ÖAW AUSTRIAN ACADEMY OF SCIENCES

VIENNA INSTITUTE OF DEMOGRAPHY
WORKING PAPERS

10/2018

PREFERENCES, PARTNERS, AND PARENTHOOD: LINKING EARLY FERTILITY DESIRES, UNION FORMATION TIMING, AND ACHIEVED FERTILITY

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Abstract

'Underachieving' fertility desires is more common among women with higher levels of education and those who delay the first marriage beyond the mid-twenties. However, the relationship between these patterns, in particular the degree to which marriage postponement explains lower fertility among the highly educated, is not well understood. In this paper, we use data from the National Longitudinal Survey of Youth-1979 cohort to analyze differences in parenthood and achieved parity for men and women, focusing on the role of union formation timing in achieving fertility goals over the life course. We expand on previous research by distinguishing between entry into parenthood and average parity among parents as pathways to underachieving; by considering variation in the impact of marriage timing by education and by stage of the life course; and by comparing results for men and women. We find that the most educated women who desired three or more children are less likely to become mothers both relative to less-educated counterparts who desired large families and relative to their college-educated peers desiring two children. Once they achieve motherhood, however, they do have the highest average parity. No comparable fatherhood differential by desired family size is present. Postponing marriage beyond the age of 30 is associated with decreases in parenthood and average parity. Age patterns are similar for both women and men, pointing at social rather than biological factors for the underachievement of fertility goals.

Keywords

Fertility, fertility desires, marriage, education.

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Acknowledgements

This research has been funded by the Austrian Science Fund (FWF): M 2188-G16 (Lise Meitner Programme). Additional support was provided to Hayford from the National Institutes of Health via Ohio State University's Institute for Population Research, grant P2C-HD058484 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development.

Preferences, Partners, and Parenthood: Linking Early Fertility Desires, Union Formation Timing, and Achieved Fertility

Natalie Nitsche and Sarah Hayford

1. Introduction

Aggregate level fertility rates today have settled at well below replacement in many societies. At the same time, the desire for a two-child family has remained strong (Sobotka and Beaujouan 2014). Unrealized fertility, or the underachievement of fertility aspirations, has thus become a common occurrence on the macro level (Bongaarts 2001). This population-level phenomenon can be the result of varying individual-level trajectories, with overachieving, underachieving and the achievement of fertility goals occurring simultaneously in different sub-populations, offsetting each other. Matching aggregate desired and achieved fertility rates on the macro-level, as are present in the United States, can still conceal variation in who meets fertility goals on the individual level (Hagewen and Morgan 2005, Harknett and Hartnett 2014).

Fertility desires and intentions appear to be similar across education groups, and are sometimes reported to be even higher among those with high educational attainment, both when surveyed before and after education is completed (Berrington and Pattaro 2014, Musik et al. 2009, Testa 2014, Mills et al. 2008, De Wachter and Neels 2011). As we will show below, in the US cohort born in the early 1960s, men and women who will later complete a college degree were the most likely to desire large families (three or more children) during adolescence. Yet, women with college education tend to have significantly lower completed fertility than women with less education (Sobotka et al. 2015, Kravdal and Rindfuss 2008, Nisen et al. 2013), chiefly driven by higher childlessness among the college educated (Musick et al. 2009, Wood et al. 2014). Indeed, the non-realization of fertility desires, or 'underachieving' occurs most often among college educated women, at least in the United States (Morgan and Rackin 2010, Quesnel-Vallee and Morgan 2004).

Micro-level evidence on the prevalence of and factors behind the 'failure to achieve fertility goals' (Casterline and Han 2017) from a life course perspective is rather scarce. Very few panel datasets measure both early fertility goals and completed fertility later in life, making such an analysis difficult to conduct. Also, the assumption that 'underachieving' may be a consequence of active choices related to career or opportunity costs, that is, deliberately planned postponement or forgoing of childbirth (Hewlett 2002, Musick et al. 2009, Quesnel-Vallee and Morgan 2003), may have kept investigations into underachieving at bay. Yet, the phenomenon of unrealized fertility is prevalent and can have meaningful implications for individuals' well-being (McQuillan et al. 2004, McQuillan et al. 2012, Casterline and Han 2017).

This paper seeks to understand the phenomenon of underachieving fertility desires in the United States by breaking down this process along multiple axes, and analyzing the impact of marital timing as one key mechanism into underachieving. Our first contribution lies in providing a new conceptualization of underachieving. We distinguish between un/achieved parenthood and under/achieved parity among parents and describing these processes separately by desired parity. Previous research has directly measured and modeled underachievement as a difference between desired and achieved fertility, in a 'discrepancy' measure (Morgan and Rackin 2010, Quesnel-Vallee and Morgan 2003). Yet, this approach conflates desires and outcomes – for example, as we will show in our sample, those who want three or more children have higher completed parity than those who want two children, even though they are more likely to underachieve. Moreover, the 'discrepancy' measure of underachievement stays silent on whether there are differentials by early fertility desires in achieving parenthood as such. Moreover, education gradients in fertility hinge upon differentials in childlessness. Hence, differentiating 'underachieving' into a parenthood and a parity component is helpful to grasp more fully who underachieves, and how exactly.

Second, we explore in more detail than previous literature the role of marital timing in underachieving of fertility goals and how this role may vary by educational attainment. Being in a marital union has been seen as a prerequisite to childbearing in the US, particularly among the highly educated (Hayford 2013). Yet, the college educated tend to marry at later ages than lower educated individuals, even though marital ages have moved toward convergence more recently (Goldstein and Kenney 2001, Manning and Brown, 2014). Selectivity into unions based on educational attainment, however, has been shown to be the main driver behind the parenthood-education association among European men (Trimarchi and Van Bavel 2017). Moreover, US women and men desiring three or more children during adolescence have been shown to postpone the first marriage the most, especially among the college educated (Nitsche and Hayford 2016). If highly educated women (and men) who desire larger families form a union later or less often than their lower educated counterparts or individuals desiring fewer children, this may lead to significant underachieving of highly educated individuals with higher fertility desires. Thus, the formation of a stable co-residential union may be a key- yet under-researched ingredient in understanding underachieving, and differentials therein, in greater detail. We therefore explore how precise marital timing relates to the realization of fertility goals, and whether marital timing may mediate desired-parity specific education differentials in achieving desired family size. Because the effect of marriage timing is likely to vary by educational attainment and across different stages of the life course, we propose and test specific hypotheses about variation in the impact of marriage timing as part of our analysis.

Using data from the NLSY79, we offer a two-step analytical approach. First, we examine who underachieves and to which extent, looking at proportions of childlessness and average parity of those who become parents at age 43, by desired number of children early in life and completed education. Second, we investigate the impact of marital timing for subsequent parenthood status and number of children among parents at age 43, using

stepwise modeling and mediation analysis. We move beyond previous research on these questions in several ways. Our conceptualization of marital timing is finer-grained than that of previous studies. By using a categorical indicator measuring 5-year intervals for marital timing, we can investigate whether there is a cut-off age for marriage associated with underachieving. We also examine whether the association between marital timing and underachieving varies by educational attainment, an extension to previous literature. Because the first set of analyses on underachieving are straightforward and descriptive, we limit the development of formal hypotheses to the second part of the analyses, which address marital timing as a pathway into underachieving. We furthermore describe how these processes differ for men and women. On average, men are more likely to underachieve fertility desires than women (Morgan and Rackin 2010, Quesnel-Vallee and Morgan 2004). However, the general association between education and underachieving does not hold for men. In the NLSY79 cohort studied in the above-cited analyses, men who graduated from college were not more likely to underachieve compared to lower educated men, while college-educated women underachieved by a full birth compared to their lower educated counterparts (Morgan and Rackin 2010, Quesnel-Vallee and Morgan 2004).

2. Background

2.1. 'Underachieving'

The underachievement of fertility goals has been well studied in low-fertility contexts. Many studies have focused on the realization of shorter-term fertility intentions, examining whether childbearing intentions have been realized within a few years after being expressed using panel data (for example Schoen et al. 1999, Maximova and Quesnel-Vallee 2009, Speder and Kapitany 2009, Regnier-Loilier and Vignoli 2011, Harknett and Hartnett 2014). Commonly, panels used for these studies consist of individuals of a variety of ages when questioned for their fertility intentions, hence, they represent diverse points of the fertile life span (Schoen et al. 1999, Maximova and Quesnel-Vallee 2009, Speder and Kapitany 2009, Harknett and Hartnett 2014). I individuals, however, adjust their fertility intentions over the life course, in response to life experiences. For example, women who never marry are more prone to reduce fertility expectations as they get older (Hayford 2009), whereas having positive experiences with childrearing or being partnered with someone who has higher fertility desires are associated with upward adjustments (Miller and Pasta 1995, Heiland et al 2008, Iacovou and Tavares 2011). It is therefore likely that fertility intentions have different meaning and predictive power, depending on the age and life stage of the respondent (Rackin and Bachrach 2016). This variation complicates the investigation into the factors associated with the realization, over- or underachievement of fertility aspirations.

There is considerable debate about the nature and measurements of fertility motivations (desires, intentions, expectations, preferences), yet they are among the strongest predictors of childbearing behavior. They are clearly relevant for the investigation of childbearing

trajectories and therefore meaningful and commonly examined in fertility research (Miller 1995, Schoen et al. 1999, Bacharach and Morgan 2013, Ni Bhrolchain and Beajouan 2015). Theoretically, fertility intentions represent action-directed plans, taking possible constraints into account. Fertility desires, in contrast, should reflect ideal outcomes given no major constraints (Thomson 1997, Philipov and Bernardi 2012). In practice, survey questions about fertility desires and intentions may be understood in similar ways by respondents and thus yield similar responses (Hagewen and Morgan 2005, Philipov and Bernardi 2012).

