

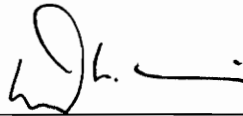
**The Impact of Acculturation Level and Marital Status on Infant Health and  
Maternal Education Among California Resident Hispanics**

by

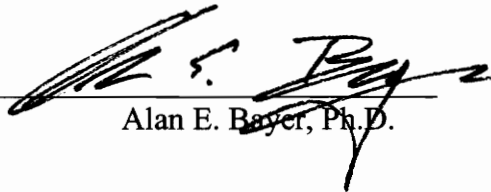
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in partial fulfillment of the requirements for the degree of

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in  
Sociology

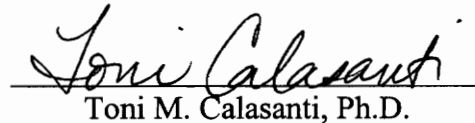
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**THE IMPACT OF ACCULTURATION LEVEL AND MARITAL STATUS ON  
INFANT HEALTH AND MATERNAL EDUCATION AMONG CALIFORNIA  
RESIDENT HISPANICS**

by

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**(ABSTRACT)**

Data for Hispanic participants in the 1985 - 1988 California Adolescent Family Life (AFL) Program were examined to determine whether acculturation level and marital status have an effect on maternal educational outcomes and infant health outcomes. Following Becerra and de Anda (1984) language preference is used as an approximation of acculturation level. With respect to marital status, two models are constructed. In Model 1, marital status includes the values never married or ever married. In Model 2, married and cohabiting women are grouped together and compared with women who neither have married nor cohabited. Logistic regression was used to determine the effect of these independent variables on the dichotomized maternal education and infant health variables. The infant health measures examined in this study are birthweight (low or adequate birthweight) and neonatal intensive care unit admission. More acculturated women were found to be more likely to have babies admitted to the NICU than less acculturated women. More acculturated women were also more likely than less acculturated women to be enrolled or graduated from school at the time they exited the AFL Program. Bivariate analyses for marriage with both birthweight and NICU admission approached significance. The logistic regression analyses for these relationships were not significant.

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My committee naturally has been vitally instrumental in this thesis. I appreciate and value the comments and suggestions of Alan E. Bayer, Ph.D., and Toni M. Calasanti, Ph.D. The one person who I will never be able to thank enough for all the encouragement is Dale W. Wimberley, Ph.D., my committee chair. Dale encouraged me to apply to graduate schools when I was a student in his undergraduate research methods course. Once I started graduate school, he helped me every step of the way and I am truly grateful. His help with the data file and analysis and his willingness to work with me long-distance were above and beyond the call of duty.

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## Chapter 1 STATEMENT OF THE PROBLEM

In this study, I will attempt to determine what, if any, social factors are associated with health outcomes for infants of adolescent Hispanic<sup>1</sup> mothers, and with educational outcomes for those mothers. The infant health outcomes on which I focus are birth weight and admission to neonatal intensive care units. The educational outcome which I will focus on is staying enrolled in, re-enrolling in, or completing high school. Data used for this analysis are for the Hispanic participants in the 1985 - 1988 California Adolescent Family Life (AFL) Program.

Hispanic adolescent mothers involved in the AFL program tended to have lower educational attainment than non-Hispanic adolescent mothers when they left the program; their infants experienced positive health outcomes compared with other mothers. There is little, if any, research which focuses specifically on the health outcomes of infants born to Hispanic adolescent mothers. It is known, however, that Hispanic infants (of mothers of all ages) are at a lower risk for infant mortality than non-Hispanic whites. According to the *California Adolescent Family Life Program: Evaluating the Impact of Case Management Services for Pregnant and Parenting Adolescents Final Report*, Hispanics in the AFL program had babies with the second lowest incidence of low birth weight of

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<sup>1</sup> The original data set includes an ethnicity variable that forms the basis of the selection of subjects for this research. The designations included: White, Black, Hispanic, and Asian. Since the designation “Hispanic” may include Spanish and

the mothers in the program: 5.4 percent (Thiel, et al. 1990). (Asians had only a 4.4 percent incidence of low birth weight but there were only 135 Asian mothers in this analysis compared with 1,413 Hispanic mothers.) Data from the Department of Health Services (DHS) for California showed that Hispanics had the lowest incidence of low birth weight in the state: 6.6 percent, compared with 7.2 percent for Caucasians, 12.4 percent for African Americans, and 13.8 percent for Asians.

Although little is known about the health outcomes specifically for infants of Hispanic adolescent mothers, several researchers have attempted to determine the effect of adolescent parenting on infant health outcomes. Researchers have found differences between birth weight of babies born to adolescent and non-adolescent mothers (Zuckerman, et al. 1983) but other researchers have not found differences in birth weight (Horon, Strobino, and MacDonald 1983). Research has found that differences in birth weight can be attributed to maternal weight gain (Horon, et al. 1983) rather than age (Turner, Grindstaff, and Phillips 1990). An older but landmark study on urban African American adolescent mothers and their infants found that birth weight differences were related to the amount of prenatal care received and that higher birth weight was associated with higher Apgar scores (Furstenberg 1976).

As previously noted, in addition to looking at health outcomes for infants, I will also investigate the effect of adolescent motherhood on educational status. Because

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Portuguese persons, the original designation is used throughout rather than the more currently used Latina, which describes only a subset of the Hispanic population.



adolescent parenting takes place at a time when most adolescents are enrolled in school, much research has investigated the influence of early parenting on school outcomes. Of the female adolescents in the AFL Program, Hispanics were most likely to have dropped out of school at the time of intake into the AFL Program (Thiel, et al. 1990). Fifty-one percent of Hispanics, compared with 42 percent of Asians, 37 percent of Caucasians, and 35 percent of African Americans, had dropped out of school prior to their involvement with the AFL Program.

Studies have shown that women who have adolescent births are less likely to graduate from high school than their non-parenting counterparts (Card and Wise 1978, Teachman and Polonko 1988, Alexander and Reilly 1981). Hispanic adolescent mothers also have lower educational attainment than other adolescent mothers (de Anda 1984, Becerra and de Anda 1984, and Ahn 1994). Marriage has been shown to impact education negatively, especially for women, so I will control for marriage when looking at educational outcomes (Teachman and Polonko 1988, Alexander and Reilly 1981, and Becerra and de Anda 1984). Age and marriage have also been shown to be related to repeat pregnancies, with married and younger mothers being more likely to have a rapid pace of child bearing (Mott 1986). “Although Hispanics represent 39% of the AFL client population, almost half of the clients that had a repeat birth were Hispanic (48%)” (Thiel, et al. 1990).

The unique contribution of this work is to explore the influences of various factors which affect the Hispanic women involved in adolescent parenting. The present study

will have two benefits to the understanding of the impact of adolescent motherhood for Hispanic mothers and their infants. First, this study will test certain hypotheses suggested and tested by previous research while focusing specifically on the Hispanic population. Second, at an applied level, this study will inform those who want to assist pregnant Hispanic adolescents, whether they be medical personnel, social workers or social scientists conducting further research.

Much existing research on adolescent pregnancy and parenting is not specific to the Hispanic population, but focuses instead on Caucasian and African-American youth, making the findings of this study all the more valuable. Literature reviewed in the next section of this proposal come from sociology, psychology, and medicine; most of it is clinical. Following the review of the literature, the theoretical model is presented, providing the assumptions made in this research and the hypotheses tested. Finally, the methods section includes important information on the data set, the variables, and the statistical analysis performed. The independent variable (acculturation level) the intervening variable (marital status) and the dependent variables for infants (birth weight and neonatal intensive care unit admission) and mothers (educational status) are operationalized in this section. Logistic regression was used in the analysis to determine the effects of the independent variables on the dependent variables.

## Chapter 2 REVIEW OF THE LITERATURE

This literature review begins with an overview of adolescent pregnancy and parenting. Then, the issue of adolescent sexuality is explored because it is the proximate cause of pregnancy in the adolescent population. The focus of the literature review shifts then to the acculturation level. Sections on marriage and education include literature which has suggested several of the hypotheses tested. Similarly, the section on birth weight and the section on neonatal complications include literature which is relevant to the hypotheses tested. The chapter concludes with a table summarizing the findings of articles and books reviewed therein.

The focus of the present study is the impact of Hispanic adolescent pregnancy on the mothers and infants involved. Much of the research on adolescent pregnancy has focused on the Caucasian and African-American populations. Hispanics are now the second largest minority in the United States and are the fastest growing segment of the population. Hispanic Americans are relatively young -- Hispanics under 20 years old account for approximately 38 percent of all Hispanics in the U.S. Hispanics have a birth rate of 22.3 per thousand women while the total U.S. population has a birth rate of 15.7 per thousand women, according to the U.S. Department of Health and Human Services' (1995) *Healthy People 2000* report.

Social research is often conducted with a social agenda or purpose in mind. While adolescent pregnancy has been studied intensively in recent years, much of the research has been policy-or medically-oriented rather than theoretical as the literature

review shows. Whatever the perspective, most of the literature begins with the assumption that adolescent pregnancy is a problem and must be solved in some way.

Pregnancy among adolescents is certainly not a new phenomenon; however, the definition of adolescent pregnancy as problematic and the attention that this subject has been given in the media are recent phenomena. Vinovskis (1981) investigated the policy-making efforts of the Carter administration which proposed spending \$148 million on the “problem,” including a new \$60 million program designated the “Adolescent Health, Services, and Pregnancy Prevention Act of 1978.” The author reported:

Almost everyone in Washington assumed that the problem of adolescent pregnancy was a serious social and health crisis that necessitated an immediate response — whether from the federal, state, and local governments or from private citizens and organizations. Furthermore, both the policymakers and the news media emphasized the “epidemic” nature of adolescent pregnancy. (Vinovskis 1981: 206-207)

Vinovskis (1981), who studied the history of adolescent pregnancy, postulated that the interest of Americans in the issue of adolescent pregnancy stemmed not from an increase in the rates or numbers of adolescent pregnancies but instead from two facts. First, the greater decline of fertility of other age groups as compared with adolescents resulted in a higher proportion of all births being attributed to teenagers. Also, an increasing proportion of births to teenagers were out-of-wedlock. As evidence, the author cited data from the National Center for Health Statistics showing that between 1960 and

1977, the fertility rate for 15- to 19- year-olds declined by 39.7 percent, the rate for 20- to 24-year-olds decreased by 55.4 percent, and the rate for 25 to 29 year olds declined 42.1 percent . “As a result, births to all women under age twenty now comprise a higher proportion of total births in this country -- up from 13.9 percent in 1960 to 17.2 percent in 1977” (Vinovskis 1981: 208). Vinovskis also determined that, between 1960 and 1977, rates of nonmarital births decreased 12.6 percent among 20- to 24-year-olds and 38.6 percent among 25- to 29- year-olds, while the rate among 15- to 19-year-olds increased by 66.7 percent. The number of nonmarital births to adolescents more than doubled in this same time frame from 92,000 to 249,806.

The race differential in out-of-wedlock births was sizable, with a quarter of births to adolescent whites being nonmarital and around eight out of ten adolescent non-white births being nonmarital. Racism, although not cited specifically by Vinovskis, is likely another factor in the increase in attention to this situation. Also contributing in the media attention is that ten years prior to his article, 90 percent of nonmarital births resulted in adoption while only 10 percent of those born nonmaritally remained with their mothers, according to Vinovskis. At the time of the article, Vinovskis claimed the reverse was true and that this contributed to the rising welfare cost of pregnancy. While it is questionable that adoption rates shifted 80 percent within 10 years, clearly there has been move in the direction indicated by Vinovskis.

The *Population Bulletin* (Population Reference Bureau 1992) reported that between 1960 and 1989 there was a five-fold increase in the proportion of births to

unmarried women. In 1960, five percent of births were to unwed mothers; in 1989 the proportion was 27 percent. Adults 20 years and older comprised about half of the unmarried mothers in 1970 and over two-thirds of the unwed mothers in 1989. Among minorities, unwed parenthood increased dramatically. Two thirds of black babies in 1989 were born to unwed mothers; for Hispanics the rate was one in three, and for whites the rate was one in five. The rate of unwed parenting for teenagers rose by 80 percent between 1970 and 1989, from 22 per 1,000 to 41 per 1,000. Only 20 percent of the births to teens in 1989 were maritally conceived compared with over half of the births occurring between 1960 and 1964, according to this demographic study.

