"Unintended Births by Ethnicity and Education Among women in the United States:
Might Some be "OKAY" Instead?"

Stacy Tiemeyer*

Oklahoma State University

*Stacy Tiemeyer <stacytiemeyer@gmail.com>

Julia McQuillan

University of Nebraska

Michael Rendall

University of Maryland

Arthur L. Greil

Alfred University

(2) Abstract (< 200 words)

Unintended births are an important public health concern in the United States, particularly for women who are lower educated or racial ethnic minorities. Despite decades of efforts to reduce unintended births, high rates persist. Guided by Cognitive Social Theory and prior research on birth intentions, we explore the value of using a "try scale" for birth intentions rather than the conventional intended, mistimed or unwanted categories. We use information from two large, nationally representative surveys, the National Survey of Family Growth (NSFG) and the National Survey of Fertility Barriers (NSFB), to conduct the analyses. The NSFG "try scale" measures how much women were avoiding or trying to conceive for each birth on a scale from 0 to 10. Most women selected "0" (avoiding), "5" (in between), or 10 (trying to conceive). This heaping suggests the need for an "in between" category similar to the NSFB "okay either way" group. We therefore match the NSFB proportions by collapsing the try scale into avoiding/trying not to (0-2), in between or okay (3-7), and trying to conceive (8-10). About 18% of births that were classified as unintended could be better conceptualized as ambivalent or okay either way. Among white, but not Hispanic women, education is associated with birth intentions.

3) **Introduction**

Reliable birth control has the potential to eliminate unintended births, yet in the United States unintended births persist as a public health (Macaluso et al 2010; Mosher, Jones & Abma 2012). The Guttmacker Institution monitors progress towards the goal of eliminating unintended pregnancies and reports unintended pregnancy rates for the U.S. population (Kost et al 2015). There is considerable variation in rates by state; Finer and Zolna (2014) showed that in 2008, 51% of pregnancies in the United States were unintended and the unintended pregnancy rate was 54 per 1,000 women aged 15–44." {Kost et al 2015). Approximately half of all pregnancies are unintended, and nearly a third of all births are classified as unintended (Finer and Zolna 2014). High rates of unintended births in the US have persisted for decades and are marked by education disparities (more among lower than higher educated women) and racial/ethnic disparities (more among Black and Hispanic than non-Hispanic White women) (Chandra & Stephen 2013, Finer & Zolna 2011, Finer & Zona 2014; Sweney & Raley 2015). The implications of these disparities are substantial and long lasting. Unintended pregnancies contribute to less pre-natal care (Finer and Henshaw 2006), worse birth outcomes (Kost & Lindberg 2015), lower psychosocial wellbeing and lower parental efficacy compared to intended births (Barber & East 2009).

There is general agreement that reducing unintended births is an important and potentially

achievable goal. In addition, demographers agree that determining which births are intended or

unintended is challenging (Santelli et al 2009), and that women may not have definitive

intentions for all births. Instead, some women feel ambivalent (Miller, Barber, Gatny 2013) or

"okay either way" about pregnancy (McQuillan et al 2011). The conventional measure of birth

intentions, used in the *National Survey of Family Growth* (Mosher, Jones, and Abma, 2012) has

three categories: intended, mistimed, or unintended. The conventional measure could therefore

categorize births as unintended when they are actually "okay" or the result of ambivalence, not

an intention to avoid pregnancy. Women who are ambivalent or okay about a birth could have

different characteristics than women who truly did not intend a birth. Conflating "okay" and

"ambivalent" births with unintended, therefore, inhibits efforts to identify how to reduce

unintended births. In addition, because Black and Hispanic women are less likely to say that they

were "trying" to get pregnant than white women. Therefore what appears to be a health disparity

could be measurement error.

The general Cognitive-Social Theory, of fertility intentions emphasizes the importance of

meanings (i.e. cognitive schemas) as well as social structures and contexts for understanding phenomenon such as unintended birth rates (Bachrach & Morgan 2013). Births are the result of several actions, therefore Cognitive-Social Theory implies the importance of understanding additional concepts, such as the meanings of contraception, sex, relationships, and pregnancies. The Cognitive-Social Theory combines the theory of reasoned action, life course theory, and the concept cognitive schemas to provide a more comprehensive model of fertility intentions than any theory alone. The reason this works is clear (if not obvious): a behavior such as not using birth control can have multiple meanings; for example that someone is trying to get pregnant or, conversely, that someone is ambivalent or okay either way about getting pregnant. For young women, anything less than a definite desire to avoid pregnancy can lead to a birth that is likely to be considered unintended (Hayford & Guzzo 2013; Miller, & Gatny 2013). As such, measures of behaviors alone or measures that have incomplete categories provide limited information about potential health consequences of reproductive experiences (McQuillan et. al. 2011; Santelli et. al. 2009). Further, to understand the race/ethnicity and educational disparities in unintended births, we need data that contains sufficient information to examine education, race/ethnicity, and measures of degree of reproductive "planfulness".

