

## Research



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# Experimental and cross-cultural evidence that parenthood and parental care motives increase social conservatism

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Differences in attitudes on social issues such as abortion, immigration and sex are hugely divisive, and understanding their origins is among the most important tasks facing human behavioural sciences. Despite the clear psychological importance of parenthood and the motivation to provide care for children, researchers have only recently begun investigating their influence on social and political attitudes. Because socially conservative values ostensibly prioritize safety, stability and family values, we hypothesized that being more invested in parental care might make socially conservative policies more appealing. Studies 1 (preregistered;  $n = 376$ ) and 2 ( $n = 1924$ ) find novel evidence of conditional experimental effects of a parenthood prime, such that people who engaged strongly with a childcare manipulation showed an increase in social conservatism. Studies 3 ( $n = 2610$ , novel data from 10 countries) and 4 ( $n = 426\,444$ , World Values Survey data) find evidence that both parenthood and parental care motivation are associated with increased social conservatism around the globe. Further, most of the positive association globally between age and social conservatism is accounted for by parenthood. These findings support the hypothesis that parenthood and parental care motivation increase social conservatism.

## 1. Introduction

Human children take an unusually long time to develop, and require an extraordinary amount of care and guidance [1–3]. Consequently, the motivation to engage in extended parenting behaviour is a universal and emotionally potent aspect of human life. In much the same way that feelings of sexual attraction motivate many mating behaviours, feelings of care, protection and

tenderness towards children motivate parental care behaviours. These parental feelings represent a fundamental motivational mechanism [4] and vary as an individual difference variable called *parental care motivation* [5,6]. Given the vital nature of parenthood and parental care motivation in human life, recent preliminary work suggests that they may also shape fundamental aspects of social attitudes and cognition (see [6,7]). Here, we present experimental and cross-cultural evidence linking both parenthood and parental care motivation to increased social conservatism (defined here as a tendency to prefer safer, more traditional behaviours, social organizations and sources of moral guidance, alongside cultural ingroup preference and resistance to cultural change).

Providing adequate parental care comes with immense costs in the form of time, money, energy and resources. Thus, a powerful motivational system facilitates engagement in such behaviours. Parental care motivation can be seen as an affective precursor to parental investment: by experiencing feelings of cuteness, fascination, concern and sympathy towards children—especially their own—adults are motivated to nurture and protect.

Of course, there also exist numerous other competing motivational systems, which lead to perpetual trade-offs between time and effort invested in the care of children and the pursuit of other goals. For example, there is evidence of a direct trade-off between parental care motivation and mating motivation: People who report greater mating motivation tend to score lower on parental care motivation, while experimental work has found that increasing one of these motives leads to decreases in the other [8]. Consonantly, research in behavioural endocrinology has found that men who show greater interest in babies also exhibit lower testosterone responses to sexual stimuli [9]. Thus, while parental care motivation has clear benefits, it also comes with costs and leads to the de-prioritization of other motivational systems.

Because of the costs and benefits of parental investment, there is considerable variation in the amount of time and effort invested in parenting. This variation may be important for political attitudes: people who tend to be involved in—or want to be involved in—childcare might be more likely to pursue a stable, family-focused environment, and might consequently find political policies which support this goal more appealing. Because of trade-offs with mating motivation, people higher in parental care motivation may also have less to gain from more sexually permissive policies. Thus, parents and people who are more motivated to care for children might show preference for policies which reinforce long-term partnerships and discourage promiscuity and adultery.

Socially conservative policies meet many of the goals that are prioritized by parenting motives. For example, social conservatism is associated with support for institutions such as (heterosexual) marriage which reinforce monogamous relationships. Social conservatives tend to have more negative attitudes towards casual sex than liberals, are more likely to get married, and have fewer sexual partners [10–13]. As well as being more inclined to advocate restrictive attitudes to sexual promiscuity itself, conservatives are more likely to oppose laws, procedures and technologies which decrease the social costs of promiscuity, such as the right to abortion and access to contraception [14–16].

There are other reasons that social conservatism might be linked to parenthood and parental care motivation. Becoming a parent to a young child means being responsible for a

physically vulnerable being, and social conservatism serves a threat-management function which helps to buttress institutional safeties [17,18]. Thus, parenting appears to make the avoidance of threats a greater priority (see [19–21]). Consistent with this, longitudinal evidence suggests that people become more risk-averse shortly before they become parents and for several years after, before returning to normal levels when the child reaches maturity [22]. Similarly, evidence suggests that social conservatives are warier of potential physical threats than are liberals [17,18], and attend more to information warning of potential threats [23].

It is thus plausible that socially conservative policies might be more appealing to parents and people who are inclined towards higher parental investment, because of at least three *perceived* functions of such policies: regulating threats, promoting family stability, and discouraging sexual promiscuity and infidelity. Importantly, the theory outlined here does *not* predict an equivalent relationship between parenting and other aspects of conservatism—i.e. attitudes on economic policies—since these do not serve the same moralistic or threat-avoidant functions. Thus, the distinction between social and economic conservatism represents an important boundary condition.

