Introduction: It is often purported that unintended pregnancy is causally related to poor maternal, infant, and child development outcomes, such as low birth weight, maternal smoking, and adverse conditions for child development[1]. In the United States, nearly half of total pregnancies in 2001 were reported as unintended [2]and while the aggregate rate of unintended pregnancy has remained stable during the last twenty years, the rate has increased among disadvantaged populations, signaling an increasing disparity between demographically defined subgroups. These correlations have signaled an interest in the unintended pregnancy, however there lacks a critical approach in addressing exactly how socioeconomic background translates into pregnancy intention status and, consequentially, maternal, infant, and child well-being outcomes. Several studies have highlighted the importance of studying contextual factors that are relevant to fertility behaviors and outcomes, specifically for disadvantaged women[3]. Education is a well-established factor in differential fertility patterns with several hypothesized links between educational attainment and lower fertility patterns[4] – including the opportunity costs of having children in the face of family and employment decisions, social, and ideational influences. The role of educational quality and opportunity may place women on divergent fertility trajectories, resulting in disadvantaged women having a greater likelihood of having unintended births while advantaged women being more likely to have intended births. This study examines the link between early educational disadvantage and unintended pregnancy in the United States.

Data and Methods: Employing multinomial logistic regression and a novel index of educational advantage, I investigated whether educational advantages in youth are associated with pregnancy intention patterns of first births among a sample of women from the National Longitudinal Survey of Youth 1979 (NLSY 79). Pregnancy intentions were based on a series of questions pertaining to contraception use and desire of pregnancy. NLSY 79 began incorporating these questions in 1982. Births were *wanted* if a woman reported not using contraception because she wanted to get pregnant or, irrespective of contraception use, she wanted to get pregnant; *mistimed* if a woman reported that she did not want to get pregnant at the time, but that she did want a baby in the future; and *unwanted* if a woman reported that she did not want a baby then or in the future. I employed an index of advantage to represent certain aspects of the educational process encountered during childhood. The index consists of eight indicators available in the NLSY that have previously been found to predict college attainment. Indicators were dichotomized, weighted by their contribution to college attainment, and summed into an index to capture cumulative educational advantages. I employed multinomial logistic regression to examine the risks of a mistimed or unwanted first birth relative to wanted first birth. The full model is as follows:

---

[1] Baydar, N. 1995. "Consequences for Children of Their Birth Planning Status." *Family Planning Perspectives* 27(6):228-245. Bertrand, J.T., K. Hardee, R.J. Magnani, and M.A. Angle. 1995. "Access, Quality Of Care and Medical Barriers In Family Planning Programs." *International Family Planning Perspectives* 21(2):64-74.

[2] Finer, L.B.and S.K. Henshaw. 2006. "Disparities in rates of unintended pregnancy in the United States, 1994 and 2001." *Perspectives on Sexual and Reproductive Health* 38(2):90.

[3] Kendall, C., A. Afable-Munsuz, I. Speizer, A. Avery, N. Schmidt, and J. Santelli. 2005. "Understanding pregnancy in a population of inner-city women in New Orleans--results of qualitative research." *Social Science & Medicine* 60(2):297-311. Moos, M.K., R. Petersen, K. Meadows, C.L. Melvin, and A.M. Spitz. 1997. "Pregnant women's perspectives on intendedness of pregnancy." Pp. 385-392 in *Womens Health Issues*. United States.

[4] Diamond, I.N., Margaret; Varle, Sarah. 1999. "Female Education and Fertility: Examining the Links." Pp. 23-48 in *Critical Perspectives on Schooling and Fertility in the Developing World*, edited by C.C. Bledsoe, JB; Johnson-Kuhnm JA; Haaga, JG. Washington, DC: National Academy Press.