In the U.S., fundamental social structural inequality by race/ethnicity and education contributes to broader health inequalities (Glass & McAtee 2006; Lutfey & Freese 2005) and to differences in how much women can exercise control over their reproductive health (Bell 2014; Colen 1986; King & Meyer 1997; Solinger 2005). Additionally, the act of planning a pregnancy can have different meanings for subgroups created by social locations such as race/ethnicity and education (Ridgeway and Kricheli-Katz 2013). Yet few datasets have the numbers of cases and relevant variables to simultaneously analyse the intersecting effects of race/ethnicity and education on birth

intentions/planfulness. Qualitative research with diverse samples of women suggests non-additive effects from race/ethnicity and education on reproductive outcomes (e.g. Bell 2014; Wilson 2014). Population studies of other health outcomes also demonstrate the value of an intersectional approach (e.g. Warner and Brown 2011). An increasing emphasis on stratified reproduction (e.g. Shreffler et al 2015) and considerable prior research on unintended births (e.g. Finer & Henshaw 2006; Guzman et al. 2010) or unmet need for fertility services (e.g. Greil et al. 2011b) have demonstrated associations with race/ethnicity or education (e.g. Kost & Lindberg 2015; Smock & Greenland 2010), but we found no studies that simultaneously analyze how subgroups created by the intersection of race/ethnicity and education are associated with birth intentions.

We explore if the proportion of births that are categorized as mistimed or unwanted could be better categorized as in between unwanted and intended. We also estimate associations between birth intentions and education and ethnicity. A measure of birth intentions that adds a midpoint between trying to conceive and trying not to conceive could be more informative than a measure that assumes that births are intended, mistimed, or unwanted.

Background

The standard source of information about unintended births in the United States is the National Survey of Family Growth (NSFG). The NSFG is a large, in-person survey of men and women that has been conducted for decades. For this study we use the sample of all births to women interviewed 2002. The NSFG measures retrospective birth intendedness using a series of questions that lead characterize births as intended, mistimed, or unwanted. The National Survey of Fertility Barriers (NSFB) was collected by telephone between 2004 and 2006. The NSFB included women at greatest risk for infertility (ages 25-45) and over-samples women from high

Black and Hispanic census tracts plus women who had or were at risk of fertility barriers. The NSFB used several fertility intentions questions from the NSFG, plus additional questions and responses that emerged from in-depth interviews. The NSFB retrospective measure of birth intendedness provides a way to measure women who were ambivalent or "okay" about births. The education by ethnicity interactions could create some very small cell sizes, thereby making it difficult to generate reliable estimates for interaction terms. Because the NSFG and NSFB alone each have strengths and weaknesses for better understanding the educational gradient in birth intentions, we use both of them.

The NSFG included a measure of "trying" to conceive with response categories ranging from "avoiding pregnancy" indicated by a 0 to "trying to get pregnant" indicated by 10. Survey participants were asked to indicate the degree that they were trying to conceive for each pregnancy in the last three years. Most participants selected "0", "5", or "10", indicating that there were three general responses (avoiding, in between avoiding and trying, and trying) and that the full range of the scale might not be useful because women do not have nuanced enough attitudes towards pregnancy for the rest of the scale. One challenge with this measure is determining what the middle value means. Does a scale around 5 mean that women were unsure if they were avoiding or trying? Or does it mean that they were undecided or okay about pregnancy or not? In surveys in which anything less than "trying" is considered "unintended", women with a score in the middle range could appear to have a problem pregnancy, when really the women are okay about pregnancy.

The team that developed the NSFB conducted in-depth interviews with women who met criteria for infertility but did not seek medical help to conceive. These interviews revealed that some of the women did not seek medical help even though they had had several months of

unprotected heterosexual intercourse without conception because they were not trying to conceive, but they were also not trying to avoid conception, they were "okay either way" (Greil and McQuillan 2010, McQuillan et al 2011). The team therefore included the category "Okay either way" to the questions about the women's current attitude towards pregnancy (i.e. currently, are you trying to, trying not to, or okay either way about getting pregnant?) as well as retrospective measures of intentions for all current and past pregnancies. A substantial percentage of women were okay either way (24%). We therefore suspect that at least some of the women in the NSFG who have scores near 5 are probably also "okay either way".   The NSFG and NSFB samples are somewhat different. The NSFG begins when women are younger and asks only about births in the last three years. The NSFB asks women about all of their pregnancies and covers a narrower ae range. We selected all of the NSFB births, not just those in the last three years, for several reasons. First, we wanted a larger sample size to test the interaction effects. In addition we did not restrict to births in the 3 years is because the NSFB sample is women aged 25 and older. Restricting to the sample to women who gave birth within 3 years of the survey would mean the NSFB sample would include only women whose births occurred over the age of 22. That approach would make it difficult to tell if differences in proportion of births intended/vs unintended reflected age and or measurement. We could control for age by limiting the NSFG sample to match age for the NSFB sample (like I say below), but then we are losing an important age demographic for unintended pregnancies and births- those occurring among women under 22 years old.

Measuring Birth Intendedness The conventional way to measure birth intentions using the National Survey of Family Growth (NSFG) involves combining responses from questions about stopping birth control or not before conception, and if the birth was sooner than desired. From these questions, births are categorized as intended, mistimed, or unwanted. Qualitative research (e.g. Barrett, Smith, and Wellings 2004) and survey data (McQuillan et al. 2011) suggests that

many women do not have well-formed intentions or were "okay either way" about a birth. The NSFG 2002 included an additional question that has the potential to capture women who did not fully intend to or not to conceive a pregnancy and have a resulting birth. The measure asks women to select a number from 0 to 10 that captures how much they were trying to get pregnant for a specific birth. The middle of the "try scale" could indicate ambivalence, could indicate uncertainty, or could indicate feeling okay either way about a pregnancy. To determine if the try scale adds useful information beyond the conventional measure of birth intentions, we use information from the National Survey of Fertility Barriers (NSFB). The NSFG has the "Try scale" and the NSFB has a measure that asks, for each pregnancy, if women were trying to get pregnant, trying not to get pregnant, or "okay either way". Because both datasets are nationally representative and were collected close in time, we collapse responses in the NSFG scale measure using various cut points until we create categories with distributions similar to the NSFB categorical measure (collapsing the 11 point NSFG try scale to match the three category NSFB birth intentions measure).

