0 | | | |
| | 2 | 1 | 0 | | | |
| | 3 | 0 | 1 | | | |

Model Convergence Status

Convergence criterion (GCONV=1E-8) satisfied.

The SURVEYLOGISTIC Procedure

Score Test for the Proportional Odds Assumption

| Chi-Square | DF | Pr > ChiSq |
|---|---|---|
| 3685469.13 | 28 | <.0001 |

Model Fit Statistics

| Criterion | Intercept Only | Intercept and Covariates |
|---|---|---|
| AIC | 247236971 | 213263394 |
| SC | 247236986 | 213263616 |
| -2 Log L | 247236967 | 213263334 |

R-Square 1.0000 Max-rescaled R-Square 1.0000

Testing Global Null Hypothesis: BETA=0

| Test | Chi-Square | DF | Pr > ChiSq |
|---|---|---|---|
| Likelihood Ratio | 33973632.8 | 28 | <.0001 |
| Score | 29149183.1 | 28 | <.0001 |
| Wald | 2634.7149 | 28 | <.0001 |

Type 3 Analysis of Effects

| Effect | DF | Wald Chi-Square | Pr > ChiSq |
|---|---|---|---|
| attndnow_c | 4 | 581.1949 | <.0001 |
| numkdhh_4 | 4 | 39.1323 | <.0001 |
| COHEVER | 1 | 5.9412 | 0.0148 |
| age1sex_ny | 4 | 485.8121 | <.0001 |
| age_y | 5 | 398.8778 | <.0001 |
| sex_r | 1 | 30.8702 | <.0001 |
| HISPRACE | 3 | 20.3247 | 0.0001 |
| edu_r | 4 | 35.2802 | <.0001 |
| metro_c | 2 | 13.8245 | 0.0010 |

The SURVEYLOGISTIC Procedure

Analysis of Maximum Likelihood Estimates

| Parameter | | DF | Estimate | Standard Error | Wald Chi-Square | Pr > ChiSq |
|---|---|---|---|---|---|---|
| Intercept | 1 | 1 | -3.6742 | 0.1658 | 491.0156 | <.0001 |
| Intercept | 2 | 1 | -1.4616 | 0.1628 | 80.5858 | <.0001 |
| attndnow_c | 1 | 1 | 2.3109 | 0.0991 | 543.5667 | <.0001 |
| attndnow_c | 2 | 1 | 1.2691 | 0.0822 | 238.3467 | <.0001 |
| attndnow_c | 3 | 1 | 0.7668 | 0.0786 | 95.0464 | <.0001 |
| attndnow_c | 4 | 1 | 0.3327 | 0.0579 | 32.9793 | <.0001 |
| numkdhh_4 | 1 | 1 | 0.4790 | 0.1881 | 6.4852 | 0.0109 |
| numkdhh_4 | 2 | 1 | 0.5376 | 0.1301 | 17.0903 | <.0001 |
| numkdhh_4 | 3 | 1 | 0.3928 | 0.0834 | 22.1828 | <.0001 |
| numkdhh_4 | 4 | 1 | 0.3936 | 0.0759 | 26.8600 | <.0001 |
| COHEVER | 2 | 1 | 0.1518 | 0.0623 | 5.9412 | 0.0148 |
| age1sex_ny | 1 | 1 | 1.5644 | 0.0869 | 323.7674 | <.0001 |
| age1sex_ny | 2 | 1 | 0.9972 | 0.1529 | 42.5132 | <.0001 |
| age1sex_ny | 3 | 1 | 0.8614 | 0.1099 | 61.4612 | <.0001 |
| age1sex_ny | 5 | 1 | -0.1463 | 0.0737 | 3.9413 | 0.0471 |
| age_y | 2 | 1 | 0.9159 | 0.0838 | 119.3624 | <.0001 |
| age_y | 3 | 1 | 1.2516 | 0.1039 | 145.1216 | <.0001 |
| age_y | 4 | 1 | 1.5179 | 0.0977 | 241.3486 | <.0001 |
| age_y | 5 | 1 | 1.8265 | 0.1035 | 311.3395 | <.0001 |
| age_y | 6 | 1 | 1.8098 | 0.1056 | 293.9393 | <.0001 |
| sex_r | 1 | 1 | 0.3104 | 0.0559 | 30.8702 | <.0001 |
| HISPRACE | 1 | 1 | -0.0863 | 0.0717 | 1.4506 | 0.2284 |
| HISPRACE | 3 | 1 | 0.1094 | 0.0637 | 2.9457 | 0.0861 |
| HISPRACE | 4 | 1 | 0.3353 | 0.1037 | 10.4479 | 0.0012 |
| edu_r | 1 | 1 | 0.5519 | 0.1290 | 18.3114 | <.0001 |
| edu_r | 2 | 1 | 0.6485 | 0.1294 | 25.1284 | <.0001 |
| edu_r | 3 | 1 | 0.5686 | 0.1245 | 20.8457 | <.0001 |
| edu_r | 4 | 1 | 0.2638 | 0.1363 | 3.7464 | 0.0529 |
| metro_c | 2 | 1 | 0.0921 | 0.0651 | 2.0029 | 0.1570 |
| metro_c | 3 | 1 | 0.3150 | 0.0847 | 13.8231 | 0.0002 |

