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EMERGING PARENTAL GENDER INDIFFERENCE? SEX COMPOSITION OF CHILDREN AND THE THIRD BIRTH

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For much of the twentieth century, parents in the United States with two children of the same sex were more likely to have a third child than were parents with one son and one daughter, that is, there was an effect of the sex of previous children on the occurrence of a third birth. Using multiple cycles of the Current Population Survey and National Survey of Family Growth, the authors examine the strength of this effect on both fertility behavior and intentions over multiple decades. Changes in the societal gender system are expected to weaken this pronatalist effect in recent periods. Consistent with this expectation, there has been some attenuation of the effect of sex composition of previous children on the third birth, suggesting declining salience of children's gender for parents.

A long and fruitful sociological tradition links demographic differences and changes to institutional structure and change. For example, Durkheim's ([1897] 1951) classic study linked differential suicide rates to institutional differences between Protestants and Catholics. Likewise, differential child mortality for boys and girls and unusual sex ratios among children provide evidence of differential treatment of children, even when indigenous people claim that it does not exist (Dyson and Moore 1983; Johansson and Nygren 1991). Racial and gender inequality in the United States are tracked by demographic measures of income inequality (Bianchi and Spain 1986; Farley and Allen 1987) and by measures of segregation in housing or occupations (Jacobs 1989; Massey and Denton 1993). The unobtrusiveness and behavioral basis of demographic indicators are important strengths: Although attitudinal surveys suggest respondents' views may be changing, behavioral data provide an assessment less influenced by normative response bias.

The current study fits in this tradition. Focusing on data spanning the last 40 years, we ask whether the desire to have both a daughter and a son has disappeared, indicating the basic equivalence, or full substitutability, of sons and daughters. Such a finding would provide strong evidence of *emerging gender indifference* among parents and clear evidence of greater gender equality in U.S. society.

The current study also contributes to a demographic literature that links preferences for sons, daughters, or particular combinations of sons and daughters to fertility levels. More specifically, strong desires for particular sex compositions of children can substantially increase fertility. In the absence of sex preselection, Bongaarts and Potter (1983) show that if couples bear children until they have at least one son, then they will have an average of 1.94 births. If couples stop having children only after having a daughter, then they will average 2.06 births. If a child of each sex is required be-

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fore parents stop childbearing, then they will have an average of three births. While the effects of the sex composition of previous children have been studied in many contexts (especially in Asia and in the context of high fertility), preferences for a son, a daughter, or one child of each sex have their greatest potential effects when parents want few children. High fertility implies that simple sex preferences (e.g., at least one son and one daughter) will be satisfied in the course of having a large number of children. In contrast, desiring few children and a particular sex composition can conflict. For example, if couples want two children and a composition of one son and one daughter, then half of those couples with two children will not achieve the desired sex composition. To the extent that composition preferences increase the number of children a woman has, we say that the *sex of previous children* has a pronatalist effect.

THEORETICAL RELEVANCE OF SEX OF PREVIOUS CHILDREN

Contraceptive technologies and infertility treatments have increasingly made fertility less constrained by physical and biological factors and have heightened the sense that fertility is something that can and should be "controlled" (Lesthaeghe 1983). Thus, most fertility is governed by conscious decisions (e.g., to have a child, to carry a pregnancy to term, etc.) made within structural constraints. Simply stated, individuals/couples assess their current circumstances, and if they anticipate an overall gain from a(nother) child, they will plan to have another child. Further, because children tend to be born one at a time, fertility decisions are inherently a *set* of sequential decisions (Namboodiri 1972). For many, the decision to have a first birth is of primary import—whether to have any children at all has pervasive life course consequences (Rindfuss, Morgan, and Swicegood 1988). The second birth may have less impact on parents' lives; respondents frequently link this decision to concerns about raising an only child or having a son or daughter (Bulatao 1981). The rationale for a third child is frequently more idiosyncratic – families are less constrained by strong norms encouraging parenthood and discouraging one-child families (Blake 1981, 1994). For those with two children of the same sex, having a child of the other sex has been one rationale for planning a third birth.

The societal "gender system" is the source of differential preference for sons, daughters, or both. The gender system is "the socially constructed expectations for male and female behaviour. . . . A gender system's expectations prescribe a division of labour and responsibilities between women and men and grant different rights and obligations to them" (Mason 1997:158). The gender system has two parts: institutionalized gender stratification and gender roles. Personal experiences with, or *perceptions* of, these social institutions and gender roles bring them to the consciousness of decision-makers.

Cross-culturally, Williamson (1976) argues that sex preferences favor sons (versus daughters), a pattern consistent with the cross-cultural predominance of patriarchy. Institutionalized gender differentiation implies that the benefits/costs of sons and daughters differ (i.e., what one anticipates from a son may differ from what one anticipates from a daughter). When gender roles are highly distinct, sons and daughters are not substitutable. Economic, social, and psychological reasons to prefer sons exist given patriarchy and the nonsubstitutability of sons and daughters (Williamson 1976). In Nepal, for instance, Niraula and Morgan (1996:256) quote an elderly woman as saying:

> I could not bear a son. God has punished me and will continue to punish me even after my death because there is no son to look after me in this state of mine and also no son for the salvation of my soul after the death. So I am a living dead.

