Differential fertility makes society more conservative on family values

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Data from the General Social Survey indicate that higher-fertility individuals and their children are more conservative on "family values" issues, especially regarding abortion and same-sex marriage. This pattern implies that differential fertility has increased and will continue to increase public support for conservative policies on these issues. The association of family size with conservatism is specific to traditional-family issues and can be attributed in large part to the greater religiosity and lower educational attainment of individuals from larger families. Over the 2004 to 2018 period, opposition to same-sex marriage and abortion was 3 to 4 percentage points more prevalent than it would have been were traditional-family conservatism independent of family size in the current generation. For same-sex marriage, evolutionary forces have grown in relative importance as society as a whole has liberalized. As of 2018, differential fertility raised the number of US adults opposed to same-sex marriage by 17%, from 46.9 million to 54.8 million.

fertility | public opinion | cultural evolution

Parents share a broad set of preferences, beliefs, and norms with their children, due to parent–child interaction, common environment, and genetics. How intergenerational transmission affects cultural evolution is the subject of a theoretical literature in evolutionary biology and the social sciences (1–4). An underappreciated insight from this work is that differential fertility can affect the dynamics of culture across generations, through its interaction with intergenerational transmission. Over time, a trait shared by parents and children will have higher relative frequency if it concentrates in larger families.

We quantify how this evolutionary process affects US public opinion on some of the most contentious policy issues of the day. We focus on a class of issues especially likely to be related to fertility: so-called "family values" issues, on themes like abortion, marriage, gender roles, and sex. Because cultural norms on these issues are effectively pronatalist, we hypothesize that individuals who are more conservative on traditional-family issues tend to have more children and—due to intergenerational persistence in these attitudes (5–7)—that individuals who grew up with more siblings tend to be more conservative on traditional-family issues. Although it has an unclear causal interpretation at the individual level, the correlation between family size and conservatism raises the population share of conservative individuals.

Using data from the US General Social Survey (GSS), 2004 to 2018, we investigate this idea for two traditional-family issues with particular relevance to US politics, abortion and same-sex marriage. *Roe v. Wade* (on abortion) and *Obergefell v. Hodges* (on same-sex marriage) are among the US Supreme Court's most socially contentious decisions of recent decades. Both have spurred protests, legal challenges, and campaign debates, so public opinion on these issues shapes the nation's politics. A key distinction is that abortion attitudes have been stable for decades, whereas gay-marriage opposition has plummeted over the last 20 y (8, 9). Does the association of traditional-family conservatism with family size become more or less important for

public opinion during periods of rapid social change? Differential fertility and intergenerational transmission could diminish as society liberalizes, or they could persist to help sustain a conservative minority. In the language of cultural evolutionary theory, selection and vertical (parent-to-child) transmission compete with innovation and horizontal (peer-to-peer) or oblique (nonparent-to-child) transmission.

Our analysis tests for an association between family size and traditional-family conservatism, assesses its drivers and specificity, and quantifies its evolutionary implications. We first estimate how abortion and marriage attitudes relate to adults' own fertility and to their parents' fertility, i.e., their own sibship size. We then investigate the forces underlying these associations, focusing especially on religiosity and education, two well-known correlates of family size and social attitudes (10–13). We also ask whether other forms of conservatism exhibit similar associations. Last, we use a reweighting estimator to quantify how these patterns have affected support for legal abortion and same-sex marriage among US adults.

Results

From 2004 to 2018, the GSS interviewed 19,360 adults over age 25. Most survey waves during this period asked two-thirds of respondents about their views on abortion and same-sex marriage. We analyzed the subsample of 12,017 with valid responses on sibship size and at least one of the issues. When we study the

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Significance

"Family values" conservatives in the United States have more children and more siblings than their compatriots. These patterns reflect the tendency of the more religious and less educated to have larger families and more conservative views on the family. Among Protestants, denominational differences play a role, with fundamentalist groups exhibiting larger families, less education, and greater conservatism. The causal pathways are unclear, but the patterns reshape society: Traditional-family conservatism is more prevalent than it would have been if each person had the same population share as his or her parents. This demographic phenomenon raises opposition to same-sex marriage and abortion by 3 to 4 percentage points. It accounts for 7.9 million of the nation's 54.8 million opponents to same-sex marriage.

