Social Role Transitions and the Disjunction between Young Adults' Intended and Realized Fertility

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March 30, 2012

Word count: 223 (abstract); 8,400 (entire manuscript)

*This paper uses data from the Monitoring the Future study, which is supported by a grant from the National Institute on Drug Abuse (R01 DA01411). Jeremy Staff is grateful for support from a Mentored Research Scientist Development Award in Population Research from the National Institute of Child Health and Human Development (K01 HD054467). The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the sponsors. Correspondence can be sent to Jeremy Staff, Department of Sociology, The Pennsylvania State University, 211 Oswald Tower, University Park, PA 16802-6207 (E-mail: jus25@psu.edu).

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Abstract

Fertility intentions are strong predictors of family behavior and fertility. Yet, intentions frequently exceed realized fertility, suggesting that some young adults are either unable to meet their expectations (i.e., "missing the target") or that their intentions change. Recent research shows that desired family size fluctuates especially during the young adult years. What characteristics and experiences account for fluctuations in the disjunction between intended and realized fertility? We use 30 cohorts (1976 to 2005) of nationally representative longitudinal data from the ongoing Monitoring the Future study to examine how social role transitions account for changes in the correspondence between fertility intentions and childbearing from ages 19 to 28. Results show that as women and men have children, they tend to adjust their fertility expectations to be consistent with the number of children already born. Other family and non-family transitions have little effect on revisions to the number of children desired. Regarding the disjunction between intended and realized parity, we find that young adults are less likely to desire more children than they currently have when they are married or divorced than when they are single. Post-secondary enrollment, educational attainment, and holding a professional job increase the likelihood that intentions will exceed realized fertility during the transition to adulthood. These role effects vary considerably by gender, but we see little variation by race/ethnicity and cohort.

Social Role Transitions and the Disjunction between Young Adults' Intended and Realized Fertility

Childbearing preferences are strong predictors of family formation behaviors and subsequent fertility (Hagewen and Morgan 2005; Schoen et al. 1999). Yet, demographers have noted that fertility intentions typically exceed realized fertility, especially in low fertility countries (Bongaarts 1992; Morgan 2001). This suggests that some women and men are either unable to meet their expectations (i.e., "missing the target") or that their expectations change with age and life experiences (Quesnel-Vallée and Morgan 2003). Though expected fertility declines with age (Axinn et al. 1994; Rindfuss et al. 1988), recent analysis of longitudinal data has confirmed that desired family size fluctuates considerably over the life course, especially during the "demographically dense" young adult years characterized by rapid social role transitions (Beets et al. 1999; Hayford 2009; Iacovou and Tavares 2011; Morgan and Rackin 2010). For instance, using latent trajectory models following a cohort of women from ages 18 to 40 (i.e., the 1979 National Longitudinal Survey of Youth or NLSY79), Hayford (2009) found that 67 percent of the sample expected to have two children and maintained those expectations during the period. Of the rest, 12 percent increased and approximately 20 percent lowered their expectations. Morgan and Rackin (2010), also using data from the NLSY79, found that most women and men in this cohort had not achieved their desired family size by age 44, compared to when they were 20 years younger, and that this disjunction between intended and completed parity was most pronounced during the young adult years.

Do the rapid social role changes that occur during young adulthood in family, school, and work account for the variation in fertility intentions and the match between intended and

completed fertility? Many theoretical models of changing fertility intentions hypothesize that life-course transitions alter people's perceptions of the costs and benefits of having children, and individuals adjust their fertility intentions to be compatible with childbearing as well as their changing life circumstances (Bongaarts 2001; Heiland et al. 2008; Iacovou and Tavares 2011; Quesnel-Vallée and Morgan 2003). Romantic relationship transitions are a key factor predicting changes in fertility intentions partly because many people intend to have children after they have found a suitable partner with whom to raise a child (Qu et al. 2000; Schoen et al. 1999). In addition, post-secondary school enrollment and career acquisition during this period of the life course may lead to the postponement of childbearing and revisions to the desired number of children (Morgan and Rackin 2010).

In this article, we use nationally representative longitudinal data from 30 cohorts of high school seniors (1976 to 2005) of the Monitoring the Future study to examine how social role transitions during young adulthood account for changes in fertility intentions as well as the correspondence between intended and desired fertility. We build upon prior research by considering a diverse set of social role transitions and experiences (i.e., marriage and cohabitation, school enrollment and attainment, and employment type). We use multiple cohorts to increase generalizability and analyses of within-individual change to control for time-stable background factors that may be spuriously related to fertility intentions and social roles changes (e.g., socioeconomic background, family structure, sibship size, non-familial aspirations, gender-role attitudes). We also consider whether the effects of social role transitions on fertility intentions and behavior vary by gender, race/ethnicity, and cohort.

Background

The transition to adulthood is a major life transition that includes multiple and often simultaneous changes in individual cognitions and behaviors, in social contexts, and in person-context fit (Schulenberg et al. 2003; Shanahan 2000). It is a time when many initial life plans and intentions forged during childhood and adolescence meet the reality of life challenges and opportunities, and when compromise among competing goals becomes necessary. It is also a time of increased heterogeneity of life paths, when individual differences regarding goals and opportunities become more manifest (Ross et al. 2009; Schulenberg et al. 2003). What happens during this global transition can influence ongoing trajectories of health and well-being, for better and worse (Settersten 2007; Staff et al. 2010), highlighting the importance of this time in the life course. Within this broader developmental context, fertility intentions become challenged, compromised, field-tested, and eventually solidified.