Odds Ratio Estimates

| Effect | | Point Estimate | 95% Wald Confidence Limits | |
|---|---|---|---|---|
| attndnow_c | 1 vs 5 | 10.084 | 8.303 | 12.246 |
| attndnow_c | 2 vs 5 | 3.558 | 3.028 | 4.180 |
| attndnow_c | 3 vs 5 | 2.153 | 1.845 | 2.512 |
| attndnow_c | 4 vs 5 | 1.395 | 1.245 | 1.562 |
| numkdhh_4 | 1 vs 5 | 1.614 | 1.117 | 2.334 |
| numkdhh_4 | 2 vs 5 | 1.712 | 1.327 | 2.209 |
| numkdhh_4 | 3 vs 5 | 1.481 | 1.258 | 1.744 |
| numkdhh_4 | 4 vs 5 | 1.482 | 1.277 | 1.720 |
| COHEVER | 2 vs 1 | 1.164 | 1.030 | 1.315 |
| age1sex_ny | 1 vs 4 | 4.780 | 4.031 | 5.668 |
| age1sex_ny | 2 vs 4 | 2.711 | 2.009 | 3.658 |
| age1sex_ny | 3 vs 4 | 2.366 | 1.908 | 2.935 |
| age1sex_ny | 5 vs 4 | 0.864 | 0.748 | 0.998 |
| age_y | 2 vs 1 | 2.499 | 2.120 | 2.945 |
| age_y | 3 vs 1 | 3.496 | 2.852 | 4.285 |
| age_y | 4 vs 1 | 4.563 | 3.767 | 5.526 |
| age_y | 5 vs 1 | 6.212 | 5.071 | 7.609 |
| age_y | 6 vs 1 | 6.109 | 4.967 | 7.513 |
| sex_r | 1 vs 2 | 1.364 | 1.222 | 1.522 |
| HISPRACE | 1 vs 2 | 0.917 | 0.797 | 1.056 |
| HISPRACE | 3 vs 2 | 1.116 | 0.985 | 1.264 |
| HISPRACE | 4 vs 2 | 1.398 | 1.141 | 1.714 |
| edu_r | 1 vs 5 | 1.737 | 1.349 | 2.236 |
| edu_r | 2 vs 5 | 1.913 | 1.484 | 2.465 |
| edu_r | 3 vs 5 | 1.766 | 1.383 | 2.254 |
| edu_r | 4 vs 5 | 1.302 | 0.997 | 1.700 |
| metro_c | 2 vs 1 | 1.096 | 0.965 | 1.246 |
| metro_c | 3 vs 1 | 1.370 | 1.161 | 1.618 |

Association of Predicted Probabilities and Observed Responses

| | | | |
|---|---|---|---|
| Percent Concordant | 74.2 | Somers' D | 0.487 |
| Percent Discordant | 25.5 | Gamma | 0.489 |
| Percent Tied | 0.3 | Tau-a | 0.310 |
| Pairs | 47038933 | c | 0.744 |

# Appendix M

## Generalized Logit Model

The SURVEYLOGISTIC Procedure
Model Information

| | |
|---|---|
| Data Set | WORK.COMBINED |
| Response Variable | att_3 |
| Number of Response Levels | 3 |
| Stratum Variable | SEST |
| Number of Strata | 84 |
| Cluster Variable | SECU_R |
| Number of Clusters | 168 |
| Weight Variable | FINALWGT |
| Model | Generalized Logit |
| Optimization Technique | Fisher's Scoring |
| Variance Adjustment | Degrees of Freedom (DF) |

| | |
|---|---|
| Number of Observations Read | 12571 |
| Number of Observations Used | 12154 |
| Sum of Weights Read | 1.2271E8 |
| Sum of Weights Used | 1.1881E8 |

Response Profile

| Ordered Value | att_3 | Total Frequency | Total Weight |
|---|---|---|---|
| 1 | 1 | 5061 | 51012467 |
| 2 | 2 | 4745 | 46155745 |
| 3 | 3 | 2348 | 21639130 |

Logits modeled use att_3=3 as the reference category.