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number of children rather than siblings, we focus on adults over 40 to eliminate concerns that fertility is not complete.

Fig. 1 shows how traditional-family conservatism varies with sibship size and fertility. Among adults ages 25 and above (Fig. 1*A*), opposition to abortion and same-sex marriage rises steadily with sibship size from one to 10-plus siblings, although it is slightly higher for individuals with no siblings than for individuals with few siblings. The gap from the trough to the peak is 24 to 25 percentage points, depending on the outcome. Opposition to abortion and same-sex marriage rises similarly with the number of children (Fig. 1*B*). Here, the gap between childless individuals and parents of seven children is 28 to 40 percentage points. Although the individuals in Fig. 1*B* are not the parents of the individuals in Fig. 1*A*, the larger fertility gradient is consistent with decay in the intergenerational transmission process.

At the bottom of each panel in Fig. 1, we plot two histograms, one weighted by family, the other weighted by individual siblings within the family. The histograms allow us to see the difference between the distribution of families of different sizes (shown in white) and the distribution of siblings (Fig. 1*A*) or children (Fig. 1*B*) from families of different sizes (shown in purple). In Fig. 1*A*, the data are at the sibling level, so the family-level distribution is a reweighted version of the individual distribution, with the weights equal to 1 over the individual's sibship size. In Fig. 1*B*, the data are at the parent or family level, so the sibling-level distribution is a reweighted version of the individual distribution, with the weights equal to the individual's number of children.

In both Fig. 1 *A* and *B*, the sibling histogram exhibits less mass at lower values and more mass at higher values than does the family histogram. Because opposition to abortion and same-sex marriage tends to be lower in smaller families, the histograms demonstrate how differential fertility shifts the next generation toward a more conservative composition. The starkest example of this phenomenon appears in Fig. 1*B*: Childless individuals, who report the lowest levels of opposition to abortion and same-sex marriage, comprise 14% of the current generation, but their offspring will constitute 0% of the next.

What social forces account for the association between traditional family attitudes and family size? Fig. 2 suggests two possibilities: religiosity and education. In Fig. 2 *A*, *Upper*, opposition to abortion and same-sex marriage rises rapidly with the frequency of religious service attendance. Opposition is 38 to 39 percentage points higher among weekly attendees of religious services than among their counterparts who attend less than annually. Fig. 2 *A*, *Lower*, also finds that average sibship size rises with attendance. Weekly attendees average 4.1 siblings, whereas nonattendees average 3.4. Religiosity thus explains part of the relationship between sibship size and traditional-family conservatism.

In Fig. 2 *B*, *Upper*, traditional-family conservatism declines rapidly with educational attainment. From high-school dropouts to graduate-degree holders, opposition to abortion and same-sex marriage falls by 40 and 31 percentage points, respectively. Fig. 2 *B*, *Lower*, reveals that average sibship size declines with education. High school dropouts average 5.8 siblings, whereas postgraduate degree holders average 2.5. Educational attainment also explains part of the relationship between sibship size and traditional-family conservatism.

While the bivariate patterns in Fig. 2 imply that religiosity and education link sibship size with traditional-family conservatism, the extent is not clear. Neither are the roles of cohort variation, time trends, and other covariates in explaining the link. Cohort variation may be especially important. Average sibship size varies systematically across cohorts, in large part due to the baby boom of the mid-20th century (*SI Appendix*, Fig. S1). If cohorts also differ in their conservatism, religiosity, and educational attainment, then the patterns in Fig. 2 may reflect variation across generations, rather than cross-sectional variation within a generation. Another important source of covariance may be race/ethnicity, which relates in complex ways to religion, class, and social attitudes (14), while also serving as the basis for large differences in average family size. In our sample, non-Hispanic blacks have 2.0 more siblings than whites on average, while Hispanics have 1.9 more.