Researchers have long studied the factors associated with fertility intentions such as age, relationship status, education, employment, and parity. During adolescence, for example, ideal family size often reflects untested ideas, hopes, or normative ideals about how lives will unfold. Desired family size may overlook the reality that life choices bring opportunities and constraints that have to be negotiated. As education ends, careers develop, and romantic partnerships become more established in young adulthood, new information about the costs and benefits of having children is brought to bear and fertility expectations are adjusted accordingly. This partly explains why researchers have noted that individuals' perceptions of the ideal number of children become much more predictive of actual behavior as people age (Thomson 1997; Morgan and Rackin 2010). These changes with age may also reflect a limited reproductive span, a reality that women may especially become more aware of and have greater concerns about as they age.

People may simply feel more "grown up" or "ready" to have children as they age (Bernardi 2003; Qu et al. 2000).

In addition to age, relationship transitions are an important factor predicting changes in fertility intentions. For many people, intended childbearing is closely tied to their romantic partners (Rindfuss and Parnell 1989; Schoen et al. 1999; Voas 2003). For instance, finding a partner and feeling secure in the relationship may lead to revisions that accommodate the partner's preferences and increase certainty about the number of intended children. Because cohabitation is generally a less stable union than marriage (Smock 2000), revisions to fertility intentions should be less likely to occur in the former. Moreover, relationship dissolution may lead also lead to variability in the desired number of children.

Education is a well-researched predictor of completed family size, with lower education being associated with larger family size (Rindfuss et al. 1980). More educated women and men are more likely to intend childlessness, to postpone childbearing, and to have fewer children (Dye 2010; Rovi 1994). The attainment of a college degree, in particular, may have a profound influence on fertility intentions. The college experience itself influences attitudes and behaviors by imparting values, aspirations, and skills that encourage and facilitate non-familial roles (Rindfuss et al. 1980). In addition, college-going adults might feel less societal pressure to get married and start a family before they finish their degree, but post-graduation might be perceived as the "right time." For those who do not attend college, or do not complete a degree, changes to intentions may come earlier in life.

Beyond the effects of education, employment is also likely to influence changing fertility aspirations in either direction. When women are employed in professional jobs, for example, work may be perceived as a constraint to childbearing and thus expectations are revised

downward (Reimondos et al. 2008; Weston et al. 2004). Alternatively, employment stability leads to union formation, which in turn might increase fertility expectations. At the same time, more economic resources make it easier to meet the expenses of raising children. Indeed, for many people, employment stability, financial security, and home ownership are necessary prerequisites to having children (Barber 2001).

Of course, actual childbearing experience is an additional important life factor that influences changes in fertility intentions (Bongaarts 2001). The reality of parenting may cause some people to want fewer children and some people to want more. For instance, the demands of motherhood may reduce fertility intentions among women who are combining multiple work, school, and family roles. Additionally, a desire for a specific sex-composition for their family may lead to changes in desired family size. For instance, Bongaarts (2001) showed that among women with two children, those with one son and one daughter were most likely to stop childbearing. This research suggests that sex preferences may matter above and beyond the number of children, though others have argued that sex preferences may matter little among recent cohorts in the United States (Morgan 2003).

Role Transitions and the Disjunction between Intended and Achieved Fertility

Research shows that young adults in the United States are often "missing the target," as intended family size frequently exceeds current parity. Scholars such as Bongaarts (2001), Quesnel-Vallée and Morgan (2003), and Morgan and Rackin (2010) have identified a diverse set of biological, cultural, and structural factors that can either impede or facilitate intended fertility. Such factors can include infertility or fecundity impairments, contraceptive use and failure, assisted reproductive technology, and gene networks that influence early attitudes related to

gender roles and desires related to childbearing (Warren et al. 2010). Other factors that influence realized fertility include child mortality, son targeting fertility behavior (Basu and De Jong 2010), as well as cultural norms towards two children and against voluntary childlessness or having large families (Quesnel-Vallee and Morgan 2003).

Changing social roles during the transition to adulthood, in particular, are theorized to sort individuals into environments that promote or constrain fertility intentions. For instance, partnership transitions may change the certainty people feel about their future childbearing plans. Since people generally believe that children have the best outcomes when raised by two parents, decisions about family size typically involve the preferences of two partners (Amato and Booth 1997; Voas 2003). Young adults who have a partner, therefore, should be more likely to achieve their fertility intentions when they are married compared to when they are single. Not having a partner, being in an unstable union, or having recently experienced relationship disruption, could cause greater uncertainty about future opportunities for childbearing, leading to postponement and unrealized intentions.

Rapid work and school transitions during the young adult years may similarly lead to revisions in fertility intentions and either increases or decreases in the disparity between intended and achieved fertility. The demands associated with prolonged post-secondary education, for instance, may lead to postponement in childbearing despite holding a normative desire for two children. Even after the completion of school, the acquisition of a career may lead to delayed childbearing, especially for women who do not want motherhood to interfere with career advancement opportunities and wage attainments (Staff and Mortimer 2011).