$$\text{logit}\,[P(Y=m|x/P(Y=0|X) = a_m + \text{age}\beta_1 + \text{race}\beta_2 + \text{EdAdv}\beta_3 + \text{Educ}\beta_4 + \text{poverty}\beta_5 + \text{malework}\beta_6 + \text{femwork}\beta_7 + \text{community}\beta_8 + \text{southresi}\beta_9 + \text{rural}\beta_{10} + \text{nativity}\beta_{11} + \text{intyear}\beta_{12} + \text{pre1982}\beta_{13}$$

where the logit of a first birth is an additive function of the explanatory variables and covariates. β_3 is the estimated main effect of low educational advantage (below 25th percentile) relative to those at or above the 25th percentile of the index of advantage. β_4 is the coefficients for the effect of education level by first birth measured as a continuous variable. The β_5 to β_{13} represent the estimated effects of family poverty status in 1978, working male at age 14, working female at age 14, community type at age 14, southern residence at age 14, rural residence at age 14, nativity, interview year, and whether first birth occurred prior to 1982 (when pregnancy intention was first assessed in NLSY 79).

Results: I analyzed the means of each of the indicators included in the index of advantage. Results are not shown but the following is a summary. In 1979, 36% of the sample reported that they expected to earn a college degree sometime in their life. Only 29% took college preparatory classes during high school while the vast majority did not take remedial English or Math. At age 14, 69% of the sample lived with two-married parents. More fathers possessed a college degree than mothers and 68% of households subscribed to a newspaper when the respondent was 14. Column 1 of Table 1 provides descriptive statistics of the sample. Columns 2 and 3 of Table 2 stratify by percentile rank of the index, between those who were below the 25th percentile and those who were at or above the 25th percentile.

The multinomial logistic models examine whether educational advantages in youth influences the likelihood of having a mistimed or unwanted first birth compared to a wanted one (unwanted births not shown due to statistically insignificant results). Model 1 of Table 2 presents estimates of the overall relationship between the index of advantage and risk of having a mistimed first birth. Low educational advantage is associated with lower likelihood of having a first birth categorized as mistimed (RRR = .67; se: .08). Model 2 presents estimates of the overall relationship between educational attainment and having a mistimed first birth. In general the models are similar between 1 and 2, with a small exception of race/ethnicity and family poverty status. In Model 1, Blacks were not significant different from whites in their likelihood of having a mistimed birth; however, in Model 2 the relative risk ratio for Black respondents *is* statistically significant. According to Model 2, Blacks are 27% more likely to have a mistimed first birth than whites. Family poverty status and having no adult female present at age 14 are significant in Model 1 but not significant in Model 2. Educational level at first birth is also significantly related to having a mistimed first birth. The odds of having a mistimed birth classified as mistimed increases with educational attainment by first birth. Model 3 includes both the index of advantage and educational attainment. Comparing the estimates in Model 3 to the estimates in Model 1 allows us to evaluate the direct effects of the index of advantage by assessing the magnitude of change in the parameter estimates. In Model 3, both the index of advantage (RRR = .71) and educational attainment remain

Discussion: I sought to examine whether a woman's educational advantages influenced her likelihood of having a mistimed or unwanted first birth, positing that inequalities in early life could lead to differing fertility trajectories in which more advantaged women are more likely to have first births classified as wanted and disadvantaged women are more likely to have births classified as unwanted or mistimed. My results provide preliminary evidence that advantages acquired during youth directly influence the likelihood of having a mistimed, unwanted, or wanted birth beyond educational attainment. Yet, I have surprising results - women with higher

early educational advantage were more likely to have mistimed first births. Descriptive analysis showed that women with lower advantages had more first births classified as unwanted and mistimed, but multinomial models suggest the opposite. I propose that women with low early educational advantage, who have few opportunities for economic development or social mobility, may view their first birth more positively than their peers who received more advantages and feel a birth could interfere with economic mobility or other aspirations that early life advantages may spur. Strengths of this analysis include: nationally representative and longitudinal dataset and use of an index that considers advantages as a combination of characteristics. Future work should continue to look at the relationship between early life advantages and pregnancy intention status as a way to critically examine and better conceptualize pregnancy intention.