NOTE: 417 observations were deleted due to missing values for the response or explanatory variables.

Class Level Information

| Class | Value | Design Variables | | | |
|---|---|---|---|---|---|
| attndnow_c | 1 | 1 | 0 | 0 | 0 |
| | 2 | 0 | 1 | 0 | 0 |
| | 3 | 0 | 0 | 1 | 0 |
| | 4 | 0 | 0 | 0 | 1 |
| | 5 | 0 | 0 | 0 | 0 |
| numkdhh_4 | 1 | 1 | 0 | 0 | 0 |
| | 2 | 0 | 1 | 0 | 0 |
| | 3 | 0 | 0 | 1 | 0 |
| | 4 | 0 | 0 | 0 | 1 |

The SURVEYLOGISTIC Procedure

Class Level Information

| Class | Value | Design Variables | | | |
|---|---|---|---|---|---|
| | 5 | 0 | 0 | 0 | 0 |
| age_y | 1 | 0 | 0 | 0 | 0 | 0 |
| | 2 | 1 | 0 | 0 | 0 | 0 |
| | 3 | 0 | 1 | 0 | 0 | 0 |
| | 4 | 0 | 0 | 1 | 0 | 0 |
| | 5 | 0 | 0 | 0 | 1 | 0 |
| | 6 | 0 | 0 | 0 | 0 | 1 |
| HISPRACE | 1 | 1 | 0 | 0 | | |
| | 2 | 0 | 0 | 0 | | |
| | 3 | 0 | 1 | 0 | | |
| | 4 | 0 | 0 | 1 | | |
| age1sex_ny | 1 | 1 | 0 | 0 | 0 | |
| | 2 | 0 | 1 | 0 | 0 | |
| | 3 | 0 | 0 | 1 | 0 | |
| | 4 | 0 | 0 | 0 | 0 | |
| | 5 | 0 | 0 | 0 | 1 | |
| COHEVER | 1 | 0 | | | | |
| | 2 | 1 | | | | |
| sex_r | 1 | 1 | | | | |
| | 2 | 0 | | | | |
| edu_r | 1 | 1 | 0 | 0 | 0 | |
| | 2 | 0 | 1 | 0 | 0 | |
| | 3 | 0 | 0 | 1 | 0 | |
| | 4 | 0 | 0 | 0 | 1 | |
| | 5 | 0 | 0 | 0 | 0 | |
| metro_c | 1 | 0 | 0 | | | |
| | 2 | 1 | 0 | | | |
| | 3 | 0 | 1 | | | |

Model Convergence Status

Convergence criterion (GCONV=1E-8) satisfied.

The SURVEYLOGISTIC Procedure

Model Fit Statistics

| Criterion | Intercept Only | Intercept and Covariates |
|---|---|---|
| AIC | 247236971 | 209787243 |
| SC | 247236986 | 209787672 |
| -2 Log L | 247236967 | 209787127 |

Testing Global Null Hypothesis: BETA=0

| Test | Chi-Square | DF | Pr > ChiSq |
|---|---|---|---|
| Likelihood Ratio | 37449840.1 | 56 | <.0001 |
| Score | 34592981.5 | 56 | <.0001 |
| Wald | 7332.7935 | 56 | <.0001 |

Type 3 Analysis of Effects

| Effect | DF | Wald Chi-Square | Pr > ChiSq |
|---|---|---|---|
| attndnow_c | 8 | 562.1675 | <.0001 |
| numkdhh_4 | 8 | 64.6785 | <.0001 |
| COHEVER | 2 | 12.9759 | 0.0015 |
| age1sex_ny | 8 | 578.9582 | <.0001 |
| age_y | 10 | 376.5318 | <.0001 |
| sex_r | 2 | 41.3536 | <.0001 |
| HISPRACE | 6 | 24.5430 | 0.0004 |
| edu_r | 8 | 68.0531 | <.0001 |
| metro_c | 4 | 21.0437 | 0.0003 |