Some recent work suggests that parenthood and parental care motivation are positively associated with social conservatism and—consistent with the rationale outlined above—that this relationship is statistically mediated by decreased mating motivation and increased threat-perception [24,25]. While these results are consistent with the hypothesis that parental care motivation leads to social conservatism, they are based upon correlational data solely from American participants recruited through online crowdsourcing platforms. These same studies also attempted to experimentally manipulate parental care motivation via online primes, but no consistent experimental effects emerged, and it was unclear whether the experimental manipulations reliably increased parental care motivation.

These studies also found preliminary evidence that parenthood status accounts for a sizable proportion of age-related increases in social conservatism. A common lay assumption is that people tend to become more conservative with age as a consequence of greater wisdom and experience, as reflected in the saying ‘whoever is not a liberal at 20 has no heart, and whoever is not a conservative at 30 has no brain’ (with various alternatives attributed to John Adams, Benjamin Disraeli, Winston Churchill, King Oskar II of Sweden and Victor Hugo [26,27]). If the finding that parenthood explains age differences in social conservatism is generalizable beyond American online samples, this would suggest that parenthood, rather than wisdom, may be at the root of age differences in political attitudes and could be among the most important demographic predictors of ideology.

The current studies directly test the hypothesis that parenthood and parenting-relevant motives influence social conservatism, using multiple methods, measures and data from across the globe. Studies 1 and 2 present experimental data, testing the hypothesis that increasing parental care motivation can lead to increases in social conservatism. Studies 3 and 4 test the generalizability of relationships between parenthood, parental care motivation, and social conservatism in novel and archival international samples. Studies 3 and 4 also test the hypothesis that parenthood could explain age-related differences in social conservatism, globally.

## 2. Methods

### (a) Participants and procedure

#### (i) Study 1

Of 402 initial participants, 26 were excluded for failing a simple attention check (as per preregistration). The analytic sample comprised 376 American university students (98.9% non-parents; ages 18–58,  $M = 19.16$  ( $s.d. = 2.35$ ), 73.1% White) who talked to an experimenter via the Zoom chat application (the study was conducted online due to COVID restrictions) and were randomly assigned to one of two experimental conditions. All participants completed a measure of parental care motivation prior to the manipulation.

Participants in the childcare condition viewed 12 pictures of young, cute children, and were asked to identify which of these most resembled how they imagined a future child of theirs to look (manipulation based on [28]). They were then asked to give this imagined child a name, and imagine and describe a series of positive experiences with them, following prompts from the experimenter. In the control condition, participants were given photos of leisure or household objects and were asked a similar set of prompts regarding imagined activities. After this spoken exercise, participants were directed to an online survey assessing social conservatism.

#### (ii) Study 2

Participants were 1924 adults (293 mothers, 693 fathers, 451 childless females and 487 childless males). Samples were from a previous article which examined experimental effects of an online childcare manipulation and found mixed evidence for effects [25]. In three online studies, participants had first completed a written task in which they wrote about either a positive interaction with a child (childcare condition) or with an adult (control condition). One of the studies also had a second control condition, in which participants wrote about their morning routine.<sup>1</sup> Qualitative written response data from these three published studies had not been analysed in the original paper. Two research assistants, who were blind to the hypotheses, coded these written responses for the amount of emotional engagement shown (see measures section below). Given that large samples are required to reliably detect moderation effects [30], the three samples were combined for analysis.

#### (iii) Study 3

Participants were 2610 adults (minimum 100 in each country; see electronic supplementary material, pp. 5–6 and tables S1 and S2 for information on recruitment, exclusions and demographics) recruited by 11 research teams in 10 countries (for country-level analyses, data were combined from two Australian samples). These samples included in-person community samples, online samples, student samples and nationally representative samples. All participants completed measures of parental care motivation and social and economic conservatism. Surveys in non-US countries were incorporated into existing survey studies. Surveys were administered in the main local language.

#### (iv) Study 4

For Study 4, we used archival World Values Survey (WVS) data, as described below.

<sup>1</sup>These control conditions were combined for analysis. Excluding this second control condition made no meaningful difference to the pattern or statistical significance of results.

### (b) Measures

#### (i) Parental care motivation

Studies 1 and 3 used the 10-item Parental Care and Tenderness scale [29], which has participants rate six statements on agreement (from 1 = *Strongly disagree*; 5 = *Strongly agree*) such as 'When I see infants, I want to hold them' and four further statements according to how much tenderness they would feel in a situation, e.g. 'You hear a young child trip and fall, and begin to cry' (1 = *No tenderness at all*; 5 = *Strong feelings of tenderness*). The overall parental care motivation score is computed from all ten items. The scale also has two subscales: The Nurturance subscale comprises six items, including the two example items above; the Protection subscale has four items, including agreement with statements such as 'I would feel compelled to punish anyone who tried to harm a child'. Scores were computed as an average of all items in Studies 1 and 2, and as factor scores in Study 3 (since many of the samples for Study 3 used non-validated translations). For Study 2, two samples were based on this 10-item version, and one sample used the original 25-item version [5] (replacing scores for that sample with an extracted 10-item version produced inferentially identical results).

