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Status and Completed Fertility across Seven Decades of American Birth Cohorts: Stable Sex-Specific Gradients and the Concentration of Male Childlessness

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Abstract

Purpose.

Whether social status still predicts reproductive success in industrial societies is a long-standing problem for evolutionary approaches to human behavior. Existing evidence for the United States comes from single surveys observed at one point in time. This study asks whether the sex-specific associations between status and completed fertility have changed across American birth cohorts, which reproductive margin carries them, and what they imply for ongoing phenotypic selection.

Methods.

Data come from the General Social Survey, 1972 to 2024. The analytic sample holds 22,975 adults aged 45 to 64, born 1908 to 1979. Poisson, logistic, and linear regressions relate children ever born, childlessness, and children among parents to within-year income quintiles and education. Selection differentials and bivariate gradients follow the Lande and Arnold approach.

Results.

Personal income predicts completed fertility positively for men and negatively for women, and both gradients are statistically stable across cohorts spanning seven decades. The male income premium lies entirely on the margins of partnership and childlessness. Among fathers, income predicts slightly fewer children. Childlessness and never marrying have concentrated sharply among low-income men in recent cohorts. Conditional on education, income is under consistent positive selection in men. Education is under negative selection in both sexes.

Conclusion.

The status-fertility architecture of the United States has remained fixed while fertility levels collapsed, sharpening the reproductive divide among men.

Introduction

Status pursuit is a human universal, and evolutionary theory explains it through reproduction. Across nonindustrial societies, higher-status men reliably leave more descendants, a pattern that holds regardless of subsistence system or how status is measured (von Rueden & Jaeggi, 2016). Industrial societies appear to break this regularity. After the demographic transition, wealthy and educated people no longer fill the cradles, and this apparent decoupling of status from fitness became what Vining (1986) called the central theoretical problem of human sociobiology (Borgerhoff Mulder, 1998; Pérusse, 1993).

Four decades of research have narrowed the problem considerably. The apparent reversal is largely specific to women and to particular measures of status. Personal income predicts fertility positively among men and negatively among women in the United States, Sweden, and much of Europe (Barthold et al., 2012; Fieder & Huber, 2007; Hopcroft, 2006, 2015, 2019; Weeden et al., 2006). The male advantage runs through mating rather than marital fertility, since high-income men mainly avoid childlessness (Fieder & Huber, 2007; Hopcroft, 2022). A recent synthesis concludes that the industrial status-fertility relationship is not so anomalous after all once sex and measurement are taken seriously (Hopcroft et al., 2024).

One dimension of the problem remains almost unexamined. Nearly every estimate for the United States is a snapshot, drawn from one survey and one slice of historical time. The country that produced those snapshots meanwhile changed profoundly. Women entered higher education and the labor force at scale, and marriage retreated and grew more selective (Sweeney, 2002). The wage structure polarized, and birth rates fell steeply after 2007 for reasons that resist standard economic explanation (Kearney et al., 2022). Whether the sex-specific status-fertility gradients survived these shifts, strengthened, or eroded is an open question with direct consequences for claims about ongoing selection in modern populations (Beauchamp, 2016; Stearns et al., 2010). The question is practical as well as theoretical. Any account of the recent fertility decline needs to know whose reproduction fell, on which margin, and how far back the pattern runs. The growing class of unpartnered low-earning men is likewise a social fact in its own right (Autor et al., 2019).

This study answers three questions with a single design. First, have the sex-specific associations between status and completed fertility changed across American birth cohorts born between 1908 and 1979? Second, which reproductive margin carries the male income premium across those cohorts, entry into parenthood or family size among parents? Third, what do the joint dynamics of income and education imply about the direction and stability of phenotypic selection on status in the contemporary United States? The General Social Survey (GSS), pooled from 1972 through 2024, supports all three answers within one continuously fielded survey program. The sections that follow develop the theoretical background, describe the data and models, present the results, and discuss what a stable gradient in a collapsing fertility regime means for evolutionary demography.

Status, Fitness, and the Industrial Anomaly

Evolutionary accounts of status begin from its reproductive payoffs. Status orders access to material resources, allies, and mates. In male mammals it typically predicts reproductive success through mating access (Trivers, 1972). Human males fit this pattern in subsistence societies. A meta-analysis of 288 estimates from 33 nonindustrial populations found a reliable positive association between men’s status and reproductive success, unchanged by subsistence category (von Rueden & Jaeggi, 2016). Mate preference data supply the proximate mechanism. Women weight resources and earning capacity in long-term partners more than men do, a sex difference documented across 37 cultures and replicated three decades later in 45 countries (Buss, 1989; Walter et al., 2020).

Industrialization complicated the fitness arithmetic. As the demographic transition unfolded, fertility fell first and furthest among elites, and cross-sectional studies began reporting null or negative associations

between status and offspring number (Skirbekk, 2008). Vining (1986) pressed the point as a direct challenge to adaptationist reasoning, and Pérusse (1993) sharpened it by showing that high-status Canadian men achieved more copulatory access but not more children under contraception and monogamy.

Explanations for the transition itself invoke the rising price of competitive offspring. Parents shifted investment from offspring quantity to offspring embodied capital as skills-based labor markets raised the returns to education (Kaplan, 1996; Kaplan et al., 2000; Shenk et al., 2013). Cultural evolutionary models add the diffusion of low-fertility norms through prestige-biased transmission (Colleran, 2016). Whatever the mix of mechanisms, low fertility carries a real fitness cost. In Swedish multigenerational data, limiting fertility raised descendants' socioeconomic position but reduced the number of descendants across four generations (Goodman et al., 2012), and smaller families do not appear to buy the offspring quality gains that would compensate (Lawson & Mace, 2010, 2011).