Another demographic study focused on fertility among Hispanics (Darabi and Ortiz 1987). The authors analyzed data from the National Longitudinal Surveys (NLS) of Labor Market Experience funded by the U.S. Department of Labor and collected by the National Opinion Research Center. The initial response rate for the 1979 survey was 90 percent; for follow-up interviews in each year up to and including 1982 the response rate exceeded 96 percent. The 12,686 youth initially interviewed were nationally representative of the 14- to 21-year-old population, though blacks, Latinos, and disadvantaged whites were oversampled. Groups selected for analysis included non-Latino whites, non-Latino blacks, and Latinos of Mexican and Puerto Rican descent.

Detailed fertility data, including information on pregnancy, fertility, and contraceptive use was collected in 1982 (Darabi and Ortiz 1987). Only those with first births prior to age 22 were included in this study and marital status was indicated.

Socioeconomic measures were derived from each respondent's reporting of her father's education, mother's education, and father's occupational status. Three categories with approximately equal proportions of respondents differentiated low, middle, and high socioeconomic status. Generational data was also obtained during interviews.

Darabi and Ortiz (1987) found that the nonmarital first birth rates of Mexican and Puerto Rican origin women fell between that of the low rate among whites and the high rate among blacks. Most Mexican first births occurred within the context of marriage, similar to those of whites. Nonmarital first births were more likely to occur within the Puerto Rican and black groups. While socioeconomic status was inversely related to nonmarital first births in most groups, the reverse was true for Mexican-origin women who, at the lowest socioeconomic level had very low rates of first nonmarital births (Darabi and Ortiz 1987). Later generations had more nonmarital births than earlier generations. By the third generation for Mexican-Americans, socioeconomic status was not related to nonmarital births.

The authors noted that Hispanics differed in their marital and fertility-related behaviors and attempted to explain these differences:

The behavior of the Mexican-origin young women contrasts sharply with that of Puerto Rican and other young women. One plausible explanation of these findings is that Mexican-origin women marry at very early ages, and therefore there are few women in the premarital childbearing category. This, however, is

not the case, since the Puerto Rican women in our study have a slightly lower mean age at marriage than the Mexican-origin women. A different interpretation is that norms proscribing premarital sexual activity are particularly strong in the Mexican community. As Mexican-origin young women are distanced from these traditional norms in successive generations, they may be more likely to engage in premarital sexual activity and, consequently, to bear their first children outside of marriage. This is further borne out by the findings that rates of sexual activity for third generation Mexican-origin young women . . . are double the rates of the first generation women (40.9% and 18.5% respectively) . . . . There appear to be strong cultural norms and values proscribing early premarital sexual activity, but endorsing high rates of marital fertility and large completed family size. (Darabi and Ortiz 1987: 27-28)

This argument for normative differences between Mexican American and other adolescents is even more convincing when viewed in the light of Mott's research (1986) which showed that fertility expectations for adolescent Hispanic mothers, unlike adolescent Caucasian and African-American mothers, did not decrease with age at first birth. Hispanic women who began their childbearing at 16 or younger had similar expectations to those who began childbearing at 19 or older.



## ***Adolescent Sexuality***

Since sexual intercourse is the proximate cause of pregnancy in the adolescent population, it is necessary to understand the factors which lead to sexual involvement. Some of the factors which lead to early sexual involvement may also be related to educational outcomes for young women who bear children. In 1983, Zelnick and Shah conducted demographic research comparing premarital sexual experiences of young men and women. Like most researchers, they begin with the hope of solving the problem of premarital pregnancy. The data were taken from a probability sample of women 15 to 19 years old and men 17 to 21 years old in the United States. At the time of the interview, half of the women and 70 percent of the men had experienced first intercourse. The average age at first coitus was 16.2 for women and 15.7 for men. The partners with whom the youth first experienced intercourse were typically older than the respondents. On average, the partners of women were almost three years older while the partners of men were less than a year older. Of the women who had experienced coitus, 60 percent reported feelings of commitment to their first partners while only 40 percent of the men reported this. African American youth tended to have first intercourse at younger ages than whites. Only a quarter of the women and 17 percent of the men had planned their first sexual experience. The authors concluded that current family planning programs are somewhat successful but that new approaches are necessary to combat the problem. "The data presented here, along with findings from other studies, clearly demonstrates that the problem of adolescent pregnancy would be considerably greater than it is if there were no

organized family planning programs to deal with that problem” (Zelnick and Shah 1983: 70).

This study, like most other studies of sexuality among youth, did not distinguish between consensual and nonconsensual sexual intercourse. This is problematic because in recent years, links have been made between child sexual abuse and later sexual activity of the abused children.

The National Longitudinal Survey of Youth Labor Market Experience (NLSY) began in 1979, with 12,600 men and women 14 to 22 years old interviewed. They were re-interviewed annually. The sample over-represented Hispanics, non-Hispanic blacks, and economically disadvantaged non-Hispanic whites. Mott and Haurin (1988) used these data to compare patterns of early sexuality among these ethnic groups, restricting their analysis to those respondents who were 19 or older at the end of 1983. The research came from a public health perspective with prevention as its goal: “From a policy perspective, this research can define more precisely the groups who are at risk of beginning potentially harmful activities because they have already followed certain behavior paths” (Mott and Haurin 1988: 129).

Their exploratory study showed that males engaged in sexual activity at younger ages than females and that black males had first intercourse at younger ages than other males. Overall, 68 percent of females and 78 percent of males experienced coitus by age 19. Hispanic males were more likely, and Hispanic females less likely, than their non-Hispanic white counterparts to have initiated sexual experience. They concluded:

[O]n the basis of these results . . . generalizations regarding Hispanic youth (about 60 percent of whom are of Mexican-American origin) are particularly difficult to arrive at. Among both Hispanic boys and girls, the pattern of sexual activity is more similar to whites than to that of black youth (Mott and Haurin 1988: 133).

Aneshensel, Fielder, and Becerra (1989) debated the merits of the minority status hypotheses in their investigation of fertility-related behavior of adolescent women. Between January 1984 and May 1985, interviews were conducted with non-Hispanic white and Mexican-American adolescent women who were selected via an area probability sample of Los Angeles County. A total of 706 Mexican-American and 317 non-Hispanic whites were interviewed in English or Spanish on a variety of fertility-related attitudes and behavior. Weighting was employed to attain the standard population age distribution to allow inter-ethnic comparisons. Mexican-American teenagers 15 to 19 years old were significantly less likely to be sexually active than Anglo teenagers. Dating, kissing, and petting (defined here as more than kissing but less than sexual intercourse) were more common among non-Hispanic whites than among Mexican-Americans (Aneshensel et al., 1989). All three of these behaviors were associated with each other in both ethnic groups, and sexual intercourse occurred almost exclusively among teens who had engaged in all three behaviors. The average age of first dating was lower among non-Hispanics than among Mexican-Americans and the interval between

dating and intercourse was shorter for whites than Mexican-Americans: 1.3 versus 1.6 years. The crude intercourse rate was higher among whites than Mexican-American adolescent females. Even when age-adjusted, the whites had a 1.3 to 2.4 greater likelihood of ever having experienced intercourse. Almost three quarters of the Mexican-Americans had only one sexual partner while less than half of the whites had only one partner. The fact that most of the Mexican-Americans had only one sexual partner lends support to the theory that Hispanic women may value “traditional” family roles to a greater extent than non-Hispanic women.

### ***Acculturation***

Determining where clients are in the acculturation process, according to Becerra and de Anda (1984) is integral to the effectiveness of the support received from social workers. This is because acculturation is related to behavior. The authors come from a social work perspective and believe that “. . . any strategies of prevention or intervention with Mexican American female adolescents must consider this reality before planning begins” (Becerra and de Anda 1984: 122).

Both age and language preference were related to fertility in a study of young women (aged 13 to 20) who received WIC supplements in Los Angeles County (Becerra and de Anda 1984). One hundred twenty-two adolescents were identified and took part; of these, 82 were Mexican-American and 40 were non-Hispanic whites. For Mexican-American child-bearing adolescents, fertility was related to language preference (Becerra and de Anda 1984) which they considered to be estimative of norms.

During the study, English-speaking ability was used as a rough indicator of acculturation and was handled as a dichotomous variable even though acculturation is, in fact, multifaceted and multidimensional. Because English-speaking ability does account for a large percentage of the variance explaining acculturation, it seemed the most appropriate and direct measure. (Becerra and de Anda 1984: 107)

Becerra and de Anda (1984) reported that for Hispanics, acculturation level was associated with marriage; marriage was more common among the Spanish-speaking than the English-speaking women in their study of WIC recipients. Of the younger adolescents 13 to 17 years old, 47.4 percent of the Spanish-speaking adolescents were married; the corresponding rate among the English-speaking Mexican-Americans was 22.7 percent; none of the whites in this age group was married. Among the older adolescents (aged 18 to 20), 85 percent of the Spanish-speaking and 61 percent of the English-speaking Mexican-Americans were married, compared with 45 percent of the non-Hispanics.

These data suggest that the traditional norm of marriage, particularly if the female becomes pregnant, is adhered to more strongly among less acculturated Mexican Americans, whereas more acculturated English speakers are moving toward the norm of

single parenthood that is more prevalent in wider society (Becerra and de Anda 1984: 109)

Acculturation among Hispanics, as measured through language preference, was also found to be related to repeat childbearing. The English-speaking 13 to 17 year old Mexican-Americans were more likely to have had two babies or to be pregnant with a second child compared with the Spanish-speaking group; the young Spanish-speaking adolescents were less likely to have had a second pregnancy or to have had more than one child. In the 18 to 20 year old group, Spanish-speaking Mexican-Americans were most likely and English-speaking Mexican-Americans were least likely to have two or more children before leaving adolescence.

While language has been used as an approximate measure of acculturation level, perhaps a more direct measure is whether one is a first-, second-, or third-generation American. Second and third generation Hispanic Americans were found to have rates of sexual intercourse more similar to non-Hispanic Americans than to first-generation Hispanic Americans, suggesting that acculturation level was a factor in rates of sexual activity (Darabi and Ortiz 1987).

Clearly, acceptance of the role of mother changes the life course of any adolescent woman. Whether or not she marries and how much education she obtains also greatly influence her life course.

## **Marriage**

Marriage has direct and indirect effects (via subsequent fertility) on the educational achievement of adolescent mothers. A young woman who becomes pregnant today is not automatically expected to marry the father as she might have been 30 years ago; and if a young pregnant woman chooses to remain unmarried, adoption is not her only option. Vinovskis (1981) stated that the number of nonmarital births doubled between 1960 and 1977. Marriage was no longer viewed as the solution to a nonmarital pregnancy, but as an option. As such, a woman's entry into marriage during adolescence, especially when faced with pregnancy, may be an indication of belief in traditional family forms.

Pregnant adolescent Hispanics were more likely to marry than either their Caucasian or African American counterparts (Davis, et al. 1986 and Becerra and de Anda 1984). Becerra and de Anda (1984) found that young Spanish-speaking pregnant or parenting Hispanics were more likely than their English-speaking counterparts to be married. Most adolescent pregnancies were conceived outside of the context of marriage, whether or not they were planned.

Davis, et al. (1986), discovered that women from a low income area who gave birth in a New York hospital were more likely to be married if they were Hispanic than if they were African-American (26 percent versus 17 percent), a finding which held true in all age groups examined. The authors had a public health orientation and concluded, "Overall the situation with respect to teenage pregnancy in the late 1980's appears grim

indeed” (Davis, et al. 1986: 265). The search for solutions to the problem of adolescent pregnancy permeates the literature regarding education and adolescent parenting.

### ***Education***

Since pregnancy and childbearing during the adolescent period coincide with junior high school and high school, it is not surprising that there is a relationship between parenthood and education. Several studies investigated the factors contributing to educational attainment in the adolescent parenting population (Card and Wise 1978, Alexander and Reilly 1981, Teachman and Polonko 1988, Davis, et al. 1986, Ahn 1994; Becerra and de Anda 1984, and Mott 1986). Much research investigates not only the effect of early parenthood, but the effects of early marriage on education as well. The lower likelihood of high school completion among adolescent mothers has been well documented. The literature in this particular area is largely policy oriented, with the goal of increasing educational attainment in the hope of increasing the quality of life for the adolescent mother and her family.