The NSFG is the gold standard dataset for fertility research in the U.S., with a high response rate from in-home data collection, large samples, over-samples of minority participants, detailed contraceptive histories, and several cohorts of data. The NSFB was designed to complement the NSFG by adding, for example, psychosocial measures. The NSFB oversampled women at risk for infertility, women who met criteria for infertility, and women in high minority census tracks. Consistent with most telephone surveys, the NSFB has a lower response rate (53%) than the in-home NSFG (71%). Comparisons of the NSFB, NSFG, and Current Population Surveys (CPS), shows that the NSFB underrepresents lower educated women (see McQuillan et. al. 2012 for a summary). Weights based upon the CPS provide a way to make both the NSFG and NSFB

representative of their target populations.

<Table 1 about here>

Table 1 provides means or proportions and ranges for the variables in the analyses. We provide the proportion of births by the conventional NSFG birth intentions measures to provide a comparison starting point. Most births were characterized as wanted (65%). Fewer births were mistimed (21%) or unwanted (14%). As described above, there are several complications with the conventional birth intentions measure that lead the NSFG research team to add additional scales to help characterize births. The "try scale" measures the degree to which women were trying to conceive for a particular birth on a scale from 0 "trying not to get pregnant" to 10 "trying to get pregnant". The mean value for this scale is 5.88, or slightly more on the "trying" than the "trying not to" attitude towards pregnancy. As we describe in more detail below, the response pattern for the try scale suggests heaping on the anchor values (0 and 10) plus the midpoint of the scale (5). We collapsed the scale into categories that approximate the three values in the NSFB survey (trying to = 8-10, okay either way = 3-7 – but we cannot be sure that those in the middle of the try scale consider themselves okay both way, and trying not to = 0 – 2). Both surveys had complex sampling designs, therefore the weighted descriptive statistics are more appropriate to interpret for summarizing the samples, particularly because the two samples cover different age ranges and different distances into the past for births (NSFG only asked about "trying" for births in the last three years). Even with some differences, using the collapsed categories the proportions with "high" trying scores are similar (NSFG = .41 and NSFB = .45), "mid" trying or okay either way (NSFG = .35, NSFB = .34), and "low" trying scores (NSFG = .23, NSFB = .21). The distribution of births by birth order are also similar, with about 40% describing a first birth, about 33% a second birth, and in the 25% range for the third or higher

birth. The average age at the birth is higher for the NSFG (M=27) than the NSFB (M = 25) samples. Births were further in the past for the NSFB (M=1994) than the NSFG (M=2000). The distribution of births by race/ethnicity is similar, with about 60% white, 14% Black, 20% Hispanic, and 6% other. The NSFB is more educated, with fewer births to women with less than a High school degree, but both having about 50% of births to women with a H.S. diploma or less. The NSFB sample is currently older on average (M=36) than the NSFB (M=29). The NSFB has about 5% more Protestant and 5% fewer "no religion" mothers than the NSFG.

Overall the samples are quite similar, even though one was conducted in person and the other on the phone, and one included younger women and the other was restricted to women 25-45.

Evaluation of the comparability of data across the two surveys.

Most researchers use an NSFG project constructed variable of birth intendedness that is created from a series of questions that result in the following categories: intended, mistimed, and unwanted (Kost & Lindberg 2015). Because the NSFB does not have a timing category and the NSFG does not have an "okay either way" category, it is challenging to simply harmonize the standard measures. The additional "Trying" question in the NSFG provides a way to harmonize the measures. We focus on the NSFG 11-point scale about "avoiding pregnancy" to "trying to get pregnant." In preliminary analyses of NSFG 2002 sample women's responses to this 11 point scale, we found substantial heaping of responses at 0 (avoiding), 5 (midway between not trying and trying), and 10 (definitely trying). In itself, this raises concern about the appropriateness of the NSFG's use of an 11-point scale. We also found, however, as Table 2 shows, that we were able to derive from these scales a three-category NSFG variable of pregnancy intentions that lined up empirically with the NSFB's 3-category response: specifically, when we coded 0,1, or 2 as "avoiding", 3 to 7 as "ok either way", and 8,9, or 10 as "trying." It is important that there are

similar weighted percentages, and also that the scales can be treated as equivalent in their

relationship to predictor variables in a pooled analysis (Rendall et al 2013).

<Table 2 about here >

Table 2 provides the distribution of births to the categories in the full try scale (0 to 10) by

the collapsed try scale categories and the conventional measure of intentions. Most of the cases

within each group are on the extremes (0 or 10) or the midpoint (5), yet some women did make

more fine distinctions about how much they were trying to conceive the focal birth. The pattern

is somewhat similar for the three conventional measures of intentions. Most of those who said

that they intended to conceive a child also said that they were trying to conceive (60% if we use

the top three categories). Most of those who said that the birth was mistimed were in the low end

of the try scale (42% were in the 0-2 values) or the middle of the scale (51%), indicating that the

"mistimed" category is challenging to interpret. Most of the births categorized as unwanted were

also evaluated as occurring when a woman was trying not to conceive (65% had values 0-2).

There is clearly some overlap between the conventional measure and the try scale, but there are

also births in almost every cell, suggesting that the try scale provides unique information

compared to the birth intentions measure.