In a recent examination of how life course factors can affect the incongruence between intended and achieved fertility among women and men in the NLSY79 cohort, Morgan and

Rackin (2010) found that more educated women had the greatest deficit of children relative to their intentions by age 44. In addition, respondents who remained single throughout this period were the most likely to underachieve their fertility intentions, whereas unwanted births increased the odds of overachieving intentions. This research points to the importance of studying how family, school, and work roles relate to fertility during the pivotal early adult years.

Population Subgroup Differences in Social Role Effects

The effects of social role transitions on fertility intentions and behaviors may be different for women and men. Despite historical changes from 1976 to the present in the percentage of women in the workforce, women today continue, on average, to be responsible for more childrearing duties than are men. For example, women are more likely to take paid parental leave than are men (e.g., 69% of women vs. 12% of men in heterosexual couples of college professors in Rhoads and Rhoads 2012). In time use studies, compared to men, women have been found to spend twice as much time with their children (Guryan et al. 2008). These gender differences in parenting responsibilities may make women's fertility intentions and the disjunction between intended and achieved fertility more dependent than men's on potentially competing social roles related to education and employment.

Race/ethnicity may also moderate the influence of role effects on fertility. There is potential that relationship status transitions have different meaning and importance for white, Black, and Hispanic young people. For example, there is fairly consistent evidence that childbearing has become increasingly separated from marriage, and more prominently so among Black and Hispanic populations than among whites (Ventura and Bachrach 2000). While many white men and women may view cohabitation as a pathway to marriage, Black and Hispanic men and

women may be more likely to view it as an alternative to marriage and as a normative setting for childbearing (Edin and Kefalas 2005; Browning and Burrington 2006). Black and Hispanic adolescents also report lower expectations of marriage compared to their white peers and tend to anticipate marriage at older ages (Manning et al. 2007). Taken together, this evidence suggests that the effect of relationship role transition may have a weaker correlation with fertility intentions among these important subgroups. Education and work transitions may also have a weaker relationship with fertility expectations for Black and Hispanic men and women than for whites because these transitions are perceived to cause less role conflict. For example, research shows that having children increases work-family conflict for white women but does not appear to do so for Hispanic women (Delgado and Canabal 2006). In another study of work and family stress, Grzywacz, Almeida, and MacDonald (2002) found that Blacks report lower work-family conflict than do non-Blacks. If childbearing is viewed as more of a competing activity with work and school among whites, we would expect these role transitions to be more strongly related to fertility intentions among white young-adults than among Blacks or Hispanics.

Finally, the effects of role transitions on fertility intentions and behaviors may vary by historical cohort. The timing and sequencing of role transitions have become increasing diverse and disorderly (Schoon and Silbereisen 2009) suggesting the corresponding possibility of fluctuations in both intended and achieved fertility across cohorts. The extent to which these transitions are normative or non-normative for a given era may also influence fertility decision-making. Role transitions that are non-normative during a particular historical period (e.g., cohabitation) may have an adverse impact on well-being. To the extent that fertility intentions depend to some degree on perceived and real security and well-being, then normativeness, as may be manifested in historical shifts across the 30 cohorts of the MTF, may be associated with

both changes in fertility intentions and changes in the links between role transitions, social-ecological factors, and intended and achieved fertility.

In summary, the period of young adulthood is full of relatively fast-paced changes in social role opportunities. These new experiences and life events can reshape how young adults evaluate the perceived costs and benefits of having a child. The social roles that people occupy may also influence their reactions to societal fertility norms and familial pressures.

This study is designed to address three specific unanswered research questions. Our first question was how individual change in fertility intentions is related to individual change in work, school, and family roles and experiences. We hypothesized that marriage and number of children already born would increase fertility intentions, whereas being single or cohabiting would decrease fertility intentions. We hypothesized that higher levels of educational attainment would reduce fertility intentions but that employment (particularly for men) would increase fertility intentions. Our second question was how social role transitions relate to the disjunction between intended and realized fertility. We hypothesized that marriage would reduce the disjunction between intended and realized fertility but that higher education and professional employment would increase the disjunction between intended and realized fertility. Our third research question was whether these relations vary significantly by gender, race/ethnicity, and cohort. We hypothesized that social role effects, particularly with respect to educational attainment and holding a professional job, would be more pronounced for women than for men. In addition, we hypothesized that social role effects related to marriage would be more pronounced for White than Black and Hispanic young adults and in earlier than later cohorts.

Method

Sample

We use US national longitudinal data from the Monitoring the Future (MTF) project, which is conducted by the Institute for Social Research at the University of Michigan. Each year, nationally representative samples of 12th graders are drawn from about 135 public and private high schools (Johnston et al., 2011a, 2011b). In this paper, we use longitudinal data from 30 consecutive 12th-grade cohorts who were initially sampled in 1976 through 2005. For each of the thirty 12^{th} grade cohorts, approximately 2,400 high school seniors were selected for biennial follow-ups using mailed questionnaires. The biennial follow-up surveys began one year after high school for one random half of each cohort and two years after high school for the other half. Note that additional information about the MTF design and methods is available on the MTF Web site at www.monitoringthefuture.org.