Yet the empirical picture was never uniformly negative, and its heterogeneity is informative. Wealth measures behave differently from education, longitudinal designs recover positive wealth effects more often than cross-sectional ones, and the wealth-fertility association turns positive in populations moving through market integration (Alvergne & Lummaa, 2014; Stulp & Barrett, 2016).

Analyses of the National Longitudinal Survey of Youth found that wealthier Americans have more children once measurement and timing are handled carefully (Stulp, Sear, Schaffnit, et al., 2016). Stulp, Sear, and Barrett (2016) argue on these grounds that fertility measurement in industrial societies is not a category error. It is the only way to detect adaptive mismatch and to estimate the selection pressures operating now.

Sex is the sharpest axis of that heterogeneity. Weeden et al. (2006) showed in United States samples that education delays and reduces fertility in both sexes, whereas higher income predicts lower childlessness and no fertility deficit among men. Hopcroft (2006) found the same crossed pattern in the GSS through 2000, and it reappeared in the National Longitudinal Survey of Youth (Hopcroft, 2015). In the 2014 Survey of Income and Program Participation, personal income and net worth predicted fertility and childbearing unions positively for men and negatively for women, and family income net of personal income predicted fertility positively for women (Hopcroft, 2019).

European register data reproduce the asymmetry (Barthold et al., 2012; Fieder & Huber, 2007; Fieder et al., 2011). Nettle and Pollet (2008) formalized it as a selection gradient. Male income stands under directional selection in modern Britain and the United States, weaker than in polygynous societies but positive, whereas female income does not.

Female gradients carry their own interpretive load. Income measured at midlife partly reflects labor supply choices already shaped by childbearing, since motherhood suppresses women's wages (Budig & England, 2001). Education predicts later first births and fewer children for women in nearly every industrial dataset, although Nordic register studies show the female education gradient flattening in recent cohorts while low-educated men increasingly remain childless (Jalovaara et al., 2019; Nisén et al., 2018). These European trajectories raise the possibility that the American gradients also moved with cohort change, in either direction.

Margins, Partnership, and Cohort Dynamics

Where the male premium comes from matters theoretically. A status effect on offspring number among fathers would indicate quantity decisions inside stable unions. A status effect on becoming a father at all indicates the mating market. European evidence points to the second. Across 13 European countries, low income raised men's childlessness and barely touched women's, and among parents the income association turned negative for both sexes (Barthold et al., 2012). Swedish registers show the same structure, with the male status effect vanishing once childless men are excluded (Fieder & Huber, 2007). In the United States, high-income men marry more, divorce less, remarry more after divorce, and avoid childlessness (Hopcroft, 2021). The male income effect also survives netting out spousal income within unions (Hopcroft, 2022). Multipartner fertility adds a further route for high-status men in Norway (Lappegård & Rønsen, 2013).

Partnership markets are also where American institutional change has been most violent. Marriage became more selective on men's economic position over recent decades (Sweeney, 2002), and localized trade shocks that destroyed young men's manufacturing earnings measurably reduced their marriage and fertility (Autor et al., 2019). Childlessness among highly educated men declined in Sweden while it climbed among the low educated (Chudnovskaya, 2019; Jalovaara et al., 2019). Subjective partner availability tracks local demographic composition imperfectly, which cautions against reading market structure straight off sex ratios (Filser & Preetz, 2021), and mating market position interacts with income in shaping behavior well beyond reproduction itself (Luberti et al., 2020; Ruder et al., 2023). If the male income premium lives on the partnership margin, then five decades of partnership deinstitutionalization should have left visible fingerprints on the cohort profile of the premium.

Cohort resolution is equally necessary on the selection side. Phenotypic selection in modern populations is measurable with the standard quantitative tools. Differentials and gradients estimated on relative fitness have documented ongoing selection on physiology and life history in the Framingham cohort (Byars et al., 2010) and on age at first birth in a rapidly evolving island population (Milot et al., 2011). Historical populations moving through demographic transitions show measurable selection on fertility itself (Courtiol et al., 2012; Moorad, 2013). Sexual selection weakened when American frontier populations abandoned polygyny (Moorad et al., 2011).

Genomic studies extend the record to the present. Polygenic scores for educational attainment predict lower lifetime fertility in Iceland and the United States, with the association persisting net of attained education, implying slow negative selection against education-linked variants (Beauchamp, 2016; Kong et al., 2017; Sanjak et al., 2018). Fertility is heritable in twin studies (Briley et al., 2017) and correlates across generations (Kolk et al., 2014), so persistent differentials can matter cumulatively. Yet no study has traced sex-specific phenotypic selection on the two central components of modern status, income and education, across the full run of twentieth-century American cohorts.

The expectations follow from the theory above. Men's personal income should predict completed fertility positively, through childlessness and partnership rather than through family size among fathers, and

women's personal income should predict it negatively. Education should predict fertility negatively in both sexes, more steeply among women.

The open question is dynamic. If the premium tracks mate preferences that are themselves stable (Walter et al., 2020), the male income gradient should persist across cohorts even as marriage recedes, and rising childlessness should concentrate it further on the extensive margin. If instead the premium depended on the mid-century male breadwinner package, it should erode in cohorts that formed families after that package dissolved. The analysis below distinguishes these possibilities.

Data and Methods

Data and Sample

Data come from the GSS cumulative file, 1972 through 2024, release 3a (Davern et al., 2026). The GSS is a repeated cross-sectional probability survey of noninstitutionalized adults in the United States, fielded 35 times across the study window, with 75,699 respondents in total. Its long, consistently worded core makes it the only American survey in which the same fertility question spans respondents born from the 1900s to the 1980s, and it has supported evolutionary analyses of American fertility before (Hopcroft, 2006; Li, 2024).