<Table 3 about here >

The 3 category try scale measure has the potential to better reflect the intentions of women

who neither try to conceive or try to avoid conception, but who are in between. The "in between"

category could be similar to the women in the NSFB who were not trying to or trying not to

conceive, but instead who were "okay either way" (22% of white, 27% of Hispanic, 25% of

Black, 32% of Asian women said that they were "okay either way" about getting pregnant

(McQuillan et. al. 2011)). Does adding the "in between" category change the percentage of

"unintended" pregnancies in the NSFG? Table 3 compares the weighted frequencies for the collapsed 3 category try scale with the standard NSFG measure. We found that of the 440 births considered "mistimed", 51% are in between trying not to or trying to conceive using the collapsed "try scale", and of the 299 births considered "unwanted", 30% are in between trying not to and trying to conceive using the collapsed "try scale". In other words, of the 739 births in the NSFG that were unintended, 43% may have been "okay", because these women did not have definite intentions on the "try" scale. Explicitly identifying and modeling women who are actively "avoiding" vs. "okay either way" provides a way to better identify unintended births that are likely to lead to worse health outcomes compared to births that appear unintended based upon behaviors, but appear "okay" based upon degree of trying to conceive.

Can we harmonize birth intentions for pooled NSFG and NSFB analyses?

There are two formal statistical methods for evaluating the suitability of two surveys for pooled analysis. The first is the propensity-score analysis approach of Schenker et al (2010). Among the disadvantages of propensity scores, as noted by the authors, is a tendency to produce attenuated coefficients. The second method uses fit statistics, and is the one we will use. Weden et al. (2012) used the fit statistics approach for pooled-survey analysis based on common variables between two surveys; Rendall et al. (2013a; 2013b) and Baker et al (2015) used the fit statistics approach to assess pooled cross-survey multiple imputation analyses. The BIC and AIC model fit statistics test if there is any improvement in model fit through inclusion of a variable indicating the source of the data (in our case, NSFG versus NSFB). We first assess whether improvement in model fit occurred when adding a survey dummy only, and second when adding the set of full interactions of survey with predictor variables. Smaller AIC or BIC indicate better fit of the model to the data. BIC includes a penalty for larger degrees of freedom, and has been

the favored criterion in sociology (Weakliem 2004). The significance of the difference in AIC or

BIC between models is tested using a chi-square distribution for the difference in the degrees of

freedom.

Formally, assume that model 1a has the predictor variables, model 1b adds an indicator for

the survey (to test if there is a difference in the log odds of the outcome between surveys), and

model 1c adds interactions for all of the survey*predictor variables to assess if the associations

are survey specific. We use S_2 as an indicator variable for observations from Survey 2 ($S_2 = 1$)

versus Survey 1 ($S_2 = 0$), and compare the model fit (indicated by AIC and BIC) for model 1b

compared to model 1a. In this case, we designate the NSFB as Survey 2. The three models that

we compared are:

$$LOGIT[\Pr\{Y|X_1\}] = \beta_0 + \beta_1 X_1 \tag{1a}$$

$$LOGIT[\Pr\{Y|X_1, S_2\}] = \beta_0 + \beta_1 X_1 + \beta_2 S_2 \tag{1b}$$

$$LOGIT[\Pr\{Y|X_1, S_2\}] = \beta_0 + \beta_1 X_1 + \beta_2 S_2 + \beta_3 X_1 S_2 \tag{1c}$$

<Table 4 about here >

where the LOGIT function multinomial for the birth intendedness outcome (High, Middle, Low

(NSFG) or Trying, Okay, Trying not to (NSFB)). If Model (1b) has a smaller model-fit statistic

than Model (1a), then the "intercept-shift" variable for Survey 2 improves upon the model

without it and the variable for S_2 (with its coefficient parameter β_2) should be added to the

analysis model (1). If Model (1c) has a smaller model-fit statistic than Model (1b), then we

would conclude that the observations from the surveys are not, after all, realizations of a

common generating mechanism. In Table 4 below, we show the model fit statistics for

preliminary pooled analysis of the NSFB 2004-2006 and NSFG 2002 using a model with

variables in common between the two surveys. These variables, in the vector X_1, are mother's age at child's birth, age at interview, race/ethnicity, education, birth order, and religion.

By two of the three criteria, the **past birth intendedness** measure is comparable between the NSFG (with its 11-point scale transformed into a 3-category variable) and NSFB. Even with large samples of births (2,085 in the NSFG and 6,997 in the NSFB), the distributions on the 3-category outcome variable are not statistically different at p<.05, and are substantively very similar. The BIC statistic is lowest for the model with no survey indicator or interaction of survey with the covariates, and is much higher in the latter case. The AIC, however, has the lowest value for the model that includes both the survey indicator and the set of interactions of survey with the covariates. The very large **increase** in the BIC statistic, however, with the set of interactions of survey with the covariates, implies a much worse model fit. Therefore, it would be a very conservative decision to forego use of the pooled-survey model on the basis of these three sets of statistics. Overall, these preliminary analyses indicate that pooled-survey analyses with the NSFG and NSFB is appropriate.

Trying to conceive versus the middle of the try scale or okay either way: ethnicity and education associations.

Table 5 summarizes the models of birth intendedness by ethnicity, education, and education by ethnicity for the NSFG, the NSFB, and the pooled data. Most of the coefficients in the NSFG are significant but not in the NSFB. This is somewhat surprising because the NSFB has three times more births than the NSFG. Yet the NSFB sample goes back further than the NSFG, which only asked about birth intendedness for births in the last three years. All of the coefficients are in the same direction in both samples. For all but one variable, the magnitude of the association is larger in the NSFG compared to the NSFB. We interpret the harmonized and pooled data

because the coefficients are a weighted average of the two surveys and therefore should minimize possible errors from either survey alone.