We base our longitudinal analyses on 30 cohorts of women and men who were in the sample during 12th grade and who completed at least one of the five follow-up surveys (at ages 19, 20, 21, 22, 23, 24, 25, 26, 27, or 28). We restrict our longitudinal sample to women and men who provided information on fertility intentions and behaviors, as well as social roles and experiences that we describe in the next section. Note that questions regarding fertility intentions were asked to a random 1/6 of the follow-up samples. For our analyses, we included 5,490 women and 4,814 men. Attrition analyses have indicated that participants who remain in the panel study through early adulthood are more likely to be White; women; higher on high school grade point average, college plans, and parental education level; and lower on high school truancy and senior-year substance use in comparison to attriters (e.g., Schulenberg et al. 2005; Staff et al. 2010).

Measures

Intended and Achieved Fertility. At each wave, respondents were asked their fertility intentions with the following question: "All things considered, if you could have exactly the number of children you want, what number would you choose to have?"[1] Responses ranged on a seven-point scale from "0" to "six or more." Achieved fertility is based upon a time-varying measure indicating number of children (including stepchildren and adopted children), which ranged on a four-point scale from 0 to "three or more."

Figure 1 shows mean values of intended and achieved fertility by age for women and men. On average, women and men intended to have approximately 2.4 children, with a decline in fertility intentions from ages 19 to 28. As fertility intentions declined with age, Figure 1 also shows that achieved fertility (i.e., number of children) increased, especially for women. Yet, by age 28 there was still a sizable gap between the number of children intended and realized.

[Figure 1 here]

To understand the life course factors that influence the disjunction between intended and achieved parity, we combined these measures into one scale coded: 0=achieved parity (number of children intended equals current number of children); 1=respondent desired one (additional) child; 2=respondent desired two (additional) children; and 3=respondent desired three (additional) children. Note that respondents could have mismatches in the other direction (i.e., intending fewer children than they currently have), but this was rare during this period of the life

[1] We recognize slight differences in question wording could produce substantively meaningful differences in the concept being measured although some evidence suggests that respondents themselves view different words as basically the same question (Thomson 1997; Thomson and Brandreth 1995). Additionally, it is likely that the covariates predicting changes in fertility intentions would have similar effect sizes regardless of subtle differences in question wording. It is unclear, for example, why the effect of marriage on changing intentions would be different if we asked about "ideal family size" compared to "desired number of children."

course (current parity exceed intentions on less than 1% of survey occasions). Instead of dropping these occasions from the analyses, they were coded as 0s.[2]

Figure 2 shows how the disjunction between intended fertility and parity varies from ages 19 to 28 by gender (top set of figures), by cohort (middle set of figures), and by race/ethnicity (bottom set of figures). Achieved parity becomes more common for all groups as they transition from late adolescence to young adulthood. Nonetheless, by age 28, most have not yet achieved parity, having fewer children than intended. For the most part, differences in parity across cohort and race/ethnicity pertain more to levels of rates than to the overall age gradation pattern.

[Figure 2 here]

Social Roles and Experiences. At each wave, respondents were asked "what is your present marital status?" and "which of the following people live in the same household with you (mark all that apply)?" We used responses from these questions to create four mutually exclusive dummy variables indicating whether the respondent was single (reference category), cohabiting, married, or separated/divorced/widowed at the time of survey administration.

Respondents at each follow-up survey were asked "during March of this year, were you taking courses at any school or college?" Respondents also indicated at each wave whether they had received a baccalaureate degree or higher. We used this information to create four mutually exclusive time-varying dummy variables: 1=not attending school and no BA/BS degree (reference category); 2=attending school and no BA/BS degree; 3=not attending school and received BA/BS degree; or 4=attending school and received BA/BS degree.

[2] The low frequency of responses for over-achieving fertility led to estimation problems when we included them as a separate category in unlisted models. Furthermore, dropping cases where respondents reported that they over-achieved their fertility intentions did not change the overall pattern of findings.

During each wave respondents were asked "which best describes your employment during the first full week in March?" We first distinguished respondents who were not working from those working part-time or full-time, as was well as whether the respondent worked in a professional job (e.g., lawyer, physician, dentist, scientist, college professor, engineer, computer programmer, registered nurse, librarian, teacher, social worker, etc.) versus a nonprofessional job. We then created three dummy variables indicating whether the respondent was currently: (1) working in a professional job; (2) working in a non-professional job; and (3) not employed

Potential Moderators. To assess whether the effects of social roles vary by sociodemographic factors, we included measures of gender and race (coded Hispanic, Black, and white). To determine whether social role effects on fertility intentions and behavior have varied across the three decades, we included two measures of cohort year defined by the year of high school graduation: 1976 to 1990; and 1991 to 2005.

Analytic Plan

We use a two-level hierarchical model (Raudenbush and Bryk 2002; Halaby 2003) to estimate relations of within-individual change in fertility intentions, as well as the mismatch between intended and realized parity, to within-individual change in work, school, and family roles and experiences. The primary advantage of using analyses of within-individual change is that it allows us to control for all time-stable individual differences that may be related to social role transitions and fertility intentions and behaviors. This hybrid modeling strategy provides estimates that are identical to a "fixed-effects" regression model (Halaby 2003), allowing us to account for a wide range of selection effects and thus more definitively address causal relations.

In all of our models, we treat multiple observations over time (i.e., person-years, level-1) as nested within individuals (level-2). For instance, in the first level of the hierarchical model predicting fertility intentions, we include a time-varying outcome measure of fertility intentions, as well as variables referencing time and time-varying covariates (e.g., family, work, and school roles) as predictors. In the second level, the level-1 parameters become outcome variables. Thus, the level-2 parameters address between-person variation in associations between social roles and fertility intentions.