From a life course perspective, measuring desired life-time fertility at the beginning of the fertile life course and comparing it to achieved fertility at its end allows for a 'big-picture' investigation into the envisioned life trajectories of individuals and the factors and experiences associated with their fulfillment. Adjustments to desired life trajectories are common and are often informed by life events themselves. Thus, establishing the degree to which possible mismatches between early desires and later outcomes reflect 'failures' in achieving desires vs. evolving desires is complex (Iacovou and Tavares 2011, Hayford 2009, Gray et al. 2013). Still, considering the difference between desired and achieved trajectories can shed light on possible sources of constraint and recalibration.

Cohort panel data with long observation periods allow for such a 'big-picture' investigation, even though comparing fertility desires early in life to achieved fertility after age 43, when most women have ended childbearing, necessarily implies a more static view of fertility goals. The National Longitudinal Study of Youth 1979 (NLSY79, USA) and the National Child Development Study (NCDS, UK) are two panels allowing for such a research design. Individuals in the NLSY79 were surveyed for their fertility desires at ages 14-22 (first wave), in the NCDS at ages 16 and 23. Three studies have compared early fertility desires to achieved fertility based on these data (Quesnel-Vallee and Morgan 2003, Morgan and Rackin 2010, Berrington and Pattaro 2014). They report that roughly 43 percent of women and 34-36 percent of men achieve their exact desired parity both in the NLSY79 (Morgan and Rackin 2010) and in the NCDS (Berrington and Pattaro 2014). Underachieving is much more common than overachieving, in particular among men and those desiring larger families (Quesnel-Vallee and Morgan 2004, Morgan and Rackin 2010, Berrington and Pattaro 2014).

These studies have defined underachieving as the net or gross error, in other words the discrepancy, between desired life-time parity at ages 16-24 and achieved parity after age 40, using a single numerical measurement of underachievement. They do not differentiate between achieving parenthood versus childlessness, and there is no outcome measure for underachieving intended parity only for those who became parents. This definition has several implications. First, it conflates desires and outcomes, as individuals with higher parity desires need to have many children to meet their fertility desires or to overachieve, while a single birth already means overachieving for those desiring no children. Numerically speaking, underachieving is thus more likely to occur among those desiring higher parities, even though they on average will have more children. Second, relying on

the discrepancy measure means that we know little on whether underachieving comes about via the lack of parenthood altogether, via lower parity among parents, or via both and to which extent. The same is true for the factors mediating fertility desires and childbearing behavior, such as education and union histories. Third, it remains unclear whether a greater likelihood of underachieving, for example among those who never marry or the highly educated, may perhaps simply hinge upon systematically larger desired family sizes among these individuals early in life, at least partly. Fourth, little is known about desired parity-specific underachieving in the studies on the US. Berrington and Pattaro (2014) differentiate underachieving separately by desired parity in the study on the UK. They show that highly educated women desiring higher parities are more likely to underachieve than their lower educated counterparts, while highly educated women desiring two children are not more likely to overachieve. Paradoxically, the highly educated women who desired three children and had them were on the other hand more likely to have a fourth child than lower educated women. The authors speculate that higher parity desires may be a signifier for a greater family orientation overall, yet it remains unclear whether more women will become mothers in this specific sub-group (ibid.). Finally, a part of the educational differential in underachieving might be attributable to differential childlessness rates of women who did not want children. Lower educated women in the US overachieve more often via mistimed or unplanned births (Musick et al. 2009). If those who did not want children or wanted one child only are more likely to become mothers among the lower than the higher educated, this will affect education specific summary measures of underachieving, in particular if more women among those who will not complete higher educated desired to remain childless.

Studies examining the consequences of unrealized fertility on other life-outcomes, for example on well-being in old age, have primarily been concerned with the effects of childlessness (e.g. involuntary childlessness), or of the experience of parenting as such (Chou and Chi 2004, Zhang and Hayward 2005, Maximova and Quesnel-Valee 2008, for a review see Umberson et al. 2010). For instance, involuntary childlessness has been linked to depressive symptoms among unpartnered older men in the US (Zhang and Hayward 2005). Depression and loneliness are more common among the childless elderly, both men and women, in Hong-Kong (Chou and Chi 2004). For women in the US, having difficulty conceiving or carrying a child to term is associated with psychological distress only for those who are unable to have any children (McQuillan et al. 2003). These findings imply that the dichotomy of remaining childless versus becoming a parent is perceived as potentially more consequential than parity or than having one or two children less than desired (among those who become parents), at least by the research community. This further underscores the need to differentiate underachieving into a parenthood and a parity component.

2.2. Partners, Marriage, and Underachieving

Existing literature suggests three primary pathways into underachieving. First, involuntary infertility may make it impossible to become a parent or to have the desired number of children. Due to data limitations, the impact of medical infertility is rarely studied in population data, although it is often discussed as an unmeasured residual mechanism. The second is the development of competing preferences or 'competing devotions', such as aspirations for education, employment, or leisure, that lead people to change their desired family size. This reasoning implies rational-choice driven decision-making processes that weigh costs and benefits of having children versus other desired life activities and outcomes (Ajzen 2005, Blair-Loy 2009, Berrington and Pattaro 2014). The third is the repeated postponement of parenthood that eventually leads to conflict with biological and social age limits for childbearing (Billari et al. 2007). In practice, these pathways may intersect, for example if postponed parenthood due to education and labor market activities leads to changed preferences or age-related infertility. Parenthood postponement due to work-family incompatibilities may be operating more prominently among women, who need to interrupt or rearrange employment before and after giving birth, and often will be primary caregivers and take on more housework after children are born (Bianchi et al. 2012, Nitsche and Grunow 2016).

The postponement of co-residential or marital unions can be another aspect leading to 'running out of time' (Casterline and Han 2017), but it has received less empirical attention than education or labor market conflicts as a unique driver of underachievement. Although marriage is widely recognized as a major determinant of fertility in general and of achieving fertility desires in particular (e.g., O'Connell and Rogers 1982, Schoen et al. 1999), it is often conflated with other life course processes rather than analyzed as a unique predictor. Empirically, however, union formation status and trajectories have been shown to be a central predictor of underachieving, and in particular of education gradients in underachieving. Berrington and Pattaro (2014) identify union formation trajectories as the main mediator between fertility intentions and underachieving among the highly educated in the UK. In the US, never being married is one of the main predictors of underachieving among both men and women in the study using a life course perspective, next to being childless at 24 and desiring more than two children (Morgan and Rackin 2010). Childlessness at 24 may, however, be directly linked to union formation processes, in particular for the more highly educated who limit non-marital fertility. Other studies have confirmed that the lack of a partner (Mynarska et al. 2015) or increases in years without a partner during the fertile life span (Keizer et al. 2008) increase the likelihood to remain childless. Keizer et al. (2008) have even concluded that "childlessness debates require a shift in focus. Concerns about the incompatibility of work with caring tasks need to be supplemented with concerns about entering and remaining in partnerships." (p. 873). Yet, an emphasis to analytically integrate partnership and childbearing trajectories to understand fertility in general and childlessness in particular is only starting to come to the fore more formally (Trimarchi and Van Bavel 2017).

The current study contributes to this linkage both conceptually and empirically. We consider the implications of marriage delay and non-marriage for underachieving early fertility desires, through both achieved parenthood and achieved parity, and for both men and women. Because of the substantial variation in non-marital fertility rates across education levels in the United States, we consider variation by education in the role of marital timing in achieved fertility. Marital timing is consequential for men's fertility as well as for women's fertility, but the relative impact of marital timing, and possible gender and education differences in the impact of marital timing, are not yet well understood.

3. Mechanisms and Hypotheses

We propose that delaying or foregoing marriage may be a primary mechanism driving underachieving of fertility desires. This analysis does not speak to the sources of delayed marriage or non-marriage, and we cannot identify whether behaviors are responding to marriage market conditions or are the result of deliberate choices. Rather, we seek to determine the role of marriage timing as a distinct driver of fertility behavior separate from fertility timing within marriage. The relationship between marriage and childbearing varies across education level, across the life course, and by gender; understanding how marriage shapes underachieving requires attention to this variation. Below we lay out possible mechanisms connecting marriage timing and fertility and suggest specific hypotheses about variation in these mechanisms.

We focus on marriage because it is a central component in US family systems. (Supplementary analyses, described in the methods section below, analyzed the impact of any co-residential union on fertility and found similar associations.) While a partner is always a prerequisite to conception, marriage as an institutionalized form of partnership has long been a normative expectation for parenthood in the US, and especially so among the highly educated (Cherlin 2009, Thornton et al. 2007). Non-marital birth rates have increased in the United States. Now about 40% of births take place to unmarried women (Martin et al. 2018). However, this trend has been concentrated among women without a college degree; even as recently as the period 2006-13, only 4% of college-educated women age 15-44 had ever had a non-marital birth (Lamidi 2016). Delaying marriage thus often implies a delay of parenthood, particularly for highly educated women (and men). Both biological as well as social age limits to fertility may play a role in lower fertility rates after marriage delay. Recent research indicates that fertility declines among women may occur later than previously suggested (McDonald et al. 2011), not before the mid-30s. Delaying marriage and trying for a baby past the age of 30 may thus not yet be consequential to fertility, however, delaying past the age of 35 may have biologically-related implications for lower conception rates. Also, socially perceived age limits to fertility, or worries about implications for the health of the offspring when pregnancy is delayed into women's late 30s or 40s, may lead to declines in birth rates after a marriage delay (Mynarska 2010, Van Bavel and Nitsche 2013).