This statement resonates with common reasons for wanting sons in Nepal: to support parents in their old age and to perform religious rites for deceased parents. In the Nepali context, existing institutions make it difficult for daughters to perform such functions. However, Nepali parents want at least one daughter as well. For instance, Hindus gain religious merit and social status by marrying off one's daughter. Without a daughter, one is disadvantaged in pursuit of merit and status. Additionally, mothers want help

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with their work—work that is not appropriate for their sons.

Gender differentiation in the United States is much less extreme than in Nepal. Thus, gender differentiation has more subtle effects on U.S. sex-composition preferences. Williamson (1976) argues that there is little evidence of a preference for sons in the United States. Instead, the compositional preference is for *at least one son and one daughter*. Studies based on U.S. data (e.g., Clare and Kiser 1951; Freedman, Freedman, and Whelpton 1960; Sloane and Lee 1983; Winston 1931; Yamaguchi and Ferguson 1995) consistently show such a sex-composition effect on fertility behavior and fertility intentions: Parents with two children of the same sex are consistently more likely to have a third child than are parents with two children of the opposite sex—a *sex-of-previous-children* effect.

Williamson (1976:22) suggests two rationales for wanting sons *and* daughters that appear especially relevant in the contemporary United States. First, "parents may desire . . . variety, based on the notion that the sexes will have different traits, strengths, leisure activities, and interests." Second, "if boys are seen as having a special tie to their fathers and girls to their mother, then parents may desire at least one of each," allowing for within-family, parent-child gender symmetry. Note that a similar argument could be based on parent-child gender asymmetry. Although seemingly separate, we see this second rationale as deriving from the first: If sons and daughters had no different traits, strengths, and so on, there would be no rationale for symmetric (or asymmetric) parent-child relationships.

What "traits, strengths, leisure activities, and interests" vary by gender and are valued by parents? In strongly patriarchal settings, classical concerns include contributions to the family economy and future social support to parents (Caldwell 1982). In diluted form, these may be relevant in the United States because of gendered *instrumental* and *expressive* roles (Parsons and Bales 1955). Traditionally, men were expected to be breadwinners and would thus link the (nuclear and extended) family to extrafamilial resources and institutions (an instrumental role). A successful son could bring status and resources to a family through his extrafamilial roles. In contrast, traditional women specialized in expressive roles that contributed to within-family stability and efficiency. Until very recently, few would dispute that males would more likely obtain higher educational attainment and occupational prestige than would females. Likewise, it is widely acknowledged that women do more "family work" than do men, and that daughters have more frequent interactions with parents than do sons (Collins and Coltrane 1992:364–78, 627).

A second relevant domain may be the intrinsic, nonsubstitutable pleasure derived from watching one's own children grow, interacting with the child, and participating with the child in particular events or tasks (Bulatao 1981; Friedman, Hechter, and Kanazawa 1994; Hoffman and Manis 1979). These might include traditionally gendered activities such as participatory or spectator sports, outdoor activities, shopping, and discussing "feelings and relationships." If one valued some of these activities in particular, traditional gender roles imply additional motivations for either a son or a daughter, depending on the activity valued.

A case for a declining effect of sex of previous children is consistent with significant changes in the gender system in recent years. Much of this redefinition has been codified legally and administratively, ranging from antidiscrimination laws to regulations regarding the division of university athletic budgets for men's and women's sports. There has been a long-term societal shift from "traditional" gender-role attitudes (stressing a dichotomy between the male breadwinner and female homemaker-mother roles) toward shared roles and egalitarianism. This documented shift in attitudes began in the late 1950s, accelerated during the 1960s and early 1970s, and has continued through the 1990s (Bianchi and Casper 2000; Cherlin and Walters 1981; Thornton and Freedman 1979). These attitudinal shifts have been broad and have involved a convergence among all segments of the population, not simply among the more highly educated or politically liberal, one gender, or a particular race (DiMaggio, Evans, and Bryson 1996). Behavioral data also suggest some convergence in husbands' and wives'

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work and family roles (Bianchi 2000). Weakened effects of sex of previous children could reflect change (or anticipated change) in gendered norms and in the gendered behavior of children and/or adults.

In addition to changes in the gender system, other arguments anticipate attenuation of the effect of the sex of previous children. Specifically, the proportion of lone-parent families (i.e., single mothers, and more recently, single fathers) has increased over the last 40 years. By 1990, more than 20 percent of all families were noncohabiting, lone-parent families (Bianchi and Casper 2000:20). Perhaps the effect of sex of previous children remains stable, but it is only relevant for partnered couples. If the preference for a balanced sex composition within a family is based on each partner's desire for a same-sex child to interact with (Margolin and Patterson 1975; Stattin and Klackenberg-Larsson 1991), a substantial increase in lone parents at parity two (the cumulative number of live births) may attenuate the effect of sex of previous children. Further, lone parents may be inclined to plan additional children upon (re)marriage (Griffith, Koo, and Suchindran 1985), regardless of the sex composition of their current children. In such a case, the sex-of-previous-children effect may weaken at the population level, while its effect for particular family types has not changed.