To account for unmeasured factors, we include the individual means from each time-varying covariate as predictors in the level-2 intercept equation (Halaby 2003; Raudenbush and Bryk 2002). The results for each social role represent the effect of being in a role on fertility intentions. Furthermore, the inclusion of the individual means of the explanatory variables to the intercept equation controls for selection effects by reducing the bias associated with unobserved, stable character traits that may influence both the time-varying covariates and the change over time in intentions (Halaby 2003), such as family background factors or other time-stable aspirations or expectations. Unlike most prior research, our analysis strategy accounts for both observed and unobserved stable differences between young adults, permitting us to draw stronger conclusions about the effects of role transitions on intended and achieved parity.

Results

Do Social Role Changes Impact Fertility Intentions?

Table 1 shows ordered regression estimates of within-individual changes in social roles that correspond with changes in fertility intentions, separately for women and men. Controlling for time-stable factors and age, we saw that union formation had little effect on changes in fertility

intentions. Actual number of children was positively related to fertility intentions. For instance, as women had more children, the number of children desired increased by 38%. For men, fertility intentions increased by 46% with each additional child. Work and student transitions had little effect on revisions to fertility intentions. Though not shown in Table 1, age had a statistically significant effect on changes in fertility intentions: fertility intentions declined linearly for men by 4% with each yearly increase in age. Age effects for women were non-linear, suggesting an accelerated decline in fertility intentions with age.

[Table 1 here]

Table 1 also shows descriptive statistics based upon the pooled data set encompassing the five waves of data from ages 19 to 28, again separately for women and men. Since these proportions are based upon number of biennial observations, one respondent can contribute from 1 to 5 observations. As shown in Table 1, women and men varied in the overall time spent in family roles, despite minimal gender differences in the time spent in school and work. For instance, women were married on 30% of occasions compared to 22% for men. Women also spent more time cohabiting, and had a higher overall average number of children between the ages of 19 and 28 (as shown in Figure 1).

Despite these gender differences in the number of occasions spent in family roles, we considered whether the effects of role changes on fertility intentions varied significantly by gender. In unlisted analyses, we used z-tests to compare the equality of the coefficients (Clogg et al. 1995), and found that only 1 of 9 comparisons of estimates shown in Table 1 were significantly different by gender ($p < .05$). The low percentage of statistically significant differences suggests that any moderation by gender could have occurred by chance. Furthermore, though the estimates of employment in a professional job varied by gender (i.e., for women the

effect was negative and for men it was positive), the effects themselves were not statistically significant. Importantly, the positive relation between fertility intentions and actual number of children was not significantly different for women and men.

Do Social Role Changes Impact the Disjunction between Intended and Realized Fertility?

To answer this question, Table 2 shows estimates of within-individual changes in social roles that correspond with changes in unfulfilled fertility intentions, separately for women and men. The bolded coefficients shown in Table 2 are significantly different for women and men (based upon unlisted z-tests comparing the equality of the coefficients; Clogg et al. 1995). Age is controlled in all models, but the non-linear effects for both women and men are not listed in Table 2.

[Table 2 here]

As shown in Table 2, when women and men were married or divorced, compared to being single, they were less likely to desire more children than they currently had. The effects of union formation and dissolution were stronger for men than they were for women. Men, but not women, were also less likely to desire more children than they currently had when they were cohabiting compared to being single.

Student and work transitions had a positive association with unfulfilled fertility intentions. Women who were college students, for instance, were more likely to desire additional children during this time than when they were not attending school and had not obtained a BA/BS. Prolonged education after completing a BA/BS degree especially increased the likelihood of unfulfilled fertility intentions. Women and men were also more likely to desire more children when they were employed in professional jobs, compared to when they were not working.

Do the Effects of Social Roles on Unfulfilled Intentions vary by Cohort and Race/Ethnicity?

In Table 3, we show estimates of within-individual changes in social roles that correspond to changes in unfulfilled fertility intentions, separately for older (1976 to 1990) and younger cohorts (1991-2005), as well as separately for whites, Blacks, and Hispanics. Table 3 also displays descriptive statistics for each social role based upon the pooled data set encompassing the five waves of data from ages 19 to 28, again separately for each group. Age is controlled in all models, though the linear and non-linear effects are not shown. Similar to Table 2, the bolded coefficients vary significantly based upon unlisted z-tests.

[Table 3 here]

Overall, we saw no difference in the effects of social roles on the disjunction between intended and realized fertility, despite differences in the overall time spent in each role during this period. For instance, respondents in the older cohorts spent more time married during this age span than individuals in the younger cohorts (30% compared to 21%, respectively), but less time cohabiting (9% vs. 14%) and as students (42% vs. 55%). Despite these historical changes in the structuring of role transitions during early adult, none of the role effects were significantly different.

In regards to race and ethnicity, only 2 of the 24 comparisons varied at the $p < .05$ level. In comparison to whites, Blacks were less likely to desire more children than they currently had when cohabiting than single. In addition, Hispanics, compared to Blacks, were likely to desire more children than they currently had when they were employed in professional jobs, compared to when they were not working.