The impact of marriage timing on fertility is likely to vary by gender as well as by education level. Age limits for fertility have been perceived more strongly for women than men, and men marry women who are on average younger than themselves. As a result, marriage delay may impact men's fertility less strongly than women's fertility, and impacts may come at later ages. Marriage forgone or very late ages at first marriage may in turn be more predictive of childlessness among men than women, as avenues toward parenthood without a partner (adoption, assisted reproduction) are less accessible to men than to women in the United States. Associations between non-marriage and childlessness may be particularly strong for highly educated men, as childbirth out of wedlock is most rare among the most educated.

Overall, we expect later marriage to be associated with lower rates of entry into parenthood (H1), but we expect this association to be weaker and take effect at older ages for men than for women (H1a). We expect the delay of marriage to have a stronger limiting effect on the entry into parenthood among the college educated compared with the lower educated. This is because the most educated more often limit non-marital fertility (H1b).

Similarly, we hypothesize that later marriage will be linked to lower completed parity among those who become parents (H2), and that declines will affect women more than men (H2a). To the extent that differences in higher-order fertility are driven by the same social and biological age constraints as differences in first births, we may see impacts of marriage timing on parity at lower ages than impacts on parenthood. However, we expect to see relatively few education differences in the impact of marriage timing on parity (H2b). By conditioning on first birth, we effectively limit our sample to those individuals who either have a marital first birth or who do not see marriage as a prerequisite to childbearing. Thus, we do not expect the stronger impact of marriage timing on parity that we hypothesized for entry into parenthood for college-educated men and women.

Finally, selection into earlier ages at marriage or educational pathways may take place based on fertility desires. If those who desire to have children most strongly self-select into early marriage, later ages at marriage may be confounded with lower desires for childbearing, and an association between marital age and underachieving may thus be spurious, at least partly. The same holds for selectivity into education based on fertility desires. We adjust for such a selection by controlling for the desired number of children.

4. Data, Sample, and Measurements

4.1. Data and Sample

The data for our analyses come from the National Longitudinal Survey of Youth-1979 (NLSY79), a US probability sample and panel study of individuals born between 1957 and 1964, started in 1979. Individuals were followed and re-surveyed annually until 1994,

thereafter bi-annually. The NLSY79 includes rich information on fertility, marriage, education, and labor-market experiences, as well as information on family background.

For our analyses, we selected only individuals who were aged 18 and younger at the first interview (yielding a sample size of 7217 individuals, 3673 men and 3544 women). This restriction is in order to measure the desired number of children roughly at the same point in the life course for all respondents and to measure desired fertility before family formation has begun. In this cohort, about a third of women have had their first birth by the age of 22 (Aughinbaugh and Sun 2016), hence we exclude the sample of those aged 19-22 at first interview. We also limit the sample to individuals observed at or beyond age 43 at least once, to obtain information on their achieved fertility. This leaves us with a sample size of 2661 men and 2642 women, meaning we are retaining 73% of the original sample of the specified age group. (Note that about half of the sample attrition is due to non-eligibility of the military and economically disadvantaged nonblack/non-Hispanic sub-samples to be followed after 1984/1990).

4.2. Measurements

Our dependent variables are the *parenthood status* and *number of children* ever born, measured at age 43. We choose age 43 as cutoff, because fecundity appears to taper off relatively quickly after that age, while births around age 40 still can contribute substantively to fertility histories of women with higher educational attainment (Beaujouan and Sobotka 2017).

Our key predictors are completed education, the desired number of children at ages 14-18, and the age at first marriage. We additionally created a variable for the age at first co-residential union (marriage or cohabitation, whichever occurred first) to conduct robustness checks. Results from these analyses (available on request) are very similar to the results shown here that include only formal marriage, suggesting that cohabitation does not substitute for marriage as a context for childbearing, at least in this early cohort. We measure the *desired number of children* in 1979 ("How many children do you want to have?"), collapsed into three categories: 1) zero children or one child (14.8%), 2) 2 children (44.4%), 3) 3 or more children (40%). We chose this categorization because exploratory analyses indicated that variation from the strong norm of a two-child family was the strongest predictor of eventual fertility. Unfortunately, cell sizes are too small to examine those desiring no children and desiring one child separately. To the extent that variation within these three categories is different at different education levels, this categorization may under- or over-estimate true educational variation in achieving desired fertility. However, exploratory analysis (not shown) indicates that average desired parity *within* the categories 0/1 and 3 or more is similar across education groups.

Completed educational attainment is measured as the highest reported degree of schooling completed over the life course. We distinguish between those who have no degree, have a

high school degree, have had some college or an associate's degree, and have a bachelor's degree or more education. *Marriage timing* is a categorical variable with six categories, and indicates the age by which the first marriage occurred, measured in 5-year steps: by age 20, between 21 and 25, between 26 and 30, between 31 and 35, between 36 and 43, later or never.

Furthermore, all models *control* for race (black or white), Hispanic origin (yes or no), family structure at age 14 (living with both biological parents yes or no), number of siblings, mother's education (measured in four categories as for respondent's education), and frequency of attending religious services in 1979. Models estimating parity also control for age at first birth.

4.3. Analytic Strategy

We estimate logistic regression models to predict parenthood status, and generalized linear models (GLM) based on a poisson distribution to predict achieved parity among parents. All models account for the control variables described above (race, Hispanic origin, mother's education, number of sibling, and religious frequency in 1979, additionally, models predicting parity control for age at first birth). We present results from four different model specifications. The first specification estimates parenthood and parity at age 43 by desired family size and education (interactive) without incorporating marital timing. These models provide a baseline assessment of education differences in achieved fertility by desired family size (figures 1&2). The second set of models predict parenthood and parity by marital timing, controlling for completed education and desired family size (figures 3&4). The third set of models are similar to the second, they estimate parenthood/parity by marital timing as well, but this time interacted with completed education (figures 5&6). The results shown in figures 3-6 provide an overall estimate of how fine-grained marital timing is related to fertility at age 43, testing hypotheses 1 and 2. We compare results for men and women to test hypotheses 1a and 2a.

Finally, the fourth set of models test for the mediating effect of marital timing on the relationship between education specific-fertility desires and achieved parenthood and parity, in two different ways. First, we repeat the first specification (parenthood and parity at age 43 by desired family size and education) and compare predicted values before and after adding the marital timing measurement in order to assess whether education differences in underachieving shrink or disappear when marital timing is controlled for. Since marital timing appears to mediate education and desired parity differences with regards to motherhood (not fatherhood or parity), we secondly use a more formal method to test for its mediating effect. We decompose the total effect of education-specific fertility desires into a direct effect and an indirect effect. The direct effect represents the effect of (education-specific) fertility desires, (while holding marital timing constant), while the indirect effect represents the effect of marital timing (while holding education specific fertility desires constant). We estimated these models using the ldecomp command in Stata

15 (Buis 2010). Results of the mediation models are not formally shown, but mentioned in the results section when relevant.

We present our findings using predicted values (tables and figures). Model tables displaying coefficients for the first specification (baseline models) and the fourth specification (baseline models adding marital timing) are shown in the appendix (Tables A-D). Model tables for the other specifications are not shown but available upon request.

5. Results

5.1. Sample Description

Basic information on the distribution of men and women in our analytic sample across desired fertility and completed education categories is presented in Table 1. In all completed education groups, for both men and women, desiring no children or one child is the least frequent response. Desiring fewer than two children is relatively more common among lower education levels; for example, 17.5% of men without a high school degree and 21.3% of women without a high school degree want fewer than two children, compared with 5.1% and 13.1%, respectively, of men and women with a four-year college degree. Desiring two children is the modal category for all education groups except for those with complete college degrees. Among both women and men with college degrees, desiring three or more children is most common (46.2% and 48.6%).

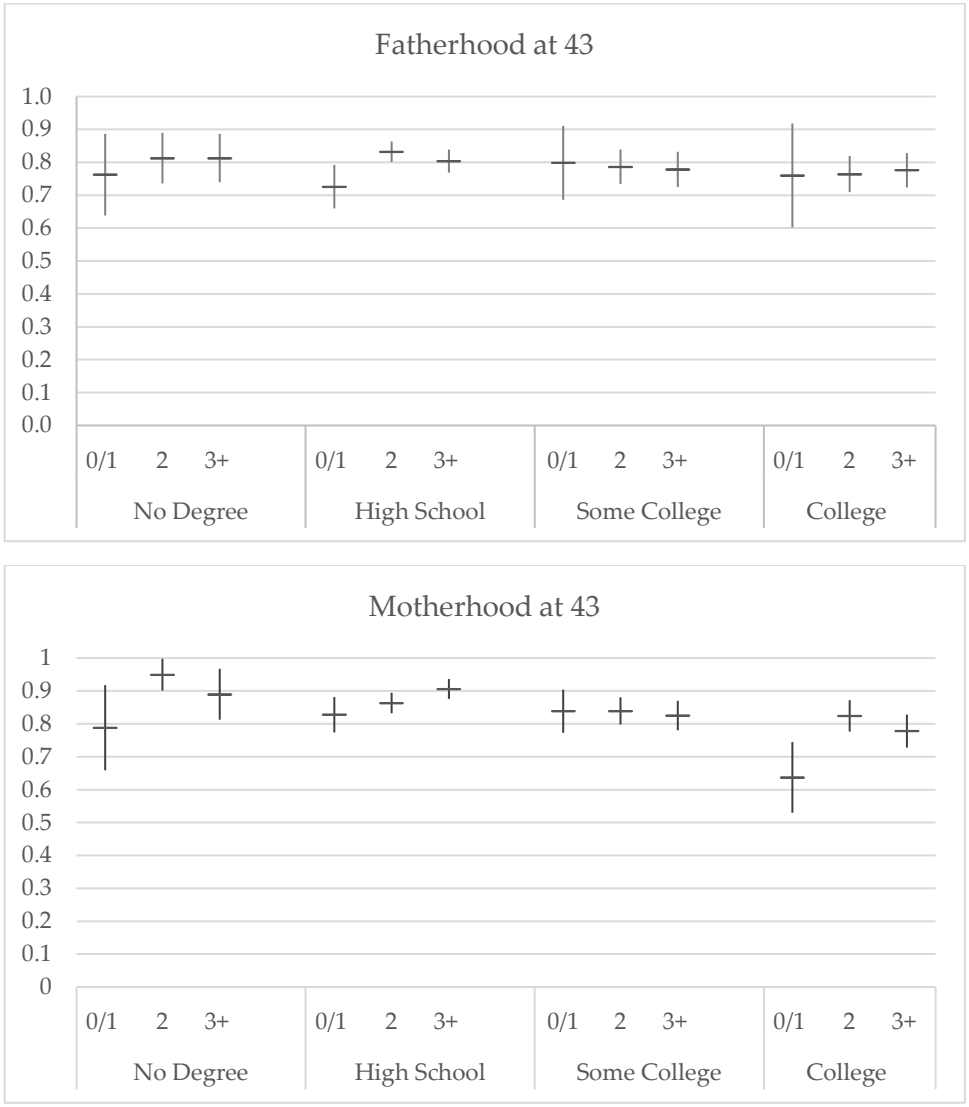
5.2. Achieving and Underachieving of Early Fertility Desires