Card and Wise (1978) found that both men and women who had children as adolescents were more likely to be married than their counterparts. For both males and females, educational attainment at five and eleven years following expected high school graduation dates was determined. Educational attainment was lower for those who had children than those who had none. Those who had children as adolescents also had spouses with lower educational and occupational attainment than their classmates. Card and Wise (1978) thought that the relationship between education and early childbearing



might be impacted by other variables as well. In ninth grade, the children who later became adolescent parents had lower socioeconomic status, lower academic ability, and lower educational expectations. To investigate the effect that these factors might have had on parenthood, four age-at-first-birth groups were constructed and were matched on socioeconomic status, educational expectations in grade nine, and race. The outcome variables included high school graduation, college graduation, and number of children. Only a fifth of women with births prior to age 18 received high school diplomas at age 18 compared with nearly three fourths of those who had children at 18 or 19 years old, and nine tenths of those who had no children by age 20. Very few women who had children prior to age 20 completed college, compared with over 20 percent of those women who did not have children before age 24.

Alexander and Reilly (1981) investigated postmarriage effects for educational differences between men and women in their debate on the relative merits of using recursive and nonrecursive models. They used reference groups to compare same-age individuals who were married and unmarried, and they controlled for premarriage education. They found that high academic aptitude was an educational asset to both men and women even when premarriage enrollment was controlled. While the timing of marriage was insignificant for men, it had a large effect for women. They estimated that for each year that marriage was put off by women, an additional eighth of a year of schooling was obtained. The authors concluded:

It appears likely, then, that previous formulations of the consequences of marriage timing for educational attainment have both understated the educational penalty suffered by early marriers and understated the sex disparity in this liability . . . . Our own results reveal modest, but nevertheless important, consequences for school attendance patterns. We also conclude that the extent and nature of family intrusions upon educational progress differ for men and women, with the disruptions that follow from early marriage being more severe for women. (Alexander and Reilly 1981: 155)

Teachman and Polonko (1988) analyzed data from the National Longitudinal Study of the High School Class of 1972 (NLS), which included follow-up interviews in 1973, 1974, 1976 and 1979. Whites who were retained in the follow-up interviews were included in this study; the final sample included 4,701 men and 4,907 women. The authors tested specific hypotheses regarding the effects of marriage and parenthood on college education. The study found that marriage and parenthood were associated with lower likelihood of college enrollment, effects being largest immediately following the transitions to marriage or parenthood. Those marriages which occurred at younger ages were found to have a greater negative impact on college enrollment than marriages which occurred at older ages. The effects for women were larger than for men, which Teachman and Polonko (1988) believed to be “consistent with the responsibilities of

household maintenance shouldered by women” (pp.520). After two years following the birth, college enrollment was unaffected. This study did not account for differences which may have led both to early parenthood or marriage and to lower educational attainment.

Educational outcomes for Hispanics were included in numerous studies of adolescent mothers (Davis, et al. 1986, Ahn 1994, Becerra and de Anda 1984, de Anda 1984, and Mott 1986). In a study of WIC recipients, de Anda (1984) found that on average, English-speaking Hispanic mothers had completed 10.4 years of school and Spanish-speaking mothers had completed 8.2 years. There were not significant differences in educational status between age groups in this sample of women.

Becerra and de Anda (1984) noted that “pregnancy was found to be a major disruption in regard to education” (p. 109). They discovered that only 11 percent of 13- to 17-year-old Spanish-speaking Mexican-Americans were continuing with school, while 41 percent of the English-speaking Mexican-Americans and 45 percent of the non-Hispanic whites in the same age group were continuing with their education. Of the older mothers (aged 18 to 20), 11 percent of the Spanish-speaking and 52 percent of the English-speaking Mexican-Americans continued in school, while 40 percent of the whites did so. Marriage accounted for the educational differences between Mexican-Americans:

The low educational achievement of the Spanish-speaking Mexican American subjects and the low percentage of this group who continued their education is attributable to the greater

likelihood of earlier marriage for this group, which in turn contributed to their continued low socioeconomic status. (Becerra and de Anda 1984: 109)

Davis, et al. (1986) studied a sixth of the women under 23 giving birth in a South Bronx hospital. The sample consisted of 475 Hispanic and black mothers. Chi-square analysis showed that black mothers were more likely than Hispanic mothers to have attended high school (96 percent versus 77 percent) and were more likely to have graduated from high school (33 percent versus 21 percent).

Young Hispanic mothers had lower educational aspirations than their African-American and white counterparts; compared to blacks or whites, more Hispanics expected to complete less than a high school education (Mott 1986). The mothers of the Hispanic women in the sample had the least education: 19 percent were high school graduates compared with the 50 percent of the mothers of white women.

The findings for Hispanic mothers, who report generally higher fertility expectations and lower educational expectations than do other mothers, suggest that these women represent a relatively unacculturated subgroup, with more traditional attitudes toward motherhood and higher education for women. (Mott 1986: 11)

Women in the National Longitudinal Survey of Youth who were 14 to 21 years old in 1979 and who were retained in the sample up to 1987 were included in a study which investigated the possibility that some unknown individual heterogeneity leads to

both early parenthood and lower educational attainment (Ahn 1994). Ahn used a proportional hazards model and applied a non-parametric method to estimate baseline hazards. The probability of completing high school was found to be much higher among the non-mothers than the among the mothers in the sample. Of the whites, 30 percent of non-mothers and 17 percent of the mothers had completed high school by age 18. Hispanics had the lowest rates of high school graduation for both non-mothers and mothers; at age 18 the rates were 20 percent and 10 percent, respectively. African American mothers were slightly less affected by their births than the other racial and ethnic groups. Twenty-five percent of African-American non-mothers and 16 percent of mothers had completed high school by age 18. By age 25, 90 percent of all the non-mothers and 60 percent of the mothers had completed high school.

For women who gave birth before age 17, unobserved individual heterogeneity was attributed with a 42 percent change in the likelihood of completing high school (Ahn 1994). For women giving birth between 17 and 19, the likelihood was changed 30 percent. The effect of the birth itself was approximately a 50 percent change in the likelihood of high school graduation in all three racial/ethnic groups. Individual heterogeneity significantly influenced the likelihood of high school completion for whites and Hispanics but not blacks. Individual heterogeneity accounted for 50 percent of the difference in high school completion for Hispanic mothers. The family background variables of having lived with both parents at age 14 and mother's education were also related. Those subjects in the sample who gave birth had mothers with less education

(1.6 years less on average) than the mothers of those who remained childless. The family background differences accounted for 20 to 30 percent of the variance in high school completion for teenage mothers. Unexplained variance was greater among Hispanics and whites than among blacks. The authors concluded that the birth itself and family background played a part in the probability of completing high school following a teen birth.

Poor educational outcomes are clearly not always the result of the pregnancy for young parents. Rather, early termination of education and early sexuality both might be indications of a readiness to take on adult roles and to begin new families, a fact that is largely ignored in the literature regarding education. Young mothers who are motivated to do so may continue educational programs in their own schools or in schools designed to serve their special needs. Decisions made by an adolescent mother from the moment she becomes pregnant influence her own life course and often the life course of her baby. A critically important determinant in the life course of a child is that child's health at birth, a subject to which I now turn.

### ***Birth Weight***

Much research in the medical field focuses on the factors which contribute to health outcomes for infants. It is well documented that early prenatal care and pregnancy weight gain are related to infant health outcomes. Burst (1979), Horon, et al. (1983), and Zuckerman (1983) all investigated the differences between the health outcomes of infants born to adolescent mothers and those born to non-adolescent mothers.

Burst (1979), a certified nurse-midwife, discussed factors which influenced adolescent pregnancy outcomes with regard to fetal growth and development. Four factors were important: maternal disease, smoking, drug abuse (including alcohol), and prenatal nutrition. She asserted that: “Maternal nutrition is directly related to birth weight which is the standard evaluative measure of the newborn used all over the world” (Burst 1979: 21), and that low birth weight was associated with mental retardation, cerebral palsy, learning problems, visual and hearing problems, neurological defects, stunted growth and development, and brain growth in the infant. Burst (1979) argued that weight gain during an adolescent pregnancy should be evaluated according to the weight that the adolescent would normally gain during that period. The author advocated nutritional counseling.

It is vital that dietary restrictions not be imposed on the pregnant adolescent, that she be encouraged to eat high protein foods and many calories, and that she be “sold” on the idea of having a bright, alert baby, and a smart child. Such a focus on nutrition can indeed increase the birth weights of adolescents and thereby reduce both the higher incidence of low birth weight babies and the incidence of babies with disabilities born to adolescents. (Burst 1979: 22)

Despite Burst’s (1979) statement that infants born to adolescents had lower birth weights, Horon, et al. (1983) did not find this to be the case. Of the 5,894 20- to 24-year-

old Pittsburgh hospital primigravid patients between 1970 and 1975, Horon et al. selected 422 through racially stratified random sampling. No differences in birth weights were found between the control and study groups despite the fact that adolescents were more likely to use clinics, be unmarried, live in neighborhoods with relatively low buying power, have lower pre-pregnancy weights, be shorter, and to have initiated prenatal care later in pregnancy. Infants born to the adolescents had a mean birth weight of 3,051 grams while the 20- to 24-year-old women had infants with a mean birth weight of 3,093 grams. However, when the total population of 20- to 24-year-old primigravid patients was considered, there was a statistically significant difference between their mean birth weight (3,274 grams) and that of the younger mothers.

Horon, et al. (1983) found gestational age to be the best predictor of birth weight in their multiple regression model. Also significantly associated with birth weight were: race, pre-pregnancy weight, weight gain during pregnancy, and the number of antepartum visits. However, the association of these variables with birth weight differed between the two maternal age groups. Race was a good predictor of birth weight in the older mothers, accounting for 3.9 percent of the difference as opposed to 0.4 percent of the difference in the birth weights of the infants born to adolescent mothers. The effect of gestational age differed as well; babies of adolescents at 37 weeks gestation or older were 300 grams heavier on average than the babies of older mothers. Maternal weight gain better predicted birth weight for infants of adolescent mothers than for infants of older mothers, explaining 5.1 percent and 1.9 percent of the variances, respectively. The sex of the



infant also had a different effect for the different age groups. Males born to adolescents weighed 11 grams more on average than females, whereas the sex differential among infants of older mothers was 90 grams.

This study, like others, did not attempt to determine the accuracy of the last menstrual period (LMP) date reported by the adolescent which is used to calculate gestational age. The fact that the birth weights of term babies were higher among adolescents could be due to poor memory of the young mother. Alternatively, some adolescents may have reported later LMP dates so that they could leave open the option of abortion.

Davis, et al. (1986) found that birthweight was related to the adequacy of prenatal care received. Approximately 70 percent of mothers in their urban hospital sample received prenatal care beginning in their first trimesters. The same proportion received 7 or more prenatal visits.

In addition to the medical and public health inquiries with regard to infant health at birth, biosocial studies have been undertaken in order to sort out the factors which lead to positive health outcomes for infants. Turner, et al. (1990) assumed that negative outcomes for adolescent mothers and their children were due not so much to the physiological effects of age as to social and economic factors. Recruitment for the study took place mostly through family physicians and obstetricians/ gynecologists in Southwestern Ontario; these methods yielded 85 percent of cases. Also, public health nurses and newspaper advertisements were employed. For 251 cases, complete medical

information on mothers and infants was available. The authors constructed a measure of weight unrelated to gestational age through a comparison of observed weights and the expected weights determined through a least-squares regression line (Turner, et al. 1990). When zero-order correlations were calculated, only two variables were found to be significantly related to birth weight: smoking and social support from the family (Turner, et al. 1990). The strongest and only reliable predictor of birth weight was family support. Overall, this model accounted for about 7 percent of the variance in birth weight.

All mothers who delivered infants in the Boston City Hospital between February of 1977 and October of 1979 were asked to participate in a study by Zuckerman, et al. (1983) to determine whether babies of adolescents had worse outcomes at birth than babies of older mothers and, if so, whether it was the mother's age or other life situation that contributed to those outcomes. Birth weight and Apgar scores were recorded at birth, and infants in the study were physically examined to obtain neurologic and morphologic assessments. These physical exams took place within three days of delivery in 75 percent of cases. Length and circumference of the head were obtained and clinical risk was dichotomized; babies were considered at risk if they (1) were born after less than 37 weeks of gestation; (2) had five minute Apgars of less than seven; or, (3) if they had birth weight, head length, or head circumference below the 10th percentile for their gestational age. Labor and delivery data were obtained through the infants' records. Mothers were interviewed to determine demographic information, health habits during pregnancy, past or present medical conditions, attitudes, and support systems.