Other arguments suggest the magnitude of the sex-of-previous-children effect might increase. To explain, the effect is visible only when fertility is controlled (i.e., when individuals have access to contraception or abortion). The period under study witnessed dramatic increases in reproductive control due to increased availability of reliable, coitus-independent contraceptive methods and legalized abortion. These changes should make the sex-of-previous-children effect increasingly visible beginning in the mid 1960s.

Finally, Yamaguchi and Ferguson (1995) report that the sex-of-previous-children effect on fertility is *stronger* among the more highly educated. They argue that more educated couples have greater future income and are thus less responsive to cost effects in discouraging births—they can better absorb the costs associated with another same-sex child. Yamaguchi and Ferguson's finding could be extended to suggest that the observed strength of the sex-of-previous-children effect would increase with time as the average educational attainment of women increases.

DATA AND ANALYTICAL STRATEGY

Features of our strategy and data increase confidence in our conclusions. First, in the absence of widespread use of sex-preselection technology, the stochastic process determining sex of previous children assures it is largely unrelated to other individual characteristics (Bongaarts and Potter 1978). This fact dramatically weakens concerns that associations between the sex of previous children and fertility (and fertility intentions) are noncausal. Second, we stress our use of multiple data sets and measures as well as the accuracy of key measures. Fertility and children's sex are among the most precisely measured social phenomena with high levels of comparability across time and groups. Accuracy of measurement allows for more precise estimation of associations. We also analyze fertility intentions that allow a (prospective) assessment of the likely future impact of the sex of previous children on fertility. Although intentions do not predict fertility behavior perfectly, the association is strong (e.g., Hendershot and Placek 1981), and most researchers consider intention questions to be useful complements to behavioral data (Bongaarts 1992; Rindfuss et al. 1988).

We use multiple data sources: four cycles of the June Current Population Survey (CPS 1980, 1985, 1990, and 1995), and three cycles of the National Survey of Family Growth (NSFG 1983, 1988, and 1995). Each survey has been used widely and is described elsewhere (U.S. Department of Commerce 2000a; U.S. Department of Health and Human Services 1997). Note that each survey contains fertility histories for at least the first three births (i.e., the portion of the fertility history of interest here), and the large sample sizes allow assessment of even modest changes in the impact of sex of previous children on fertility. Female respondents at parity two or higher are included in

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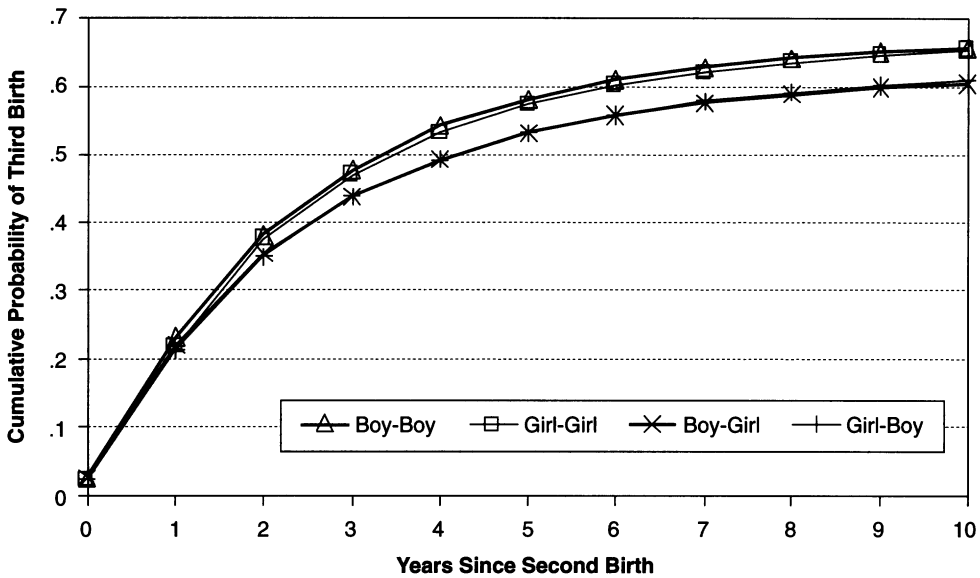

Figure 1. Probability of a Third Birth among Mothers Who Have Completed Their Fertility (Aged 40 and Older): CPS, 1980, 1985, 1990, and 1995

Note: Number of cases = 59,997.

the fertility analysis, while women at parity two at the time of survey comprise the sample for analyses of intentions.

MAGNITUDE AND TRENDS IN EFFECTS OF SEX OF PREVIOUS CHILDREN

Using pooled CPS data for women aged 40 and older at the time of the survey (those in birth cohorts 1915 to 1954), Figure 1 shows the probability of progression to parity three by children's sex composition and duration since second birth (N = 59,977). Because few births occur after age 40, these data capture well the sex-of-previous-children effects for women who have completed childbearing. Specifically, mothers with same-sex children (i.e., only sons [boy-boy] or only daughters [girl-girl]) are more likely to progress to the third birth than are women who had a mixed sex composition (i.e., boy-girl or girl-boy). The same-sex progression probabilities are essentially identical, as are the mixed-sex progression probabilities. In contrast, the same versus mixed progression probabilities are significantly different (log-rank $\chi^2 = 133.1$, $p < .0001$). This pattern indicates a clear preference for having children of both sexes, as opposed to a preference for only sons or only daughters. Subsequently, we focus on the contrast *same* versus *mixed* and ignore other possible contrasts.