Analysis of Maximum Likelihood Estimates

| Parameter | att_3 | DF | Estimate | Standard Error | Wald Chi-Square | Pr > ChiSq |
|---|---|---|---|---|---|---|
| Intercept | 1 | 1 | -3.8202 | 0.2453 | 242.5419 | <.0001 |
| Intercept | 2 | 1 | -1.5387 | 0.1973 | 60.8233 | <.0001 |
| attndnow_c 1 | 1 | 1 | 2.6569 | 0.1580 | 282.8669 | <.0001 |
| attndnow_c 1 | 2 | 1 | 0.4045 | 0.1837 | 4.8497 | 0.0277 |
| attndnow_c 2 | 1 | 1 | 1.8912 | 0.1214 | 242.5157 | <.0001 |
| attndnow_c 2 | 2 | 1 | 0.7719 | 0.1120 | 47.5120 | <.0001 |
| attndnow_c 3 | 1 | 1 | 1.1011 | 0.1202 | 83.8601 | <.0001 |
| attndnow_c 3 | 2 | 1 | 0.3506 | 0.1208 | 8.4248 | 0.0037 |
| attndnow_c 4 | 1 | 1 | 0.5254 | 0.0888 | 35.0078 | <.0001 |

The SURVEYLOGISTIC Procedure

Analysis of Maximum Likelihood Estimates

| Parameter | att_3 | DF | Estimate | Standard Error | Wald Chi-Square | Pr > ChiSq |
|---|---|---|---|---|---|---|
| attndnow_c | 4 | 2 | 1 | 0.2462 | 0.0877 | 7.8718 | 0.0050 |
| numkdhh_4 | 1 | 1 | 1 | 0.8860 | 0.3747 | 5.5913 | 0.0180 |
| numkdhh_4 | 1 | 2 | 1 | 0.5820 | 0.3720 | 2.4480 | 0.1177 |
| numkdhh_4 | 2 | 1 | 1 | 1.2214 | 0.2082 | 34.4232 | <.0001 |
| numkdhh_4 | 2 | 2 | 1 | 0.9229 | 0.1942 | 22.5828 | <.0001 |
| numkdhh_4 | 3 | 1 | 1 | 0.7944 | 0.1550 | 26.2524 | <.0001 |
| numkdhh_4 | 3 | 2 | 1 | 0.6030 | 0.1422 | 17.9862 | <.0001 |
| numkdhh_4 | 4 | 1 | 1 | 0.5333 | 0.1139 | 21.9166 | <.0001 |
| numkdhh_4 | 4 | 2 | 1 | 0.1502 | 0.0987 | 2.3181 | 0.1279 |
| COHEVER | 2 | 1 | 1 | 0.1742 | 0.0975 | 3.1955 | 0.0738 |
| COHEVER | 2 | 2 | 1 | -0.1007 | 0.0910 | 1.2257 | 0.2683 |
| age1sex_ny | 1 | 1 | 1 | 1.9031 | 0.1279 | 221.2768 | <.0001 |
| age1sex_ny | 1 | 2 | 1 | 0.5166 | 0.1205 | 18.3747 | <.0001 |
| age1sex_ny | 2 | 1 | 1 | 1.3064 | 0.2817 | 21.5090 | <.0001 |
| age1sex_ny | 2 | 2 | 1 | 0.3880 | 0.3290 | 1.3907 | 0.2383 |