Discussion

A life course model of fertility intentions suggests that decisions are imbedded within an unfolding sequence of social role transitions that intersect with historical time (Quesnel-Vallee and Morgan 2003). Fertility decision-making is a dynamic process where people are revising their intentions to be compatible with their social reality. Life-course transitions and experiences alter people's perceptions of the costs and benefits of having children, and individuals adjust their fertility intentions to be compatible with their own changing life circumstances (Heiland et al. 2008; Iacovou and Tavares 2011).

We hypothesized that marriage and number of children already born would increase fertility intentions, whereas being single or cohabiting would decrease fertility intentions. Consistent with prior research, we found that, as they age, young women and men expect to have fewer children (Axinn et al. 1994; Rindfuss et al. 1988). Furthermore, as childbearing has been shown to increase the total number of children desired (Miller and Pasta 1995), we find that as women have children, they tend to adjust their fertility expectations upward to be consistent with the number of children already born. Although prior research showed that married or cohabiting people want more children than do people who are single or who experienced relationship disruptions (Rindfuss and Parnell 1989; Schoen et al. 1999), we found that relationship status had little effect on revisions to the number of children desired for both women and men. We also hypothesized that prolonged education would reduce fertility intentions but that employment (particularly for men) would increase fertility intentions. This hypothesis was rejected because student status, educational attainment, and labor force participation did not appear to be associated with revisions in fertility intentions.

Our second question asked how social role transitions relate to the disjunction between intended and realized fertility. We hypothesized that marriage would reduce the disjunction between intended and realized fertility, whereas education and professional employment would increase the odds that respondents would desire more children than they currently had. Consistent with recent research by Morgan and Rackin (2010), respondents were less likely to desire more children than they currently had when they were married compared to when they were single. Prolonged education, especially following the completion of a BA/BS degree, also increased the likelihood of unfulfilled fertility intentions, as did professional work.

Finally, we asked whether the relation between social role transitions and fertility intentions varied significantly by gender, race/ethnicity, and cohort. We hypothesized that social role effects, particularly with respect to educational attainment and holding a professional job, would be more pronounced for women than for men. Indeed, women were more likely than men to desire additional children when they were students compared to when they were not students. Similarly, the effect of professional employment was also stronger for women than for men. We also observed that men were more likely than women to realize their fertility goals through marriage and cohabitation. Research by Morgan and Rackin (2010) showed that men who remarried multiple times in the NSLY79 were much more likely to overachieve their fertility intentions by age 44. Though we could not distinguish marriage from remarriage in this study, it is possible that some of the gender difference in marriage we observed here resulted from the greater opportunities to establish new families when men remarried.

Though we hypothesized that social role effects related to marriage would be more pronounced for white than Black young adults, marriage effects were statistically significant for white, Black, and Hispanics and the differences between these groups were not significant. We

did find that Blacks, compared to whites, were less likely to desire more children than they currently had when they were cohabiting. This finding is consistent with prior research showing that Black women and men viewing cohabitation as an alternative to marriage and as a normative setting for childbearing (Edin and Kefalas 2005; Browning and Burrington 2006). The relationship must be viewed with caution, however, given that over 91% of the social role effects did not vary by race and ethnicity.

We found no evidence that social role effects, especially those related to marriage, were more pronounced for young adults in earlier than later cohorts. Why? It may be that the cohorts in the MTF do not extend sufficiently backward or forward in time to capture historical forces that affect fertility intentions. Decreases in preferred family size were large and culture-wide from the 1930s and 1940s until the 1950s and 1960s as greater numbers of women entered the workforce and as artificial birth control became more available, and its use more normative. Historical changes of comparable magnitude did not occur in subsequent decades, including those encompassing the MTF cohorts. However, economic challenges associated with the recent "great recession," which already have been linked to delayed social-role transitions (e.g., marrying at later ages, residing longer with parents) are likely to influence fertility decisions. As new cohorts are added to the MTF the effects of historical time on fertility intentions, and on the disjunction between intended and achieved fertility, may become more apparent.

Nonetheless, the inclusion of 30 consecutive senior-year cohorts is an important strength of the study, allowing us to assess robustness in the relations between social role transitions, fertility intentions, and fertility behavior. The use of large-scale representative multi-wave panel data, spanning a 10-year age interval in early adulthood, allowed us to consider a broad range of social role transitions that are increasingly occurring later in the life course, such as school

completion, marriage, and career acquisition, as well as the simultaneous impact of role transitions in multiple domains (school, work, and family). Additionally, research has shown that people's fertility preferences are influenced by their families of origin throughout their lives, consistent with a life course model of fertility that emphasizes the continuing influence of early life experience (Axinn et al. 1994). By controlling for time-stable selection effects in the analytic approach reported here, we were able to draw stronger conclusions about causal influence.

Despite these strengths, our study also has limitations. For instance, because the sample included only those who remained in school until at least the 12th grade, generalizability to those who dropped out of high school is limited. In addition, the two-year lag between the waves may result in some lack of precision in assessing the impact of role transitions on intended and realized fertility. MTF respondents also did not report fecundity impairments, whether the birth of their child was mistimed or unwanted, whether their child(ren) had died, or their preference for one child of each sex or the targeting of a son, which may affect the odds of achieving fertility intentions above and beyond the social role transitions we included in our analyses.