To address these issues, Fig. 3 presents average marginal effects from probit regressions of opposition to abortion or same-sex marriage on sibship size, with and without adjustment for cohort indicators, year indicators, and other covariates. The complete set of covariates is not available for all individuals, so we restrict attention to the sample with data on all covariates, reducing the number of observations from 12,017 to 9,624.

In the unadjusted models, each additional sibling is associated with a 2.6-percentage-point increase in opposition to abortion and a 2.3-percentage-point increase in opposition to same-sex marriage.* Adjusting for cohort and year leaves the association for abortion unchanged and decreases the association for marriage to 1.9. Cohort and time variation account for nearly one-fifth of the tendency for same-sex-marriage opposition to concentrate in larger families. This finding is a consequence of steeply declining cohort trends in same-sex-marriage opposition and average sibship size; cohort trends in abortion opposition are shallower (*SI Appendix*, Fig. S1).

For both abortion and marriage, however, the tendency of individuals from larger families to be more religious and less educated explains most of the sibsize–conservatism link. With and without cohort and year indicators, adjusting for religiosity (attendance, religion, and beliefs; *Materials and Methods*) reduces the association by 56 to 60% for abortion attitudes and by 51 to 54% for same-sex marriage. Adjusting instead for highest degree reduces them by 42 to 43% and 31 to 34%, respectively, while adjusting for both reduces them by 82 to 87% and 70 to 75%. Further adjustment for race or other background covariates (*Materials and Methods*) leads to comparatively minor changes in either association.
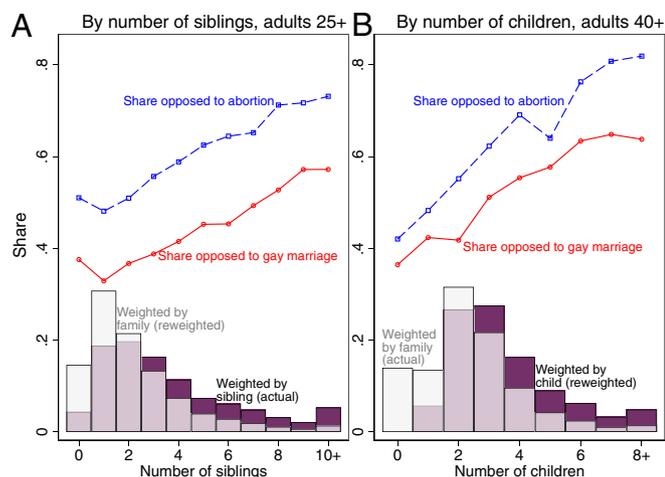

Fig. 1. Traditional-family conservatism rises with family size, raising the representation of individuals from more conservative families. Bars are histograms that alternatively weight by the family of origin or by individual siblings within each family. (*A*) By number of siblings, adults ages 25 and above. (*B*) By number of children, adults ages 40 and above.

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*The associations are similar in the full sample: 0.026 for abortion and 0.022 for same-sex marriage.
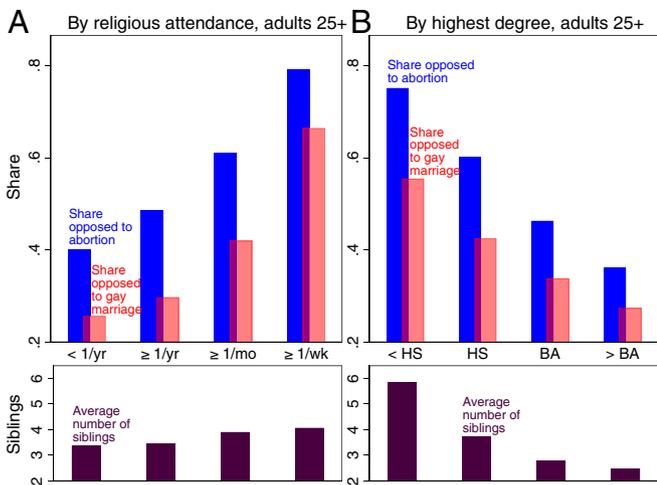
Fig. 2. Religiosity and education mediate the association of sibship size with traditional-family conservatism. (*A*) By religious attendance, adults ages 25 and above. (*B*) By highest degree, adults ages 25 and above.