The analytic sample holds respondents aged 45 to 64 at interview with valid data on children ever born, 22,975 adults in all, 10,396 men and 12,579 women. The lower bound approximates completed fertility. Female fertility at these ages is essentially complete, and male fertility is nearly so, a point the limitations return to. The upper bound keeps income measurement meaningful by excluding most retirees. Birth cohorts are computed from survey year and age and run from 1908 to 1979. They are grouped into four bands for cohort-specific estimation: 1900 to 1929, 1930 to 1944, 1945 to 1959, and 1960 to 1979. Sample sizes by sex and cohort band appear in Table 1.

Measures

Children ever born is the GSS item asking respondents how many children they have ever had, counting all live births, top-coded at eight. Childlessness is an indicator for zero children. Never married comes from current marital status.

Personal income is the respondent's own pre-tax income from all sources, converted by the GSS to constant dollars. Because real income levels, top codes, and category schemes shift across five decades, the analysis uses relative position rather than dollar amounts. Respondents are assigned to quintiles of personal income computed within sex and survey year inside the analytic sample. A man in the top quintile in 1975 and a man in the top quintile in 2022 therefore occupy the same position relative to male peers interviewed the same year. Personal income is missing for respondents without individual earnings reports, 29.0% of men and 42.4% of women. The income models therefore hold 14,622 respondents, 7,381 men and 7,241 women.

This selectivity is heavier for women in early survey years. Education models therefore cover the full sample, a robustness check uses household income, which nearly everyone reports, and the female income gradient is read with caution throughout.

Education enters as completed years of schooling, with degree categories used in robustness checks. Models control for age, age squared, race in three categories, and cohort band.

Analytic Strategy

Counts of children ever born are modeled with Poisson regression, childlessness with logistic regression, and children among parents with ordinary least squares. All models use heteroskedasticity-robust standard errors. Descriptive statistics are weighted with the GSS composite weight, formed from the cumulative weight through 2018 and the post-stratification weight from 2021 onward. Regressions are unweighted with demographic controls, and a weighted specification appears among the robustness checks. Cohort dynamics are estimated two ways. The income model is fitted separately within each sex and cohort band, and the top income quintile is interacted with a continuous cohort term. Because the 2021 to 2024 rounds moved to a mixed web and phone design, a sensitivity check drops them.

Selection is quantified in the standard phenotypic framework (Lande & Arnold, 1983). Relative fitness is children ever born divided by the mean for the respondent's sex and cohort band. Traits are log personal income and years of education, each standardized within sex and survey year so that a unit is one standard deviation among same-sex peers measured in the same year. The selection differential for a trait is the coefficient from regressing relative fitness on the standardized trait. The bivariate gradient enters income and education jointly and estimates the direct association of each net of the other.

These are descriptive covariances between phenotype and relative fitness. They imply an evolutionary response only insofar as the traits' correlates are heritable, and they carry no causal claim about the phenotypes themselves (Stearns et al., 2010).

Analyses were run in Python with the statsmodels library. Claude (Anthropic), a large language model, was used to write the data-processing and analysis code and to edit language throughout the manuscript, under the author's direction and verification, as detailed in the Statements and Declarations. The full extraction and analysis script and the derived dataset are available as described in the data availability statement.

Results

Fertility Decline and the Basic Gradients

Completed fertility fell by nearly one child across the study cohorts while childlessness rose, and the rise in childlessness was sharper for men. Table 1 shows weighted means of 2.95 children for men and 3.02 for women born 1900 to 1929, against 2.07 and 2.21 for the 1960 to 1979 cohorts. Childlessness at ages 45 to 64 climbed from 11.9% to 19.4% among men and from 11.3% to 13.8% among women. Never marrying

tripled among men, from 4.0% to 12.9%. The GSS thus reproduces the familiar contour of American cohort fertility, including its late-century erosion of male family formation.

Table 1
Sample characteristics by sex and birth cohort, GSS 1972–2024, ages 45–64

Birth cohort	n	With income data	Children ever born	Childless (%)	Never married (%)	Education (years)
Men						
1900–1929	2,216	1,285	2.95	11.9	4.0	11.4
1930–1944	2,341	1,769	2.77	10.4	4.9	12.8
1945–1959	3,406	2,458	2.17	17.5	9.6	13.8
1960–1979	2,433	1,869	2.07	19.4	12.9	13.9
All cohorts	10,396	7,381	2.45	15.1	8.1	13.1
Women						
1900–1929	2,694	961	3.02	11.3	2.8	11.2
1930–1944	2,919	1,735	3.12	7.1	3.0	12.6
1945–1959	4,039	2,593	2.14	13.6	7.9	13.7
1960–1979	2,927	1,952	2.21	13.8	11.4	14.0
All cohorts	12,579	7,241	2.58	11.6	6.4	13.0

Note. Entries other than counts are weighted with the GSS composite weight. Children ever born is top-coded at eight. Income data refer to nonmissing personal income in constant dollars.

Raw income patterns already display the sex asymmetry at the heart of the study. Table 2 arrays the weighted outcomes by within-year income quintile. Women’s completed fertility falls monotonically with income, from 2.76 children in the bottom quintile to 1.92 in the top. Men’s means barely move across quintiles, from 2.46 to 2.55, yet their childlessness plunges from 21.0% in the bottom quintile to 9.1% in the top, and their never-married share falls from 14.7% to 2.3%. Women show the reverse partnership pattern in muted form. Childlessness rises with female income, from 9.3% to 19.2%, while never marrying stays between 6.5% and 8.4% in every quintile. Figure 1 displays the adjusted and raw versions of these contrasts.