Figure 1 shows predicted probabilities of parenthood based on the multivariate model described above, holding covariates at their mean value (margins command in Stata 15). Significant differences in the incidence of parenthood by the desired number of children emerge within and across education groups, but mostly for women not men. As can be expected, the prevalence of parenthood is lower for all women desiring 0 or 1 child than for higher desired parities, except for women with 'some college' education. The incidence of motherhood is lowest among women desiring 0 or 1 child with college degrees: 64% of them will become mothers, in contrast to 83% and 78% of college educated women desiring two or three and more children. Lower educated women who desired 0 or 1 child also have higher incidences of motherhood compared to the college-degreed women desiring 0 or 1 child: 79% among non-degreed women and 83% among those with high-school degrees will become mothers. Among men, lower incidences of fatherhood of those desiring 0 or 1 child are present only among the high-school-degreed; 73% of them will become fathers, significantly less than those desiring two or three and more children (83% and 80% respectively). Moreover, desiring two children is associated with lower parenthood chances among the college educated (76%) than desiring two children among high school educated men (83%).

Table 1: Sample description, men and women aged 14-18 at first interview in the nlsy79

Analytic sample all			**By highest degree completed**							
	Men	**Women**								
	N= 2589	N=2566								
Percentages										
Completed Education										
No Degree	10.35	7.91								
High School	49.17	41.47	**Men**				**Women**			
Some College	20.05	27.36	*No Degree*	*High School*	*Some College*	*College*	*No Degree*	*High School*	*Some College*	*College*
College	20.43	23.27	N= 203	N= 1064	N= 702	N= 597	N= 268	N= 1273	N= 519	N= 529
Number of Desired Children										
Zero or one	11.84	17.31	17.49	14.37	9.55	5.15	21.29	18.89	17.34	13.11
Two	44.8	44.17	39.16	45.08	45.61	46.18	43.56	46.65	43.55	40.67
Three and more	43.36	38.53	43.35	40.56	44.83	48.66	35.15	34.47	39.11	46.22
Race & Ethnicity										
Non-Hispanic Black	31.25	30.79	29.1	35.98	32.76	19.47	28.08	31.86	35.47	24.29
Hispanic	19.7	19.49	36.94	19	21	10.4	35.96	20	22.79	9.05
Age at First Marriage										
by 20	14.48	31.18	21.64	17.91	12.72	4.35	47.78	38.72	31.62	11.56
by 25	32.75	30.12	26.49	32.29	37.19	32.7	15.76	26.79	32.48	38.19
by 30	17.38	13.21	11.19	14.14	16.38	29.3	7.88	9.02	10.97	25.13
by 35	9.19	6.63	6.72	7.78	8.67	14.37	4.93	5.73	5.84	9.72
by 43	5.02	4.13	6.34	4.16	5.78	5.67	4.93	3.38	4.56	4.69
later or never	21.17	14.73	28	23.72	19.27	13.61	18.72	16.35	14.53	10.72
Family Structure										
Two Parents in HH at 14	66.32	65.94	51.87	64.02	67.63	77.88	53.69	62.5	64.1	78.39
MEANS										
Mother Education in Years	10.80	10.70								
Religious Frequency in 1979	3.28	3.66								
Gender Ideology in 1979	2.39	2.11								
Number of Siblings	2.44	2.45								

Figure 1: Predicted probabilities of fatherhood and motherhood at age 43 by desired number of children in adolescence and highest degree completed

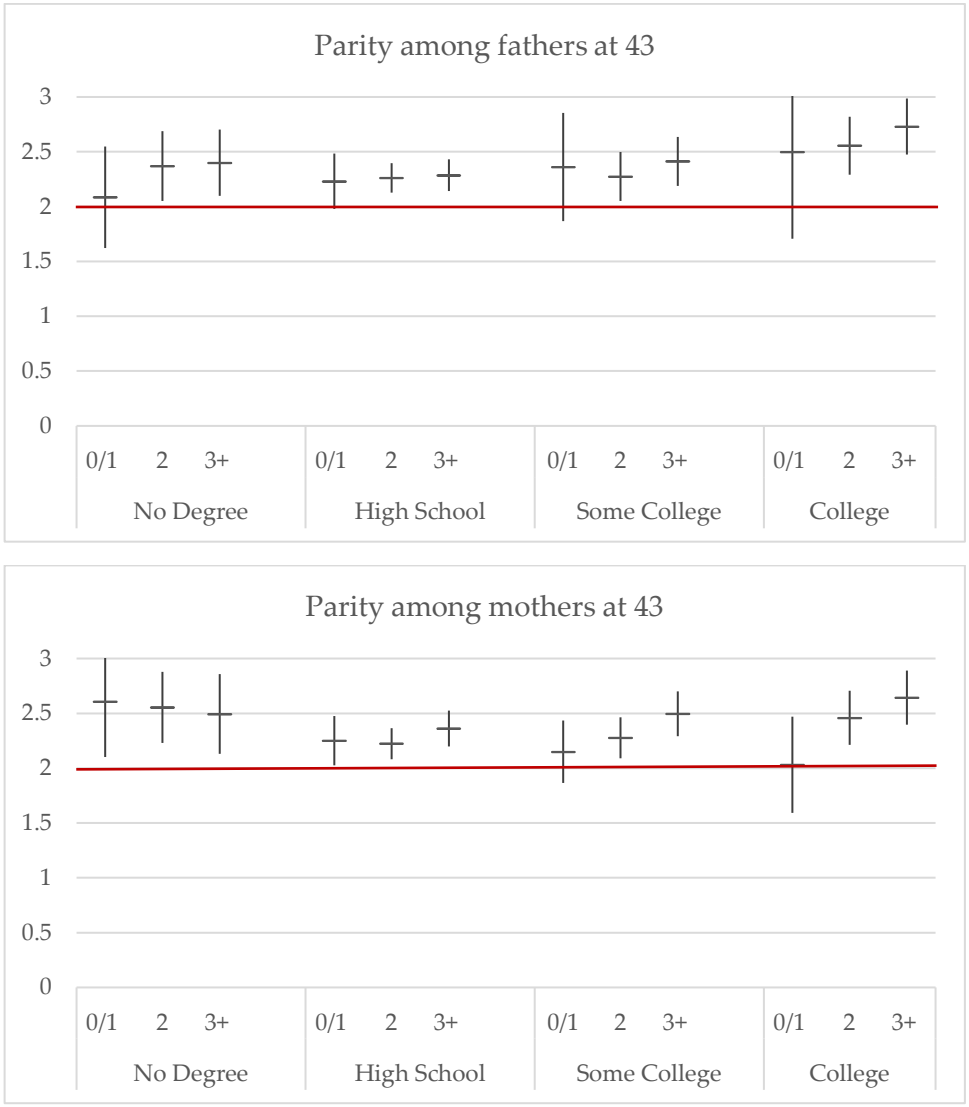


Models control for: race, Hispanic ethnicity, religiosity in 1979, family structure at age 14, number of siblings, mother's education.

Interestingly, differences in parenthood between those desiring two and those desiring three or more children are negligible among men, yet present among women. Only among women with a high school degree will those desiring three or more children become mothers more often than those desiring two children, but confidence intervals overlap. In particular, among women with a bachelor's degree or higher, the proportion becoming a mother is smaller for those desiring three or more children than for those desiring two children. The most educated women desiring three or more children are also significantly less likely to become mothers than lower educated women desiring three or more children (contrasts: no high school degree: $p<.05$; high school degree: $p<.001$). Among women who

desire two children, there are no such significant differences in achieving motherhood across education groups (besides the outstandingly high motherhood rates of 95% of women desiring two with no degree).

Figure 2: Predicted parity among fathers and mothers at age 43 by desired number of children in adolescence and completed education



Models control for: race, Hispanic ethnicity, religiosity in 1979, family structure at age 14, number of siblings, mother's education.

Figure 2 depicts the average predicted number of children ever born to parents, by desired number of children and education. Unsurprisingly, in almost all groups, desiring more children is associated with higher average parity when parenthood is achieved. What is less expected is that, among the group of parents who desired two children or three or more children, college-degreed fathers as well as mothers have the highest average parity

compared to the lower educated. The college degreed desiring three or more children achieve highest average parity compared to everyone else, both among men and women (note that women without a degree desiring 0/1 children have similarly high parity, yet, they are a small group). This finding suggests that underachievement among highly educated women is primarily attributable to differences in transitioning to motherhood, and not in parity differences among mothers. Desiring 0 or 1 child is associated with the lowest average parity among college educated mothers only, yet, this is not underachieving, neither in our nor in the discrepancy measure definition.