The association of sibship size with opposition to abortion and same-sex marriage is present in all sample years and all major demographic groups. As noted in the introduction, attitudes toward abortion were stable during the sample period, while attitudes toward gay marriage became markedly less conservative. Unadjusted models estimated separately by year shed light on the distribution of these trends across sibship sizes (*SI Appendix,* Fig. S2). For the abortion relationship, both the intercept and the slope are stable over time. For the same-sex-marriage relationship, the slope is relatively stable, but the intercept steadily declines from 0.50 to 0.21, implying that declining opposition was distributed evenly across family sizes. Furthermore, the associations are significantly positive in models estimated separately by race, nativity, and major religious group, including those who claim no religious affiliation (*SI Appendix,* Fig. S3).[†] Among Protestants, who comprise half of our sample, members of more conservative denominations tend to have larger families, less education, and greater opposition to abortion and same-sex marriage (*SI Appendix,* Fig. S4), consistent with existing research (15–18).

Are these relationships specific to abortion and same-sex marriage? Similar patterns are evident for other dimensions of traditional-family conservatism, but not other forms of conservatism. Conservative attitudes toward sex education, school prayer, teenage sex, marital infidelity, and gender roles in the household all display positive relations with sibship size (*SI Appendix,* Fig. S5). However, of the 63 GSS questions asked in every survey during the study period that could be coded on a scale of conservatism, traditional-family attitudes account for the largest sibsize–conservatism associations (*SI Appendix,* Fig. S6). Conservatism on fiscal policy, immigration policy, and gun rights have weaker and sometimes negative associations with sibship size, as does Republican Party affiliation. The reason is in line with the mechanisms underlying our main result: Conservative attitudes that are associated less positively with sibship size also tend to be associated less positively with religiosity and less negatively with education (*SI Appendix,* Fig. S7).

Even so, the negative associations that arise for a few dimensions of conservatism deserve attention. Further analysis sug-

gests that race explains these patterns, in contrast to our main results (*SI Appendix,* Fig. S8). Within subsamples of non-Hispanic whites or blacks, most of the negative associations disappear altogether (*SI Appendix,* Fig. S9). The most noteworthy example is Republican Party affiliation, which declines 1.5 percentage points for each additional sibling. This association shrinks to practically zero among whites and among blacks when treated as separate subsamples. The association in the combined sample is due to blacks overwhelmingly identifying as Democrats and having larger family sizes, on average, than whites. Differential population growth by race may have political implications, but it is conceptually distinct from the phenomenon we study here. In any case, while traditional-family conservatives have more children as well as more siblings, fertility does not currently vary by Republican Party affiliation (*SI Appendix,* Fig. S10), so any partisan growth differential is unlikely to carry forward to the next generation.

Viewed through the lens of cultural evolutionary theory (2, 3), the association between sibship size and traditional-family conservatism is intriguing because it affects the dynamics of conservatism at the population level. Fig. 4 quantifies this phenomenon with a statistic we call the "composition effect" of differential fertility. The composition effect compares the actual prevalence of opposition to abortion and same-sex marriage with the prevalence that would be obtained if sibship size were independent of opposition, which we call the "deweighted" prevalence. Under the counterfactual, individuals from different sibship sizes have the same population shares as their parents: undoing the natural reweighting of the population from one generation to the next due to differential fertility. In Fig. 1*A*, the composition effect is equivalent to taking the difference between two averages of the sibsize-specific opposition shares, weighted by either the solid histogram or the transparent histogram.