Table 2
Children ever born, childlessness, and never marrying by personal income quintile (weighted)

Income quintile	Children ever born		Childless (%)		Never married (%)	
	Men	Women	Men	Women	Men	Women
Q1	2.46	2.76	21.0	9.3	14.7	7.0
Q2	2.39	2.66	17.3	8.6	8.7	6.5
Q3	2.46	2.42	11.9	11.7	6.1	7.7
Q4	2.34	2.17	13.4	15.8	5.1	7.0
Q5	2.55	1.92	9.1	19.2	2.3	8.4

Note. Quintiles of personal income in constant dollars, computed within sex and survey year among respondents aged 45–64 with nonmissing income (n = 7,381 men, 7,241 women).

Adjustment reveals the positive male gradient that the raw means conceal. High-income men are concentrated in recent, low-fertility cohorts, which suppresses their raw advantage. Table 3 reports Poisson models with age, cohort, and race controls. For men, the top quintile out-reproduces the bottom by 15%, with an incidence rate ratio of 1.147 and a 95% confidence interval of 1.086 to 1.211. For women the same contrast is 0.681, with an interval of 0.646 to 0.718. The sex difference in the top-quintile coefficient is large and precise in a pooled interaction model (b = -0.499, p < .001). Education tells a different story from income. Each additional year of schooling predicts 2.1% fewer children for men and 4.8% fewer for women, both p < .001, on the full samples of 10,378 men and 12,555 women.

Table 3
Poisson regressions of children ever born on personal income quintile and on education, by sex

Predictor	Men IRR (95% CI)	p	Women IRR (95% CI)	p
Income Q2 (ref. Q1)	1.014 (0.955–1.078)	= .641	0.942 (0.899–0.988)	= .014
Income Q3 (ref. Q1)	1.058 (0.999–1.119)	= .054	0.870 (0.829–0.913)	< .001
Income Q4 (ref. Q1)	1.045 (0.987–1.107)	= .129	0.779 (0.741–0.819)	< .001
Income Q5 (ref. Q1)	1.147 (1.086–1.211)	< .001	0.681 (0.646–0.718)	< .001
n	7,381		7,241	
Education (per year)	0.979	< .001	0.952	< .001
n	10,378		12,555	

Note. Incidence rate ratios from Poisson regressions with robust standard errors. All models control for age, age squared, birth-cohort group, and race. Income models are estimated on the sample with nonmissing personal income. Education models are estimated on the full analytic sample and enter education as years of schooling.

The Margins of the Male Premium

The entire male income premium arises from who reproduces at all, not from how many children fathers have. Table 4 splits the outcome. On the extensive margin, top-quintile men face barely a third of bottom-quintile men's odds of childlessness, an odds ratio of 0.346, p < .001. On the intensive margin the sign flips. Among fathers, every quintile above the bottom predicts slightly fewer children, with the top quintile at -0.122 children (p = .054). High-income men are more likely to become fathers and then have marginally smaller families. Barthold et al. (2012) reported precisely this structure in thirteen European countries, and it evidently characterizes the United States as well.

Women's two margins move together rather than against each other. Top-quintile women face 2.66 times the odds of childlessness, and mothers in the top quintile have 0.593 fewer children than bottom-quintile mothers, both p < .001. Female income is associated with less reproduction on both margins, which is consistent with opportunity costs that bind on family size as well as on entry into motherhood.

Table 4
Extensive and intensive margins: childlessness and children ever born among parents, by sex

Income quintile (ref. Q1)	Childlessness OR, men	p	Childlessness OR, women	p	Children among fathers (b)	p	Children among mothers (b)	p
Q2	0.733	< .001	1.036	= .767	-0.139	= .045	-0.168	= .005
Q3	0.510	< .001	1.389	= .004	-0.203	= .002	-0.290	< .001
Q4	0.541	< .001	1.868	< .001	-0.205	= .002	-0.444	< .001
Q5	0.346	< .001	2.660	< .001	-0.122	= .054	-0.593	< .001
n	7,381		7,241		6,039		6,078	

Note. Childlessness models are logistic regressions of having no children. Parent models are ordinary least squares regressions of children ever born among respondents with at least one child. All models control for age, age squared, birth-cohort group, and race, with robust standard errors.

Stability across Cohorts

The central dynamic finding is stasis. Table 5 estimates the top-versus-bottom quintile contrast separately within each sex and cohort band. For men the incidence rate ratio is 1.227 in the 1900 to 1929 cohorts, 1.038 in 1930 to 1944, 1.134 in 1945 to 1959, and 1.231 in 1960 to 1979. For women it is 0.627, 0.783, 0.644, and 0.650. Formal trend tests find no linear cohort drift for either sex. The interaction of the top quintile with cohort in decades is -0.0042 for men (p = .814) and − 0.0228 for women (p = .222). Cohorts that completed their fertility under the one-earner marriage regime of the 1950s and cohorts that did so after the 2008 recession show statistically indistinguishable income gradients. Figure 2 displays this stability alongside the mechanism beneath it.

Table 5

Top versus bottom income quintile across birth cohorts: incidence rate ratios and partnership outcomes

Birth cohort	IRR Q5 vs. Q1 (95% CI)	n	Childless, Q1 (%)	Childless, Q5 (%)	Never married, Q1 (%)	Never married, Q5 (%)
Men						
1900–1929	1.227 (1.089–1.383)	1,285	17.3	4.1	8.0	1.2
1930–1944	1.038 (0.939–1.148)	1,769	14.6	7.0	9.7	2.1
1945–1959	1.134 (1.028–1.251)	2,458	24.7	11.7	15.6	2.3
1960–1979	1.231 (1.088–1.393)	1,869	26.1	11.0	24.2	3.2
Women						
1900–1929	0.627 (0.542–0.725)	961	7.6	22.2	0.9	8.5
1930–1944	0.783 (0.709–0.864)	1,735	7.7	12.5	3.5	4.4
1945–1959	0.644 (0.587–0.706)	2,593	10.6	21.2	8.6	9.8
1960–1979	0.650 (0.586–0.721)	1,952	9.9	21.0	11.6	9.9

Note. Incidence rate ratios are from sex-specific Poisson regressions of children ever born within each cohort group, controlling for age, age squared, and race, with robust standard errors. Childlessness and never-married shares are weighted. Interacting the top quintile with a linear cohort term (per decade) gives b = -0.0042 (p = .814) for men and b = -0.0228 (p = .222) for women.