#### (ii) Social and economic conservatism

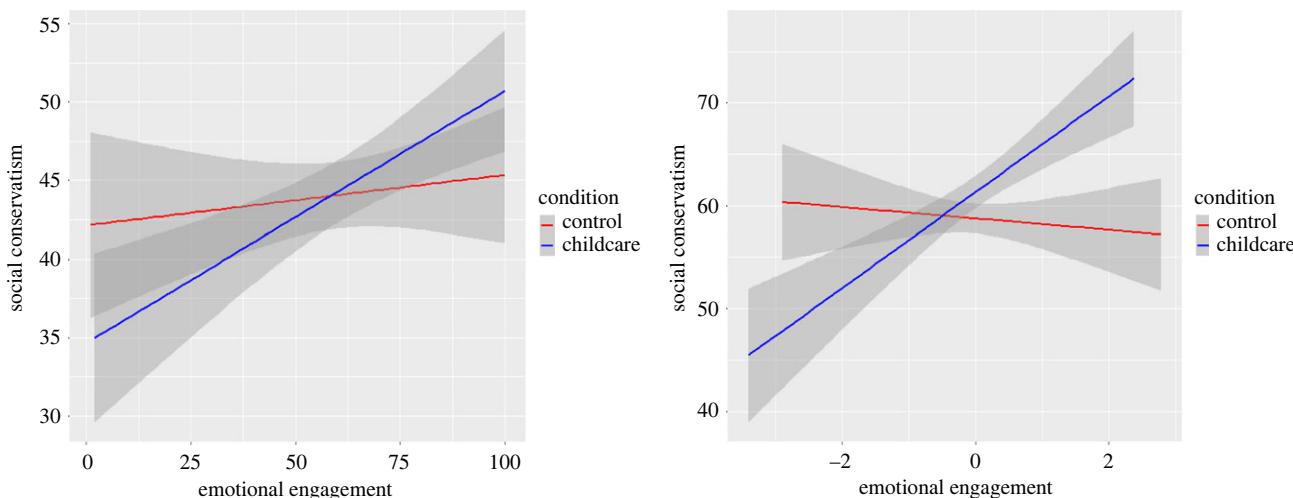
In Studies 1–3, social and economic conservatism were measured with versions of the 12-item Social and Economic Conservatism Scale [15]. The Social subscale asks participants to rate positivity or negativity towards items such as 'traditional values', 'patriotism', 'abortion choice' (reverse), and 'military and national security', while the economic subscale includes 'welfare benefits' and 'limited government'. Additional items were added to the social conservatism scale for Studies 1 and 3 (see online materials). To minimize survey length, the economic subscale was not included in Study 1. In Study 3, since we expected cross-cultural differences in the structure of social conservatism (leading to lower inter-correlations among social conservatism items), we used principal components analysis to extract the largest factor for each country separately. In Studies 1 and 2, we used mean scores in line with preregistration (Study 1) and with the original published studies (Study 2).

In Study 4, for Wave 6 data, social conservatism was measured as a factor extracted from scores for sexual/reproductive conservatism, importance of tradition and ingroup preference. These three components all loaded highly ( $\beta$ 's > 0.62) onto the overall social conservatism measure. Wave 5 used an average of scores for importance of tradition and sexual conservatism, while Wave 7 used an average of sexual conservatism and ingroup preference.

Sexual/reproductive conservatism was calculated by averaging scores for six items asking how justifiable 'homosexuality', 'divorce', 'abortion', 'sex before marriage', 'casual sex' and 'prostitution' were from 1 (never justifiable) to 10 (always justifiable). Some items were not present in all waves, but all waves included at least four items. Scores were reversed and then averaged for a mean-composite (Cronbach's  $\alpha = 0.87$ ) with scores ranging from 0 to 10 ( $M = 7.30$ ,  $s.d. = 2.47$ ), which was then standardized. The importance of tradition was assessed with a single item from the Schwartz values scale in the WVS, where people rated the statement 'Tradition is important to this person; to follow the customs handed down by one's religion or family' from 1 'not at all like me' to 6 'very much like me' ( $M = 4.47$ ,  $s.d. = 1.43$ ). Ingroup preference ( $M = 1.14$ ,  $s.d. = 0.87$ ) was measured by subtracting the averaged trust score for two outgroups (foreign person and person of other religion) from the average trust score for two ingroups (family and neighbourhood).

#### (iii) Emotional engagement

Emotional engagement with the manipulation was measured in Study 1 via a self-report item which directed participants to



**Figure 1.** Line plots showing effects of condition on social conservatism, moderated by emotional engagement with manipulation in Study 1 (left,  $n = 376$ ) and Study 2 (right,  $n = 1924$ ). (Online version in colour.)

'rate your emotional response to the previous imagination task from 0 to 100, where 0 is no emotional response and 100 is extremely strong'. Study 2 used data from three existing studies [25] which involved a short writing task in which participants were asked to recount and reflect upon a positive interaction they had had with either a child (childcare condition) or an adult (control condition). In one of these studies, there was also a second control condition with no writing task, which was combined with the adult interaction condition for the purpose of these analyses (removing data from this condition did not meaningfully affect results). The responses were not coded in the original paper. For the present study, two research assistants rated the responses from 1 to 5 on the strength of emotional engagement with the manipulation. To counteract differences in emotional engagement across conditions, scores were standardized by condition and averaged across the two raters. Given that the correlation between raters' scores was modest ( $r = 0.41$ ), we also ran the moderation analyses described below for each rater separately—this yielded directionally consistent, statistically significant results for all reported analyses for both raters.