Fig. 4*A* plots the actual and deweighted prevalences of opposition, both overall and by year. The deweighted prevalence removes the influence of population reweighting due to differential fertility and thus represents the counterfactual under independence of sibsize and attitudes. Across all survey years, 57% and 41% of respondents reported opposition to abortion and gay marriage, respectively. Were sibship size independent
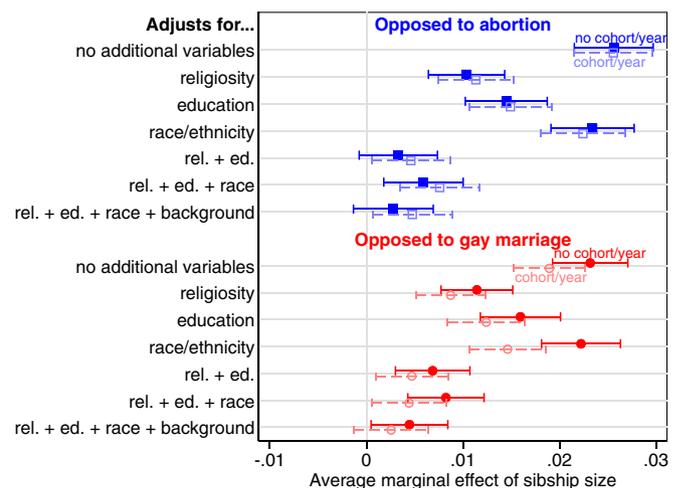

Fig. 3. Unadjusted and adjusted associations of sibship size with traditional-family conservatism. Points are average marginal effects from probit models. Capped spikes are 95% CIs based on heteroskedasticity-robust SE. "Cohort, year" models adjust for quinquennium of birth and year of interview. See *Materials* and *Methods* for a description of additional covariates. Ed., education; rel., religiosity.

[†]Many individuals with no religious affiliation are nevertheless religious: 21% claim a strong belief in God, and 24% claim to pray daily.
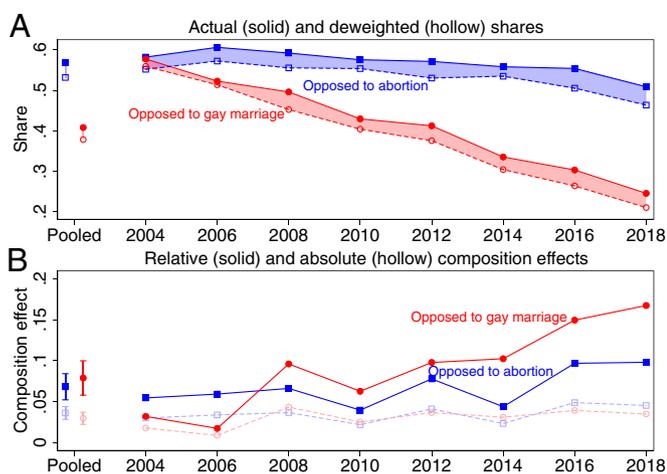
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Fig. 4. Composition effects of differential fertility on the prevalence of traditional-family conservatism. The deweighted share is computed by reweighting observations by 1 over sibship size. The absolute composition effect is actual minus deweighted share; the relative composition effect is absolute composition effect divided by deweighted share. Capped spikes are 95% CIs based on bootstrapped SEs. (*A*) Actual (solid) and deweighted (hollow) shares. (*B*) Relative (solid) and absolute (hollow) composition effects.

of attitudes, these shares would be 53% and 38%, respectively. The pooled averages mask significant heterogeneity over time, however. While actual and counterfactual opposition to abortion were relatively stable between 2004 and 2018, with only a slight downward trend, both measures of opposition to same-sex marriage declined sharply over the same period. Actual opposition to same-sex marriage declined from 58% to 25% from 2004 to 2018. The gap between the actual and deweighted prevalences also widened slightly, so that differential fertility accounts for a growing share of public opposition to same-sex marriage.

Fig. 4*B* provides point estimates and CIs for the absolute and relative composition effects of differential fertility. The absolute effect equals the actual prevalence minus the deweighted prevalence, as described above, while the relative effect equals the absolute effect divided by the deweighted prevalence. Pooling all years, the prevalence of opposition to abortion is 3.6 percentage points higher ($P < 0.001$) than it would have been if sibship size were independent of opposition at the individual level. In relative terms, this effect amounts to a 6.8% increase ($P < 0.001$). For same-sex marriage, the absolute effect is 3.0 percentage points ($P < 0.001$); the relative effect is 7.9% ($P < 0.001$).