Stable relative gradients coexist with a widening absolute divide in male family formation. Among men born 1900 to 1929, childlessness was 17.3% in the bottom income quintile and 4.1% in the top. Among men born 1960 to 1979, it was 26.1% against 11.0%. Never marrying moved further still. It reached 24.2% of bottom-quintile men in the youngest cohorts, three times its level in the oldest, while never exceeding 3.2% among top-quintile men in any cohort band. One bottom-quintile man in four born after 1960 reached midlife without ever marrying, and one in four reached it childless. Women show no comparable income polarization of partnership. Never marrying tilted toward high earners among women in the oldest cohort

band and differs by under two points in every later one. The female childlessness gradient runs in the opposite direction, concentrated among high earners.

Selection Differentials and Gradients

Univariate selection differentials understate the selection operating on male income because income and education pull in opposite directions. Table 6 reports both. The differential on male income is small and mostly nonsignificant, between 0.004 and 0.043 across cohort bands. The differential on male education is consistently negative, between − 0.054 and − 0.111. Once the bivariate gradient separates the two correlated traits, male income shows a positive direct association with relative fitness in every cohort band, between 0.053 and 0.075 per standard deviation (all $p < .05$). Male education remains negative, between − 0.052 and − 0.143. A standard deviation of income corresponds to roughly 5% to 8% of mean fitness for men, and this direct gradient is, if anything, largest in the most recent cohorts.

Selection on women's status traits is negative on both components in every cohort band. Differentials run from − 0.075 to -0.157 for income and from − 0.100 to -0.202 for education, and the bivariate gradients keep both negative, with education dominating. Figure 3 plots the gradients. The sexually antagonistic structure pairs positive direct selection on male income with negative selection on female income and on education in both sexes. It is visible in every band, and no band departs from the pattern.

Table 6
Selection differentials and bivariate selection gradients on income and education, by sex and birth cohort

Birth cohort	s income (SE)	s education (SE)	β income (SE)	β education (SE)	n
Men					
1900–1929	0.036 (0.021)	-0.054 (0.016)***	0.057 (0.024)*	-0.052 (0.022)*	1,283
1930–1944	0.004 (0.016)	-0.106 (0.015)***	0.053 (0.017)**	-0.143 (0.019)***	1,766
1945–1959	0.015 (0.018)	-0.111 (0.016)***	0.061 (0.018)***	-0.140 (0.019)***	2,456
1960–1979	0.043 (0.021)*	-0.055 (0.019)**	0.075 (0.022)***	-0.068 (0.022)**	1,865
Women					
1900–1929	-0.134 (0.024)***	-0.100 (0.015)***	-0.112 (0.024)***	-0.073 (0.026)**	958
1930–1944	-0.075 (0.016)***	-0.156 (0.013)***	-0.035 (0.016)*	-0.139 (0.017)***	1,734
1945–1959	-0.157 (0.017)***	-0.202 (0.013)***	-0.101 (0.017)***	-0.167 (0.018)***	2,590
1960–1979	-0.141 (0.017)***	-0.181 (0.013)***	-0.091 (0.018)***	-0.132 (0.018)***	1,952

Note. Selection differentials (s) are the covariance between relative fitness (children ever born divided by the sex- and cohort-specific mean) and the standardized trait, estimated by regressing relative fitness on the trait with robust standard errors. Gradients (β) enter standardized log income and standardized education jointly. Traits are standardized within sex and survey year. Differentials for income and education are estimated on their respective nonmissing samples, and the table reports the joint-model n. *p < .05, **p < .01, ***p < .001.

Robustness

The crossed income gradients survive every specification change examined. Table 7 collects the checks. Dropping the 2021 to 2024 mixed-mode rounds leaves the top-quintile ratios at 1.134 for men and 0.684 for women. With the sample restricted to ages 50 to 64, where male fertility is more nearly complete, the ratios are 1.147 and 0.695. Weighted estimation gives 1.099 and 0.709. Replacing cohort bands with period fixed effects gives 1.146 and 0.676, so the results do not hinge on how time is parameterized. Measuring status with degrees rather than years leaves education negative for both sexes, with graduate-degree holders at 0.810 of the fertility of those without high school completion among men and 0.582 among women.

Household income behaves differently from personal income in an informative way. With family income quintiles, the male top-quintile ratio is unchanged at 1.147, while the female ratio rises from 0.681 to 0.887. Much of the female personal-income penalty reflects the respondent’s own earnings rather than household

resources, which echoes the distinction Hopcroft (2019) drew between personal and family income for American women.

Table 7
Robustness of the top-quintile income association (IRR, Q5 vs. Q1)

Specification	Men	Women
Main model	1.147	0.681
Excluding 2021–2024 surveys	1.134	0.684
Ages 50–64	1.147	0.695
Survey-weighted estimation	1.099	0.709
Period fixed effects instead of cohort	1.146	0.676
Family income quintiles	1.147	0.887
Graduate degree vs. less than high school	0.810	0.582

Note. All estimates are significant at $p < .01$. The family income specification uses quintiles of household income within survey year on the sample with nonmissing family income. The final row compares graduate-degree holders with respondents who did not finish high school in the education model.