Disaggregation by birth cohort introduces a temporal dimension into this analysis, a dimension featured in a classic perspective on social change (Ryder 1965). The percentage of each cohort that progresses to the third birth changes over time, peaking at over 70 percent for the 1930s cohorts, and falling to a low of around 45 percent for the most recent cohorts (1950–1954).[1] Despite this considerable variation in level, our analyses show persistent differences in the fertility of those families with "same" and "mixed" sex compositions. To estimate the magnitude of the sex-of-previous-children effect across cohorts, we regressed (for each cohort separately) the odds of having a third birth on the contrast same versus mixed. Figure 2 presents the resulting odds ratios, along with a 95-percent confidence interval. Odds ratios greater than 1.0 indicate an increased likelihood of a third birth for those

[1] The percentage of the total fertility rate accounted for by third-order births remained stable throughout the twentieth century at roughly 16 percent (Morgan 1996:25).

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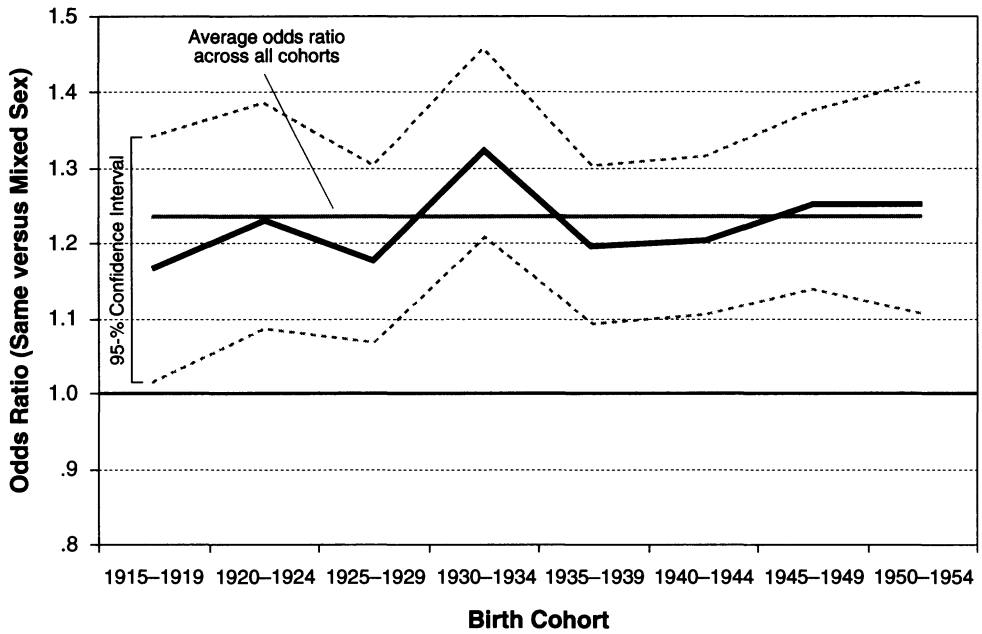

Figure 2. Odds Ratios for a Third Birth, by Cohort, among Mothers with Two Same-Sex Children: Observed Fertility, CPS 1980, 1985, 1990, and 1995

Note: Number of cases = 59,997.

with same-sex (versus mixed-sex) compositions. Pooling all cohorts, the estimated odds ratio is 1.23 indicating that the odds on a third birth are increased by a factor of 1.23 (or 23 percent) if the previous children were both sons or both daughters (versus mixed). The sex-of-previous-children effect is substantial in magnitude, statistically significant, and does not vary significantly by birth cohort.

In light of the research that indicates fertility is a period-driven process (i.e., social changes affect people of all ages and cohorts similarly and at the same time; see Ní Bhrolcháin [1992]), an assessment of the sex-of-previous-children effect by calendar year is preferred to a cohort-based approach. The period approach also allows inclusion of more contemporary data (i.e., data for women still in the childbearing years at the survey date). Using the pooled CPS and NSFG data, a discrete-time event-history file was constructed. Individuals were followed from their second child's birthday until the birth of their third child, until age 41, or until they were censored by the survey date. We stratified these risk-segments by calendar year and estimated sex-of-previous-children effects on the transition to third birth for each year (from 1955 to 1994).[2]

Over the entire 40-year span under consideration, mothers with same-sex children are more likely to progress to a third child than are mothers with children of different sexes. However, from this period perspective, the magnitude of the sex-of-previous-children effect changes somewhat. As shown in Table 1, significance tests indicate a significant strengthening of the effect after 1970 ($p < .001$), and then a decline after 1985 (significant at $p = .014$). More precisely, estimated effects are 1.12, 1.26, and 1.15 in these three periods.[3]

[2] Additional controls for age, race, marital status, and education, all of which are known to be associated with overall fertility patterns, do not alter the results. Limiting analysis to shorter durations following the second birth (e.g. five years) leads to similar results.