Ethnicity by Education interactions

We conducted preliminary analyses to explore the benefits of pooling estimates of the intersection of race/ethnicity and education in birth intendedness. We use the harmonized three category birth intendedness measure constructed from the NSFG try scale and NSFB birth intentions measure adjusting for clustering of births among respondents. The results reveal striking interaction patterns. Compared to non-Hispanic White women, education matters much less for the probability that a given birth was either unintended (trying to avoid) or "ok either way" for Hispanic women. We show this result in the multinomial model contrasting being "okay either way" compared to trying to get pregnant (Table 5). For white, but not Hispanic women, more education is associated with lower odds of being "okay either way" rather than trying to get pregnant. Therefore, including the "middle/okay either way" group is important for understanding birth intendedness and race/ethnicity by education differences between groups.

Discussion/Conclusion

Preliminary analysis indicate that it is empirically justified to harmonize measure of birth intendedness in the NSFG and NSFB, that collapsing the NSFG "Try scale" into a three category measure provides useful information about women who are not planful (trying to or trying not to) about pregnancies. Because the NSFB birth intentions measure includes the "okay either way" category that emerged from in depth interviews with women, there is some face validity to a measure that includes a meaningful alternative to trying to or trying not to conceive – those who are in between. Yet the term "trying" has issues. Some women may want to conceive or hope to conceive but to not like to describe themselves as "trying" (see for example Greil and

McQuillan 2010). The collapsed try scale distribution is quite similar to the NSFB categories, suggesting that the cut off points for collapsing the scale reflect the NSFB categories, and that harmonizing the datasets for combined analyses is justified.

Other research using the NSFB indicates that Hispanic women have different interpretations and/or experiences of fertility than white women. For example, Shreffler et al (2016) found that fertility intentions had a stronger association with subsequent births for White women and importance of parenthood had a strong association with subsequent births for Hispanic women.

Advances in reproductive technology provide the means for women and couples to have greater control over their fertility. More women can – and are – delaying or forgoing having children. Yet similar percentages of women are having unintended births in the 2000s as the 1980s. Unintended births are generally equated with unwanted births, but several studies suggest that unintended could also reflect a less planful (not trying and not avoiding, but "okay", ambivalent, or in-between) approach to pregnancy. For public health efforts aimed at reducing the negative consequences of unwanted births to succeed, it is necessary to distinguish unintended births that were unwanted from unintended births that reflect a non-planful or non-intentional approach to pregnancy. The very important social and biomedical changes that have occurred in recent decades have provided unprecedented possibilities for women and couples to achieve fertility goals if they want to. Because it is possible to plan pregnancies, however, does not mean that all women and couples will want to or will think it is right to do so. For example, practicing Catholics may value accepting pregnancies that come rather than trying to or not to conceive. Others who have few economic resources or who have experienced little mastery in their lives may not feel empowered to be intentional about pregnancy and birth. Some women are uncomfortable with the idea of "trying" to get pregnant because it seems too "white" or

"middle class" an approach to pregnancy (Greil and McQuillan 2010).

That higher education is associated with more of a "trying to" than an "in between/okay" approach to pregnancy for White but not for Hispanic women suggests that attitudes and approaches to pregnancy vary by social location. This finding is similar to Lareau's (2005) description of concerted cultivation and natural growth approaches to raising children. Middle class parents saw parenting as involving concerted cultivation to develop their children into independent beings who have a mastery approach to their lives. Working class parents saw parenting as allowing their children to grow with little direct guidance towards developing a certain kind of person (and fewer resources to do so even if they wanted to). Lareau describes how the different parenting styles each have merit, but also how they contribute to reproducing social inequality. Conceptualizing education as an indicator of social class, we see parallels between approaches to parenting and approaches to pregnancy/birth by social class, but only for white women. For Hispanic women, changes in education are not associated with changes in birth intendedness.

Harmonizing the NSFG "try scale" and the NSFB "birth intendedness" categories provided valuable new insights from existing variables. The NSFG try scale is one of three variables added to the NSFG to address concerns with the limitations of the conventional measure of birth intentions (Santelli et al 2009; Mosher et al. 2012). There are also birth wantedness and happiness scales, but because the try scale used similar language to the NSFB item, we focus on the try scale. The full try scale has the potential for a broader range of categories for characterizing the degree of trying for pregnancy, but most responses heaped on the extremes or in the center. The pattern of responses was similar to the responses to the question in the NSFB that asked women, for each birth, if they were trying to, trying not to, or okay either way about a

birth. The "okay either way" language came from cognitive interviews done with women and couples who had had a period of at least 6 months in which they had had unprotected intercourse without conception. When asked if they were trying to get pregnant, many said "no". Subsequent discussions revealed that they were also not trying to not get pregnant, they were just "okay either way". We cannot know for sure if they women who picked values in the middle of the try scale on the NSFG are also "okay either way', but it is likely that many are. It is also possible that some are not sure if they are okay either way, they may just not have a developed intention or might just not be intentional about pregnancy, but instead are passive or accept what comes. Even though we cannot know for sure what women are really indicating when they pick a value in the middle of the scale, we see value in not just using the scale as a continuous measure. Instead, as the response patterns for the try scale and the cognitive interviews for the creation of the NSFB scale suggest, three categories (1. trying to, 2. trying not to/avoiding, and 3. okay either way/in between) providing meaningful categories that also seem to capture most women's experiences.