Discussion

Seven decades of American cohorts changed almost everything about family life except the architecture connecting status to reproduction. The three questions posed in the introduction receive clean answers. The first question, whether the sex-specific gradients moved across cohorts, is answered by stability. Men's personal income predicts completed fertility positively and women's negatively in every cohort band from 1908 to 1979, with no detectable trend in either sex. The second question, which margin carries the male premium, is answered by partnership. The premium exists entirely on the extensive margin of childlessness and marriage, and among fathers income predicts marginally fewer children. The third question, what this implies for selection, is answered by a stable sexually antagonistic regime. Conditional on education, income stands under positive directional selection in men and negative selection in women, while education stands under negative selection in both sexes.

The stability itself is the finding that requires theoretical digestion. The cohorts compared here bracket the gender revolution, mass contraception, the collapse of early marriage, and the post-2007 birth dearth (Kearney et al., 2022; Sweeney, 2002). A premium that depended on any particular institutional package should have moved. A premium rooted in stable mate preferences should not have, and it did not.

Women's preference for resource-holding long-term partners is among the most cross-culturally and temporally robust findings in mate preference research (Buss, 1989; Walter et al., 2020). The American data behave exactly as if that preference kept sorting men into and out of reproductive careers while every

institution around it was rebuilt. This extends the conclusion of Hopcroft et al. (2024) backward and forward in historical time. The industrial pattern is not merely explicable once sex is taken seriously. It is stationary.

The margin results locate the mechanism in the mating market rather than in marital fertility decisions, and the cohort trends show that market becoming more discriminating in absolute terms. Low-income men's midlife childlessness rose from about one in six to about one in four across the study cohorts, and their never-married share tripled, while never marrying peaked at 3.2% among top-quintile men. This is the fingerprint that economic accounts of declining male marriageability would predict (Autor et al., 2019; Sweeney, 2002), and it matches the Nordic concentration of childlessness among low-educated men (Chudnovskaya, 2019; Jalovaara et al., 2019).

Implications

In evolutionary terms, the variance in male reproductive success associated with resource holding has grown at the bottom of the distribution even though the relative gradient held still. Stable selection gradients operating on a rising baseline of exclusion produce an increasingly visible class of men outside reproduction altogether, a development with social consequences that extend well past demography.

The antagonistic structure of the two status components helps dissolve the original paradox. Vining (1986) and Pérusse (1993) treated status as a single vertical dimension and asked why it no longer predicted fitness. In these data, aggregate status appears fitness-neutral for men only because two of its components cancel. Income is associated with higher male fitness, and the education that typically accompanies income is associated with lower fitness. Univariate differentials on either component alone therefore mislead. Raw comparisons mislead in a second way, documented directly in the results. High-income men sit disproportionately in recent, low-fertility cohorts, so unadjusted quintile means show a flat male fertility profile even though the cohort-adjusted gradient is positive.

The bivariate gradients recover the underlying regularity that fieldworkers see in nonindustrial societies, namely positive selection on male resource command (von Rueden & Jaeggi, 2016), operating beneath a layer of educational counter-selection specific to post-transition economies. The phenotypic education gradients estimated here run parallel to the genomic record, in which education-linked polygenic scores predict reduced fertility net of attained education in Iceland and the United States (Beauchamp, 2016; Kong et al., 2017; Sanjak et al., 2018). Given nontrivial heritabilities of fertility and its socioeconomic correlates (Briley et al., 2017; Kolk et al., 2014), a regime this stable over seven decades of cohorts is long enough to matter on evolutionary timescales, although any response remains slow and conditional on the underlying genetics.

The female gradients deserve a reading that keeps both causal directions in view. Part of the negative personal-income association surely reflects reverse causation, since motherhood suppresses women's earnings and labor supply (Budig & England, 2001). Income here is also measured at midlife, after fertility. The family-income contrast supports this reading. Household resources are far less negatively associated with women's fertility than own earnings, as Hopcroft (2019) also found with net-worth and family-income measures.

Yet reverse causation cannot explain the education gradient, which is measured before most childbearing and is steeper for women in every cohort, nor the rise of childlessness among high-earning women in every band. The opportunity-cost account of female reproductive restraint under skills-based labor markets remains the most economical summary (Kaplan et al., 2000; Sear et al., 2016), with the Nordic evidence warning that this configuration is institution-sensitive rather than universal (Jalovaara et al., 2019; Nisén et al., 2018).

Limitations

Several limitations bound these conclusions, and the first three concern measurement. Income is observed once, at ages 45 to 64, not as a lifetime profile. The estimates therefore capture the association between midlife relative position and completed reproduction rather than the effect of income at the ages when partnerships form. Men underreport nonmarital births in surveys, which inflates male childlessness, plausibly more among low-income men, and would then overstate the extensive-margin gap (Rendall et al., 1999). Children ever born is top-coded at eight, which trims the right tail, although fewer than 1% of recent cohorts reach the cap. Personal income is missing for 29.0% of men and 42.4% of women, concentrated among nonworkers, so the female income results describe women with earnings. The education models, which cover the full sample, and the family-income models bound this concern but do not remove it.

Design limits follow. The GSS samples the noninstitutionalized adult population cross-sectionally, so the cohort comparisons pool respondents interviewed at different ages and periods. The age window also truncates male fertility slightly. Completed fertility is one generation of fitness, not long-run genetic contribution, which can diverge across generations (Goodman et al., 2012). The selection estimates are phenotypic covariances, informative about the direction and stability of selection but silent on genetic response without heritability assumptions (Stearns et al., 2010). Finally, the United States is one post-transition society, and the Nordic contrasts already show that gradient shapes vary with institutional context.

Future Directions

Three extensions would carry the questions forward. A first direction is comparative. Running the same cohort-resolved, margin-split design on European register data would show whether stationarity is a general property of post-transition regimes or an American one. A second direction concerns mechanism. Linking the partnership polarization documented here to local mating market composition would test whether the concentration of male childlessness follows the geography of male earnings shocks (Autor et al., 2019; Filser & Preetz, 2021). A third direction is genetic. Cohort-resolved phenotypic gradients on income and education supply the quantities that genomic studies of ongoing selection need for triangulation, and the two literatures have yet to be joined at the cohort level.