[3] Results presented in earlier versions of this paper suggested a greater and more rapid decline in the sex-of-previous-children effect in the period-based behavioral analysis. The earlier results were based on data that included imputed values for missing "sex of children" responses in the 1990 and 1995 CPS. The imputing strategy

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Table 1. Odds Ratios for a Third Birth, by Period, for Mothers with Two Same-Sex Children (versus Mixed-Sex Children): CPS and NSFG

Period	Odds Ratio	Logit Coefficient	
1955–1965	1.12***	.117	(.019)
1966–1985	1.26***[a]	.227	(.015)
1986–1994	1.15***[b]	.142	(.031)

Note: Numbers in parentheses are standard errors of logit coefficients. Models control for age and duration since second birth.

[a] The increase from 1955–1965 to 1966–1985 is significant at $p < .001$

[b] The decrease from 1966–1985 to 1986–1994 is significant at $p = .014$

*$p < .05$ **$p < .01$ ***$p < .001$ (two-tailed tests)

Consideration of fertility-intention data strengthens our claim that the sex-of-previous-children effect has weakened recently and that its effect will remain modest. We use 1985 and 1990 CPS data (the 1995 cycle did not collect intentions data) and 1988 and 1995 NSFG to examine responses from women who (at interview) had two children and were younger than age 41. In each survey, women were asked whether they intended to have another child—a prospective fertility measure.[4] We contrast those who intend to have another child with those who do not or who are undecided. The magnitude of sex-of-previous-children effect on intentions should be greater than that estimated for fertility outcomes because an inability to have intended children and unintended fertility weaken effects on observed outcomes. What is key for our arguments is evidence of change, specifically evidence of recent attenuation.

Table 2. Odds Ratios Showing the Sex-of-Previous-Children Effect (Same versus Mixed Sex) on the Third Birth Intentions of Women Aged 40 or Younger: CPS, 1985, 1990, and NSFG, 1988, 1995, without Controls

Survey/Year	Odds Ratio	Logit Coefficient	
Current Population Survey Data (N = 16,727)			
1985	1.49***	.401	(.077)
1990	1.33***	.282	(.067)
National Survey of Family Growth Data (N = 3,119)			
1988	1.62**	.481	(.153)
1995	1.12	.112	(.132)

Note: Numbers in parentheses are standard errors of logit coefficients. These models estimate the effect of the sex of previous children (same versus mixed sex), without controls, on a mother's intention to have a third child.

*$p < .05$ **$p < .01$ ***$p < .001$ (two-tailed tests)

Table 2 shows the sex-of-previous-children effects on fertility intentions (i.e., odds ratios: yes versus no + don't know) from the two pairs of surveys. Comparing the 1985 and 1990 CPS, a modest, statistically nonsignificant decline in sex-of-previous-children effect is observed. However, when we contrast the 1988 and 1995 intention data from the NSFG, we find clear and statistically significant evidence of decline in the sex-of-previous-children effect (from 1.62 to 1.12). Thus, consistent with CPS and NSFG behavioral data, fertility intention data indicate an attenuation of the effect of sex-of-previous-children beginning around 1985.[5]

COMPETING HYPOTHESES

Two hypotheses introduced earlier suggest a strengthening of the sex-of-previous-children effect. Above we reported an increased

used in the CPS data assigned virtually all missing "sex of children" cases at parity two to a "mixed sex" composition. It is unclear why this would affect results. Nevertheless, we have removed all imputed cases from the present analysis and have combined CPS and NSFG data to produce the most precise estimates possible. Contact the first author for complete details and comparisons.

[4] The NSFG asked: "Looking to the future, do you (and your husband/partner) intend to have another baby?" Women who were sterile or who had partners that were sterile (or who otherwise physically could not have children) were included with the group not intending to have additional children. The CPS question is ostensibly the same in 1985 and 1990.

[5] We tested for a significant change in the sex-of-previous-children estimate by combining the four data sets. The decline in effect from 1985 (CPS) to 1995 (NSFG) is significant ($p < .05$).

