

Do Men Really Prefer to Live with Sons? Stress, Pregnancy, and Family Composition

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In 1988, Morgan, Lye and Condran published an article in the *American Journal of Sociology* demonstrating that in 1 and 2-child families, couples with girls were significantly more likely to divorce. The finding that “girls cause divorce” was quickly appropriated by both family literature and popular press. The stylized fact is now cited in several hundred journal articles and has been used in at least as many press features. More recent research has provided further support by identifying consistent patterns in U.S. living arrangements; girls have a lower probability than boys of coresiding with their fathers (Dahl and Moretti 2008; Lundberg, McLanahan and Rose 2007). Similarly, women who have a female birth outside of marriage are less likely to subsequently marry the child’s father than are women who have a male non-marital birth (Lundberg and Rose 2003). Scholars argue that these patterns are indicative of son preference among U.S. fathers (Dahl and Moretti 2008). In fact, a child’s sex – thought to be exogenous to family processes – is now regularly used as an instrument for union stability (e.g., Bedard and Deschênes 2005; Ananat 2008).

In recent years, critiques of these patterns have emerged; these have included concerns that the findings do not extend across contexts, cannot be driven by paternal investment (Dieckman and Schmidheiny 2004), and have attenuated in recent periods (Morgan and Pollard 2002). The fact that sex ratios at birth are observed to differ between blacks and whites also raises questions; although researchers typically confine analyses of child gender and family living arrangements to whites, it remains unclear exactly why, at the population level, different pregnancies are readily observed to have different likelihoods of ending in the live birth of a boy (e.g., Kaba 2008; Marcus et al. 1998).

As such, an important competing hypothesis for the son-preference argument remains unexamined. Several decades of research in epidemiology, biology, and obstetrics provide evidence that stress results in the differential abortion of male fetuses - detectable at the population level and resulting in sex-ratios at birth closer to 1.0 (Stearns 1987, Catalano and Bruckner 2005). Further, it is unclear that these perturbations need to be as sizeable as famine, warfare, or recession to affect the sex-composition of children. Expressions of stress following difficult life events at the individual-level predict greater than expected female births (Obel et al. 2007; Hansen et al. 1999).

Evidence also indicates that the likelihood of miscarriage is higher than may be widely appreciated; between 50 and 70% of embryos do not develop to live births (Boklage 1990, Wilcox et al. 1988) – with more losses occurring among males (Boklage 2005) – and maternal reports of stress are sufficient to predict both clinical and sub-clinical pregnancy termination (Nepomnaschy et al 2005).

The medical, biological, and anthropological literatures on the causal mechanisms of sex determination are long. Many mechanisms have been proposed and tested, but a great deal about the causal machinery remains unknown. However the established patterns described here motivate an important empirical question: does the sex of a child provide information about the family's underlying propensity to experience different union trajectories or living arrangements? For example, **might high-conflict marriages and the sources of family strain that drive household instability differentially produce daughters** to a degree that would be discernible in the kinds of large datasets that were used to test the “girls-cause-divorce” and “men prefer sons” hypotheses?

The present study explores these questions. Our research is motivated by two simple but provocative patterns, which we observe consistently in U.S. Vital Statistics data from the early 1970s to the late 1990s. First, we find that women who report having experienced a miscarriage before their first live birth are more likely to have a daughter than a son. This may indicate that vulnerability to pregnancy loss provides predictive power regarding the sex of a first-birth, which is small but nonetheless discernible in population-level data. Second, we find that sons are substantially more likely to be delivered in more complicated procedures (for example, Caesarian or other non-vaginal deliveries) than daughters. This suggests that medical care (and, possibly, other conditions correlated with medical care) around the time of birth may have predictive power.

Our main analyses will draw on multiple longitudinal data sets from the United States with measures of household economic characteristics, relationship quality, union histories, and fertility histories. The inquiry provides an important compliment to existing literature on family processes. First, our findings will provide bounds on the competing interpretations of children's living arrangement patterns reported in earlier research (Dahl and Moretti 2008; Morgan, Condran, and Lye 1988). Second, by investigating the possible *endogeneity* of family sex composition, we emphasize the importance of bridging research in the biological and social sciences to understand stress and family instability.

DATA AND METHOD

Data for this study come from the Early Child Longitudinal Study – Birth Cohort (ECLSB) and the National Longitudinal Study of Youth – 97 (NLSY-97). The ECLS-B is a population-representative sample of over 10,000 children born in the United States in 2001. The data set

includes information from the children's birth certificates – including, importantly, information on mothers' previous miscarriages – as well as interviews conducted with parents (whether or not they lived with children) when children were, roughly, 9 months, 2 years, 4 years, and 5.5 years old. Household composition and the quality of parents' relationships are collected in each survey round. Data on maternal mental health are also collected.

The NLSY-97 is an ongoing longitudinal population-representative sample that follows a cohort of roughly 9,000 adolescents who were ages 12-16 at the end of 1996. Data from parents were collected in 1997; adolescents who were interviewed in 1997 have been re-interviewed every subsequent year. Fertility and union histories are updated in each wave. Importantly, information on miscarriage, conflict within unions, and indicators of depression and anxiety are also collected longitudinally.

Our analysis begins by replicating the relationship we have previously observed in the U.S. vital registry between women's histories of miscarriage and the probability that her children are female. Preliminary analysis suggests this relationship holds in both the ECLS-B and the NLSY97. The finding gives us confidence that we have sufficient sample sizes in these data sets to detect disproportionate male fetus loss in the context of family stress.

The analysis will proceed by replicating existing findings that union stability and household composition are correlated with the sex-composition of children. We then take advantage of the longitudinal data and explore the *timing* of pregnancies and births, relative to conflict within marriage and maternal anxiety, and relative to subsequent transitions in union status and fathers' household residence. We also explore whether and how strongly these factors are correlated with experience of miscarriage. Finally, we use this set of correlations to bound the possible causal effect operating directly between the birth of a daughter and union instability – that is, the possible effect of son-preference on children's living arrangements in contemporary U.S. families.

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