Table 2
Multinomial Logistic Model of Pregnancy Intention Status

	Model 1 (N= 2501) (Mistimed vs Wanted ref.)			Model 2 (N=3319) (Mistimed vs Wanted ref.)			Model 3 (N=2496) (Mistimed vs Wanted)		
	RRR	*SE*		RRR	*SE*		RRR	*SE*	
Index of advantage (above 25th percentile ref.)									
Low Educational Advantage	0.67	0.076	***				0.713	0.085	**
Educational Attainment by first birth				1.10	0.026	***	1.068	0.032	*
Age at 1979	0.88	0.021	***	0.86	0.017	***	0.867	0.021	***
Race and/or ethnicity (non-Hispanic White reference ref.)									
Non-Hispanic Black	1.29	0.171		1.27	0.142	*	1.268	0.170	
Hispanic	0.75	0.110	*	0.67	0.084	**	0.751	0.111	
Family Poverty Status 1978 (not in poverty ref.)									
In Poverty	0.78	0.088	*	0.86	0.082		0.789	0.090	*
Working Male in HH at age 14 (worked ref.)									
Did not work	1.03	0.194		0.88	0.141		1.032	0.197	
No adult male present	1.31	0.189		1.04	0.113		1.313	0.189	
Working Female in HH at age 14 (worked ref.)									
Did not work	0.98	0.095		0.95	0.080		0.981	0.096	
No adult female present	0.38	0.176	*	0.72	0.234		0.393	0.185	*

Notes: RRR = relative risk ratio, SE = standard error

a. Low educational advantage refers to respondents below 25th percentile on the index of advantage

b. Educational attainment by first birth is measured as continuous variable

c. All models controlled for community at age 14, southern residence, urban residence, respondent's nativity, if respondent's first birth occurred before 1982, and marital status when pregnancy intention of first birth was reported

*$p \leq .05$, **$p \leq .01$, ***$p \leq .001$.

Table 1
Levels and Significance of Sample Characteristics (Column 1) and Index of Advantage (Columns 2 and 3) by Sociodemographics

	Sample Characteristics	Below 25th Percentile Educational Advantage	Above 25th Percentile Educational Advantage	
	Level	Level	Level	sig.
Index of Advantage	4.32			
Age at 1979	18.03	17.66	18.15	***
First Birth Pregnancy Intention Status				
Wanted	58.56	54.80	60.09	***
Mistimed	33.06	33.69	32.80	***
Unwanted	8.39	11.51	7.12	***
Educational attainment by first birth	12.66	11.40	13.18	***
Race and/or ethnicity				
Non-Hispanic White	64.36	0.50	0.69	***
Non-Hispanic Black	21.50	0.30	0.19	
Hispanic	14.14	0.20	0.12	
Respondents Birthplace				
United States	94.38	93.74	94.59	
Outside United States	5.62	6.26	5.41	
Family Poverty Status 1978				
Not in poverty	74.01	56.86	79.86	
Poverty	25.99	43.14	20.10	***
Southern Residence at age 14				
Non-South	63.05	56.33	65.31	***
Southern Residence at age 14	35.09	41.69	32.88	***
Outside United States	1.85	1.99	1.81	***
Female in household worked				
Didn't work	45.55	42.87	46.44	***
Worked	53.33	53.73	53.20	***
Not present	1.12	3.40	0.36	***
Male in household worked				
Didn't work	5.98	9.53	4.81	***
Worked	80.69	61.45	87.08	***
Not present	13.32	29.01	8.11	***
Community at age 14				
Town/City	78.89	76.83	79.58	*
Country	16.21	18.55	15.43	*
Farm	4.89	4.62	4.99	*
Urban/Rural Residence 1979				
Rural	21.67	17.45	23.01	***
Urban	78.33	82.55	76.99	***

a. Except for Index of Advantage and Age at 1979, all variables are dummy coded
b. Column 1 refers to descriptive characeristics of the study sample. Column 2 refes to the percentage of responden low score (below 25th percentile) in the Index of Advantage who have a given characteristic. Column 3 refers to th given characteristic percentage of respondents with a high score (25th percntile or greater) who have a
c. Significance level refers to differences between Col 2 and Col 3
*$p \leq .05$, **$p \leq .01$, ***$p \leq .001$.