### 3. Results

#### (a) Do acute reminders of parenting increase social conservatism?

Study 1 tested whether an interactive parenting prime increases social conservatism (preregistered at: [https://aspredicted.org/MKV\\_4FN](https://aspredicted.org/MKV_4FN)). Beyond testing this main effect (which was our preregistered prediction), we also ran exploratory analyses to test whether effects were moderated by people's emotional engagement with this manipulation (measured with a single self-report item).

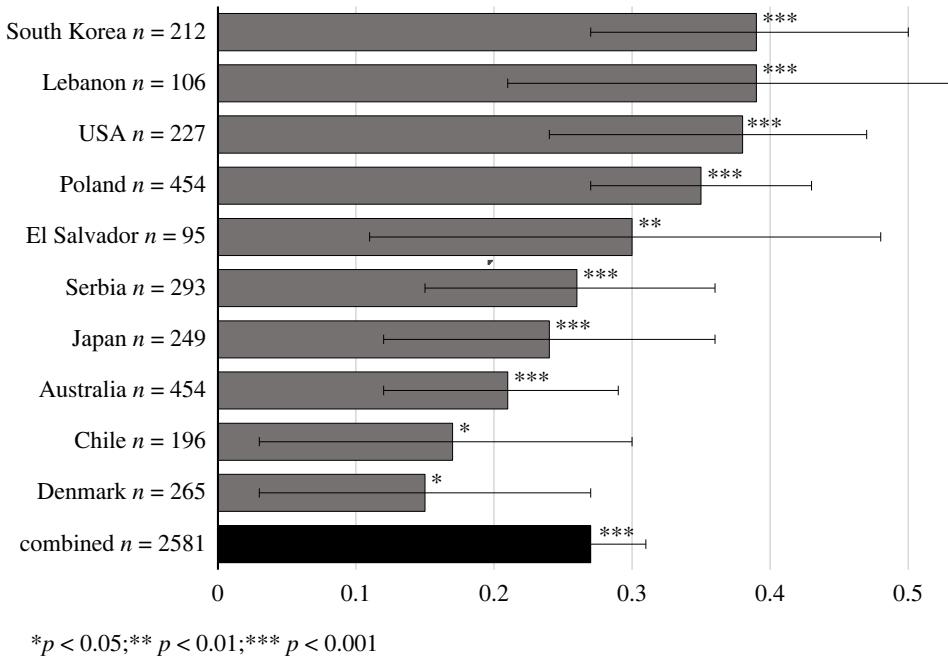
Means comparisons revealed that social conservatism scores did not differ between experimental conditions (44.43 versus 44.07,  $t_{376} = -0.24$ ,  $p = 0.811$ , 95% CI [-3.25, 2.55]). However, exploratory bootstrapped moderation analyses found that experimental effects were moderated by the strength of participants' self-reported emotional engagement with the manipulation (interaction  $b = 0.13$ , 95% CI [0.002, 0.24],  $p = 0.046$ ). Those who reported higher engagement (+1 s.d.) with the manipulation had non-significantly higher social conservatism scores in the childcare

condition,  $b = 3.05$ , 95% CI [-0.94, 7.94],  $p = 0.134$ , those at the mean of emotional engagement showed a smaller positive effect,  $b = 0.87$ , 95% CI [-2.10, 3.83],  $p = 0.561$ , while those who were less engaged showed nonsignificant negative effects of the childcare condition,  $b = -2.98$ , 95% CI [-7.29, 1.33],  $p = 0.174$ .

To further test this moderation effect, Study 2 attempted to replicate this moderation in reanalysed data from three previously published studies in which parenting primes were used. As in Study 1, there was a significant interaction (figure 1,  $p < 0.001$ ) such that more emotionally engaged participants (+1 s.d.) scored higher on social conservatism in the childcare condition compared to controls,  $b = 6.62$ , 95% CI [3.82, 9.43],  $p < 0.0001$ . Participants who displayed average levels of emotional engagement scored slightly higher in the childcare condition,  $b = 2.52$ , 95% CI [0.37, 4.67],  $p = 0.021$ , while less engaged participants (-1 s.d.) showed no difference between conditions,  $b = -1.27$ , 95% CI [-4.13, 1.59],  $p = 0.382$ . These moderated experimental effects were also mediated by corresponding changes in parental care motivation (moderated mediation analysis is reported in electronic supplementary material, figure S1).

Consistent with the theoretical framework, these interaction effects were specific to *social* conservatism, with no main effects or interaction effects emerging for economic conservatism ( $p$ 's > 0.22). Further exploratory analyses also tested the possibility that the experimental effects on social conservatism might be solely driven by child- and family-relevant items (i.e. the three items in the social conservatism scale assessing 'abortion choice', 'traditional marriage' and 'family unit' items). Running separate moderation analyses for the three directly family-relevant items and the four other items, produced very similar results in both cases: a significant interaction effect ( $p$ 's < 0.001) with larger experimental effects (higher social conservatism scores in the childcare condition) at higher levels of emotional engagement ( $p$ 's < 0.001 at +1 s.d.).

In summary, the experiments in Studies 1 and 2 found that parenting primes increased social conservatism, but only in people who emotionally engaged with the manipulations. There were no equivalent effects on economic conservatism. The effects on social conservatism were mediated by increases in parental care motivation, suggesting



\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

**Figure 2.** Magnitude of zero-order correlations (Pearson's  $r$ ) between parental care motivation and social conservatism across countries in Study 3.

that increased parental care motivation leads causally to greater social conservatism.