In addition, the three category past birth intendedness measure facilitate harmonizing the NSFG and NSFB by making a "close enough' birth intendedness dependent variable that allows for pooled statistical analysis. The resulting data set with 9,082 births is large enough to support education by ethnicity intersectional analysis. The analysis of the intersection between education and ethnicity revealed that education does not have the same strong association with past birth intendedness for Hispanic as it does for White women.

Public health efforts to support healthy mothers and children have focused in part on unintended/unwanted births because they have negative consequences for mothers and children and are seen as preventable through contraception (England, 2016). Yet rates of

unintended/unwanted births have remained stubbornly high in the United States. We suggest that to some degree the rates are inflated because they contain some births that women were not trying to conceive, but nevertheless welcome. It could be, however, that women who are "in-between/okay" about a birth are more like those who see their birth as unwanted/unintended than those who wanted/intended their birth. Determining where to put scarce public health resources will benefit from more clear conceptualization and measurement of core concepts. We have taken steps in that direction by exploiting strengths of two large national data sets, harmonizing similar variables, and conducting pooled analyses. We also benefited from the cognitive social framework and prior research that emphasizes the importance of paying attention to the meanings of terms such as "trying" and "intending".

We recognize limitations in this study. Most important is the challenge of accurate recall of birth intentions at the time of conception and reporting those intentions accurately in a survey, sometimes many years later. In addition, how the mother and child are doing plus the relationship with the father in the present could alter memories of past intentions. Some of the Hispanic women took the survey in Spanish and some in English. It is possible that heterogeneity among the Hispanic women is masking effects, or that the patterns reflect one group more than the other. The sample sizes for the language subgroups, however, is quite small, limiting the ability to analyze the groups separately. Future research should also add more covariates that exist in both surveys, and could exploit cross-survey multiple imputation to incorporate variables that exist in only one of the surveys (e.g. the importance of parenthood scale in the NSFB is a potential explanatory variable in the model). It is also possible that the middle of the try scale in the NSFG is not a sufficient match to the "okay either way" category in the NSFB. We suspect that there is considerable alignment, but lack a developed methodology to determine if we are

correct. Future research using both the 11 point try scale and the three category NSFB item with 'okay either way" could shed light on this question.

Even with these limitations, we make important contributions to research on birth intentions. Similar to others who have highlighted women who are ambivalent about pregnancy and birth, we find that many women are not trying to or trying not to conceive, but instead either do not have intentions, have intentions "in between", or are "okay either way" about pregnancy. Identifying the "in-between" group reveals that the proportion of "unintended/unwanted" births may be lower by up to 18%, and important reduction. Future research is necessary to determine if the "in-between/okay" group is better off in terms of child outcomes and maternal wellbeing and life satisfaction. Finally, our work shows how two valuable surveys can be used for pooled analyses to support simultaneous analysis of ethnicity and education, thus better modeling the effect of social location on birth intendedness.

References

Bachrach, Christine A. and S. Philip Morgan. 2013. "A Cognitive–Social Model of Fertility Intentions." *Population and Development Review* 39(3):459-85.

Baker, Elizabeth H. Michael S. Rendall, and Margaret M. Weden. 2015. Epidemiological paradox or immigrant vulnerability? Obesity among young children of immigrants *Demography* 52(4):1295-1320.

Barber, Jennifer S., and East, P.L. 2009. "Home and parenting resources available to siblings depending on their birth intention status." *Child Development*. 80:921-939.

Bell, Ann V. 2014. Misconception: Social Class and Infertility in America: Rutgers University Press.

Bird, Chloe E. and Patricia P. Rieker. *2008. Gender and Health: The Effects of Constrained Choices and Social Policies.* Cambridge University Press: London and New York.

Chandra, Anjani, Casey E. Copen, and Elizabeth Hervey Stephen. 2013 "Infertility and Impaired Fecundity in the United States, 1982–2010: Data from the National Survey of Family Growth." *National Health Statistics Reports* (67).

England, Paula. 2016. "Sometimes the Social Becomes Personal: Gender, Class, and Sexualities." *American Sociological Review*. Forthcoming, February 2016. Presented as presidential address to ASA in August 2015.

Finer, Lawrence B. and Stanley K. Henshaw. 2006. "Disparities in Rates of Unintended Pregnancy in the United States, 1994 and 2001." *Perspectives on Sexual and Reproductive Health* 38(2):90-96.

Finer, Lawrence B. and Mia R. Zolna. 2011. "Unintended Pregnancy in the United States: Incidence and Disparities, 2006." *Contraception* 84(5):478-85. PMCID: PMC3338192

Finer, Lawrence B. and Mia R. Zolna. 2014. Shifts in Intended and Unintended Pregnancies in the United States, 2001–2008. *American Journal of Public Health* 104(S1):S43-S48.

Glass, Thomas A. and Matthew J. McAtee. 2006. "Behavioral Science at the Crossroads in Public Health: Extending Horizons, Envisioning the Future.*" Social Science and Medicine* 62(7):1650-71.

Greil, Arthur L. and Julia McQuillan. 2010. "Trying Times": Medicalization, Intent, and Ambiguity in the Definition of Infertility." *Medical Anthropology Quarterly*. 24:137–156.

Greil, Arthur L., Julia McQuillan, Karina M. Shreffler, Katherine M. Johnson, and Kathleen S. Slauson-Blevins. 2011b. "Race-Ethnicity and Medical Services for Infertility Stratified Reproduction in a Population-Based Sample of Us Women." *Journal of Health and Social Behavior* 52(4):493-509. doi: 10.1177/0022146511418236. PMID: 22031500

Guzman, L., Wildsmith, E., Manlove, J., and Franzetta, K. 2010. "Unintended births: Patterns by race and ethnicity and relationship Type." *Perspectives on Sexual and Reproductive Health* 42: 176-186.