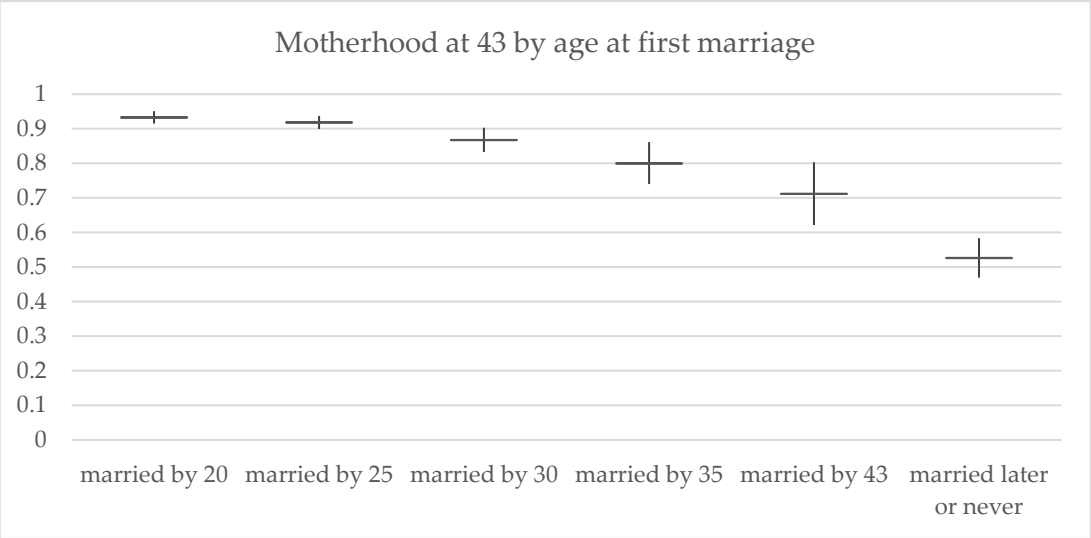
5.3. Marital Timing and Underachieving

In Figures 3 and 4, we present adjusted predicted probabilities for parenthood and parity by age at marriage. Results from models allowing for interactions with education are displayed in Figures 5 and 6.

Based on Figures 3 and 4, it is clear that parenthood probabilities decline by age at first marriage, confirming H1. For both men and women, the largest decline is when marriage is postponed beyond age 30 to 35 (men: $p<.01$; women, $p<.05$). There is further decline for marriage postponed past age 35, but this decline is not statistically significant at conventional levels (men: $p=.11$; women, $p=.11$). Declines and levels are very similar for men and women, contrary to our expectations (rejecting H1a). Moreover, the decline in parenthood with delayed marital timing is larger for the most educated women, but not men (Figure 5). This partly confirms H1b, but for women only. This educational differential suggests that the decline is not primarily rooted in the biological clock, but rather in competition with other activities such as career involvement, or changing expectations or social expectations around timing, especially since the most educated have the most resources to address potential age-related health issues and infecundity. As hypothesized, parenthood among those not married by age 43 is the lowest, and this association significantly increases with education. The most educated men not married by 43 have the lowest chances of fatherhood. All models underlying the predicted probabilities control for desired family size. Hence, possible selection into marital timing by desired number of children should not drive our findings.

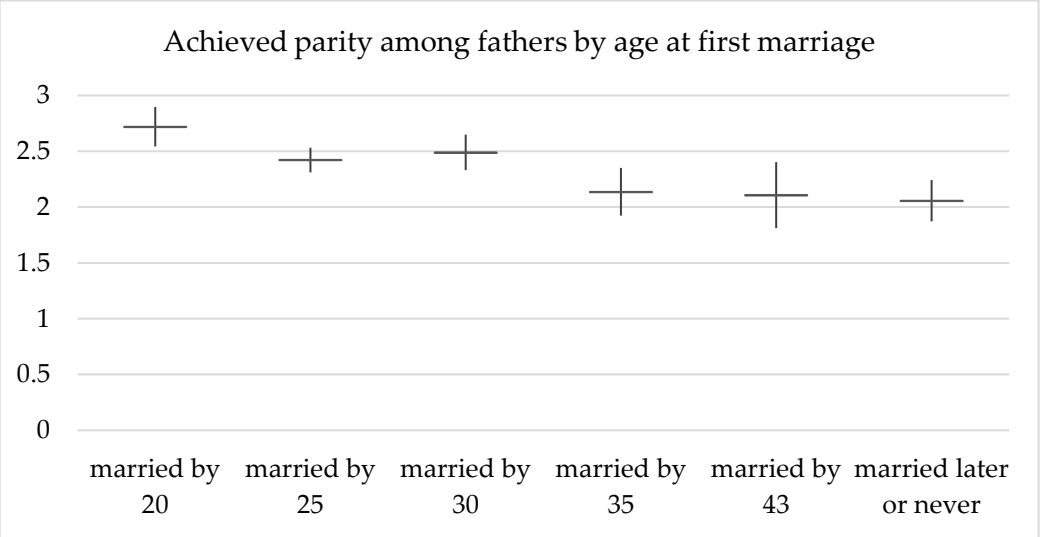
Figure 4 shows that among those who are mothers, overall, parity declines with age at marriage up until age 35, but does not decline further after that (difference between marital age 30 and 35 significant on the 10% level). Average parity is around 2 even for mothers who marry late or never marry. We observe a similar pattern among fathers. Their marital ages up to age 30 are associated with completed parity around 2.5, those who marry past age 30 have an average parity of around 2, regardless of the age at marriage or whether they married at all (difference between marital age 30 and marital age 35 significant at $p<.05$). Overall, this confirms H2, but we note that the decline in parity is not continuous, but rather seems to occur stepwise, and is tied to whether marriage was established by age 30, in particular for men.

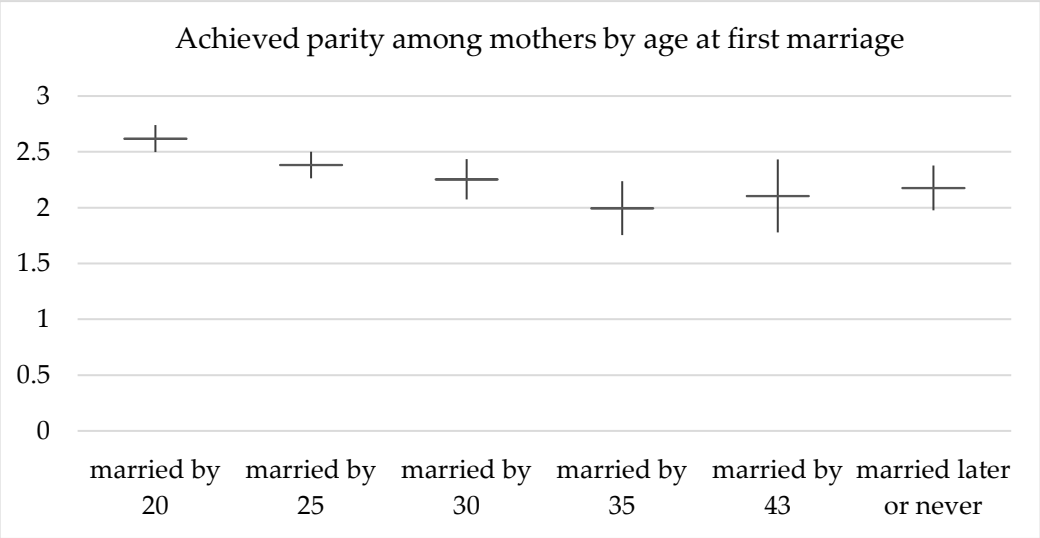
Figure 3: Predicted probability of fatherhood and motherhood by age at first marriage



Models control for: race, Hispanic ethnicity, religiosity in 1979, family structure at age 14, number of siblings, mother's education, completed education, number of desired children.