### (b) Is parental care motivation associated with social conservatism across cultures?

Study 3 tested whether the correlations between social conservatism and parental care motivation (how much people report feelings of liking, tenderness, and protectiveness towards children) would replicate in larger and more diverse samples. For analyses of the combined sample,  $p < 0.0001$  unless otherwise specified.

To test the overall relationship between parental care motivation and social conservatism across the combined sample, we ran a two-level linear mixed effects model with parental care motivation nested within country, and social conservatism as the dependent variable. This yielded a highly significant positive association between parental care motivation and social conservatism  $b = 0.27$ , 95% CI [0.24, 0.31].

Consistent with the theoretical framework, this relationship was largely specific to social—and not economic—conservatism. The association with economic conservatism was relatively weak overall ( $b = 0.07$ , 95% CI [0.03, 0.11]) and was only significantly positive in three of 10 countries (see electronic supplementary material, tables S3–S4). This association became non-significantly negative when controlling for social conservatism,  $b = -0.01$ , 95% CI [-0.04, 0.03],  $p = 0.769$ .

The magnitude of the overall correlation between parental care motivation and social conservatism was unchanged by including sex and age as covariates, and only slightly attenuated ( $b = 0.25$ ) when simultaneously controlling for the effects of socio-economic status. Separate analyses of subgroups revealed that this relationship was present in both parents ( $b = 0.19$ , 95% CI [0.12, 0.26]) and non-parents ( $b = 0.29$ , 95% CI [0.25, 0.34]), and in both men ( $b = 0.31$ , 95% CI [0.24, 0.38]) and women ( $b = 0.26$ , 95% CI [0.22, 0.31]). To test that these results were not primarily driven

by items related to family unity or to religion, we conducted additional exploratory analyses using alternative versions of the social conservatism scale which omitted these items. Results of these exploratory analyses on the full sample were inferentially identical to those from the central analyses (see electronic supplementary material, p. 9 and table S5).

Further analysis by country revealed consistent results, with significant, positive correlations emerging in all ten countries (figure 2). The strengths of these correlations do not appear to be dependent upon shared phylogenetic clustering: the strongest relationships were found in the USA, Lebanon, South Korea, El Salvador and Poland—countries within different global regions and with diverse histories. These results suggest that the relationship between parental care motivation and social conservatism is not unique to Western or Christian countries.

Although our *a priori* plan was to use the overall Parental Care and Tenderness scale for analyses—since we were interested in parental care motivation as a generalized affective precursor to parental investment—exploratory analyses revealed that both subscales were positively associated with social conservatism, although the association was somewhat stronger for the Nurturance subscale than for the Protection subscale (average correlations across samples of  $r = 0.26$  and  $r = 0.19$ , respectively, see electronic supplementary material, table S3).

There was also a positive relationship between parenthood status and social conservatism ( $b = 0.28$ , 95% CI [0.21, 0.36]). The magnitude of this relationship was almost unchanged ( $b = 0.27$ ) by controlling for sex and age, and was positive in both men ( $b = 0.39$ , 95% CI [0.25, 0.54]) and women ( $b = 0.22$ , 95% CI [0.13, 0.31]). Controlling for subjective socio-economic status in addition to these variables reduced the analytic sample size ( $n = 1734$ ), but still yielded a robust association between parenthood and social conservatism ( $b = 0.21$ ). Relationships by country are shown in table S5 of the electronic supplementary material with parents scoring significantly higher on social conservatism than non-parents in seven of the eight countries for

which there were at least 50 parents and 50 non-parents ( $b$ 's 0.28–0.69. In the other country, Japan, parents scored non-significantly higher,  $b = 0.23$ ,  $p = 0.069$ ).

There was a small overall relationship between parenthood status and economic conservatism,  $b = 0.10$ , 95% CI [0.02, 0.18],  $p = 0.014$ . However, this relationship was substantially driven by a highly significant positive association in the USA, and only reached statistical significance in one other country—Serbia—where the relationship was *negative* (see electronic supplementary material, table S6). Further—as with the relationship between parental care motivation and economic conservatism—this overall association became nonsignificant when controlling for social conservatism,  $b = 0.02$ , 95% CI [−0.06, 0.09],  $p = 0.617$ .

Consistent with results from American samples [24,25], the small positive effect of age on social conservatism (full sample  $b = 0.34$ , 95% CI [0.12, 0.56],  $p = 0.003$ ) became non-significant when controlling for parenthood ( $b = -0.07$ , 95% CI [−0.32, 0.19],  $p = 0.605$ ). This is consistent with the hypothesis that population age differences in social conservatism may actually be accounted for by parenthood, rather than representing a general consequence of ageing.

Thus, Study 3 found that parental care motivation and parenthood status were associated with social—but not economic—conservatism across multiple countries. Further, parenthood statistically explained age-related increases in social conservatism in the combined cross-cultural sample.

### (c) Is parenthood reliably related to social conservatism around the globe?

To further test the correlational relationship between parenthood and socially conservative attitudes, Study 4 analysed individual-level data from all seven waves of the WVS [31], spanning 40 years of data collection (1980–2020), and involving 426 444 participants in 88 countries. We examined three core components of social conservatism: sexual/reproductive conservatism, importance of tradition and ingroup preference.