Conclusion

Across American cohorts born between 1908 and 1979, the association between status and completed fertility kept a fixed, sexually antagonistic shape. Personal income predicted men’s completed fertility roughly 15% higher from bottom to top quintile, entirely through who partnered and reproduced at all, and

predicted women's roughly a third lower. Education predicted lower fertility in both sexes. None of these gradients moved detectably across seven decades of cohorts that otherwise transformed American family life, while the share of low-income men excluded from reproduction rose by half. The central theoretical problem of human sociobiology looks different at this resolution. Status did not stop predicting fitness in the industrial United States. Its components predict fitness in opposite directions, by sex and by margin, and they have done so with remarkable constancy while the population around them moved into a low-fertility, high-exclusion regime.

Declarations

Conflict of interest.

On behalf of all authors, the corresponding author states that there is no conflict of interest. The author has no relevant financial or non-financial interests to disclose.

Ethics approval.

This study is a secondary analysis of publicly available, de-identified survey data collected by NORC at the University of Chicago. No human participants were recruited or contacted by the author, and no ethics committee approval was required.

Informed consent.

Not applicable. Consent from survey respondents was obtained by NORC as part of the General Social Survey program.

Use of generative artificial intelligence.

The author conceived the research, directed the analysis, and is responsible for all intellectual content, arguments, and conclusions in this manuscript. Claude (Anthropic) was used iteratively and extensively throughout manuscript preparation for language editing and revision, including substantial rewriting of passages drafted by the author for clarity, structure, and style. The author directed all such revisions, reviewed and approved the resulting text, and takes full responsibility for the accuracy, integrity, and originality of the final manuscript. Every passage the system touched was examined in substance by the author, who holds the subject-matter competence to approve, alter, or reject it and who holds editorial responsibility for the manuscript. The manuscript therefore meets the conditions of the human review and editorial control exemption in Article 50(4) of Regulation (EU) 2024/1689, whose transparency obligations became applicable on 2 August 2026. The declaration is made in full regardless, so that no reader has to infer the extent of the assistance. Machine-readable marking of synthetic output is an obligation of the system provider under Article 50(2) of that Regulation and not of the author; no marking, watermark, or provenance metadata present in any output was removed, altered, or obscured at any stage, and no assisted passage is presented as unassisted. Claude was additionally used to write the analysis code that extracts the General Social Survey variables, estimates the reported models, and draws the figures from

author-specified content. The author specified every design decision, ran and inspected the output, and verified the reported quantities against the source data. Generative artificial intelligence was not used to supply references; every source cited was verified by the author against the original publication. No image in this manuscript was produced by a generative artificial intelligence system; the figures were computed by the analysis script from the model estimates. Claude is not an author of this manuscript and is not listed as one.

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The author conceived the research, conducted the analysis, and is responsible for all intellectual content, arguments, and conclusions in this manuscript. Claude (Anthropic) was used iteratively and extensively throughout manuscript preparation for language editing and revision, including substantial rewriting of passages drafted by the author for clarity, structure, and style. The author directed all such revisions, reviewed and approved the resulting text, and takes full responsibility for the accuracy, integrity, and originality of the final manuscript.Every passage the system touched was examined in substance by the author, who holds the subject-matter competence to approve, alter, or reject it and who holds editorial responsibility for the manuscript. The manuscript therefore meets the conditions of the human review and editorial control exemption in Article 50(4) of Regulation (EU) 2024/1689, whose transparency obligations became applicable on 2 August 2026. The declaration is made in full regardless, so that no reader has to infer the extent of the assistance. Machine-readable marking of synthetic output is an obligation of the system provider under Article 50(2) of that Regulation and not of the author; no marking, watermark, or provenance metadata present in any output was removed, altered, or obscured at any stage, and no assisted passage is presented as unassisted.Generative artificial intelligence was not used to generate or analyse data, to produce results, or to supply references. Every source cited was verified by the author against the original publication. No image in this manuscript was produced by a generative artificial intelligence system; the figures are schematic diagrams drawn with standard plotting software. Claude is not an author of this manuscript and is not listed as one.

Data availability.

The General Social Survey cumulative data file (1972–2024, release 3a) is publicly available from NORC at the University of Chicago at https://gss.norc.org. The derived analytic extract (CSV) and the full extraction

and analysis code that reproduce every table and figure are available from the corresponding author and are supplied with the submission as supplementary material (Online Resource 1).

Code availability.

The complete Python analysis script is included in Online Resource 1.