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effect between the 1955–1965 and 1966–1985 time periods. This change is consistent with increasing contraceptive effectiveness and abortion availability that should have strengthened the influence of sex-of-previous-children by allowing couples to more reliably choose the number of children they bear. This hypothesis gains credibility from synchronous changes in the sex-of-previous-children effect and declining "unintended fertility" (Henshaw 1998). A second hypothesis does not fare well. As noted earlier, Yamaguchi and Ferguson (1995) argued that the effect of sex of previous children is stronger for highly educated women (with 16 or more years of school). One might argue that increasing proportions of women with a college education would strengthen the estimated effect for the total population. To consider this possibility, an interaction term (*16 or more years of education* × *sex of previous children*) was added to the logistic models that produced the results shown in Figure 2 (results not shown here). In contrast to Yamaguchi and Ferguson's (1995) finding, the interaction of college degree with the sex-of-previous-children variable was not significant for any of the cohorts. Moreover, the sign of the interaction fluctuated from cohort to cohort.[6] Because the analytical method used by Yamaguchi and Ferguson differs from ours, we investigated whether our differing results could be due to methodological differences. Specifically, we reestimated logistic regressions for each cohort *within each of the four CPS data sets*. The results of these regressions (available from the authors) can be described simply: Using only the data Yamaguchi and Ferguson used (i.e., the 1985 CPS), we can replicate their finding of a significant interaction between higher education and sex composition of children. Cohorts of women born during the 1940s are shown to have strong and significant interactions in the expected direction *in the 1985 CPS*. However, we failed to find consistent effects for the *education* × *sex-of-previous-children* interaction for other cohorts, and more important, *for these same cohorts* using the other surveys. Thus, it is our view that some anomalous variation (possibly sampling variation) in the 1985 CPS data led to Yamaguchi and Ferguson's finding that the sex-of-previous-children effect was stronger for highly educated women. Given these findings, increasing educational levels of cohorts could not affect trends in the sex-of-previous-children effect.[7]

We also offered two hypotheses for weakening effects of sex of previous children, a pattern we observed only for the most recent period (i.e., after 1985). Our primary substantive hypothesis for this decline is a weakened gender system. The primary competing hypothesis stresses changing marriage and living arrangements—perhaps the sex-of-previous-children effect persists, but for a declining segment of the population (the two-parent household with only biological children). The timing of the sex-of-previous-children attenuation argues against this hypothesis because dramatic change in marriage and family composition occurred much earlier than 1985 (Espenshade 1985). We have also tested this hypothesis directly by reestimating results described in Figure 2 and Table 1 for two subsamples of women: (1) women who were married at the birth of their second child, and (2) once-married women who were married at the birth of the first child and remained married until the third birth or censoring. The observed decline in the sex-of-previous-children effect persists for these more refined samples and thus increases in lone-parent families cannot account for the aggregate behavioral trends we present.

Further, Table 3 shows models estimated on the CPS and NSFG intention data. Models shown build on the simple model in Table 2. For example, column 1 adds controls for marital status, educational attain-

[6] Similarly, interactions between race (black, Hispanic, and other) and children's sex composition were tested to examine whether the sex-of-previous-children effect on third births varies by race. No evidence for these interactions was found.

[7] Consistent with this finding and the persistence of a sex-of-previous-children effect across cohorts with both high (1930–1934) and relatively low (1950–1954) fertility (Figure 2), Blake (1979) demonstrated that the desire for children is not as vulnerable to cost factors as one might expect according to microeconomic models.

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Table 3. Odds Ratios Showing the Sex-of-Previous-Children Effect (Same versus Mixed Sex) on the Third-Birth Intentions of Mothers Aged 40 or Younger: CPS, 1985, 1990, and NSFG, 1988, 1995, with Controls

Year		With Controls [a] (1)	Only Married [b] (2)	NSFG Controls [c] (3)
Current Population Survey Data				
1985	Odds ratio	1.55***	1.63***	—
	Logit coefficient	.436*** (.081)	.490*** (.090)	—
1990	Odds ratio	1.31***	1.29**	—
	Logit coefficient	.272*** (.069)	.259** (.079)	—
Number of cases		16,727	12,931	
National Survey of Family Growth Data				
1988	Odds ratio	1.70**	1.71*	1.69**
	Logit coefficient	.531** (.163)	.533* (.211)	.527** (.164)
1995	Odds ratio	1.25	1.35	1.21
	Logit coefficient	.221 (.144)	.300 (.189)	.192 (.150)
Number of cases		3,119	2,145	3,105

Note: Numbers in parentheses are standard errors of logit coefficients.

[a] Models in column 1 include controls for respondent age, marital status (dummy indicators: never-married, previously married, currently married [reference]), education (dummy indicators: less than high school, college, high school diploma [reference]), and race/ethnicity (dummy indicators: black, Hispanic, other, white [reference].

[b] Models in column 2 replicate those in column 1 for currently married women only.

[c] Models in column 3 control for respondent age, education, marital status, race/ethnicity, total family income, pronatalist religious affiliation (dummy indicator: Catholic, other [reference]), weekly religious attendance, full-time employment, mother's education, rural residence, ever had abortion.

*$p < .05$ **$p < .01$ ***$p < .001$ (two-tailed tests)

ment, and race. Each factor has a significant impact on intending to have an additional child, but these effects are not the focus here and are not shown. Instead, we stress that the addition of these variables does not attenuate the sex-of-previous-children effect (compared with estimates in Table 2) or alter the pattern of change described earlier. The decline in the sex-of-previous-children effect from 1985 to 1995 is significant ($p < .05$). (Detailed results are available from the authors).