All social conservatism scores (including subscales) were standardized, such that  $b$ -weights represent standard deviations. All global analyses used mixed model regressions, in which predictors were nested within country and (where applicable) wave of data. Age was log-10 transformed for all analyses. Effects are significant at  $p < 0.0001$  unless indicated otherwise.

### (d) Sexual/reproductive conservatism

Participants' average ratings of the justifiability of six acts—‘homosexuality’, ‘divorce’, ‘abortion’, ‘sex before marriage’, ‘casual sex’ and ‘prostitution’—were used to measure sexual/reproductive conservatism. Scores were reversed so that higher scores indicated more conservatism/lower acceptability. This measure was included in all seven waves of the WVS, although some waves contained only four or five of these items. To test the overall relationship, we ran a mixed-effects model with country and wave [1–7] as random effects, and parenthood as the predictor. This yielded a positive association,  $b = 0.18$ , 95% CI [0.18, 0.19], which was robust to controlling for sex, age and relative income,  $b = 0.24$ , 95% CI [0.23, 0.25].

We were also interested in whether *number* of children might be an even stronger predictor of social conservatism. Although number of children is not necessarily a reflection of parental care motivation, parents with more children have a greater investment in the interests of their children, and are likely to spend more time (and resources) on childcare. Thus, there may be an amplification of the motivational changes associated with parenthood, especially in the case of people with multiple young children. Indeed, number of children was positively related to sexual conservatism and accounted for more overall variance than the dichotomous parenthood variable,  $b = 0.10$ , 95% CI [0.10, 0.10], ( $b = 0.13$  with covariates).

Consistent with previous work, age was weakly positively associated with sexual conservatism across the whole sample ( $b = 0.04$ , 95% CI [0.02, 0.06]). However, consistent with the hypothesis that parenthood status largely accounts for age-related increases in social conservatism, this relationship became negative when controlling for parenthood ( $b = -0.27$ , 95% CI [−0.29, −0.25]) or number of children ( $b = -0.53$ , 95% CI [−0.55, −0.51]).

### (e) Importance of tradition

Waves 5 and 6 of the WVS ( $n = 173\,540$ ) contained a single measure assessing the extent to which ‘Tradition is important to this person; to follow the customs handed down by one's religion or family’. There was a strong positive association between parenthood and importance of tradition,  $b = 0.22$ , 95% CI [0.20, 0.23] (or  $b = 0.18$  with covariates). The number of children was also positively associated with importance of tradition and explained somewhat more total variance than parenthood alone,  $b = 0.10$ , 95% CI [0.09, 0.10] (the magnitude of effects was unchanged when including covariates,  $b = 0.10$ ).

Older individuals expressed a greater importance of tradition ( $b = 0.51$ , 95% CI [0.47, 0.55]); however, this effect was reduced by over 70% when controlling for parenthood status ( $b = 0.14$ , 95% CI [0.09, 0.18]), and was reversed when controlling for number of children ( $b = -0.15$ , 95% CI [−0.19, −0.10]).