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Figures

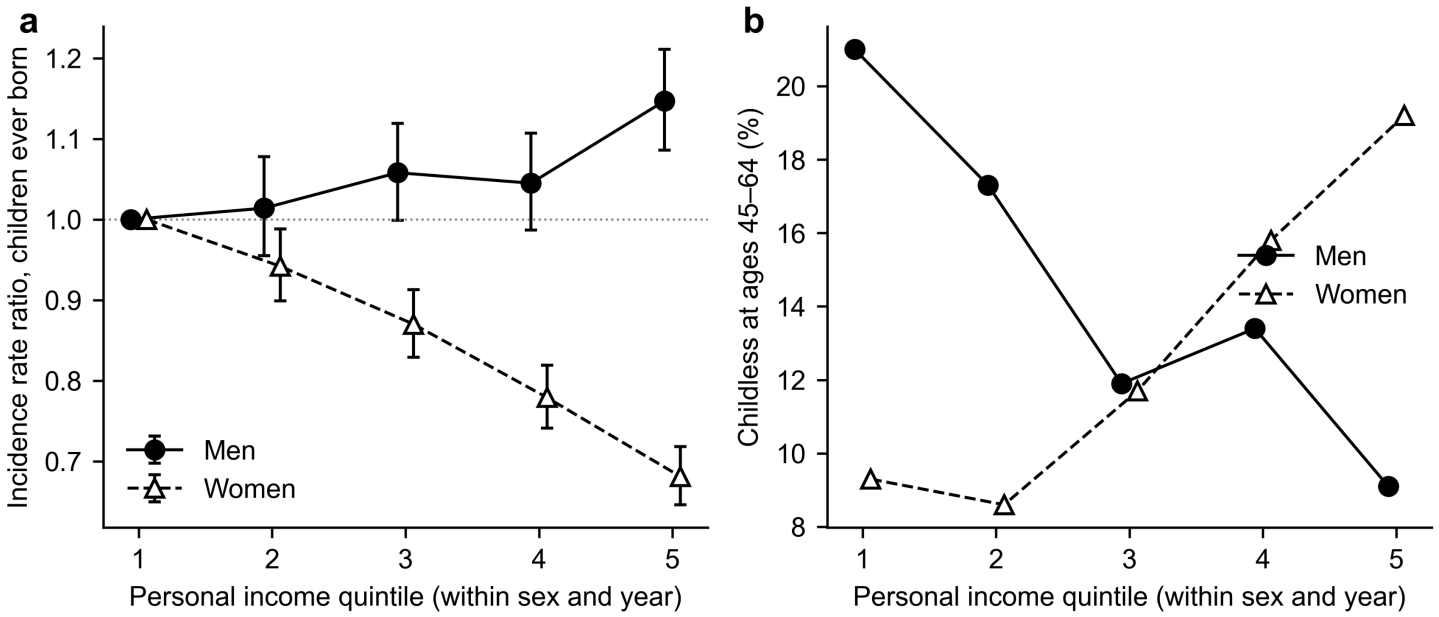


Figure 1

Personal income and completed fertility in the GSS 1972–2024, ages 45–64. Panel a shows incidence rate ratios for children ever born by within-year personal income quintile, relative to the bottom quintile, from sex-specific Poisson models controlling for age, age squared, birth-cohort group, and race, with 95% confidence intervals. Panel b shows the weighted share childless by income quintile. Filled circles denote men and open triangles denote women



Figure 2

Cohort dynamics of the income gradient. Panel a shows incidence rate ratios for children ever born, top versus bottom within-year income quintile, from Poisson models estimated separately by sex and birth-cohort group, controlling for age, age squared, and race, with 95% confidence intervals. Panel b shows weighted shares of men aged 45–64 who are childless and who never married, in the top and bottom income quintiles, by birth-cohort group

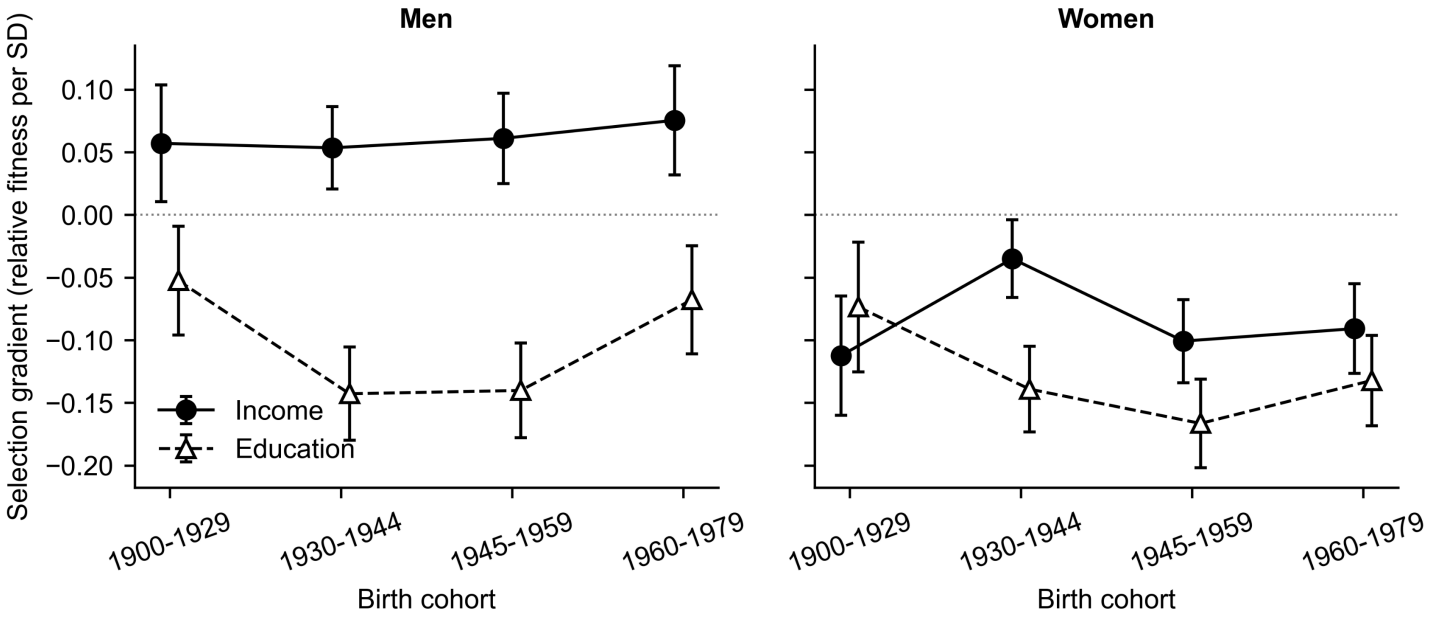


Figure 3

Bivariate selection gradients on standardized log personal income and standardized education, by sex and birth-cohort group, with 95% confidence intervals. Gradients are coefficients from regressing relative fitness, children ever born over the sex-by-cohort mean, on both standardized traits jointly