Hayford, Sarah. R. and Karen. B. Guzzo. 2013. "Race-ethnic differences in motivation to avoid unintended nonmarital pregnancy." *Perspectives on Sexual and Reproductive Health* 45: 41-51.

King, Leslie and Madonna Harrington Meyer. 1997. "The Politics of Reproductive Benefits: U.S. Insurance Coverage of Contraception and Infertility Treatments." *Gender and Society* 11:8–30.

Kost, Kathryn and Laura Lindberg. 2015. "Pregnancy Intentions, Maternal Behaviors, and Infant Health: Investigating Relationships with New Measures and Propensity Score Analysis." *Demography*. 52(1)83-111.

Lareau, Annette. 2005. *Unequal Childhoods.* University of California Press.

Luftey, Karen and Jeremy Freese. 2005. "Toward Some Fundamentals of Fundamental Causality: Socioeconomic Status and Health in the Routine Clinic Visit for Diabetes." *American Journal of Sociology*. 110:5:1325-72.

Macaluso, Maurizio, Tracie J. Wright-Schnapp, Anjani Chandra, Robert Johnson, Catherine L. Satterwhite, Amy Pulver, Stuart M. Berman, Richard Y. Wang, Sherry L. Farr, and Lori A Pollack. 2010. "A Public Health Focus on Infertility Prevention, Detection, and Management." *Fertility and Sterility* 93(1):16. e1-16. e10.

McQuillan, Julia, Arthur L. Greil, and Karina M. Shreffler. 2011. "Pregnancy Intentions among Women Who Do Not Try: Focusing on Women Who Are Okay Either Way." *Maternal and Child Health Journal* 15(2):178-87. PMCID: PMC3010258

Miller, Warren, Jennifer S. Barber, and Heather Gatny. 2013. "Ambivalent Fertility Desires: Effects on Pregnancy Risk in Young Women." *Population Studies* 67:25-38.

Mosher, William D., Jo Jones, and Joyce C. Abma. 2012. *Intended and Unintended Births in the United States: 1982-2010*: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics.

Rendall, Michael S., Bonnie Ghosh-Dastidar, Margaret M. Weden, Elizabeth H. Baker, and Zafar Nazarov. 2013. Multiple imputation for combined-survey estimation with incomplete regressors in one but not both surveys. *Sociological Methods and Research* 42(4) 483-530.

Ridgeway, Cecilia L., and Tamar Kricheli-Katz. 2013. Intersecting Cultural Beliefs in Social Relations Gender, Race, and Class Binds and Freedoms. *Gender & Society* 27(3):294-318.

Santelli, John S., Laura Duberstein Lindberg, Mark G. Orr, Lawrence B. Finer, and Ilene Speizer. 2009. "Toward a Multidimensional Measure of Pregnancy Intentions: Evidence from the United States." *Studies in Family Planning* 40(2):87-100.

Schenker, N., T.E. Raghunathan, and I. Bondarenko. 2010. Improving on analysis of self-reported data in a large-scale health survey by using information from an examination-based survey Statistics in Medicine 29:553-545.

Shreffler, Karina. M., Julia McQuillan, Arthur L. Greil, & David R. Johnson. 2015. Surgical sterilization, regret, and race: Contemporary patterns. *Social Science Research*. 50:31-45. Doi:10.1016/j.ssresearch.2014.10.010 PMCID: PMC4297312

Shreffler, Karina, Stacy Tiemeyer, Julia McQuillan, Tiffany Spierling, and Arthur Greil. 2016. Predicting Pregnancy and Birth: Do Fertility Intentions and Importance of Motherhood Matter Differently for U.S. Women who Identify as White, Black, or Hispanic? Paper presented at Population Association of American Annual Meeting, Washington D.C.

Smock, Pamela. J., and Fiona Greenland. 2010. Diversity in Pathways to Parenthood: Patterns, Implications, and Emerging Research Directions. *Journal of Marriage and Family* 72(3):576-593.

Solinger, Rickie. 2005. *Pregnancy and Power: A Short History of Reproductive Politics in America*: NYU Press.

Sweeney, Megan M., & R. Kelly Raley. 2014. Race, Ethnicity, and the Changing Context of Childbearing in the United States. *Annual Review of Sociology* 40:539-558.

Warner, David F. and Tyson H. Brown. 2011."Understanding How Race/Ethnicity and Gender Define Age-Trajectories of Disability: An Intersectionality Approach" *Social Science & Medicine,* 72: 1236-1248.

Weakliem, W. L. 2004. ''Introduction to Special Issue on Model Selection.'' *Sociological Methods and Research* 33:167-87.

Weden, Margaret M., Peter Brownell, and Michael S. Rendall. 2012. Prenatal, perinatal, early-life, and sociodemographic factors underlying racial differences in the likelihood of high body mass index in early childhood. *American Journal of Public Health* 102(11):2057-2067.

Wilson, Kristin J. 2014. *Not Trying: Infertility, Childlessness, and Ambivalence*. Nashville, TN: Vanderbilt University Press.

Table 1. Descriptive Statistics by selected characteristics and Survey.