Consistent with Fig. 4*A*, annual estimates reveal significant increases in composition effects for same-sex marriage, but not abortion. Between 2004 and 2018, the absolute effect for abortion rose a statistically nonsignificant 1.5 points ($P = 0.39$), while the relative effect rose a nonsignificant 4.3 points ($P = 0.26$). In contrast, the absolute effect for same-sex marriage rose 1.7 points ($P = 0.23$), while the relative effect rose 13.5 points ($P = 0.017$) due to secular declines in the prevalence of opposition. By 2018, differential fertility in the last generation raised the number of US adults opposed to same-sex marriage by 16.7% ($P = 0.001$). Multiplied by Census population estimates (19), our results imply that 54.8 million adults over age 25 opposed same-sex marriage in 2018. Had sibship size been independent of opposition in an identically sized population, they would have been 7.9 million fewer.

Three extensions appear in *SI Appendix*. First, the composition effects here include a between-cohort component that

gives greater weight to birth cohorts with larger average sibship size. How much reweighting occurs purely within cohorts? *SI Appendix A* estimates within-cohort composition effects. Levels and trends in within-cohort composition effects are broadly similar to those in Fig. 4, although within-cohort effects are slightly smaller for same-sex marriage. In 2018, the within-cohort relative effect for same-sex marriage was 15%, compared with an overall relative effect of 17%.

Second, the composition effects here measure reweighting due to differential fertility among parents only, ignoring nonparents. What if childless members of the last generation had as many children as their fertile counterparts? *SI Appendix B* computes lower bounds for composition effects that account for childlessness, again finding levels and trends similar to those in Fig. 4.

Third, heterogeneity in another demographic process—mortality—could, in principle, counteract fertility composition effects. *SI Appendix C* estimates mortality differentials by traditional-family conservatism and explores how they affect public opinion. Mortality risk is uncorrelated with opposition to abortion. Same-sex-marriage opponents do have higher mortality risk, but the differential is too small to have composition effects that compete with those from differential fertility.

Discussion

Traditional-family conservatives have more siblings and more children, patterns largely attributable to the higher fertility and conservatism of the more religious and less educated. As a consequence, conservative attitudes on abortion and same-sex marriage are 3 to 4 percentage points more prevalent than they would have been if the number of siblings had been independent of traditional-family conservatism in the current generation. In the case of abortion, for which the ratio of conservative to liberal attitudes has been relatively stable, this reshaping of the population amounts to increasing the number of people opposed to abortion by 5 to 10% in any given year. In contrast, because opposition to same-sex marriage has plummeted, but its association with sibship size has not, compositional forces account for an ever-growing share of the remaining opposition. As of 2018, opponents of same-sex marriage numbered 54.8 million, 17% higher than would have been in the absence of the relationships documented here.

At its core, our study is about culture as a determinant of fertility preferences (20), not the explanatory roles of religiosity and education. Nevertheless, the selective forces we highlight here relate closely to previous findings on differential fertility by religiosity and education. Major religious groups and the denominations within them vary systematically in their fertility, and more religious people have more children (12, 13, 21–23). Because affiliations and beliefs are transmitted intergenerationally (24, 25), these patterns shape the religious composition of the next generation. For example, fertility differences across denominations explain most of the 20th-century shift from mainline to conservative Protestantism in the United States (17). Differential fertility is also a primary driver of changes in the global population shares of major religious groups (26). Researchers have noted similar pressures stemming from the tendency of the less educated to have more (and less-educated) children, although in the United States, the resulting negative composition effect on average education is small in relative terms (27). Furthermore, the sign and magnitude of this composition effect vary with the level of economic development (28, 29).