| age1sex_ny | 3 | 1 | 1 | 1.1166 | 0.1918 | 33.8736 | <.0001 |
| age1sex_ny | 3 | 2 | 1 | 0.2369 | 0.1800 | 1.7326 | 0.1881 |
| age1sex_ny | 5 | 1 | 1 | -0.2718 | 0.1075 | 6.3903 | 0.0115 |
| age1sex_ny | 5 | 2 | 1 | -0.3365 | 0.0895 | 14.1386 | 0.0002 |
| age_y | 2 | 1 | 1 | 1.1576 | 0.1286 | 80.9789 | <.0001 |
| age_y | 2 | 2 | 1 | 0.7889 | 0.1104 | 51.0822 | <.0001 |
| age_y | 3 | 1 | 1 | 1.6329 | 0.1542 | 112.1361 | <.0001 |
| age_y | 3 | 2 | 1 | 0.8819 | 0.1367 | 41.6528 | <.0001 |
| age_y | 4 | 1 | 1 | 2.1112 | 0.1663 | 161.1240 | <.0001 |
| age_y | 4 | 2 | 1 | 1.2541 | 0.1639 | 58.5477 | <.0001 |
| age_y | 5 | 1 | 1 | 2.6616 | 0.1751 | 231.1157 | <.0001 |
| age_y | 5 | 2 | 1 | 1.5549 | 0.1783 | 76.0590 | <.0001 |
| age_y | 6 | 1 | 1 | 2.7720 | 0.1684 | 271.0123 | <.0001 |
| age_y | 6 | 2 | 1 | 1.7583 | 0.1624 | 117.2272 | <.0001 |
| sex_r | 1 | 1 | 1 | 0.5211 | 0.0823 | 40.1223 | <.0001 |
| sex_r | 1 | 2 | 1 | 0.3170 | 0.0671 | 22.3118 | <.0001 |
| HISPRACE | 1 | 1 | 1 | -0.1071 | 0.1136 | 0.8884 | 0.3459 |
| HISPRACE | 1 | 2 | 1 | 0.0182 | 0.1057 | 0.0295 | 0.8636 |
| HISPRACE | 3 | 1 | 1 | 0.1984 | 0.0975 | 4.1387 | 0.0419 |
| HISPRACE | 3 | 2 | 1 | 0.0804 | 0.1060 | 0.5746 | 0.4485 |
| HISPRACE | 4 | 1 | 1 | 0.3562 | 0.1708 | 4.3468 | 0.0371 |
| HISPRACE | 4 | 2 | 1 | -0.0611 | 0.2163 | 0.0798 | 0.7776 |
| edu_r | 1 | 1 | 1 | 0.9088 | 0.1917 | 22.4800 | <.0001 |
| edu_r | 1 | 2 | 1 | 0.6569 | 0.1638 | 16.0786 | <.0001 |
| edu_r | 2 | 1 | 1 | 1.1483 | 0.1935 | 35.2299 | <.0001 |
| edu_r | 2 | 2 | 1 | 0.9449 | 0.1477 | 40.9177 | <.0001 |
| edu_r | 3 | 1 | 1 | 0.9870 | 0.1824 | 29.2728 | <.0001 |
| edu_r | 3 | 2 | 1 | 0.7998 | 0.1426 | 31.4645 | <.0001 |
| edu_r | 4 | 1 | 1 | 0.4870 | 0.2123 | 5.2600 | 0.0218 |
| edu_r | 4 | 2 | 1 | 0.4670 | 0.1877 | 6.1869 | 0.0129 |