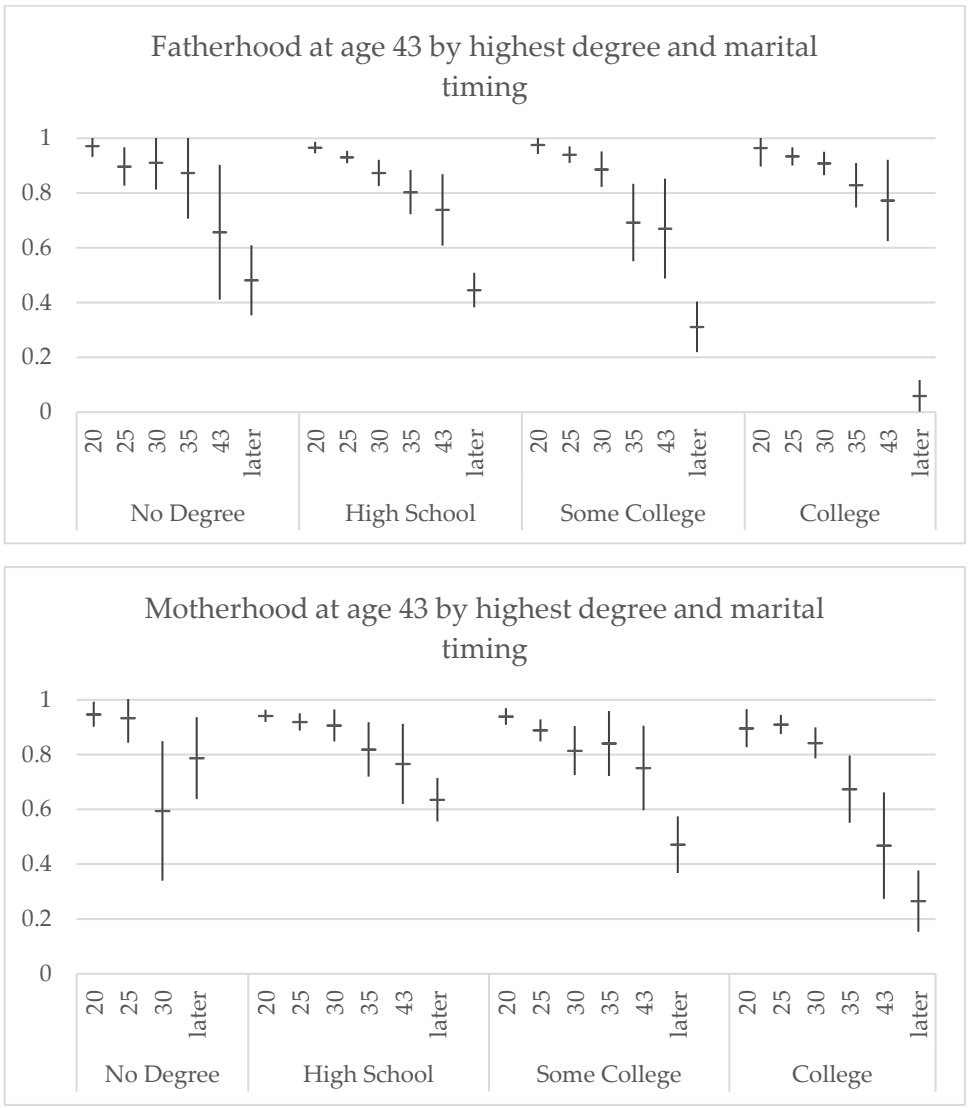
Figure 4: Predicted average parity among fathers and mothers by age at first marriage





Models controls for: race, Hispanic ethnicity, religiosity in 1979, family structure at age 14, number of siblings, mother's education, completed education, number of desired children.

Figure 5: Fatherhood and motherhood at age 43 by highest degree and marital timing

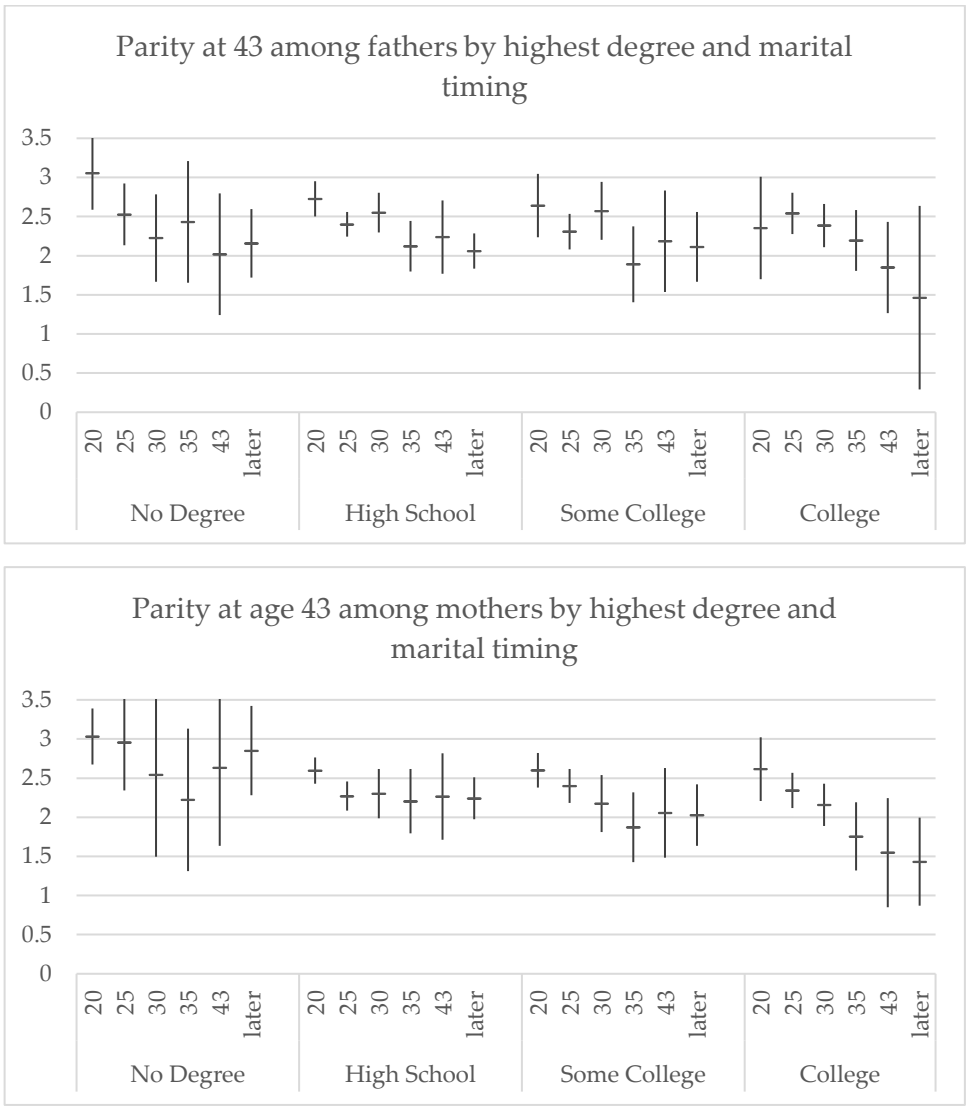


Models controls for: race, Hispanic ethnicity, religiosity in 1979, family structure at age 14, number of siblings, mother's education, completed education, number of desired children.

When breaking down by education (Figure 6), this overall pattern (decline in average parity only up to age 35) holds for women without a college degree. For the latter, completed parity continues to decline with age at marriage, to 1.5 for those marrying past age 30. This reflects a greater dependence on marriage for childbearing not only for parenthood but also for achieved parity among the most educated. Cell sizes are too small to differentiate further by desired number of children here. Results presented above suggest possible differences by desired parity. Again, findings for men are similar. H2b is thus only partly confirmed; parity declines for the most educated are more pronounced with increasing age at marriage. This suggests that competing devotions or changing preferences

may take place, next to confining childbearing to marital unions, not only affecting entry into parenthood but also family size when marriage occurs late.

Figure 6: Average predicted parity among fathers and mothers by highest degree and marital timing



Models controls for: race, Hispanic ethnicity, religiosity in 1979, family structure at age 14, number of siblings, mother's education, completed education, number of desired children

5.4. Testing for the Mediating Effect of Marital Timing

Tables 2 and 3 show predicted probabilities of fatherhood and motherhood by education and desired parity, before and after controlling for marital timing (probabilities before controlling are identical with those in Figure 1 presented above, corresponding to model tables A and B). We found that educational differences in underachieving among women

hinge on differential chances of motherhood (not differences in parity among mothers), and on distributional differences in their lifetime fertility desires. Therefore, we only show results of testing the mediating effect of marital timing on parenthood, not on parity. We test whether the predicted probabilities of parenthood are significantly different from each other 1) within education but across desired parity or 2) within desired parity but across education, before and after controlling for marital timing. Test results are shown below the tables.

As discussed (Figure 1), there are only a few significant differences in achieving fatherhood either by education (within desired parity) or by desired parity (within education). Before controlling for marital timing, among high school educated men, parenthood is significantly lower for those desiring no or one child compared to those desiring two ($p<.001$). Also, college educated men desiring two children have significantly lower chances of parenthood than high school educated men desiring two children ($p<.05$). These differences are only slightly attenuated after controlling for marital timing. Yet, the mediation analysis indicates a significant indirect effect of marital timing on the fatherhood difference between high school educated men desiring none or one child and those desiring two children ($p=.01$), hence, marital timing does seem to mediate the realization of fertility desires in terms of fatherhood beyond what is explained by the different desires themselves. No significant direct or indirect effects are present in the mediation analyses when comparing college-degreed and high school-degreed men desiring two children.

Table 2: Predicted probability of fatherhood at age 43, before and after controlling for first marital timing

Education	Desired children	Baseline model			Controlling for marital timing		
		Estimate	*CI LB*	*CI UB*	*Estimate*	*CI LB*	*CI UB*
No degree	0/1	0.76	0.64	0.89	0.83	0.71	0.94
	2	0.81	0.74	0.89	0.86	0.78	0.93
	3+	0.81	0.74	0.89	0.91	0.86	0.96
High school	0/1	0.73	0.66	0.79	0.82	0.76	0.88
	2	0.83	0.80	0.86	0.88	0.85	0.91
	3+	0.80	0.77	0.84	0.87	0.84	0.90
Some college	0/1	0.80	0.69	0.91	0.84	0.74	0.95
	2	0.79	0.73	0.84	0.83	0.78	0.88
	3+	0.78	0.72	0.83	0.84	0.78	0.89
College	0/1	0.76	0.60	0.92	0.86	0.74	0.98
	2	0.76	0.71	0.82	0.83	0.78	0.88
	3+	0.78	0.72	0.83	0.84	0.79	0.89