This study focused on the 423 non-adolescent and 275 adolescent mother-infant pairs for whom complete information was available (Zuckerman, et al. 1983). Univariate analysis showed that compared to non-adolescents, adolescents entered prenatal care later in pregnancy, had more gonococcal infection during pregnancy, had lower pre-pregnancy weight, were more likely to be black, reported fewer religious affiliations, and were less likely to smoke, drink alcohol, or use psychoactive drugs.

Among the infants of adolescent and non-adolescent mothers, there were no statistically significant differences in mean five minute Apgar, mean birth length, mean head circumference, or incidence of birth trauma (Zuckerman, et al. 1983). There was a difference in mean birth weight, with infants of adolescent mothers weighing 94 grams less than the other infants. There was no significant difference in the proportions of infants in any of the high risk categories between the two groups. Multivariate analysis was employed to determine the contribution of each variable on infant outcome.

Adolescence was not found to be significantly related to gestational age at birth or birth size. These outcomes were affected by other variables, however. Lower birth weight was associated with lower pre-pregnancy weight, being black, delivering males, and smoking marijuana during pregnancy. Adolescent status was found to be independently but weakly associated with lower five-minute Apgar scores, with infants of adolescents averaging 0.17 points lower than infants of non-adolescents when length of gestation was held constant.

Finally, Zuckerman, et al. (1983) used logistic regression to determine whether being an adolescent was associated with any clinical high risk factors. Adolescent status was not significantly associated with prematurity, birth trauma, birth weight, length, or head circumference below the 10th percentile for gestational age, or with five-minute Apgar scores of less than seven. A replication of this analysis comparing mothers aged 16 or younger compared with others found no significant differences.

Birthweight is an important and concrete measure of a neonate's health. Further health measures include neonatal complications, including neonatal mortality.

### ***Neonatal Complications***

Literature on adolescent parenting often assumes that neonatal complications are prevalent. This is one reason why so much of the literature is policy- and prevention-oriented. Some researchers are taking a different approach, looking at social support as a potential benefit to not only the mothers but the infants as well.

Norbeck and Tilden (1983) hypothesized that "High life stress, low social support, and high emotional disequilibrium will be positively related to complications of pregnancy" (pp. 33). The clinic in a large, urban, university medical center provided the sampling frame for this study which included 117 mothers and their infants. Over half of the mothers were having first babies. There was no relationship between prior therapeutic abortions and complications, but gravida (pregnancies) and parity (births) were significantly related to delivery, labor, and overall complications (Norbeck and Tilden 1983). Their findings supported their biosocial and psychosocial hypotheses.

Permanence and change were the subjects of Boyce, Schaeffer, and Uitti's (1985) biosocial study of adolescent pregnancy outcomes. A 40-item self-administered questionnaire measured permanence or change in five aspects: awareness of self as reliable, relationship stability, stability of places, daily routines, and religious or spiritual belief in universal order. Unmarried pregnant adolescents in Pima County, Arizona were recruited to participate in this study. All 89 women who were asked to be interviewed and have their medical records reviewed agreed. The interviews focused on life events, social networks, and positive and negative affect. All of the medical records were reviewed following the birth. Social network was defined as the group of people who made planned contact with the respondent at least once per month. Social networks ranged from six people to 50 with a mean of 21 people in a network. On average the respondents had known 18 network members for more than a year, and three members for a year or less. An average of four people were viewed as willing to provide emotional support and discuss personal problems. Neonatal complications occurred in 10 cases (11 percent); of these, eight newborns had one complication and two had two complications. Mothers with low sense of permanence were more likely to have infants with neonatal complications. Those mothers with smaller and less established social networks were more likely to have infants with complications. Twenty-seven percent of the variance in permanence was explained by a combination of negative life events and three measures of social support. For neonatal complications, sense of permanence was the only significant and independent predictor.

Because the risks of neonatal and postneonatal mortality are relatively low, this outcome will not be investigated in the present study. It is important, however, to understand the prevalence of these phenomena in the U.S. population as a whole, and within the Hispanic population, specifically.

Using a variety of data sources, Singh and Yu (1995) found that the infant mortality rate decreased between 1950 and 1991 by an average of 3.11 percent per year for whites and 2.89 percent annual decrease for blacks. Neonatal mortality (occurring between birth and 27 days) declined more rapidly than postneonatal mortality (occurring between 28 days and 364 days). The disparity between blacks and whites for postneonatal mortality lessened. In 1960 black infants succumbed to postneonatal mortality 2.9 times more often than whites; in 1991, this proportion fell to 2:1.

Singh and Yu, (1995) found that Cuban, Central and South American, and Mexican infants had rates of infant mortality substantially less than whites. Ethnic differences were similar in neonatal mortality as well, with Mexicans among those at significantly lower risk than whites. In recent years, education and income have become increasingly negatively correlated with infant mortality. Among Hispanics, Cubans have the lowest, and Puerto Ricans the highest, rates of infant mortality.

The literature reviewed above comes from many disciplines. Each researcher concerned with adolescent pregnancy has a slightly different view of the topic. Table 1 summarizes these perspectives. In the next chapter, I detail my own assumptions and biases on this important issue.

**Table 1: Summary of Reviewed Literature**

<b>BACKGROUND</b>		
<b>Authors (Date)</b>	<b>Theoretical Perspective and/or Purpose</b>	<b>Findings</b>
<b>Vinovskis (1981)</b>	historical	A higher proportion of births can be attributed to teenagers and an increasing proportion of births to teenagers are out-of-wedlock, resulting in the increased media attention to the issue.
<b>Population Reference Bureau (1992)</b>	demographic	Between 1960 and 1989 there was a five-fold increase in births to unmarried women, with the increase for minority women being greater.
<b>U.S. Department of Health and Human Services (1995)</b>	public health	Hispanics are relatively young subpopulation of the U.S. and have high birth rates.
<b>Darabi and Ortiz (1987)</b>	demographic (normative explanation)	Generational differences account for differences in nonmarital birth rates of Mexican-American women, possibly due to the normative influences of acculturation.

Table 1 (continued)

<b>ADOLESCENT SEXUALITY</b>			
<b>Authors (Date)</b>	<b>Variables Studied</b>	<b>Theoretical Perspective and/or Purpose</b>	<b>Findings</b>
<b>Zelnick and Shah (1983)</b>	age, sex, planning sexual activity, contraceptive use	demographic (prevention-related)	Age at first intercourse is lower for girls than boys. Racial differences are found with African Americans having sex earlier, on average, than Caucasians.
<b>Mott and Haurin (1988)</b>	race, age, smoking marijuana, drinking alcohol, sexual activity	normative, deviant behavior (prevention related)	Researchers temporally linked three quasi-adult activities: having sex, drinking alcohol, and using marijuana. They did not support notion that an adolescent's choice to enter into adult behaviors constitutes a widespread syndrome of deviant behavior.
<b>Aneshensel, et al. (1989)</b>	ethnicity, socioeconomic status, contraceptive use	minority status hypothesis	Mexican-American teens are less likely to have intercourse, less likely to use contraception, less likely to abort, and more likely to want pregnancies compared with non-Hispanic whites, a finding which persists across socioeconomic strata, possibly due to a strong set of pro-family values within the Mexican-American population.



Table 1 (continued)

<b>ACCULTURATION</b>			
<b>Authors (Date)</b>	<b>Variables Studied</b>	<b>Theoretical Perspective and/or Purpose</b>	<b>Findings</b>
<b>Becerra and de Anda (1984)</b>	marriage, age and acculturation level (language preference)	normative (social work orientation)	Marriage was more common among Spanish-speaking and older mothers compared with English-speaking and younger mothers.
<b>Darabi and Ortiz (1987)</b>	age, acculturation level (language preference) and sexual activity	normative	Acculturation level and age are related to fertility of Mexican Americans with young English-speaking mothers being more likely than young Spanish-speaking mothers to have a second child during adolescence.
<b>MARRIAGE</b>			
<b>Authors (Date)</b>	<b>Independent Variables</b>	<b>Theoretical Perspective and/or Purpose</b>	<b>Findings</b>
<b>Becerra and de Anda (1984)</b>	Acculturation level and age	normative (social work orientation)	Marriage was more common among Spanish-speaking and older mothers compared with English-speaking and younger mothers.
<b>Davis et al. (1986)</b>	race/ ethnicity and age	social problem (public health orientation)	Women delivering babies were more likely to be married if Hispanic rather than African American regardless of age.

**Table 1 (continued)**

<b>EDUCATION</b>			
<b>Authors (Date)</b>	<b>Independent Variables</b>	<b>Theoretical Perspective and/or Purpose</b>	<b>Findings</b>
<b>Card and Wise (1978)</b>	having children during adolescence, socioeconomic status, educational expectations	policy-driven	In ninth grade, boys and girls who later became adolescent parents had lower socioeconomic status, lower academic ability, and lower educational expectations. Educational attainment was lower for both men and women who had children during adolescence.
<b>Alexander and Reilly (1981)</b>	age, sex, educational ability, socioeconomic status, and marriage	procedural (statistical use)	High tested ability results in benefits to education for men and women. Age at marriage had insignificant effects on education for men but large effects for women. Socioeconomic indicators had little effect for men and women.
<b>Teachman and Polonko (1988)</b>	age, sex, marriage, and parenthood	normative (gender-role)	Marriage and parenthood both impact education negatively for adolescent parents. The effects are more severe for women and for younger parents.
<b>Davis et al. (1986)</b>	race/ ethnicity	social problem (public health orientation)	Young women delivering infants in a urban hospital were found to be more likely to have attended and to have graduated high school if they were black as opposed to Hispanic.

Table 1 (continued)

EDUCATION (continued)			
Authors (Date)	Independent Variables	Theoretical Perspective and/or Purpose	Findings
Ahn (1994)	motherhood, race/ethnicity, mother's education, and unobservable differences	normative: rational-choice (policy-driven)	Those in the sample who had mothers with less education were more likely to become adolescent mothers. Hispanics had the lowest high school completion rates regardless of birth. Birth had ~ a 50% change in likelihood of graduation within each racial/ ethnic group: white, black, and Hispanic. Women under 17 had more unobserved differences contributing to likelihood of high school completion than those 17-19. Unexplained variance was greater among Hispanics and whites than among blacks.
Becerra and de Anda (1984)	pregnancy, age marriage, and acculturation level	normative (social work orientation)	For 11-13 year-olds, 11% of Spanish-speaking Mexican Americans, 41% of English-speaking Mexican Americans, and 45% of non-Hispanic whites were continuing with education while pregnant. In the oldest group (18 - 20) the respective rates were 11%, 52%, and 40%. Marriage largely accounted for the differences within the Mexican American group with Spanish-speakers being more likely to marry.
de Anda (1984)	language preference, age, informal support networks	social network (social work orientation)	English-speaking Hispanic mothers complete more years of schooling compared with Spanish-speaking Hispanic mothers.
Mott (1986)	race/ ethnicity	normative (policy oriented)	For Hispanics, fertility expectations are higher and educational expectations are lower, suggesting they represent "a relatively unacculturated subgroup."

Table 1 (continued)

<b>BIRTH WEIGHT</b>			
<b>Authors (Date)</b>	<b>Independent/ Intervening Variables</b>	<b>Theoretical Perspective and/or Purpose</b>	<b>Findings</b>
<b>Burst (1979)</b>	prenatal nutrition (essay, not data analysis)	medical orientation, policy-driven	Prenatal nutrition is vitally important to the pregnant adolescent.
<b>Horon, et al. (1983)</b>	birthweight, gestation, age, race, gravidity	medical orientation	When race and gravidity are controlled, there are no differences in infants born to adolescents and infants born to young adults.
<b>Davis, et al. (1986)</b>	race/ethnicity, prenatal care	social problem (public health orientation)	Low birthweight (under 2500 grams) was twice as likely among mothers who received fewer than seven prenatal medical visits.
<b>Turner, et al. (1990)</b>	social support from family, friends, and partners	social network, biosocial	Social support from family is significantly related to birthweight.
<b>Zuckerman, et al. (1983)</b>	age, race, socioeconomic status	medical orientation	No significant differences in health measures of infants born to adolescent and adult mothers were found.