In fact, theories of long-run demographic change suggest interconnected roles for religiosity and educational attainment. These theories predict that if lineages vary in their prioritization of the "quantity" and "quality" of children, then after the demographic transition, quantity-preferring lineages exhibit higher fertility

and lower educational investment in individual children (30). Our results are consistent with an interpretation in which religion drives cultural heterogeneity in childrearing preferences. If religions developed pronatalist doctrine historically to promote demographic and economic success, then the transmission of this doctrine across generations would tend to concentrate higher fertility, lower child investment, religiosity, and traditional-family conservatism in the same families.

This form of self-sustaining religious stratification summons theories of complex religion (14), which study how religion interacts with class and race. Consistent with these theories, the roles of religiosity and education in our results are hard to disentangle. Race plays less of a direct role in explaining our main findings, but still helps clarify why "family values" issues stand out. In particular, black and white Christians converge on social conservatism, but diverge on economic policy and civil rights, with blacks tending toward liberal positions on these issues (31). In line with this interplay between race and religion, we find positive sibsize-attitude associations for traditional-family conservatism, but not other forms of conservatism. Indeed, within major racial groups, sibship size exhibits little relation to nonfamily issues.

Our results say little about the causal effect of sibship size on conservatism. Adjusting for religiosity and educational attainment eliminates most of the association of sibship size with abortion and marriage attitudes. Although religiosity and educational attainment could, in principle, act as mediators, along the causal chain between sibship size and conservatism, research suggests that their associations with sibship size do not primarily reflect the effects of sibship size. Religiosity correlates with intended fertility (13), and exogenous variation in sibship size does not systematically decrease educational attainment (32, 33), implying that the associations partly reflect parental attributes that precede childbearing. As a corollary to the lack of a causal interpretation, the association between sibship size and conservatism does not imply that the end of the baby boom affected trends in social conservatism (*SI Appendix*, Fig. S1). Nevertheless, cross-cohort variation in sibship size does account for 12% of the composition effect for gay marriage. Overall, our results are best interpreted as cross-sectional relationships relevant for the dynamics of culture across generations.

A caveat is also in order for the composition effect of differential fertility. If all parents had the same number of children, average conservatism in the next generation might differ from the deweighted average we use. Actual changes in the distribution of family size may come with adjustments to parental investment in children's socialization or human capital, which, in turn, may affect their conservatism. Conservatism may also be frequency-dependent. Our estimator only quantifies how the prevalence of traditional-family conservatism would change if the population shares of different-sized families were equalized, but the conservatism of their members were preserved.

From a Darwinian perspective, the composition effect reflects differential reproductive success. Because mortality differences by family size are minimal, one can, indeed, interpret our findings as evidence of natural selection on culture. Importantly, natural selection does not require genetic inheritance; our results reveal selection on a cultural phenotype. Whether, how much, and why genetic differences influence adherence to social attitudes within a population remain open questions. Twin studies have reported substantial heritability for social attitudes, some using US data that include questions about abortion and gay rights (5, 34, 35). Any genetic influence presumably operates through influence on more basic psychological traits or selection into environments that shape opinions within particular sociopolitical contexts.

Our analysis has a broader lesson that attitudes are correlated with demographic processes, and this interconnection can affect the long-term dynamics of public opinion. Past differential fer-

tility shapes the composition of the current generation in a way that elevates "family values" conservatism. Opposition to abortion and same-sex marriage, two defining issues of the "culture wars" that have shaped American politics for half a century (36), are significantly more prevalent than they would be if they were not related to family size. These forces can help sustain large pockets of opposition to change, even in the face of broader liberalizing trends. Natural selection is a silent warrior in America's culture wars.

Materials and Methods

Data. Our main analyses use data from all GSSs (37) from 2004 to 2016, the period with continuous coverage on both abortion and same-sex marriage attitudes. We code a respondent as opposed to abortion if the that person responds "no" when asked whether "it should be possible for a pregnant woman to obtain a legal abortion if the woman wants it for any reason." We code a respondent as opposed to same-sex marriage if that person "disagrees" or "strongly disagrees" with the statement that "homosexual couples should have the right to marry one another." We relate these variables to the number of siblings and, in auxiliary analyses, the number of children.[‡] To ensure that reported sibship sizes are complete, we exclude respondents under age 25.