Testing selected contrasts:	Baseline model		Controlling for marital timing	
Within education, across desired family size	Chi2	P	Chi2	P
3+ college versus 2 college	0.11	0.74	0.02	0.90
3+ some college versus 2 some college	0.04	0.84	0.04	0.84
3+ high school versus 2 high school	1.44	0.23	0.13	0.72
3+ no degree versus 2 no degree	0.00	1.00	1.78	0.18
0/1 college versus 2 college	0.00	0.96	0.19	0.67
0/1 some college versus 2 some college	0.04	0.85	0.07	0.79
0/1 high school versus 2 high school	9.60	0.00	3.86	0.05
0/1 no degree versus 2 no degree	0.48	0.49	0.19	0.66
Within desired family size, across education				
3+ college versus 3+ some college	0.00	0.96	0.00	0.99
3+ college versus 3+ high school	0.73	0.39	1.66	0.20
3+ college versus 3+ no degree	0.57	0.45	4.11	0.04
2 college versus 2 some college	0.32	0.57	0.00	0.94
2 college versus 2 high school	4.86	0.03	2.97	0.08
2 college versus 2 no degree	0.91	0.34	0.27	0.60
0/1 college versus 0/1 some college	0.16	0.69	0.04	0.84
0/1 college versus 0/1 high school	0.14	0.71	0.32	0.57
0/1 college versus 0/1 no degree	0.00	0.98	0.16	0.68

Table 3: Predicted probability of motherhood at age 43, before and after controlling for first marital timing

Education	Desired children	Baseline model			Controlling for marital timing		
		Estimate	*CI LB*	*CI UB*	*Estimate*	*CI LB*	*CI UB*
No degree	0/1	0.79	0.66	0.92	0.88	0.79	0.97
	2	0.95	0.90	1.00	0.96	0.92	1.00
	3+	0.89	0.81	0.97	0.91	0.84	0.98
High school	0/1	0.83	0.77	0.88	0.86	0.81	0.91
	2	0.86	0.83	0.89	0.89	0.86	0.92
	3+	0.91	0.88	0.94	0.93	0.90	0.95
Some college	0/1	0.84	0.77	0.90	0.88	0.82	0.93
	2	0.84	0.80	0.88	0.86	0.82	0.90
	3+	0.83	0.78	0.87	0.84	0.79	0.88
College	0/1	0.64	0.53	0.74	0.66	0.54	0.77
	2	0.82	0.78	0.87	0.85	0.81	0.90
	3+	0.78	0.73	0.83	0.83	0.78	0.87

	Baseline model		Controlling for marital timing	
Within education, across desired family size	Chi2	P	Chi2	P
3+ college versus 2 college	1.83	0.18	0.73	0.39
3+ some college versus 2 some college	0.20	0.65	0.63	0.43
3+ high school versus 2 high school	3.52	0.06	4.03	0.04
3+ no degree versus 2 no degree	1.68	0.20	1.69	0.19
0/1 college versus 2 college	11.96	0.00	13.26	0.00
0/1 some college versus 2 some college	0.00	0.99	0.11	0.74
0/1 high school versus 2 high school	1.37	0.24	0.97	0.32
0/1 no degree versus 2 no degree	6.26	0.01	3.21	0.07
Within desired family size, across education				
3+ college versus 3+ some college	1.90	0.17	0.13	0.72
3+ college versus 3+ high school	18.39	0.00	15.60	0.00
3+ college versus 3+ no degree	3.74	0.05	2.45	0.12
2 college versus 2 some college	0.21	0.64	0.10	0.75
2 college versus 2 high school	1.90	0.17	1.98	0.16
2 college versus 2 no degree	6.51	0.01	6.16	0.01
0/1 college versus 0/1 some college	10.17	0.00	12.25	0.00
0/1 college versus 0/1 high school	10.83	0.00	12.75	0.00
0/1 college versus 0/1 no degree	2.63	0.10	6.92	0.01

As described above (Figure 1), we found more differences by desired number of children and education in parenthood chances among women. Results from before and after controlling for marital timing show that some differences are indeed attenuated when marital timing is controlled for, while others are not.

Even though the lower incidence of motherhood among college educated women desiring three children compared with those desiring two children just misses marginal significance, it is noteworthy that motherhood probabilities are adjusted to be nearly the same in these two groups after controlling for marital timing (p=.39). The same is true for the contrast between college-degreed women desiring 3 or more children, and women with some college education or no degrees desiring three or more children (p=.72, and p=.12). The meditation analysis supports these results. Indirect effects of marital timing operating through the desired number of children are significant for the contrast between college-degreed women desiring three and more children and 1) college-degreed women desiring two children (p=.08), and 2) women with some college education desiring three or more children (p=.01). Significant indirect effects are not present compared with high school educated women desiring two children. Here, the direct effect, in other words the effect of the desires themselves when marital timing is purged out, is highly significant (p=.00). Thus, delayed marital timing may indeed be an important factor behind lower incidences of motherhood of college-degreed women who had desired three children when compared to slightly higher motherhood rates of college-educated women desiring two children and to those desiring three or more children who have some college education or dropped out of high school.

Another picture emerges regarding college-educated women who did not desire children, or wanted one only. As before controlling for marital timing, they remain significantly less likely to be mothers after controlling for marital timing compared with college-degreed women who wanted two children (p=.00) as well as compared with lower educated women who wanted 0 or 1 child (some college p=.00, high school p=.00, no degree p=.01). Again, the results from the mediation analyses confirm these findings. There are no significant indirect effects (marital timing) present in any of the aforementioned contrasts, yet all direct effects in these four contrasts are highly significant (p<.01), indicating that low fertility desires among those who will complete college have a very different meaning and effect on life courses than among those who acquire less education.

6. Discussion and Conclusion

In this study, we investigate the underachievement of early fertility desires in the NLSY79 cohort among men and women. Our focus is on understanding the role that marital timing plays in underachieving and education differences therein, and whether this association differs between men and women and across education groups. We furthermore extend the literature by differentiating underachieving into two components, namely in the

achievement of parenthood and achieved completed parity among those who became parents.

Two main results came to the fore. First, we confirm previous literature by showing that the relationship between the desired numbers of children and fertility outcomes at age 43 differs significantly by education. Beyond what has been known, we find that education differences in underachieving vary by the desired family size among women but not men, and that these differences by desired number of children hinge mainly upon chances to achieve motherhood, and not on the number of children conditional on having any children. The most educated women desiring three or more children appear more likely to remain childless, not only compared with lower educated women desiring three or more children, but also compared with their most educated peers desiring two children (even though this last contrast between college-degreed women just misses statistical significance). Yet, these women will have the highest parity among all women if they do become mothers. Given that almost half of all women with completed college said they were aspiring to become mothers of three or more children, this is a remarkable finding. It appears that a significant proportion of the educational fertility differential among women may hinge upon women who desired many children, completed college, and subsequently remained childless. Of course, these women may have changed their preferences as they aged, remaining childless purposefully. Likewise, work-family incompatibilities may have led them to postpone and ultimately forgo motherhood. Future research is needed to investigate those pathways. We focused on a different underlying mechanism, namely the postponement of marriage, and the role it plays in underachieving, and the education differential therein, among men and women. Unfortunately, low case numbers did not allow for estimating the role of marital timing in achieving parenthood among women with completed college who desired three or more children, as they produce large standard errors and wide confidence intervals. However, these models (not shown) suggest that it is postponing marriage past age 35, which is associated with declines in achieving motherhood among these women. About 20% of women with completed college who desired 3+ children marry beyond the age of 35 or never. This proportion is only slightly larger than among women desiring large families with some college or high school degrees (around 18%), yet limiting non-marital fertility among the highest educated women, in conjunction with delaying marriage more than lower educated women may lead to these differences in motherhood.

Our findings bring together the literature which addresses the education-fertility differential and the literature on underachieving fertility desires and education differentials therein. We show that childlessness is the main culprit of underachieving of college degreed US women, and not lower parity among parents. Hence, childlessness emerges as the main driver not only of the education fertility differential observed in advanced societies, but also of how fertility desires are mediated by education in their translation into differential life courses.

We also noted that college-degreed women who wanted no children or one only were much more likely to remain childless compared with both lower educated counterparts and

compared with college-degreed women who desired more children. Here, underachievement plays a lesser role (even though some women in this group will have underachieved their desire for one child), yet our findings are interesting as they suggest that college education may provide women with the agency to realize their *low* fertility intentions, but not their *high* fertility intentions. Lutz (2018) recently argued that: "education typically empowers women (and couples) to reach their personal target for family size, regardless of what the target is." (p.27). Our findings are more differentiated and speak loudly against this hypothesis. We find that education empowers women to reach their low fertility targets, but not their high fertility targets, rather, education appears to disempower a good portion of women desiring large families from becoming mothers at all, at least in this US birth cohort. Of course it remains to be uncovered by future research how the education-agency issue plays out across different places or times.

Our second main finding confirms the chief-role of delaying marriage for fertility, for both men and women, yet, how it mediates the realization of early fertility desires over the life course deserved a differentiated discussion.

On the one hand, we show that postponing marriage past the age of 30 is associated with declines in both parenthood rates and achieved parity among parents, and that this relationship is remarkably similar for women and men. This similarity surprised us, as we hypothesized marital delay to affect men's fertility at later ages than women's, because they tend to marry younger women and are thought to experience slower declines in fecundity with age. We believe our findings underscore the importance of social factors for childbearing processes, and hint at a perhaps less important role of biology. Delaying marriage past age 30 affects parenthood and achieved parity most strongly among the most educated women, who tend to not have children out of wedlock. After controlling for desired family size, men who do not marry before the age of 43 are the most likely to remain childless, in particular when they are highly educated. Our findings underscore the importance of union formation for fertility, and that it is equally relevant for men's and women's fertility, both in terms of whether and when it happens in the life course. This is further confirmed by the fact that holding marital age at its mean will increase parenthood probabilities for almost all education groups, among both men and women.

On the other hand, we show that adjusting for marital timing will have larger impacts on parenthood probabilities for college degreed women who desired three or more children, which makes differences in achieving motherhood with college degreed women desiring two children and women with some college education desiring three children almost disappear. Delaying or forgoing marriage thus seems to be an important reason fortheir lower chances to become mothers for this specific group of high achieving women who desired large families.