**Table 1 (continued)**

<b>NEONATAL COMPLICATIONS</b>				
<b>Authors (Date)</b>	<b>Independent / Intervening Variables</b>	<b>Theoretical Perspective and/or Purpose</b>	<b>Findings</b>	
<b>Boyce, et al. (1985)</b>	social network, sense of permanence	social network, biosocial	Sense of permanence was significantly related to neonatal complications, as were smaller and less established social networks.	
<b>Singh and Yu (1995)</b>	time, race/ethnicity	demographic, public health (tracking and projecting trends in infant mortality rates)	Racial and ethnic differences persist in infant mortality rates within the U.S. most likely due to differences in socioeconomic status. Hispanics are at low risk of infant mortality due to SIDS.	
<b>Norbeck and Tilden (1983)</b>	social support, life stress, emotions	biosocial/ psychosocial (policy-driven)	High life stress was associated with pregnancy complications, as were low social support and emotional disequilibrium.	

## Chapter 3 THEORETICAL MODEL

This chapter explores the theoretical foundations for the current study. The chapter begins with a discussion of broad theories of human behavior, moves to a specific discussion of assumptions I have made regarding the behavior of the adolescent mothers in this study, and ends with the specific hypotheses to be tested.

Sociologists generally agree that individuals are not the proper unit of analysis for study and that theories pertaining to individual actors are reductionist and wrong-headed. Theories of individual behavior, it would be argued, are best left to psychologists or economists. Unfortunately, theories of groups have failed to explain individual variation within groups.

When pressed to explain individual actions, many sociologists assume that individual behavior is basically determined. There are two levels of determination according to Hechter (1983). First, social relations are limited at the structural level, narrowing the individual's possible choices. Then, behavior is determined by the norms of the society which are imbued in the individual through the process of socialization.

Friedman (1983) suggests that normative explanations arose from a failure of rational-choice theory to explain certain types of behavior. Rational-choice, a notion borrowed from economics, asserts that: "Each individual . . . acts to maximize his or her benefit, or at least to minimize his or her cost, given a reasonable amount of information" (Friedman 1983: 91). Some of the literature suggested that for Hispanic women,

adolescent motherhood may be a rational choice. This may be the case; I did not attempt to explain the pregnancy, merely the outcomes for infants and mothers.

I tend to agree with Hechter that a combination of structural and normative explanations is necessary to fully understand behavior. “In such an approach the structure first determines, to a greater or lesser extent, the constraints under which individuals act. While these constraints define the limits of the individual’s possible action, they are insufficient to determine his or her behavior” (Hechter 1983: 8).

However, due to the limited nature of this research, broader structural influences such as economics, racism, and sexism were not investigated.

Both norms and structural factors (in a narrow sense) are investigated in this analysis which attempts to explain infants’ health outcomes and mothers’ educational outcomes on the basis of acculturation level and marital status. I expected that norms associated with different acculturation levels and marital statuses would result in different mother and infant outcomes. I also expected that social support, would impact outcomes due to the effects on the mothers economic and emotional well-being.

Norms associated with various acculturation levels were expected to lead to behaviors effecting marriage, birthweight, neonatal ICU, and school status outcomes. Lower acculturation level was expected to be associated with being married. It was also expected that less acculturated women would place a higher value on motherhood and would therefore act in ways contributing to positive health outcomes for infants. Behaviors contributing to healthy infant outcomes may include seeking prenatal care

earlier in pregnancy and gaining sufficient weight during pregnancy. These behaviors are known to lead to higher birth weight and lower likelihood of admission into a neonatal intensive care unit.

With regard to marital status, I believed that taking on the role of wife through marriage (or to a lesser degree cohabitation) was an indicator of favorable attitudes toward family and especially the roles of wife and mother. If true, then it is also likely that women who marry during pregnancy would act in ways that would result in healthy infant outcomes.

On a structural level, I thought that both less acculturated women and married women would have social support in their roles as mothers but not in their roles as students. If a woman believes in traditional gender roles, marriage and pregnancy would both be valued while education would not.

Social support can be an important health-promoting factor in general. Some studies have examined the impact of social support on infants' health outcomes. For example, Ann Oakley's (1985) review of earlier research concluded that social support led to improved birthweights and other measures of infant health. For teenage mothers, sources of support may include partners, family other than a partner, and friends. One study of Canadian teen mothers found that, with marital status controlled, family (excluding partner) support most clearly promoted higher birthweights; partner support showed a positive, though not statistically significant, relationship with birthweight, while support from friends showed a nonsignificant negative relationship (Turner,



Grindstaff, and Phillips, 1990). Koniak-Griggin, Lominska, and Brecht (1993) compared sources of support among black, Hispanic, and white pregnant adolescents (all of whom were English speaking) and found that their social networks were similarly constructed in the three ethnic groups. There was also a great deal of variation within each of the groups. Koniak-Griffin et al. did not assess the impact of such support on infants' health outcomes.

One might question whether the presence of a male partner in the households of young Hispanic mothers would actually promote their infants' well-being. Feminists note that the presence of male partners may create additional household labor burdens and even pose the threat of violence - concerns that might be heightened by the machismo conventionally associated with Hispanic men's approaches to relationships with women. However, as Baca Zinn (1994, p. 75) writes, "A wave of revisionist work on marital Power [within Mexican-origin families] conducted in the 1970s and 1980s found that wives and husbands share in family activities and decision making.... These studies refute the stereotype of macho-dominated Mexican-origin families," although they do not show these families to be egalitarian. Vega's (1990) review of literature on Hispanic families similarly cautions against the assumption that Hispanic men routinely exhibit such machista behavior.

The next pages illustrate the hypotheses which arise from the theoretical model in both figure and text form. Figure 1 is comprised of independent and dependent variables, each of which is lettered; the letter corresponds with the letter of the variable listed in the

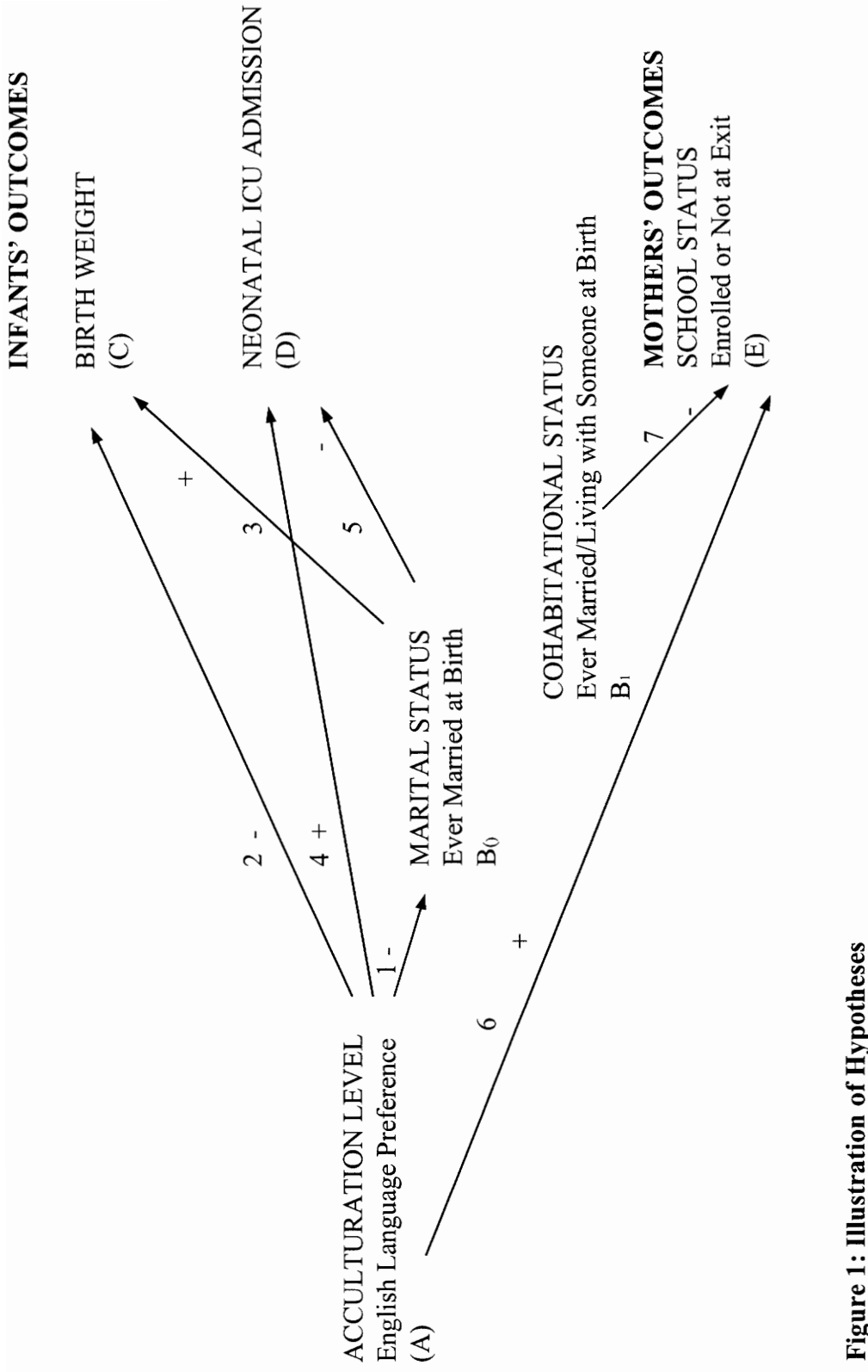
methods section. Each hypothesis is indicated by an arrow drawn between two variables.

Each arrow is numbered and the number corresponds with the number of the hypothesis on the following pages. The “+” or “-” sign next to the number indicates the expected relationship between the variables. My theoretical model of normative influences and social support led me to the following hypotheses:

### ***Hypotheses***

- 1) Less acculturated women (A) will be more likely to be married (B) at the time of their first births than more acculturated women.
- 2) Less acculturated women (A) will have first babies with higher birth weights (C) than more acculturated women.
- 3) Married women (or cohabiting women) (B) will have first babies with higher birth weights (C) than never-married (or non-cohabiting) women.
- 4) More acculturated women (A) will be more likely to have first babies admitted to neonatal ICU (D) than less acculturated women.
- 5) Married (or cohabiting) women (B) will be less likely to have first babies admitted to neonatal intensive care units (D) than non-married (or non-cohabiting) women.
- 6) Less acculturated women (A) will be less likely to be enrolled or graduated from school at the time they exit the AFL program (E) than more acculturated women.

- 7) Married (or cohabiting) women (B) will be less likely to be enrolled or graduated from school (E) at the time they exit the AFL program than never-married (or non-cohabiting) women.



**Figure 1: Illustration of Hypotheses**

## **Chapter 4 METHODS**

This section will describe the program which serves as the source of the data used in this analysis, the clients of that program, the variables to be analyzed, and the statistical procedures used.

### ***AFL Program***

Program sites at 27 locations were funded starting in 1985 by the Maternal and Child Health Branch of the California Department of Health Services (Rounds, Weil, and Thiel 1992). This Adolescent Family Life (AFL) program was designed to provide continuous and comprehensive case management services to pregnant and parenting adolescents. To be eligible for the AFL program, clients had to be 17 or under (unless they were receiving special education services, in which case eligibility was extended to age 22) and pregnant or parenting (Thiel et al. 1990).

### ***AFL Clients***

“Between January 1, 1986 and June 30, 1988, 7,332 clients enrolled in the Adolescent Family Life program. Almost two of every three (65 percent) clients were pregnant when they enrolled in the program . . .” (Thiel, et al. 1990: 34). Hispanics made up the largest ethnic group in the AFL program -- 39 percent of the clients served. Clients were 11 to 22 years old and they were referred to the program by health care providers (30 percent), personal referrals (21 percent), educational institutions (14 percent), and social service agencies (11 percent). Many of the clients were lost to follow-up (28 percent) and because they moved (26 percent). Involvement in the

program ranged from months to years. The average length of involvement was 15 months.

In 1985, a team of evaluators from the University of Southern California was charged with the task of evaluating the AFL program (Thiel, et al. 1990). The California Adolescent Family Life Evaluation Project was designed to evaluate the effectiveness of the AFL program. The evaluation took place during the three year demonstration period, from September 1985 to June 1988. This study will focus on the Client Evaluation Data Set which includes data on clients collected at intake, assessment, birth, six months postpartum, 12 months postpartum and upon exiting the program. The Evaluation Team held training for the data collection for program directors and case managers to ensure that each understood what was needed for the evaluation.

This study focuses on the Hispanic adolescent women program who gave birth for the first time while involved in the AFL program. These restrictions are imposed by eliminating from the sample all non-Hispanic women, and all women with one or more previous live births, and women with miscarriages and stillbirths. I dichotomized the marriage variable (B) and the outcome variables: birth weight (C), neonatal intensive care unit admission (D), and school status at exit (E).