Finally, on a small number of survey occasions (5%) from ages 19 to 28, respondents in the MTF expressed that they "don't know" their fertility intentions. This uncertainty is an understandable reaction to the multiple demands and experiences of young adulthood (e.g., Quesnel-Vallée and Morgan 2003). Survey respondents may also hold more complex answers than the pre-established response categories can accommodate (Coombs and Coombs 1977), such as a preference for one child of each sex (Bongaarts 2001). Even when fertility intentions are known, it is plausible that some respondents might wish to avoid telling researchers an exact number of desired children. This social stigma may cause certain people who do not want children at all, or those who want many children, to mask their true desires behind an expression

of uncertainty (Shoemaker et al. 2000). Although this finding is typical of questions about fertility intentions, it is often unclear how to include the uncertain respondents (e.g., Iacovou and Tavares 2011). Though we excluded occasions on which respondents indicated that they "don't know" how many children they desire, those experiencing the transition to adulthood likely have good reason for expressing uncertainty given the multiple and often simultaneous social role transitions, and future research should consider the role that uncertainty plays in the realizing of fertility intentions.

The global transition to adulthood involves multiple levels from neurological development underlying improved executive functioning (Burt and Masten 2010; Spear 2010) to social and economic opportunities (Bynner 2005) and cultural expectations about developmental timetables (Heckhausen 2010). Clearly, fertility intentions and outcomes relate to these many levels, and like most else during this global life transition, are best thought of as moving targets. By bringing a more explicit developmental perspective to the understanding of fertility intentions and outcomes during young adulthood, our findings show how intentions relate to the many social role transitions that occur during this time. Our analytic approach, fixed-effects regression analyses, allows us to control for selection effects, and thus make stronger statements about how social role transitions contribute to changes in fertility intentions and outcomes. It is notable that across the third decade of life, we found that the convergence between intentions and outcomes increases, and this pattern appears relatively robust across gender, race/ethnicity, and cohort. Overall, we found that when young adults were single, students (women only), or employed in a professional job they preferred more children than they currently had. These statuses (single, students, employed in a demanding professional job) do not generally facilitate having children, indicating that the desire to have more children is stronger when competing goals or non-

facilitating circumstances impede the desire. Very likely, in these circumstances, the desire for more children represents more of a future desire than an immediate one. In contrast, when in circumstances more conducive to having children, intentions are more likely to be achieved. Future research, building on our findings, should extend further into the fourth decade of life to get to the "point of no return" when parity can only be achieved by changing intentions to match outcomes, and to examine how parity relates to health and well-being.

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Table 1. Within-Individual Ordered Regression Estimates of Family, School, and Work Effects on Fertility Intentions during the Transition to Adulthood, by Gender

	Women (n=5,490)		Men (n=4,814)		% of occasions in role from ages 19 to 28	
	est (se)	odds	est (se)	odds	Women	Men
Number of Children	.319 ***	1.38	.377 ***	1.46		
	(.047)		(.059)			
Family Transitions (vs. Single)						
Married	-.021	.98	-.032	.97	30%	22%
	(.063)		(.076)			
Cohabit	-.062	.94	-.212 **	.81	12%	10%
	(.064)		(.078)			
Divorced	-.112	.89	.112	1.12	3%	2%
	(.136)		(.178)			
Student Transitions (vs. Non Student/No Degree)						
Student and no BA degree	.093	1.10	.100	1.11	33%	32%
	(.060)		(.070)			
Student and BA degree	.128	1.14	.220 *	1.25	7%	7%
	(.100)		(.108)			
Non-student and BA Degree	.038	1.04	-.062	.94	15%	14%
	(.092)		(.105)			
Work Transitions (vs. Not Employed)						
Employed in Non-professional job	-.101 *	.90	.024	1.02	63%	63%
	(.048)		(.059)			
Employed in professional job	-.129	.88	.132	1.14	13%	12%
	(.078)		(.088)			

Note. Non-linear effects of age and level-2 estimates not shown; * p < .05; ** p < .01; *** p < .001

Table 2. Within-Individual Ordered Regression Estimates of Family, School, and Work Effects on Unfulfilled Fertility Intentions during the Transition to Adulthood, by Gender

	Women		Men	
Family Transitions (vs. Single)	est (se)	odds	est (se)	odds
Married	**-.501** ***	.61	**-.948** ***	.39
	(.062)		(.075)	
Cohabit	**.023**	1.02	**-.227** **	.80
	(.064)		(.075)	
Divorced	-.435 ***	.65	-.594 ***	.55
	(.128)		(.163)	
Student Transitions (vs. Non Student/No Degree)				
Student and no BA degree	.152 **	1.16	.069	1.07
	(.057)		(.068)	
Student and BA degree	**.804** ***	2.23	**.507** ***	1.66
	(.098)		(.107)	
Non-student and BA Degree	**.641** ***	1.90	**.336** **	1.40
	(.091)		(.103)	
Work Transitions (vs. Not Employed)				
Employed in Non-professional job	**.387** ***	1.47	**.046**	1.05
	(.046)		(.058)	
Employed in professional job	**.580** ***	1.79	**.249** **	1.28
	(.074)		(.088)	

Note. Bolded coefficients vary significantly ($p < .05$) by gender based upon unlisted z-tests for the equality of the coefficients; Non-linear effects of age and level-2 estimates not shown; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 3. Within-Individual Ordered Regression Estimates of Family, School, and Work Effects on Unfulfilled Fertility Intentions during the Transition to Adulthood, by Cohort and Race/Ethnicity