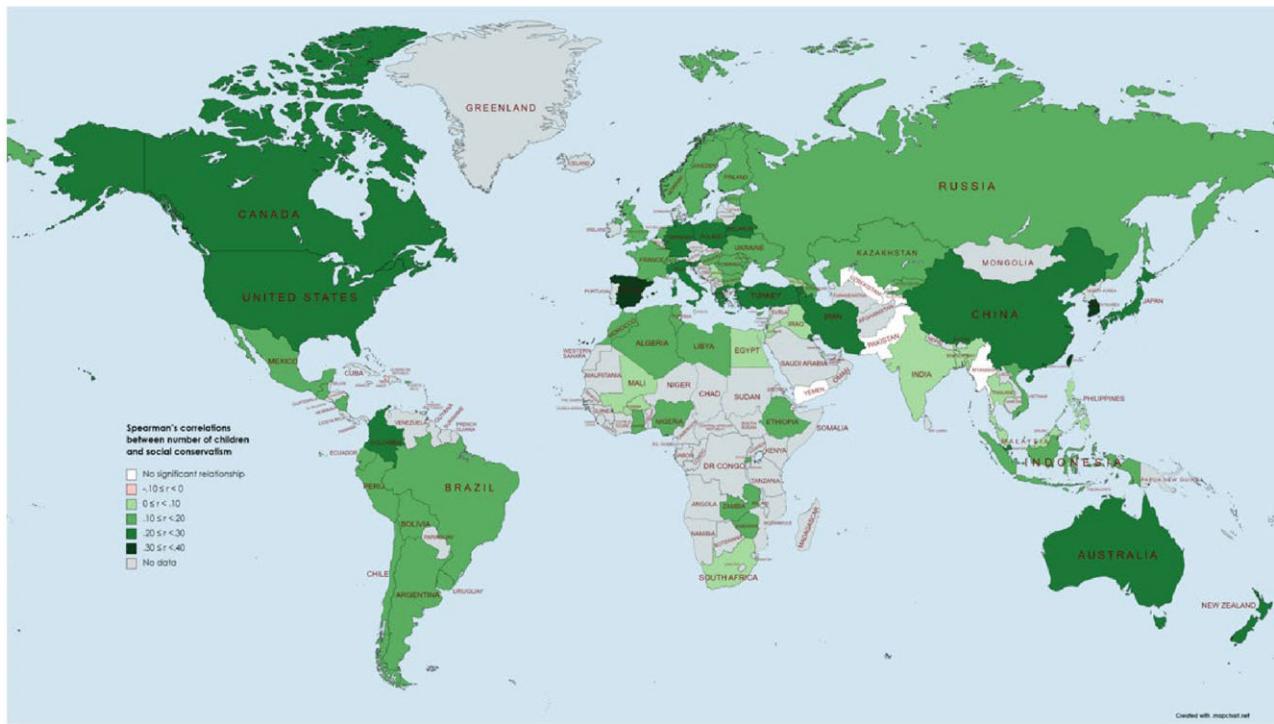
### (f) Ingroup preference

Four items in Waves 6 and 7 ( $n = 167\,677$ ) assessed trust in different ingroups (family, neighbourhood) and outgroups (member of another religion, person from other country). We subtracted outgroup trust from ingroup trust to give a measure of ingroup preference. Across the two waves, parenthood was associated with stronger ingroup preference ( $b = 0.10$ , 95% CI [0.09, 0.11] before covariates,  $b = 0.12$ , 95% CI [0.11, 0.13] after including covariates). The number of children was also associated with greater ingroup preference with ( $b = 0.07$ , 95% CI [0.07, 0.07]) or without ( $b = 0.06$ , 95% CI [0.05, 0.06]) covariates).

Age was not associated with ingroup preference,  $b = 0.00$ , 95% CI [−0.03, 0.03],  $p = 0.874$ . This relationship became negative when parenthood or number of children were included in the model (respective  $b$ 's of −0.15 and −0.33).

### (g) Social conservatism

For Waves 5, 6 and 7—which each had more than one of the components above, and all three for Wave 6—we calculated



**Figure 3.** Bivariate Spearman's correlations between number of children and social conservatism in combined data from World Values Survey Waves 5, 6 and 7 (88 countries,  $n = 250\,437$ ). (Online version in colour.)

overall social conservatism score as a factor of the two or three facets (sexual conservatism, tradition and ingroup preference) in each study. Parenthood was associated with more socially conservative attitudes in each of these three waves, with or without the additive inclusion of sex, age and income as covariates (for all 15 models, parent status  $b$ 's 0.09–0.30, see electronic supplementary material, tables S7, S9 and S11).

Similarly, number of children was associated with more socially conservative attitudes, with or without the incremental inclusion of these covariates (for 15 additional models, number of children  $b$ 's 0.07–0.14, see electronic supplementary material, tables S8, S10 and S12). Analyses for Wave 7 only were preregistered prior to our deciding to analyse data from all waves (<https://aspredicted.org/TCJ-B1H>) and predicted positive associations between number of children and overall social conservatism (results were in line with predictions,  $p < 0.0001$ ). The associations for both parenthood and number of children were robust even when controlling for religious belief—a close correlate of social conservatism which has been shown recently to be related to parenthood globally [32]—in addition to the other covariates (see electronic supplementary material, tables S7–S12).

Running separate analyses by country and averaging correlations across the three waves, there was a significant positive bivariate correlation between parenthood and social conservatism in 78 of 88 countries (see electronic supplementary material, table S13). For number of children, there was a positive association in 83 of 88 countries, with a weak negative relationship in just one country, Haiti (figure 3; electronic supplementary material, table S14). These relationships were present across a highly culturally diverse group of countries, spanning all five inhabited continents.

In sum, Study 4 showed that parenthood and number of children were robust correlates of three core components of social conservatism across the majority of countries around the globe. Further, aggregated across multiple waves of data from hundreds of representative national samples, parenthood status and number of children accounted for most or all of age-related increases in sexual conservatism and traditionalism.

## 4. Discussion

Results from four studies, using multiple methodologies, measures and samples convergently suggest that parenting motives—assessed both objectively as parenthood status and subjectively as parental care motivation—fundamentally influence social conservatism. Studies 1 ( $n = 376$ ) and 2 ( $n = 1871$ ) provided evidence that experimentally inducing a parental mindset leads to increased social conservatism in participants who engaged more with the manipulation. Study 3 ( $n = 2610$ ) found robust associations between parental care motivation and social conservatism across 10 countries. Consistent with our theoretical framework, the relationships in Studies 1–3 were largely specific to social—not economic—conservatism. Finally, Study 4 ( $n = 426\,444$ ) found evidence that parents, and especially parents of multiple children, have more traditional and more socially conservative views in dozens of countries around the world.

Studies 3 and 4 provide an important insight into age-related increases in social conservatism. Across seven waves of WVS data and in a combined novel sample from 10 countries, the relationship between age and social conservatism appears to be largely a consequence of parents (especially parents of multiple children) scoring higher on social conservatism and, on average, being older. Thus, it appears that

parenthood, not age (or the wisdom that comes with it), drives the putative age-conservatism relationship.