### ***Variables***

Five variables provide the basis for the analysis:

- A. Following Becerra and de Anda (1984) and other researchers, the mother's self-reported primary language (asked at intake) is used as an approximation of

acculturation level. (Although I recognize that primary language may correspond with important individual differences other than acculturation, the data lack good alternative measures. As other researchers have done, I will assume that a Latina's primary language is a good indicator of her acculturation.) The values are:

- 0 less acculturated, or Spanish language preference, and
- 1 more acculturated, or English language preference.

B<sub>0</sub>. Marital status (at birth) is used in the analysis. Original codes include: single/ never married, widowed, if pregnant married to expectant dad, married to other male, divorced/ annulled/ separated, living with expectant dad, living with other male, and don't know. It is dichotomized to:

- 0 never married (includes single/ never married, living with expectant dad, or living with other male), and
- 1 ever married (includes widowed, if pregnant married to expectant dad, married to other male, or divorced/ annulled/ separated).

B<sub>1</sub>. Cohabital status (at birth) is used in the analysis. Original codes include those listed above. It is dichotomized to:

- 0 never married and not currently living with expectant or other male, and
- 1 ever married or living with expectant dad or other male.

C. The infant's birth weight (in grams) is included in the analysis. It is

dichotomized to:

0 under 2500 grams, and

1 2500 grams and over.

D. Neonatal intensive care unit (NICU) admission is coded

dichotomously as:

0 never admitted to NICU, and

1 ever admitted to NICU.

E. The mother's school status at exit is used in the analysis. The original

codes include: enrolled in junior or middle school, enrolled in high school,

enrolled in alternative school, enrolled in high school/ SAPIID program on site,

completed GED program/ California proficiency test, vocational school,

graduated, not in school, never attended school, dropped out, or don't know. This

variable is dichotomized to:

0 dropped out/ not enrolled, and

1 enrolled/ graduated/ or equivalent achieved.

### ***Statistical Analysis***

With respect to the statistical analysis, first descriptive statistics were computed for the original variables of interest (acculturation level, marital status, birthweight, NICU admission, and school status). Bivariate correlations with all of the original variables were then computed. When the cohabitational status variable was added midway in the analysis, descriptive statistics were computed for it. (Bivariate correlations were not



computed for this variable.) Next, logistic regression is performed for the dependent variables. Odds ratios and their statistical significance are reported. Obtained statistical significance of .05 or lower is considered an indication that the null hypotheses should be rejected and that there is in fact a relationship between the variables. Parameter estimates with a significance between .10 and .05 are characterized as “approaching significance.”

## Chapter 5 FINDINGS

The original sample contained 7,774 cases; of these, 2,971 were Hispanic clients. Eliminating from the sample all those who were reported not to be pregnant ( $n = 934$ ), who had one or more children ( $n = 1,051$ ) at the time of entering into the AFL Program or both, 1,920 cases were retained. Birth outcomes were available for only 1,516 of these cases. Included in this number were 18 clients with fetal deaths and two with neonatal deaths. These clients too were eliminated from the sample leaving 1,496 cases. When descriptive statistics revealed one client with Chinese as a primary language, this case was also deleted, leaving 1,495 clients. However, closer investigation revealed duplicate case numbers in the data set. These additional records for some clients contained information on children born later. The 128 records of this type were eliminated. In the final analysis, 1,367 cases formed the basis for this study.

The three dependent variables in the analysis are birth weight, infant's admission into neonatal intensive care units for infants, and mother's school status at exit from the AFL program. The exogenous independent variable is acculturation level and marital status at birth is an intervening variable<sup>2</sup>. Separate logistic regression analyses were performed for each dependent variable.

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<sup>2</sup> The amount of missing data for several variables led me to revise my original data analysis plan. I had intended to look at five dependent variables, two independent and three intervening variables. However, when I excluded anyone with missing data for

When all five variables are taken together, over half the sample lacks data for one or more variables; only 589 cases remain. Much of this problem is due to the mother's school status variable, for which only 694 cases have data. Separate analyses for the mother's outcome variables and the infant's outcome variables were determined to be most appropriate due to the missing data. The data were cleaned before the analysis.

### ***Univariate Analyses***

Table 2 shows that at the time of the birth 14 percent of clients had married while 86 percent remained unmarried. Only 68 infants were low birth weight (5 percent) and 130 infants spent some time in the neonatal intensive care unit (10 percent). Of the mothers for whom data were available at 12 months postpartum, 49 percent were either enrolled in school or had graduated, received a GED, or passed a California proficiency test.

Table 2 through Table 4 on the following pages show summaries of the descriptive statistics on the variables analyzed. Table 2 includes all cases, while Table 3 is limited to cases with data for all variables except mother's school status (A, B, C, and D) (which will be referred to as subsample 1 in the logistic regression tables). Table 4 includes those cases with complete data for all five variables (A, B, C, D, and E) (which will be referred to as subsample 2 in the logistic regression tables).

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any of these variables, I was left with only 24 cases. I scaled back the original plan and retained only five variables.

**Table 2: Descriptive Statistics for Variables A, B, C, D, and E (n = 1,367)**

<b>Variable</b>	<b>Coding</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>n</b>
<b>A</b> Acculturation level (language preference)	0 = less acculturated 1 = more acculturated	.62	.48	1,354
<b>B<sub>0</sub></b> Marital Status at Birth	0 = never married 1 = ever married	.14	.35	1,352
<b>B<sub>1</sub></b> Cohabital Status at Birth	0 = not living with spouse or other male 1 = living with spouse or boyfriend	.22	.42	1,350 <sup>3</sup>
<b>C</b> Birthweight	0 = low birthweight 1 = adequate birthweight	.95	.22	1,318
<b>D</b> Ever in neonatal intensive care unit	0 = never in NICU 1 = ever in NICU	.10	.31	1,253
<b>E</b> School status at exit from AFL program	0 = not graduated/ passed GED, or enrolled 1 = enrolled, graduated, or passed GED	.50	.50	694

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<sup>3</sup> The data set was transferred from magnetic tapes to the VPI & SU mainframe. Maintaining the data on the mainframe incurred costs for the Sociology department. For this reason, only the cases and variables of interest were retained in the file. I retrieved this file via FTP for purposes of data cleaning and recoding. Recoding took place before duplicate records were discovered. After univariate and bivariate analyses were completed, the file was transferred back to Blacksburg for the logistic regression runs. It was not until the bivariate analyses were completed that the cohabitational status variable was conceptualized. At this point, the original variable had to be retrieved from the mainframe to recode and match with the file being used for analysis. Duplicate cases were still in this original file. When small discrepancies appeared between the marital status and cohabitational status variables, they were ignored due to the difficulty in manipulating the data files.

**Table 3: Descriptive Statistics for All Cases with Data for A, B, C, and D**  
**(n = 1,189) (subsample 1)**

<b>Variable</b>	<b>Coding</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>n</b>
<b>A</b> Acculturation level (language preference)	0 = less acculturated 1 = more acculturated	.62	.48	1,189
<b>B<sub>0</sub></b> Marital Status at Birth	0 = never married 1 = ever married	.14	.35	1,189
<b>B<sub>1</sub></b> Cohabitation Status at Birth	0 = not living with spouse or other male 1 = living with spouse or boyfriend	.23	.42	1,186
<b>C</b> Birthweight	0 = low birthweight 1 = adequate birthweight	.95	.23	1,189
<b>D</b> Ever in neonatal intensive care unit	0 = never in NICU 1 = ever in NICU	.11	.31	1,189
<b>E</b> School status at exit from AFL program	0 = not graduated/ passed GED, or enrolled 1 = enrolled, graduated, or passed GED	.49	.50	589

**Table 4: Descriptive Statistics for All Cases with Data for A, B, C, D & E  
(n = 589) (subsample 2)**

<b>Variable</b>	<b>Coding</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>n</b>
<b>A</b> Acculturation level (language preference)	0 = less acculturated 1 = more acculturated	.63	.48	589
<b>B<sub>0</sub></b> Marital Status at Birth	0 = never married 1 = ever married	.15	.35	589
<b>B<sub>1</sub></b> Cohabital Status at Birth	0 = not living with spouse or other male 1 = living with spouse or boyfriend	.24	.43	588
<b>C</b> Birthweight	0 = low birthweight 1 = adequate birthweight	.94	.24	589
<b>D</b> Ever in neonatal intensive care unit	0 = never in NICU 1 = ever in NICU	.11	.31	589
<b>E</b> School status at exit from AFL program	0 = not graduated/ passed GED, or enrolled 1 = enrolled, graduated, or passed GED	.49	.50	589

## ***Bivariate Analyses***

First order correlations were computed for the entire sample and for a subsample of cases. Table 5 shows that acculturation was positively correlated with both NICU admission and school status. Marital status and birthweight were negatively correlated at a level approaching significance. Birthweight and NICU admission were strongly negatively correlated as would be expected since they are both measures of infant health. There was also a positive correlation between NICU admission and school status at exit, a relationship I did not study.

Table 6 reveals the correlations for subsample 2: those cases with data for all five of the original variables. In this subset, acculturation level is correlated with NICU admission and school status at levels approaching significance. Marital status is associated with NICU admission also at a level which approached significance. Birthweight and NICU admission are highly negatively correlated. School status is highly correlated with NICU admission in this subset as well. Following Tables 5 and 6 is the logistic regression analysis.

**Table 5: Correlation Coefficients for All Variables****With Pairwise Exclusion of Missing Cases**

	<b>Acculturation Level</b>	<b>Marital Status at Birth</b>	<b>Birth Weight</b>	<b>NICU Admission</b>	<b>School Status at Exit</b>
<b>Acculturation Level</b>	1.000 ( 1,354)	.040 ( 1,339)	-.016 (1,306)	.056 ** (1,241)	.111 *** (689)
<b>Marital Status at Birth</b>	.040 (1,339)	1.000 (1,352)	-.034 * (1,303)	-.046 ** (1,238)	-.043 (684)
<b>Birth Weight</b>	-.016 (1,306)	-.034 * (1,303)	1.000 (1,318)	-.367 *** (1,215)	-.045 (658)
<b>NICU Admission</b>	.056 ** (1,241)	-.046 ** (1,238)	-.367 *** (1,215)	1.000 (1,253)	.152 *** (631)
<b>School Status at Exit</b>	.111 *** (684)	-.043 (684)	-.054 (658)	.152 *** (631)	1.000 (694)

\*  $p \leq .10$ \*\*  $p \leq .05$ \*\*\*  $p \leq .01$



**Table 6: Correlation Coefficients for All Variables****With Listwise Exclusion of Missing Cases**

	<b>Acculturation Level</b>	<b>Marital Status at Birth</b>	<b>Birth Weight</b>	<b>NICU Admission</b>	<b>School Status at Exit</b>
<b>Acculturation Level</b>	1.000 (589)	.011 (589)	-.036 (589)	.070 * (589)	.076 * (589)
<b>Marital Status at Birth</b>	.011 (589)	1.000 (589)	-.035 (589)	-.064 * (589)	-.055 (589)
<b>Birth Weight</b>	-.036 (589)	-.035 (589)	1.000 (589)	-.305 *** (589)	-.050 (589)
<b>NICU Admission</b>	.070 * (589)	-.064 * (589)	-.305 *** (589)	1.000 (589)	.143 *** (589)
<b>School Status at Exit</b>	.076 * (589)	-.055 (589)	-.050 (589)	.143 *** (589)	1.000 (589)

\*  $p \leq .10$ \*\*  $p \leq .05$ \*\*\*  $p \leq .01$

## ***Logistic Regression***

This section reviews the results of the statistical analyses with respect to the specific hypotheses tested. Logistic regression estimates were computed for marital status and cohabitational status, the infant health outcomes, and the mother's educational outcome. Models for three samples are included for each of the analyses. The first sample is the largest and includes all cases. The second sample is a subset of cases including only those having data for every variable except the school status at exit (E), which had the most missing data. The final sample includes cases which have no missing data for any of the variables. The following tables present the findings from the logistic regressions performed.

Tables 7 shows the logistic regression models for marital status (Variable B<sub>0</sub>).

Hypothesis 1: *Less acculturated women (A) will be more likely to be married (B<sub>0</sub>) at the time of their first births than more acculturated women.*

Despite the expectation for less acculturated women to be married more often than their more acculturated counterparts, the opposite was found to be the case, as shown in Table 7. More acculturated women were more likely to be married, though the relationship was not statistically significant for any sample.