The SURVEYLOGISTIC Procedure

Analysis of Maximum Likelihood Estimates

| Parameter | | att_3 | DF | Estimate | Standard Error | Wald Chi-Square | Pr > ChiSq |
|---|---|---|---|---|---|---|---|
| metro_c | 2 | 1 | 1 | 0.2011 | 0.1012 | 3.9449 | 0.0470 |
| metro_c | 2 | 2 | 1 | 0.2299 | 0.0940 | 5.9788 | 0.0145 |
| metro_c | 3 | 1 | 1 | 0.4340 | 0.1118 | 15.0567 | 0.0001 |
| metro_c | 3 | 2 | 1 | 0.1154 | 0.1041 | 1.2294 | 0.2675 |

Odds Ratio Estimates

| Effect | att_3 | Point Estimate | 95% Wald Confidence Limits | |
|---|---|---|---|---|
| attndnow_c 1 vs 5 | 1 | 14.252 | 10.457 | 19.424 |
| attndnow_c 1 vs 5 | 2 | 1.498 | 1.045 | 2.148 |
| attndnow_c 2 vs 5 | 1 | 6.628 | 5.224 | 8.409 |
| attndnow_c 2 vs 5 | 2 | 2.164 | 1.737 | 2.695 |
| attndnow_c 3 vs 5 | 1 | 3.007 | 2.376 | 3.807 |
| attndnow_c 3 vs 5 | 2 | 1.420 | 1.121 | 1.799 |
| attndnow_c 4 vs 5 | 1 | 1.691 | 1.421 | 2.013 |
| attndnow_c 4 vs 5 | 2 | 1.279 | 1.077 | 1.519 |
| numkdhh_4 1 vs 5 | 1 | 2.425 | 1.164 | 5.055 |
| numkdhh_4 1 vs 5 | 2 | 1.790 | 0.863 | 3.710 |
| numkdhh_4 2 vs 5 | 1 | 3.392 | 2.256 | 5.101 |
| numkdhh_4 2 vs 5 | 2 | 2.517 | 1.720 | 3.682 |
| numkdhh_4 3 vs 5 | 1 | 2.213 | 1.633 | 2.999 |
| numkdhh_4 3 vs 5 | 2 | 1.828 | 1.383 | 2.415 |
| numkdhh_4 4 vs 5 | 1 | 1.705 | 1.363 | 2.131 |
| numkdhh_4 4 vs 5 | 2 | 1.162 | 0.958 | 1.410 |
| COHEVER 2 vs 1 | 1 | 1.190 | 0.983 | 1.441 |
| COHEVER 2 vs 1 | 2 | 0.904 | 0.756 | 1.081 |
| age1sex_ny 1 vs 4 | 1 | 6.706 | 5.219 | 8.618 |
| age1sex_ny 1 vs 4 | 2 | 1.676 | 1.324 | 2.123 |
| age1sex_ny 2 vs 4 | 1 | 3.693 | 2.126 | 6.414 |
| age1sex_ny 2 vs 4 | 2 | 1.474 | 0.773 | 2.809 |
| age1sex_ny 3 vs 4 | 1 | 3.054 | 2.097 | 4.448 |
| age1sex_ny 3 vs 4 | 2 | 1.267 | 0.891 | 1.803 |
| age1sex_ny 5 vs 4 | 1 | 0.762 | 0.617 | 0.941 |
| age1sex_ny 5 vs 4 | 2 | 0.714 | 0.599 | 0.851 |
| age_y 2 vs 1 | 1 | 3.182 | 2.473 | 4.095 |
| age_y 2 vs 1 | 2 | 2.201 | 1.773 | 2.733 |
| age_y 3 vs 1 | 1 | 5.119 | 3.784 | 6.925 |
| age_y 3 vs 1 | 2 | 2.416 | 1.848 | 3.157 |
| age_y 4 vs 1 | 1 | 8.258 | 5.961 | 11.440 |
| age_y 4 vs 1 | 2 | 3.505 | 2.542 | 4.832 |
| age_y 5 vs 1 | 1 | 14.319 | 10.160 | 20.180 |
| age_y 5 vs 1 | 2 | 4.734 | 3.338 | 6.715 |

The SURVEYLOGISTIC Procedure

Odds Ratio Estimates

| Effect | | att_3 | Point Estimate | 95% Wald Confidence Limits | |
|---|---|---|---|---|---|
| age_y | 6 vs 1 | 1 | 15.991 | 11.496 | 22.244 |
| age_y | 6 vs 1 | 2 | 5.803 | 4.221 | 7.977 |
| sex_r | 1 vs 2 | 1 | 1.684 | 1.433 | 1.978 |
| sex_r | 1 vs 2 | 2 | 1.373 | 1.204 | 1.566 |
| HISPRACE | 1 vs 2 | 1 | 0.898 | 0.719 | 1.123 |
| HISPRACE | 1 vs 2 | 2 | 1.018 | 0.828 | 1.253 |
| HISPRACE | 3 vs 2 | 1 | 1.219 | 1.007 | 1.476 |
| HISPRACE | 3 vs 2 | 2 | 1.084 | 0.880 | 1.334 |
| HISPRACE | 4 vs 2 | 1 | 1.428 | 1.022 | 1.996 |
| HISPRACE | 4 vs 2 | 2 | 0.941 | 0.616 | 1.437 |
| edu_r | 1 vs 5 | 1 | 2.481 | 1.704 | 3.613 |
| edu_r | 1 vs 5 | 2 | 1.929 | 1.399 | 2.659 |
| edu_r | 2 vs 5 | 1 | 3.153 | 2.158 | 4.607 |
| edu_r | 2 vs 5 | 2 | 2.573 | 1.926 | 3.437 |
| edu_r | 3 vs 5 | 1 | 2.683 | 1.877 | 3.836 |
| edu_r | 3 vs 5 | 2 | 2.225 | 1.683 | 2.943 |
| edu_r | 4 vs 5 | 1 | 1.627 | 1.073 | 2.467 |
| edu_r | 4 vs 5 | 2 | 1.595 | 1.104 | 2.305 |
| metro_c | 2 vs 1 | 1 | 1.223 | 1.003 | 1.491 |
| metro_c | 2 vs 1 | 2 | 1.258 | 1.047 | 1.513 |
| metro_c | 3 vs 1 | 1 | 1.543 | 1.240 | 1.922 |
| metro_c | 3 vs 1 | 2 | 1.122 | 0.915 | 1.376 |