The cross-cultural evidence presented in Studies 3 and 4 was correlational, such that we cannot confidently conclude that parenthood itself causes social conservatism. However, the experimental work on US participants, combined with the non-independence of parenthood and age-related increases in social conservatism in the multinational samples of Studies 3 and 4, suggests a provisional hypothesis that some people become more socially conservative as they age because of motivational changes induced by parenthood. While it is not possible to directly test causality by randomly assigning people to become parents, future cross-cultural work using experimental and longitudinal methods should aim to provide further attempts to falsify this hypothesis.

The moderated experimental effects in Studies 1–2, while consistent with a causal explanation, could also plausibly be explained by non-random allocation. An alternative explanation for these moderated effects could be that people high in parental care motivation—who were also higher in social conservatism—responded more strongly to the parenting (versus control-) manipulations, while those lower in parental care motivation—who were less conservative—responded more strongly to the control manipulations. However, this alternative hypothesis would predict a moderated effect of condition (by emotional engagement) on parental care motivation regardless of whether it was measured before or after the manipulation. On the contrary, Study 1 (where the PCAT was administered before the manipulation) found a moderated effect on social conservatism but no moderated effect on parental care motivation. Meanwhile, Study 2 (where both measures were administered after the manipulation), found a moderated effect on parental care motivation, which was larger than the effect on social conservatism and also fully mediated this latter effect (see electronic supplementary material).

Another potential limitation is that the findings relating to parental care motivation in Studies 1–3 were based on self-report data, which allows the possibility that phenomena such as social desirability could, in theory, explain the correlations between parenting motives and social conservatism. However, social desirability seems unlikely to account for the relationship: parental care motivation has been shown to correlate *positively* with social desirability, while in many countries—including the USA and South Korea, two of the countries in which the relationship between parental care motivation and social conservatism was strongest—socially desirable answering is *negatively* associated with conservatism (e.g. [33–36]). Thus, controlling for social desirability would be unlikely to decrease the strength of the relationship between parental care motivation and social conservatism.

In Study 4, the relationship between parenthood status and conservative attitudes was widespread but not universal, suggesting the possibility of sociocultural moderators. Further, the present study did not include samples from pre-industrial societies (e.g. hunter-gatherers or horticulturalists). Cultures like these might offer important insights into boundary conditions for the relationship between parenting motives and social conservatism, and also into the reasons for its existence. For example, if biological parenthood itself leads to increases in parental care motivation and social

conservatism, this would predict a difference in these variables between parents and non-parents in cultures where childcare is shared relatively evenly within a community (e.g. the Efe culture of the Democratic Republic of Congo [37,38]). However, if engaging in childcare is more important, this would predict similar relationships in non-parents who engage in extensive childcare. Similarly, at an individual level, research on parents of adoptive versus biological children could provide insight into the relative influence of biological versus behavioural parenting.

Future research may also address more precisely how changes in parental care motivation and ideological beliefs correspond to different life stages, such as parenthood, grandparenthood and menopause. For example, are times when fertility or short-term mating opportunities are low—but when childcare is pertinent—associated with more conservative attitudes? Consistent with this theoretical rationale, some preliminary work has found that number of grandchildren is positively associated with some aspects of social conservatism (specifically gender-related issues and conformity) even when controlling for age and number of children [39]. More focused future research should seek to establish whether having multiple young family members is sufficient to change political beliefs, or whether engaging (or investing) in childcare is a necessary component.

If our central hypothesis—that parental care motives lead to more socially conservative attitudes—is correct, this could provide important insights into the long-term impacts of policies and technologies that directly influence birthrates (e.g. abortion restrictions, China's 'one child policy', birth control). Similarly, given that birthrates are declining in most of the world—but increasing sharply in some regions [40]—the current findings could have profound implications for the political landscape of the future. Specifically, our findings would suggest that global increases in childlessness could potentially contribute to a process of liberalization on social issues. Consequently, integrating these findings into existing models of political attitudes may contribute to more accurate models of population-level shifts in ideology.

## 5. Conclusion

Human reproduction requires unusually lengthy periods of care for children. The motivation to care for children is consequently among the fundamental drivers of human behaviour, but its power to shape social attitudes and cognition is underappreciated. Here, we found cross-cultural and experimental evidence suggesting that parental care motivation leads to increases in socially conservative attitudes, and that parenthood is associated with social conservatism around the globe.

**Ethics.** Studies 1–3 were approved by Tulane Universities IRB ('Social Attitudes', approval no. 1058004). Study 4 used archival data and did not require ethical approval.

**Data accessibility.** Data and materials for all studies are accessible at: [https://osf.io/732b8/?view\\_only=5ad6ca9fd34243d9b016ade80b2cf103](https://osf.io/732b8/?view_only=5ad6ca9fd34243d9b016ade80b2cf103).

The data are provided in electronic supplementary material [41].

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visualization, writing—review and editing; A.M.F.: investigation, writing—review and editing; A.G.: investigation, writing—review and editing; M.E.G.: investigation; D.J.: investigation; G.J.: investigation, writing—review and editing; M.K.: investigation; L.L.: investigation, writing—review and editing; R.L.: investigation; F.L.: investigation, writing—review and editing; J.M.: investigation, writing—review and editing; Z.P.: investigation, writing—review and editing; M.B.P.: investigation; A.R.S.: investigation, writing—review and editing; I.Z.: investigation, writing—review and editing; D.R.M.: conceptualization, supervision, writing—review and editing.

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