**Table 7: Logistic Regression Models for Marital Status at Birth ( $B_0$ ):**

**0 = never married, 1 = ever married**

Independent Variable	Models		
	(1)	(2)	(3)
A: More Acculturated	1.27	1.31	1.07
	<i>.24</i>	<i>.27</i>	<i>.07</i>
	(2.08)	(2.28)	(.07)
Intercept	-1.98	-1.98	-1.81
n	1,339	1,189	589

Note: for each independent variable, three estimates are shown in the following order: (1) the odds ratio, (2) beta (in italics), and (3) the Wald chi-square (in parentheses). Beta alone is shown for the intercept.

\*  $p \leq .10$

\*\*  $p \leq .05$

\*\*\*  $p \leq .01$

Table 8 presents the findings for the regressions on birthweight (C).

Hypothesis 2: *Less acculturated women (A) will have first babies with higher birth weights (C) than more acculturated women.*

Table 8 indicates that when only acculturation level is considered, the more acculturated women are less likely to have adequate birthweight, however, this is not a statistically significant relationship. This direction of the relationship is unchanged when marital status or cohabitational status is held constant. None of the relationships between acculturation and birthweight are significant.

Hypothesis 3: *Married (or cohabiting) women (B) will be more likely to have adequate birthweight babies (C) than women who never married.*

The hypothesis for married women was unsupported by the logistic regression analysis. A negative relationship was found between birthweight and marital status, as shown in Table 8 rather than a positive relationship. However, this relationship was not significant. Women who were living with either a marital or other partner were less likely than those not cohabiting to have adequate birthweight babies, but again the relationship was not significant.

**Table 8: Logistic Regression Models for Birthweight (C):**

**0 = under 2500 grams, 1 = 2500 or more grams**

Independent Variable	Models														
	1	2	1	2	1	2									
subsample:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
A: More Acculturated	.86	.84	.72							.87	.85	.73	.85	.83	.72
	<i>-.16</i>	<i>-.17</i>	<i>-.32</i>							<i>-.13</i>	<i>-.16</i>	<i>-.32</i>	<i>-.16</i>	<i>-.19</i>	<i>-.33</i>
	(.35)	(.41)	(.75)							(.26)	(.36)	(.74)	(.39)	(.49)	(.80)
B <sub>0</sub> : Ever Married at Birth				.68	.71	.69				.67	.71	.69			
				<i>-.39</i>	<i>-.35</i>	<i>-.37</i>				<i>-.41</i>	<i>-.34</i>	<i>-.37</i>			
				(1.51)	(1.10)	(.71)				(1.61)	(1.04)	(.70)			
B <sub>1</sub> : Cohabiting Spouse/ Other at Birth				.69	.77	.92				.72	.76	.89			
				<i>-.37</i>	<i>-.27</i>	<i>-.08</i>				<i>-.33</i>	<i>-.28</i>	<i>-.11</i>			
				(1.79)	(.88)	(.04)				(1.36)	(.94)	(.08)			
Intercept	3.02	2.96	2.94	2.96	2.91	2.79	2.99	2.91	2.75	3.06	3.01	3.00	3.09	3.04	2.98
n	1,306	1,189	589	1,303	1,189	589	1,301	1,189	588	1,291	1,189	589	1,291	1,186	588

Note: for each independent variable, three estimates are shown in the following order: (1) the odds ratio, (2) beta (in italics), and (3) the Wald chi-square (in parentheses). Beta alone is shown for the intercept.

\* p ≤ .10  
 \*\* p ≤ .05  
 \*\*\* p ≤ .01

Table 9 presents the logistic regression models for NICU admission (D).

Hypothesis 4: *More acculturated women (A) will be more likely to have first babies admitted to neonatal intensive care units (D) than less acculturated women.*

The expected direct relationship was found between acculturation and neonatal intensive care unit admission, as indicated by Table 9. Admission to a neonatal intensive care unit was 1.49 times as likely for more acculturated women as opposed to less acculturated women in the most complete sample (n = 1,241). This relationship is statistically significant at the  $p < .05$  level. When regression was performed on the subset of data with values for variables A, B, C, and D (model 2) and the subset of data with values for variables A, B, C, D, and E (model 3), the relationship approached significance. When marital status or cohabitational status are held constant, the relationship remains positive and approaches significance.

Hypothesis 5: *Married (B<sub>d</sub>) (or cohabiting) women will be less likely (more likely) to have first babies admitted to neonatal intensive care units (D) than never-married or non-cohabiting women.*

The logistic regression models 4 through 6 in Table 9 show that there are negative relationships between NICU admission and both marital status and cohabitational status, but none is significant. This is true also when acculturation level is in the equation.

**Table 9: Logistic Regression Models for NICU Admission (D):**

Independent Variable	Models														
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
subsample:															
A: More	1.49 **	1.43 *	1.66 *							1.48 *	1.45 *	1.67 *	1.45 *	1.42 *	1.61
Acculturated	.40	.36	.51							.39	.37	.51	.37	.35	.48
B <sub>0</sub> : Ever Married at Birth				.60	.62	.48					.60	.61	.48		
				-.50	-.47	-.73					-.50	-.50	-.74		
B <sub>1</sub> : Cohabiting Spouse/ Other at Birth				(2.56)	(2.25)	(2.28)				(2.55)	(2.46)	(2.34)			
				.72	.69	.59				.71	.71	.62			
				-.33	-.37	-.52				-.34	-.34	-.48			
				(1.89)	(2.23)	(2.12)				(1.96)	(2.01)	(1.76)			
Intercept	-2.43	-2.38	-2.48	-2.09	-2.09	-2.06	-2.08	-2.06	-2.03	-2.36	-2.33	-2.40	-2.33	-2.30	-2.36
n	1,241	1,189	589	1,238	1,189	589	1,236	1,186	588	1,226	1,189	589	1,224	1,189	588

Note: for each independent variable, three estimates are shown in the following order: (1) the odds ratio, (2) beta (in italics), and (3) the Wald chi-square (in parentheses). Beta alone is shown for the intercept.

\* p ≤ .10  
 \*\* p ≤ .05  
 \*\*\* p ≤ .01

Finally, Table 10 presents models used to test hypotheses 6 and 7.

Hypothesis 6: *More acculturated women (A) will be more likely to be enrolled or to have graduated from school (E) at the time of exiting the AFL program than less acculturated women.*

More acculturated women were 1.58 times as likely to have graduated or to be enrolled in school at the time they exited the AFL program. This relationship is significant at the  $p < .001$  level for the sample of 689. When only the cases with data for all variables are considered, the odds ratio of 1.37 merely approaches significance. The relationships are similar when marital status and cohabitational status are held constant.

Hypothesis 7: *Ever married ( $B_0$ ) or cohabiting ( $B_1$ ) women (B) will be less likely to be enrolled or graduated from school (E) at the time they exit the AFL program than never married or non-cohabiting women.*

A negative, relationship was in fact found between marital status and school status, but it was not statistically significant. Cohabitation is also negatively, but not significantly, related to school continuance or completion. The relationships between school status and marital and cohabitational statuses are about the same when acculturation level is considered.



**Table 10: Logistic Regression Models for School Status at Time of Exit from Program**

**(E): 0 = dropped out/ not enrolled, 1 = graduated, received GED, or enrolled**

Independent Variable	Models									
	1		2		2					
subsample:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
A: More	1.58 ***	1.37 *					1.51 ***	1.38 *	1.50 **	1.36 *
Acculturated	.46	.32					.41	.32	.41	.31
	(8.38)	(3.40)					(6.71)	(3.46)	(6.50)	(3.19)
B <sub>0</sub> : Ever Married at Birth			.78	.73			.79	.72		
			-.25	-.32			-.24	-.32		
			(1.28)	(1.80)			(1.19)	(1.86)		
B <sub>1</sub> : Cohabiting					.83	.81			.86	.83
Spouse/ Other at Birth					-.19	-.21			-.15	-.18
					(1.06)	(1.18)			(.67)	(.86)
Intercept	-.30	-.26	-.02	-.01	.03	.00	-.23	-.21	-.22	-.20
n	689	589	684	589	684	588	679	589	679	588

Note: for each independent variable, three estimates are shown in the following order: (1) the odds ratio, (2) beta (in italics), and (3) the Wald chi-square (in parentheses). Beta alone is shown for the intercept.

\*  $p \leq .10$

\*\*  $p \leq .05$

\*\*\*  $p \leq .01$

## **Chapter 6 CONCLUSIONS**

At the outset of this paper, I indicated the purpose would be twofold: to test hypotheses specific to the population of interest and to further the understanding of those interested in assisting young Hispanic mothers and mothers-to-be.

This chapter begins with a table summarizing the outcomes of the hypothesis testing. Since many of my hypotheses were unsupported or only partially supported, I discuss possible alternative explanations for the findings. Sections on the limitations of this analysis and policy implications follow this discussion.

**Table 11: Summary of Hypothesis Testing Results**

Hypothesis	Outcome of Analysis	Notes
1) Less acculturated women (A) will be more likely to be married (B) at the time of their first births than more acculturated women	unsupported	insignificant and relationship was in opposite direction as expected
2) Less acculturated women (A) will have first babies with higher birth weights (C) than more acculturated women.	unsupported	insignificant
3) Married women (or cohabiting women) (B) will have first babies with higher birth weights (C) than never-married (or non-cohabiting) women.	partially supported	bivariate relationship approached significance (for cases with both variables - subsample 2)
4) More acculturated women (A) will be more likely to have first babies admitted to NICU (D) than less acculturated women.	supported	logistic regression and bivariate analysis
5) Married (or cohabiting) women (B) will be less likely to have first babies admitted to neonatal intensive care units (D) than non-married (or non-cohabiting) women.	partially supported	bivariate analysis of subsample 2 approaches significance
6) More acculturated women (A) will be more likely to be enrolled or graduated from school at the time they exit the AFL program (E) than less acculturated women.	supported	logistic regression and bivariate analysis
7) Married (or cohabiting) women (B) will be less likely to be enrolled or graduated from school (E) at the time they exit the AFL program than never-married (or non-cohabiting) women.	unsupported	insignificant

None of the hypotheses with respect to marital status were fully supported by the analysis. First, less acculturated women were not more likely to marry as I had expected. Cohabiting with a spouse or mate, on the other hand, was negatively related to acculturation level (results not shown).

Marital status (as well as cohabitational status) was negatively correlated with birthweight though the relationship was not found to be significant. This was the opposite of my expectations.<sup>4</sup> Acculturation also had an insignificant effect on birthweight.

In addition to birthweight, admission to a neonatal intensive care unit provided a measure of infant health at birth. NICU admission was related to acculturation level. More acculturated women had infants who were nearly 1.5 times more likely to be admitted to NICU, a relationship which is significant. (Marital and cohabitational were only found to be significantly correlated with NICU in the bivariate analysis of cases for subsample 2.)

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<sup>4</sup> It could be that women who marry are at an economic disadvantage relative to their non-married counterparts, creating structural barriers to healthy pregnancy outcomes rather than social support. Young women who marry or live with men may be leaving a household with more wage earners for one with fewer wage earners. Economic forces could certainly contribute to lower birthweight if there is not access to nutritional food and medical care. If women leave one home for another, it may also be that they are losing some access to the social support from their family of origin. Finally, as noted in Chapter 3, the presence of a male partner may create additional burdens for the mother in addition to any social or material support he provides.

With respect to the educational outcomes for mothers, acculturation level had a significant correlation in the expected direction in both the bivariate and logistic regression analyses. From reading Mott (1986) I knew that Hispanics were less likely than whites or blacks to expect a high school diploma. I assumed that this meant that more acculturated Hispanics would then expect more education. Indeed, more acculturated women were more likely to be enrolled in school or graduated at the time of exiting the AFL program, a relationship which is statistically significant. But again, acculturation level, the explanation studied, is normative but cannot easily be separated from structural explanations. Is the English speaking mother more likely to continue with school because she is socially more similar to her English speaking non-Hispanic classmates? Or is it simply that she recognizes that there are more opportunities open to her, as an English-speaking woman, and therefore, education could positively impact her earning potential?

This analysis raises many questions. Clearly there are other important variables which need to be studied. Acculturation level and marital status are insufficient to explain infant health outcomes and maternal educational outcomes for Adolescent Family Life Program participants. I now turn to the implications of this analysis for future research and for public policy.