To further examine the notion that increasing lone parenthood contributed to the reduced visibility of the sex-of-previous-children effect, we repeat the analyses conducted in column 1 for currently married women only, and report estimated odds ratios in column 2 (Table 3). This reanalysis produces results that are indistinguishable from those described above. In column 3 we use only the NSFG data because they allow controls for additional factors not available in the CPS data. Additional factors not previously controlled include: respondent ever had an abortion (potential sex-selective pregnancy), as well as factors linked to pronatalist group membership (rural residence, Catholicism, weekly church attendance), factors associated with reduced overall fertility (full-time employment, family income), and a measure of mother's educational attainment to assess the role of maternal education on transmission of fertility attitudes. Each of these factors has previously been shown to affect fertility behavior (Bianchi and Spain 1986;

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Thornton, Axinn, and Hill 1992). Although the measurement of some of these factors is recognized to be poor (e.g., abortion, income), their inclusion speaks generally to the robustness of the changes in the sex-of-previous-children effect (additional analyses available from the authors).

In short, we find no evidence in any of the data sets or with either outcome (behavior or intentions) supportive of compositional explanations (focusing on increased educational attainment or the increase in sole-parent families). These compositional arguments cannot account for the increase in effects of sex-of-previous-children after 1965 or the recent (post-1985) decline.

Left open is the question whether the sex-of-previous-children effect and observed changes in it are truly pervasive (i.e., whether the magnitude and change in the sex-of-previous-children effect is the same for all groups). Our data limit our ability to provide a definitive answer to the pervasiveness question. The CPS data have few covariates other than education and race/ethnicity. We were not able to reject the hypothesis that the sex-of-previous-children effect was the same across racial/ethnic groups (results not shown), and our reexamination of the Yamaguchi and Ferguson (1995) finding shows clearly (but counter to Yamaguchi and Ferguson) pervasive effects of the sex-of-previous-children effect across education level.

Following the theme of group-specific relevance of *sex of previous children,* we could test for differences related to our primary hypothesis—that gender systems produce this sex-of-previous-children effect and are primarily responsible for its change. Specifically, we could identify segments of the population that are subject to (or subscribe to) stricter, more traditional gender systems than the population as a whole and test for differences in the relevance of sex of previous children for these groups. The more rigid the gender system, the more important the sex composition of children should be to intentions for third births. Relatively conservative or family-oriented groups include Hispanics, Catholics, frequent churchgoers (high religiosity), and rural residents. Using NSFG intention data, we conducted tests for interactions to examine whether these groups were more responsive to the sex-of-previous-children effect than others and whether effects changed differentially over time (results not shown). The direct effect of sex of previous children was remarkably robust; interactions between the group membership and sex of previous children did not even reach levels of marginal ($p < .10$) significance and were not stable across years. Although the lack of significant differences may be due to the relatively small samples in the NSFG or to the indirect measurement of traditional gender values, it could also be reconciled theoretically; research has identified an overall population convergence in social attitudes over time (DiMaggio et al. 1996) and has shown that the most rapid changes in attitudes occurred prior to the 1988 observation window on our attitudinal measures. Thus, any potential differences between these groups and the population as a whole may have weakened to the point where we can no longer identify them with NSFG data.

DISCUSSION

We have examined the changing relevance of sex of previous children, both in terms of completed fertility (for cohorts 1915–1954) and in terms of period fertility (for periods 1955–1994). The period results, which include the most recent experience, suggest a post-1985 decline in the sex-of-previous-children effect. Reference to the Lexis diagram in Figure 3 allows us to integrate all of these results. Lexis diagrams provide a simple way to clarify relations between cohort and period exposure segments (Preston, Heuveline, and Guillot 2001). The Lexis diagram shows the period and age dimensions on the horizontal and vertical axis, respectively. The cohort "life lines" are shown as upward sloping diagonal lines. We focus on behavior and intentions between ages 15 and 40 (represented by the area between bold dashed lines) for a long series of birth cohorts and periods. A substantial literature, ending with Yamaguchi and Ferguson's (1995) analysis, indicates that parents with two children of the same sex are substantially more likely to have a third child than are parents with one son and one daughter. We confirm that this is true for cohorts born 1915 to 1954 (for childbearing represented

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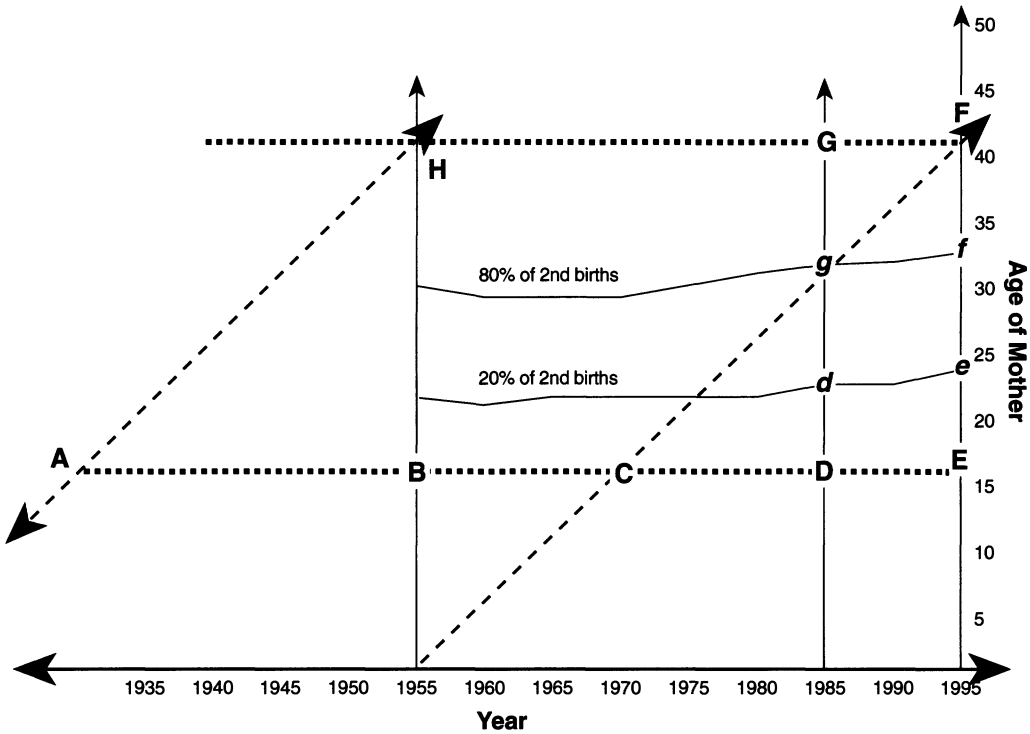