	NSFG (last 3yrs)		NSFB (all births)	
	Unweight. M/P	Weight. M/P	Unweihgt. M/P	Weight. M/P
Birth Intentions (Conventional Categories)				
Want	.62	.65		
Mistimed	.22	.21		
Unwanted	.17	.14		
Try scale	5.58	5.88		
High (Values 8-10)	.38	.41	.45	.45
Mid (Values 3-7)	.36	.35	.34	.34
Low (Values 0-3)	.26	.23	.22	.21
Birth Order				
1st Birth	.40	.40	.45	.43
2nd Birth	.33	.33	.33	.34
3rd or Higher Birth	.27	.27	.22	.24
Age at birth (14-44_	26.63	27.12	25.44	24.85
Child Birth Year (1975-2006)	2000	2000	1995	1994
Race/Ethnicity				
White	.49	.60	.55	.58
Black	.20	.14	.20	.16
Hispanic	.26	.20	.21	.22
Other	.05	.06	.04	.04
Education				
Less than HS	.22	.20	.08	.16
High School Diploma	.32	.30	.26	.33
Some College	.25	.25	.33	.29
BA Degree	.17	.19	.23	.17
MA Degree+	.05	.06	.10	.05
Age at interview (16-44)	28.47	28.97	36.17	36.19
Religion				
Protestant	.50	.52	.59	.57
Catholic	.32	.30	.27	.28
Other	.05	.06	.07	.07
None	.13	.13	.07	.08
n births)	2,085	2,085	6,997	6,997

Note: NSFG=NSFB :"High" on the try scale = "Trying
to"; "Mid" on the try scale = "Okay"; "Low" on the try
scale= "Trying not to"
Note. Unweight. = Unweighted; Weight. = Weighted.

Note. M = Mean; P = Proportion.

Table 2. NSFG Weighted Frequencies of Try scale by Recoded 3 Category Try scale & Conventional NSFG Measure

Tryscale	N	NSFG Birth Specific Try scale in 3 Categories			NSFG Birth Intentions Categories		
		High %	Mid %	Low %	Intended %	Mistimed %	Unwanted %
0	329	0	0	68%	5%	27%	48%
1	64	0	0	13%	1%	5%	7%
2	94	0	0	19%	2%	10%	10%
3	87	0	12%	0	2%	10%	6%
4	81	0	11%	0	3%	7%	4%
5	364	0	49%	0	15%	26%	15%
6	82	0	11%	0	4%	4%	3%
7	122	0	17%	0	8%	4%	1%
8	148	17%	0	0	10%	2%	1%
9	63	7%	0	0	4%	1%	0%
10	651	76%	0	0	46%	4%	3%
Total N NSFG	2,085	862	737	487	1,346	440	299

Comparison of 3 category distribution with NSFB categories.

	High	Mid	Low
Weighted % NSFG	41%	35%	23%
Weighted % NSFB	45%	34%	21%

Note: NSFG=NSFB Categories "High" = "Trying to"; "Mid" = "Okay"; "Low" = "Trying not to"

Table 3. NSFG Weighted Percentages in the Three category collapsed Try Scale groups by the conventional NSFG Birth Intentions Measure with NSFB comparable Birth "Try" Groups.

Value on the NSFG Try Scale	NSFG	Unintended	NSFG Intended	NSFG Total	NSFB Birth Intention	NSFB Total
	Unwanted	Mistimed				
Try scale (Low)	9%	9%	5%	23%	Trying Not To	21%
Try scale (Middle)	4%	11%	20%	35%	Okay	35%
Try scale (High)	1%	2%	39%	41%	Trying To	45%
Total Births (%)	14%	21%	65%	100%		100%
Total Births (N)	299	440	1,346	2,085		6,997

Note: Low on the try scale = 0-2; Middle on the try scale = 3-7; High on the try scale = 8-10.
Births with scores indicating trying not to conceive and not wanting a birth (9%+9%=18%).
Births indicating unwanted or mistimed but may have been desired (4%+11%+1%+2%=18%).
Of the "intended" births, about 5% resulting when women were trying not to conceive,
and 20% were to women in the middle of the try scale.
Chi-Square test for the differences between the NSFG and NSFB groups indicates no significant difference in the three try groups by survey (chi-square p-value = .09).

Table 4. NSFG 2002 and NSFB wave 1 Comparison of Model fit.

Past Birth Intendedness	AIC	BIC
(a) Covariates only	18,138.8	18,444.7
(b) Covariates + survey indicator	18,089.3	18,409.4
(c) Covariates + survey + survey*covariates	18,071.5	18,669.1

Table 5. Multinomial logistic coefficients of Birth intentions Ethnicity and Education.
Contrasting the Middle/Okay Category to the reference category "Trying to get pregnant"
NSFG and NSFB separately and combined.

	NSFG	p	NSFB	p	NSFG & NSFB harmonized & pooled	p
Hispanic (ref: non-Hispanic White)	-.878	.020	-.638	.111	-.678	.031
Education (ref: < H.S. graduate)						
High School Graduate	-.873	.021	-.019	.950	-.213	.405
Some College	-1.073	.003	-.048	.871	-.273	.275
Bachelor's degree	-1.473	<.001	-.689	.024	-.853	<.001
Master's degree or more	-2.103	<.001	-.940	.003	-1.213	<.001
Hispanic * Education						
High School Graduate	.913	.055	.692	.121	.733	.042
Some College	1.123	.016	.831	.063	.883	.013
Bachelor's degree	.523	.457	1.106	.023	1.003	.013
Master's degree or more	2.393	<.001	1.495	.021	1.693	<.001
Sample size (N of Births)	2,085		6,997		9,082	

Note: Adjusted for the clustering of multiple births to individual women.
In the harmonized and stacked combined model, NSFG = NSFB: "high" = "trying to",
"mid" = "okay either way", "low" = "trying not to" having a baby.