### ***Limitations***

There are two primary limitations to this research. Among them are the data set and the statistical procedures used. The data set is limited by an enormous amount of

missing data. One of my original measures of infant health outcomes (Apgar Score) could not be used due the fact that only a quarter of the cases included this information.

The second limitation pertains to the logistic regression procedure used in the analysis. To perform the regression I had to create models where one variable depended on several others. Ryder (1980) points out that, with regard to decisions on childbearing, “Decisions made concerning the allocation of time and other scarce resources among these activities are made jointly rather than separately” (p. 194). Due to the nature of the logistic regression procedure, each outcome had to be analyzed separately. It was impossible to determine, for example, whether decisions about marriage contributed to decisions about education.

### ***Future Research***

There is no doubt that adolescent mothers and their infants will continue to be of concern to public health officials as well as educators. Medical research will continue to inform the public about what is learned with respect to biological aspects of pregnancy. We now know, for example, how important diet and medical care are to pregnant women. We also know that knowledge of diet alone does not influence pregnancy. In order to use this knowledge about diet we need to know what social influences impact a woman’s diet during pregnancy. Both norms and structural influences are important determinants of what women consume and how much and when prenatal care is received.

Normative influences which may be found to effect infant health may be as broad as a culture’s idealization of thinness or as specific as an ethnic groups use of certain

cooking techniques or foods. Structural explanations which should be studied include economic factors. Both household income or reliance on public funds for medical or nutritional assistance may influence the health of pregnancies and infant health outcomes. The impact of legislation regarding an illegal immigrant's ability to obtain medical care may become a factor in infant health outcomes as well.

With regard to education, it is important to determine whether decisions regarding pregnancy and marriage are made in concert with decisions regarding education. Rational-choice proponents suggest that earning a high school diploma is not perceived as a way to increase earning potential for a young woman; it is quite understandable that education would be abandoned in favor of other priorities.

### ***Public Policy Implications***

It is my hope that social scientists, social workers, nurses, doctors, and politicians will first seek to study and to understand this population. Their specific needs can be met only after they are understood. Clearly, the goal of having infants born healthy is a good one. Therefore, on a structural level, access to medical care should be universally available. Also, access to adequate nutrition should be universally available. I would not suggest that efforts be made to influence acculturation level because I do not believe it is the goal of government to do so and because it is not clear to me that becoming more acculturated is better for people overall.

High school graduation is associated with higher income and higher social status. Among Hispanic women, especially those who become parents at an early age, high

school graduation does not appear to be highly valued. If education is not perceived as an asset by Hispanic adolescents, efforts to increase access to education for young mothers will not be of much use. It would be more useful to determine what Hispanic women want out of life. Higher socioeconomic status may be less valued than large families. Whatever the case may be, policy makers must find out first what would improve the quality of life for mothers and infants. Only then can policy makers truly help them.



## REFERENCES

- Ahn, Namkee. 1994. "Teenage Childbearing and High School Completion: Accounting for Individual Heterogeneity." *Family Planning Perspectives* 26: 17-21.
- Alexander, Karl L. and Thomas W. Reilly. 1981. "Estimating the Effects of Marriage Timing on Educational Attainment: Some Procedural Issues and Substantive Clarifications." *American Journal of Sociology* 87: 143-156.
- Aneshensel, Carol S., Eve P. Fielder and Rosina M. Becerra. 1989. "Fertility and Fertility-Related Behavior Among Mexican-American and Non-Hispanic White Female Adolescents." *Journal of Health and Social Behavior* 30: 56-76.
- Baca Zinn, Maxine. 1994. "Adaptation and Continuity in Mexican-Origin Families." Pp. 64-81 in Ronald L. Taylor, ed., *Minority Families in the United States: A Multicultural Perspective*. Englewood Cliffs, NJ: Prentice Hall.
- Becerra, Rosina M. and Diane de Anda. 1984. "Pregnancy and Motherhood Among Mexican American Adolescents." *Health and Social Work* 9: 106-123.
- Boyce, W. Thomas, Catherine Schaeffer and Chris Uitti. 1985. "Permanence and Change: Psychosocial Factors in the Outcome of Adolescent Pregnancy." *Social Sciences in Medicine* 21:1279-1287.
- Brewster, Karin L. 1994. "Race Differences in Sexual Activity Among Adolescent Women: The Role of Neighborhood Characteristics." *American Sociological Review* 59: 408-424.
- Burst, Helen V. 1979. "Adolescent Pregnancies and Problems." *Journal of Nurse-Midwifery* 24: 19-24.
- Card, Josefina J. and Lauress L. Wise. 1978. "Teenage Mothers and Teenage Fathers: The Impact of Early Childbearing on the Parents' Personal and Professional Lives." *Family Planning Perspectives* 10: 199-205.
- Darabi, Katherine F. and Vilma Ortiz, 1987. "Childbearing among Young Latino Women in the United States." *American Journal of Public Health* 77: 25-28.
- Davis, J. Kent, Raymond Fink, Arun Yesupria, Benamana Rajegowda, and Rasila Lala, 1986. "Teenage Pregnancy in an Urban Hospital Setting." *Journal of Community Health* 11: 259-267.

- de Anda, Diane. 1984. "Informal Support Networks of Hispanic mothers: A Comparison Across Age Groups." *Journal of Social Service Research* 7: 89-105.
- Dryfoos, Joy G. and Toni Heisler. 1978. "Contraceptive Services for Adolescents: An Overview." *Family Planning Perspectives* 10: 223-233.
- Furstenberg, Jr., Frank F. 1976. *Unplanned Parenthood*. New York: Free Press.
- Grady, William R., Daniel H. Klepinger, John O.G. Billy and Koray Tanfer. 1993. "Condom Characteristics: The Perceptions and Preferences of Men in the United States." *Family Planning Perspectives* 25: 67-73.
- Hechter, Michael. 1983. *The Microfoundations of Macrosociology*. Philadelphia: Temple Press.
- Holck, Susan E., Charles W. Warren, Leo Morris and Roger W. Rochat. 1982. "Need for Family Planning Services Among Anglo and Hispanic Women in U.S. Counties Bordering Mexico." *Family Planning Perspectives* 14: 155-159.
- Horon, Isabelle L., Donna M. Strobino, and Hugh M. MacDonald, 1983. "Birth Weights Among Infants Born to Adolescent and Young Adult Women." *American Journal of Obstetrics and Gynecology* 146: 444-449.
- Horwitz, Sarah McCue, Lorraine V. Klerman, H. Sung Kuo, and James F. Jekel, 1991. "School-Age Mothers: Predictors of Long-term Educational and Economic Outcomes." *Pediatrics* 87: 862-868.
- Kalish, Susan. 1993. "Pregnancy Rates Fall While Numbers Rise." *Population Today*.
- Koniak-Griffin, Deborah, Susan Lominska and Mary-Lynn Brecht, 1993. "Social Support During Adolescent Pregnancy: A comparison of three ethnic groups." *Journal of Adolescence* 16:43-56.
- Mott, Frank L. 1986. "The Pace of Repeated Childbearing among Young American Mothers." *Family Planning Perspectives* 18: 5-12.
- Mott, Frank L. and R. Jean Haurin. 1988. "Linkages Between Sexual Activity and Alcohol and Drug Use Among American Adolescents." *Family Planning Perspectives* 20: 128-137.

- Norbeck, Jane S. and Virginia Peterson Tilden. 1983. "Life Stress, Social Support and Emotional Disequilibrium in Complications of Pregnancy: A Prospective, Multivariate Study." *Journal of Health and Social Behavior* 24: 30-46.
- Oakley, Ann. 1985. "Social Support in Pregnancy: the 'soft' way to increase birthweight?" *Soc. Sci. Med.* 21: Vol. 11 1259-1268.
- Plotnick, Robert D. 1992. "The Effects of Attitudes on Teenage Premarital Pregnancy and its Resolution." *American Sociological Review* 57: 800-811.
- The Population Reference Bureau. 1992. "Births to Unmarried Mothers." *Population Bulletin* 47: 22-23.
- Rounds, Kathleen, Marie Weil and Karen Smith Thiel. 1992. "Adolescent Pregnancy and Early Intervention Programs Benefit from Case Management." *Journal of Case Management* 1: 15-20.
- Ryder, Norma B. 1980. *Where do Babies Come From?* chapter 16 in: *Sociological Theory and Research: A Critical Appraisal* Blalock, Herbert M.(ed.) New York: The Free Press.
- Singh, Gopal K. and Stella M. Yu., 1995. "Infant Mortality in the United States: Trends, Differentials, and Projections, 1950 through 2010." *American Journal of Public Health* 85: 957-964.
- Teachman, Jay D. and Polonko. Karen A. 1988. "Marriage, Parenthood, and the College Enrollment of Men and Women." *Social Forces* 67: 512-523.
- Thiel, Karen Smith, Marie Weil, Beatrice Ferleger; Wendy Russel; Chul Jo; and Ann Kwinn. 1990. *California Adolescent Family Life Program: Evaluating the impact of case management services for pregnant and parenting adolescents Final Report.* University of Southern California School of Social Work.
- Trussel, James and Jane Menken. 1978. "Early Childbearing and Subsequent Fertility." *Family Planning Perspectives* 10: 209-218.
- Turner, R. Jay, Carl F. Grindstaff, and Norman Phillips. 1990. "Social Support and Outcome in Teenage Pregnancy." *Journal of Health and Social Behavior* 31: 43-57.
- U.S. Department of Health and Human Services. 1995. *HEALTHY PEOPLE 2000 REPORT.* Washington, D.C.: U.S. Government Printing Office.

Vega, William A. 1990. "Hispanic Families in the 1980s: A Decade of Research." *Journal of Marriage and the Family* 52 (November): 1015-1024.

Vinokskis, Maris A. 1981. "An 'Epidemic' of Adolescent Pregnancy? Some Historical Considerations." *Journal of Family History* Summer: 205-230.

Zelnick, Melvin and Farida K. Shah. 1983. "First Intercourse Among Young Americans." *Family Planning Perspectives* 15: 64-70.

Zuckerman, Barry, Joel J. Albert, Elizabeth Dooling, Ralph Hingson, Herbert Kayne, Suzette Morelock, and Edgar Oppenheimer, 1983. "Neonatal Outcome: Is Adolescent Pregnancy a Risk Factor?" *Pediatrics* 71: 857-863.

## APPENDIX

### A: Acculturation Level (Language Preference)

Value Label	Frequency	Percent	Valid Percent	Cum Percent
More Acculturated (English)	927	62.0	62.7	62.7
Less Acculturated (Spanish)	551	36.9	37.3	100.0
Missing	17	1.1	Missing	
	-----	-----	-----	
Total	1495	100.0	100.0	

Valid cases 1478 Missing cases 17

### B<sub>0</sub>: Ever Married at Birth

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Ever Married	217	14.5	14.7	14.7
Never Married	1257	84.1	85.3	100.0
Missing	21	1.4	Missing	
	-----	-----	-----	
Total	1495	100.0	100.0	

Valid cases 1474 Missing cases 21

### B<sub>1</sub>: Cohabiting at Birth

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Not Cohabiting	914	76.9	77.1	77.1
Cohabiting: Spouse/Other	272	22.9	22.9	100.0
Missing	3	.3	Missing	
	-----	-----	-----	
Total	1189	100.0	100.0	

Valid cases 1186 Missing cases 3

**C: Birthweight**

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Low Birthweight (<2500 Gm)	75	5.0	5.2	5.2
Not Low Birthweight	1366	91.4	94.8	100.0
Missing	54	3.6	Missing	
	-----	-----	-----	
Total	1495	100.0	100.0	

Valid cases 1441 Missing cases 54

**D: Ever Admitted to Neonatal Intensive Care Unit**

Value Label	Frequency	Percent	Valid Percent	Cum Percent
In NICU For Some Time	136	9.1	9.9	9.9
Never In NICU	1237	82.7	90.1	100.0
Missing	122	8.2	Missing	
	-----	-----	-----	
Total	1495	100.0	100.0	

Valid cases 1373 Missing cases 122

**E: School Status at Exit**

Value Label	Frequency	Percent	Valid Percent	Cum Percent
Never Attended/ Drop	379	25.4	51.2	51.2
Enrolled/ Graduated	361	24.1	48.8	100.0
Missing	581	38.9	Missing	
Do Not Know	174	11.6	Missing	
	-----	-----	-----	
Total	1495	100.0	100.0	

Valid cases 740 Missing cases 755

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