Conversely, marital timing does not appear to be driving their differences in motherhood chances compared to lower educated women desiring large families. It is also not mediating the lower incidences of motherhood among college-degreed women desiring

low fertility compared with less educated low fertility desirers or college-degreed higher fertility desirers.

It remains to be said that our study is not without limitations. While offering a new conceptualization of underachieving, we grouped low fertility desirers and high fertility desirers into only two categories, losing detail. We believe pooling cases in this way is meaningful, yet, precision is lost in terms of understanding whether women desiring one child may underachieve more often among the college educated than lower educated women, and whether underachieving motherhood among college educated high fertility desirers may hinge particular on women desiring larger parity than three children. Also, as discussed above, life courses are long, and fertility and other life desires malleable. We avoid working with intentions measured later in life to overcome the issue that they have been already affected by other experiences (e.g. lack of partner), but we thereby also miss measuring changes that are rooted in mind changing that is not triggered by constraints to childbearing. Future research is needed to investigate whether high fertility desiring women who will remain childless may have revised their life plans to embark on other paths than previously envisioned, for example high powered careers.

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Appendix

Table A: Logistic regression models predicting fatherhood at age 43 by completed educational degree and desired number of children, without (model 1) and with (model 2) controls for marital timing. Log odds.

Fatherhood	**Model 1**			**Model 2**		
	Coef.	**Std. Err.**	**P>z**	**Coef.**	**Std. Err.**	**P>z**
0/1 no degree	-0.434	0.366	0.235	-0.424	0.421	0.314
2 no degree	-0.135	0.280	0.630	-0.206	0.325	0.526
3+ no degree	-0.134	0.270	0.621	0.337	0.313	0.281
0/1 hs	-0.628	0.203	0.002	-0.471	0.240	0.050
3+ hs	-0.191	0.159	0.230	-0.067	0.186	0.717
0/1 some col	-0.224	0.375	0.549	-0.290	0.444	0.514
2 some col	-0.300	0.194	0.122	-0.410	0.225	0.069
3+ some col	-0.346	0.195	0.076	-0.358	0.228	0.116
01/ college	-0.450	0.456	0.324	-0.157	0.536	0.769
2 college	-0.425	0.193	0.027	-0.392	0.228	0.085
3+ college	-0.356	0.191	0.063	-0.361	0.227	0.112
Hispanic	0.112	0.142	0.430	0.424	0.173	0.014
Black	0.275	0.123	0.026	1.319	0.158	0.000
Two parents at 14	0.021	0.110	0.849	-0.084	0.129	0.514
Religious Frequency	0.030	0.030	0.311	0.001	0.035	0.987
Siblings	0.101	0.060	0.093	0.109	0.071	0.124
Mom HS	-0.194	0.121	0.110	-0.289	0.143	0.043
Mom SC	0.127	0.200	0.526	0.213	0.232	0.358
Mom Col	-0.078	0.160	0.627	0.007	0.187	0.971
married by 20				0.806	0.294	0.006
married by 30				-0.430	0.190	0.024
married by 35				-1.182	0.205	0.000
married by 43				-1.652	0.245	0.000
married later				-3.155	0.171	0.000
Constant	1.206	0.228	0.000	2.184	0.287	0.000

N=2589

Reference categories: Completed high school degree two children desired; mom no degree, married between 21-25

Table B: Logistic regression models predicting motherhood at age 43 by completed educational degree and desired number of children, without (model 3) and with (model 4) controls for marital timing. Log odds.

Motherhood	**Model 3**			**Model 4**		
	Coef.	**Std. Err.**	**P>z**	**Coef.**	**Std. Err.**	**P>z**
0/1 no degree	-0.531	0.417	0.203	-0.136	0.444	0.760
2 no degree	1.087	0.530	0.040	1.068	0.546	0.050
3+ no degree	0.244	0.423	0.564	0.191	0.447	0.669
0/1 hs	-0.275	0.235	0.241	-0.250	0.253	0.325
3+ hs	0.421	0.224	0.060	0.477	0.238	0.045
0/1 some col	-0.196	0.282	0.489	-0.148	0.303	0.625
2 some col	-0.193	0.206	0.347	-0.253	0.221	0.251
3+ some col	-0.293	0.209	0.162	-0.444	0.225	0.048
01/ college	-1.283	0.273	0.000	-1.451	0.300	0.000
2 college	-0.298	0.216	0.168	-0.331	0.235	0.159
3+ college	-0.590	0.203	0.004	-0.527	0.222	0.018
Hispanic	0.075	0.166	0.653	0.372	0.181	0.039
Black	-0.083	0.137	0.546	0.667	0.158	0.000
Two parents at 14	-0.288	0.127	0.024	-0.335	0.137	0.015
Religious Frequency	0.027	0.033	0.414	-0.003	0.036	0.928
Siblings	0.144	0.064	0.025	0.183	0.069	0.008
Mom HS	-0.277	0.136	0.041	-0.224	0.146	0.124
Mom SC	-0.331	0.206	0.109	-0.140	0.219	0.524
Mom Col	-0.286	0.185	0.122	-0.080	0.201	0.690
married by 20				0.216	0.191	0.259
married by 30				-0.536	0.194	0.006
married by 35				-1.023	0.227	0.000
married by 43				-1.563	0.258	0.000
married later				-2.349	0.180	0.000
Constant	1.752	0.261	0.000	2.188	0.304	0.000

N=2566

Reference categories: Completed high school degree two children desired; mom no degree, married between 21-25

Table C: General linear models (poisson distribution, ml optimization) predicting parity at age 43 among fathers by completed educational degree and desired number of children, Without (model 5) and with (model 6) controls for marital timing.

Parity Among Fathers	**Model 5**			**Model 6**		
	Coef.	Std. Err.	P>z	Coef.	Std. Err.	P>z
2 no degree	0.128	0.131	0.330	0.123	0.131	0.350
3+ no degree	0.140	0.129	0.277	0.135	0.129	0.295
0/1 hs	0.067	0.127	0.595	0.048	0.127	0.707
2 hs	0.081	0.117	0.488	0.071	0.117	0.544
3+ hs	0.092	0.117	0.434	0.084	0.117	0.472
0/1 some col	0.124	0.156	0.429	0.114	0.157	0.466
2 some col	0.086	0.124	0.486	0.068	0.124	0.584
3+ some col	0.146	0.123	0.237	0.131	0.123	0.290
01/ college	0.180	0.198	0.363	0.144	0.198	0.466
2 college	0.203	0.126	0.107	0.167	0.127	0.188
3+ college	0.269	0.124	0.030	0.236	0.125	0.059
Age at FB	-0.034	0.003	0.000	-0.037	0.003	0.000
Hispanic	0.079	0.041	0.052	0.079	0.041	0.053
Black	-0.001	0.036	0.983	0.006	0.039	0.870
Two parents at 14	0.004	0.032	0.892	0.005	0.032	0.867
Religious Frequency	0.004	0.009	0.643	0.004	0.009	0.638
Siblings	0.007	0.019	0.721	0.003	0.019	0.857
Mom HS	-0.042	0.036	0.243	-0.047	0.036	0.185
Mom SC	-0.025	0.057	0.664	-0.031	0.058	0.587
Mom Col	-0.058	0.047	0.221	-0.062	0.048	0.194
married by 25				0.011	0.042	0.794
married by 30				0.150	0.052	0.004
married by 35				0.029	0.066	0.658
married by 43				0.045	0.083	0.587
married later				-0.077	0.059	0.195
Constant	1.590	0.144	0.000	1.654	0.146	0.000

N=2037

Reference categories: No degree desiring 0/1 children; mom no degree, married by age 20

Table D: General linear models (poisson distribution, ml optimization) predicting parity at age 43 among mothers by completed educational degree and desired number of children, Without (model 7) and with (model 8) controls for marital timing.

Parity Among Mothers	**Model 7**			**Model 8**		
	Coef.	Std. Err.	P>z	Coef.	Std. Err.	P>z
2 no degree	-0.020	0.116	0.861	-0.035	0.117	0.762
3+ no degree	-0.044	0.122	0.716	-0.062	0.122	0.611
0/1 hs	-0.147	0.110	0.183	-0.171	0.111	0.123
2 hs	-0.159	0.103	0.123	-0.180	0.104	0.082
3+ hs	-0.099	0.104	0.340	-0.121	0.105	0.247
0/1 some col	-0.193	0.120	0.107	-0.214	0.120	0.074
2 some col	-0.136	0.107	0.205	-0.161	0.108	0.134
3+ some col	-0.043	0.107	0.686	-0.073	0.108	0.500
01/ college	-0.250	0.149	0.093	-0.286	0.150	0.056
2 college	-0.059	0.113	0.603	-0.092	0.114	0.418
3+ college	0.014	0.111	0.902	-0.016	0.112	0.888
Age at FB	-0.034	0.003	0.000	-0.033	0.003	0.000
Hispanic	0.054	0.039	0.171	0.059	0.039	0.136
Black	-0.019	0.036	0.603	0.006	0.039	0.869
Two parent at 14	-0.003	0.031	0.914	-0.006	0.031	0.837
Religious Frequency	0.013	0.009	0.129	0.012	0.009	0.173
Siblings	0.053	0.019	0.005	0.053	0.019	0.005
Mom HS	-0.014	0.034	0.675	-0.014	0.034	0.680
Mom SC	0.055	0.059	0.352	0.056	0.060	0.346
Mom Col	0.052	0.049	0.291	0.050	0.049	0.313
married by 25				0.014	0.037	0.713
married by 30				0.019	0.051	0.708
married by 35				-0.061	0.068	0.372
married by 43				-0.076	0.084	0.370
married later				-0.082	0.054	0.127
Constant	1.555	0.132	0.000	1.578	0.133	0.000

N=2147

Reference categories: No degree desiring 0/1 children; mom no degree, married by age 20

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