	Older Cohorts (1976 to 1990)	**Younger Cohorts (1991 to 2005)**	**% of occasions in role**	
	est (se)	est (se)	Older cohorts	Younger cohorts
Married (vs. Single)	-.678 ***	-.722 ***	30%	21%
	(.059)	(.083)		
Cohabit	-.039	-.117	9%	14%
	(.064)	(.075)		
Divorced	-.583 ***	-.304	3%	1%
	(.115)	(.206)		
Student and no BA degree (vs. Non-Student/No Degree)	.138 *	.103	29%	38%
	(.054)	(.075)		
Student and BA degree	.533 ***	.492 ***	13%	17%
	(.089)	(.109)		
Non-student and BA Degree	.738 ***	.596 ***	6%	8%
	(.094)	(.114)		
Employed in Non-professional job (vs. Not employed)	.294 ***	.203 ***	63%	62%
	(.045)	(.061)		
Employed in professional job	.512 ***	.362 ***	12%	15%
	(.073)	(.091)		

	white	**Black**	**Hispanic**	**white**	**Black**	**Hispanic**
Married (vs. Single)	-.645 ***	-1.057 ***	-.991 ***	28%	14%	24%
	(.052)	(.205)	(.220)			
Cohabit	**-.027**	**-.480** **	-.150	11%	10%	10%
	(.053)	(.186)	(.228)			
Divorced	-.477 ***	-.903 *	-.518	2%	3%	2%
	(.111)	(.366)	(.420)			
Student and no BA degree (vs. Non-Student/No Degree)	.125 *	.217	.085	32%	34%	39%
	(.049)	(.143)	(.180)			
Student and BA degree	.450 ***	.897 ***	.715 *	16%	10%	10%
	(.076)	(.250)	(.324)			
Non-student and BA Degree	.611 ***	1.118 ***	.905 **	7%	5%	4%
	(.080)	(.303)	(.312)			
Employed in Non-professional job (vs. Not employed)	.257 ***	.206	.458 *	63%	63%	69%
	(.040)	(.124)	(.180)			
Employed in professional job	.461 ***	**.186**	**.936** **	14%	9%	8%
	(.062)	(.225)	(.309)			

Note. Bolded coefficients vary significantly ($p < .05$) based upon unlisted z-tests for the equality of the coefficients; Non-linear effects of age and level-2 estimates not shown; * $p < .05$; ** $p < .01$; *** $p < .001$

Figure 1. Unadjusted Mean Levels of Intended and Achieved Parity from Ages 19 to 28, by Gender

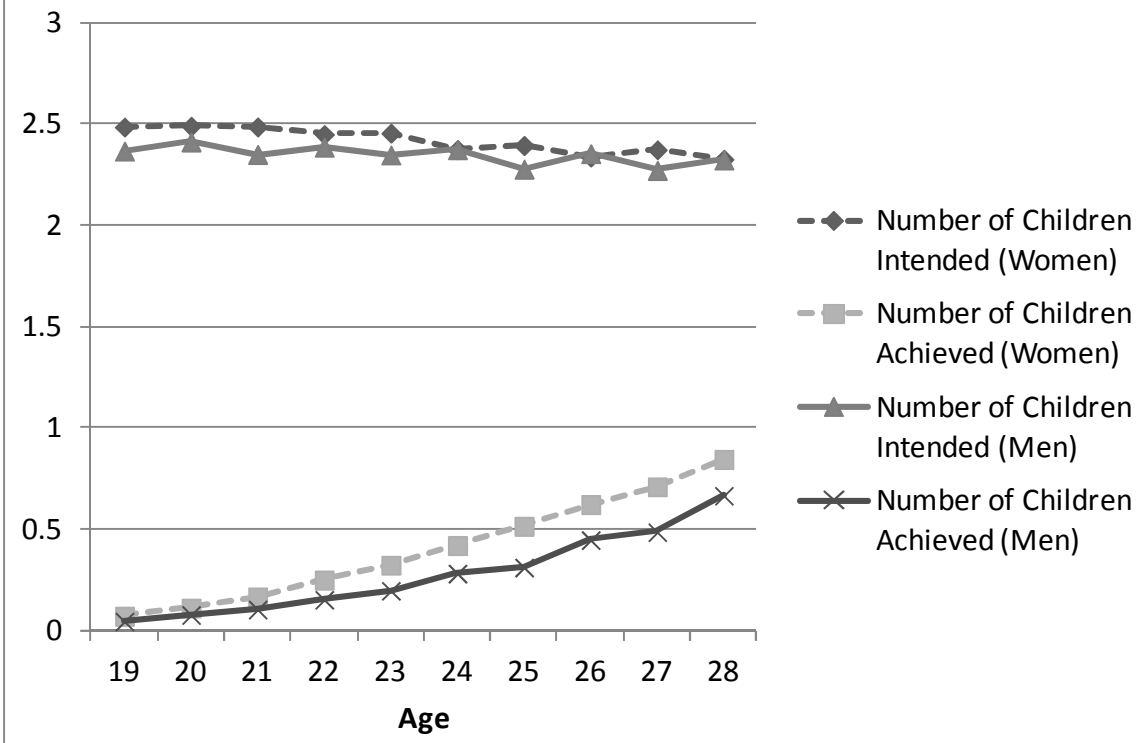

Figure 2. Percentage Achieving and Underachieving Parity from Ages 19 to 28, by Gender, Cohort, and Race/Ethnicity