Figure 3. Lexis Diagram Integrating the Cohort and Period Results

by the parallelogram ACFH) and for periods 1955 to 1985 (the rectangle BDGH). Only for the last 10-year period studied do we find evidence of an attenuation of this effect.

Both observations deserve comment. First, the long-term existence of this effect is striking. Our analysis suggests the sex-of-previous-children effect strengthened modestly in the 1960s and prior to 1985. Such a change could reflect greater contraceptive efficacy that revealed more clearly women's/couples' intentions.

The first observation, long-term visible effects that strengthened, makes the second observation, recent attenuation, especially striking. The CPS and NSFG behavioral data refer to cohorts whose members have not all reached the end of their reproductive ages; thus caution is appropriate. However, we are able to replicate this finding with intentions data from the CPS and the NSFG, which suggest that the attenuation will persist and perhaps continue in the near future. Thus this second, robust finding (i.e., recent attenuation) begs the question: Why did the sex-of-previous-children effect persist so long only to weaken so recently?

Figure 3 suggests a possible explanation. The change in the sex-of-previous-children effect took place in the final periods (after 1985) approximated by the rectangle DEFG. As shown by the 20th and 80th percentile lines, most women had their second births between ages 23 and 32 and were subsequently at risk of having a third child. This observation focuses our attention even more precisely on the area *defg*. Mothers to be observed can be defined by cohort (i.e., those born in the 1960s) or by period (those at risk of a third birth after 1985). We stress a *combination of both cohort and period*—these cohorts are the first to be born and raised in an attitudinal climate supportive of gender equality and the first to have experienced increasing opportunity for women. Perhaps just as important, these cohorts have seen weakening gender stratification throughout their lifetimes and may reasonably project this trend into the future.

In addition, some recent and visible changes may have underscored women's gains and their irreversibility. For instance, since 1988 the college enrollment of recent high school graduates has been greater for

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women than men (U.S. Department of Commerce 2000b, table 295) and the gender gap in college education has widened since.[8] As another example, Title IX, enacted in 1972 and reinforced by the Civil Rights Restoration Act in 1988, has produced dramatic convergence in one of the more visible and most gender-segregated aspects of American life: sports. Participation by girls in high school sports has shown dramatic increases, as has women's participation in sports at the college level. At the high school level, 6.5 million students participate in high school sports programs. The ratio of males to females in 1971 was 12.5:1; the comparable 1997 estimate is 1.4:1; at the college level, the 1997 ratio is 1.5 (U.S. Department of Commerce 2000b, tables 430, 432).

In summary, the observed shifts in fertility patterns could reflect the synergy among cohorts that were primed to be gender indifferent by exposure to social attitudes while growing up, and the period when structural and other social factors (collectively referred to as the "gender system") enabled such behavior. If the current patterns continue, as suggested by the intentions analyses, the completed fertility behavior of cohorts passing through the period beginning with the late 1980s would provide a clear attenuation of the sex-of-previous-children effect shown in Figure 2.

The declining effect of children's sex composition on the third birth is theoretically consistent with current shifts in the gender system. We have highlighted the convergence in children's roles, but this convergence also has been mirrored at the parental level (Bianchi 2000). Growing structural opportunities for parents complement such changes for their children, combining to reduce the relevance of a child's gender to the activities and experiences of that child and its parents. Although effects of gender persist, they are significantly diluted in strength when compared with earlier periods. Currently no strong theoretical argument suggests a strengthening of sex-preferential fertility behaviors. The observed changes also do not appear to be artifacts of particular data or measurement strategies; multiple approaches and data sources all indicated attenuation. Societal changes clearly have visible effects on demographic processes, thereby making demographic change a useful and unobtrusive indicator of social change.

[8] The male:female ratio of the percentage of recent high school graduates enrolled in college shifted from 1.42:1 in 1960 to 1.02:1 in 1985, and has remained near or below .90:1 since 1995 (U.S. Department of Commerce 2000b, table 295).

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