Probit Analysis. To shed light on which covariates explain the association of sibship size with traditional-family conservatism, we estimate a probit regression:

$$Pr[opposed_i] = \Phi[\alpha + \beta s_i + X_i' \gamma] \qquad [1]$$

where $opposed_i$ is opposition to either abortion or same-sex marriage, $\Phi[\cdot]$ is the standard normal distribution function, s_i is sibship size, and X_i is a vector of covariates. We report average marginal effects of sibship size, i.e., the average of $\partial Pr[\cdot] / \partial s_i = \beta \phi(\alpha + \beta s_i + X_i' \gamma)$, and 95% CIs based on heteroskedasticity-robust SEs.

We estimate models with and without indicators for cohort (quinquennium of birth) and time (survey year). We then add four sets of covariates: religiosity, education, race/ethnicity, and childhood background. Religiosity covariates include indicators for frequency of religious service attendance (never, <1/y, 1/y, 1/y to 1/mo, 1/mo, 2 to 3/mo, nearly 1/wk, 1/wk, and >1/wk), strength of religious affiliation (none, not very strong, somewhat strong, and strong), religion (conservative Protestant, moderate Protestant, liberal Protestant, Catholic, Jewish, none, and other), belief in God, belief that the Bible is God's word, and daily prayer. Education covariates include indicators for less-than-complete high school, complete high school, less-than-complete college, complete college, and more than college. Race/ethnicity covariates include indicators for non-Hispanic white, non-Hispanic black, Hispanic, and other. Background covariates include indicators for gender, parents' highest degree, and the following characteristics at age 16: parental coresidence, religion, region of residence (census divisions, plus foreign), residence in a place with population <50,000, and mother's employment status.

Reweighting Analysis. The composition effect compares actual opposition to abortion or same-sex marriage with the counterfactual opposition that would be obtained if individuals from different sibship sizes had the same population shares as their parents. Letting k index sibship size and η_k denote the population share of individuals from sibships of size k, we derive a counterfactual population share that gives equal weight to each sibship instead of each individual:

$$\tilde{\eta}_k = \frac{\eta_k / k}{\sum_{j=1}^{K} \eta_j / j}. \qquad [2]$$

This ratio is equivalent to weighting each individual by 1 over her sibship size. We refer to it as the "deweighted" population share because it undoes the natural reweighting of the population from one generation to the next due to differential fertility.[§] Next, let π_k denote the share of individuals from sibships of size k who oppose abortion or same-sex marriage. Estimates

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[‡] Both counts include deceased children, and the sibling count includes adopted and step-siblings. Both are top-coded at the 99th percentile: 14 for sibship size, eight for the number of children.

[§] Computation of Eq. 2 should exclude deceased siblings, who do not contribute to current population composition, but the GSS only offers the full count of siblings, including the deceased.

of η_k, $\bar{\eta}_k$, and π_k appear in Fig. 1A. We can write the absolute composition effect as:

$$\Delta = \sum_{k=1}^{14} (\eta_k - \bar{\eta}_k)\pi_k. \qquad [3]$$

Inside the parentheses, η_k weights the sample to give average opposition across individuals, while $\bar{\eta}$ reweights the sample to give average opposition across families. We refer to these averages as the actual and deweighted prevalences of opposition. Δ captures the absolute effect of differential fertility, in percentage points. Another quantity of interest is the relative composition effect:

$$\delta = \frac{\Delta}{\sum_{k=1}^{14} \bar{\eta}_k \pi_k}, \qquad [4]$$

which divides the absolute composition effect by the deweighted prevalence of opposition. We estimate Δ and δ by substituting estimates of η_k, $\bar{\eta}_k$, and π_k into Eqs. **3** and **4**. SEs are computed by the bootstrap.

Replication Materials.
Data and code for reproducing the analysis are archived on the Open Science Framework (https://osf.io/6kbcf/).

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