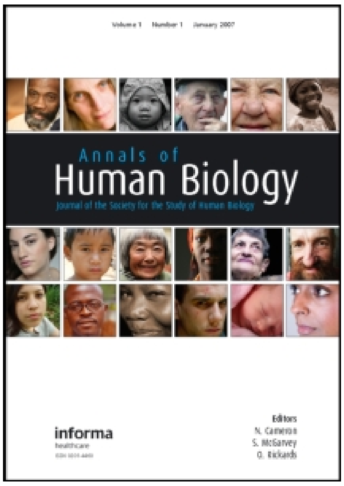

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Sociosexually unrestricted parents have more sons: A further application of the generalized Trivers-Willard hypothesis (gTWH)

Satoshi Kanazawa [a]; Péter Apari [b]
[a] Department of Management, London School of Economics and Political Science, London, UK [b] Department of Animal Taxonomy and Ecology, Eötvös University, Budapest, Hungary

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ORIGINAL ARTICLE

Sociosexually unrestricted parents have more sons: A further application of the generalized Trivers–Willard hypothesis (gTWH)

SATOSHI KANAZAWA[1] & PÉTER APARI[2]

[1]*Department of Management, London School of Economics and Political Science, London, UK, and* [2]*Department of Animal Taxonomy and Ecology, Eötvös University, Budapest, Hungary*

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Abstract

Background: The generalized Trivers–Willard hypothesis (gTWH) proposes that parents who possess any heritable trait which increases male reproductive success at a greater rate than female reproductive success in a given environment will have a higher-than-expected offspring sex ratio, and parents who possess any heritable trait which increases the female reproductive success at a greater rate than male reproductive success in a given environment will have a lower-than-expected offspring sex ratio.
Aim: One heritable trait which increases the reproductive success of sons much more than that of daughters is unrestricted sociosexual orientation. We therefore predict that parents with unrestricted sociosexual orientation (measured by the number of sexual partners, frequency of sex, and attitudes toward relationship commitment and sexual exclusivity) have a higher-than-expected offspring sex ratio (more sons).
Subjects and method: We analyse the US General Social Surveys and the National Longitudinal Study of Adolescent Health (Add Health), both with large nationally representative samples.
Results: Our analyses support the prediction from the gTWH.
Conclusion: One standard deviation increase in unrestrictedness of sociosexual orientation increases the odds of having a son by 12–19% in the representative American samples.

Keywords: *Evolutionary psychology, generalized Trivers–Willard hypothesis (gTWH), offspring sex ratio, sociosexual orientation*

Introduction

The Trivers–Willard hypothesis (TWH) (Trivers and Willard 1973) suggests that parents might under some circumstances be able to vary the sex ratio of their offspring in order to maximize their reproductive success. In particular, the TWH predicts that parents in good

Correspondence: Satoshi Kanazawa, Department of Management, London School of Economics and Political Science, Houghton Street, London WC2A 2AE, UK. E-mail: S.Kanazawa@lse.ac.uk

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condition are more likely to have sons, and parents in poor condition are more likely to have daughters. These predictions have been supported by data from a large number of experiments with a wide array of species (Venezuelan opossum: Austad and Sunquist 1986; red deer: Clutton-Brock et al. 1986; spider monkey: Symington 1987). Dickemann (1978, 1979) was the first to apply the TWH specifically to human populations, and more recent support for the TWH among humans include Betzig and Weber (1995), Cronk (1991), Gaulin and Robbins (1991), Kanazawa (2001), and Mueller (1993).

While the TWH is one of the most celebrated principles in evolutionary biology and the preponderance of empirical evidence supports it, not all human studies have been supportive. Among the industrial populations, Koziel and Ulijaszek (2001) provide only qualified support, and Freese and Powell (1999), Keller et al. (2001), Ellis and Bonin (2002) find no support for the TWH for contemporary North America. Among the pre-industrial populations, an analysis of a large nationally representative sample of women in Ethiopia provides no evidence that better nourished mothers are more likely to have sons (Stein et al. 2004). Despite the fact that polygynous men are on average wealthier than monogamous men, Whiting (1993) finds that polygynous mothers have much *lower* secondary sex ratios than monogamous women (0.876 vs 1.141). And a comprehensive analysis of nationally representative samples from 35 developing nations finds no evidence that wealthier women are more likely to have sons (Guggenheim et al. 2007). Sieff (1990) provides a critical review of the literature, discusses the difficulties of defining and measuring parental investment, and suggests alternative explanations for biased offspring ratios.

While the TWH in its original formulation has specifically to do with material and economic condition of parents and their ability to vary the sex ratio of their offspring in response to such condition, the basic insight behind it may be more general. The fundamental assumption underlying the TWH is that, if males are expected to attain greater reproductive success than females, *for whatever reason*, then parents may have more sons than daughters. If, in contrast, females are expected to attain greater reproductive success than males, *for whatever reason*, then parents may have more daughters than sons. While female fitness variance is much smaller than male fitness variance among mammalian species, there is still variance among females, and some women do better than others, in terms of the quality, if not quantity, of their offspring.

Kanazawa (2005) thus proposes the *generalized* Trivers–Willard hypothesis (gTWH):

> gTWH: Parents who possess any heritable trait which increases male reproductive success at a greater rate (or decreases male reproductive success at a smaller rate) than female reproductive success in a given environment will have a higher-than-expected offspring sex ratio (more males). Parents who possess any heritable trait which increases female reproductive success at a greater rate (or decreases female reproductive success at a smaller rate) than male reproductive success in a given environment will have a lower-than-expected offspring sex ratio (more females).[1]

There has been emerging evidence for the gTWH with respect to a variety of heritable traits which increase the expected reproductive success of sons or daughters. For example, individuals with strong systemizing brains, such as engineers, scientists, and mathematicians, are more likely to have sons, whereas those with strong empathizing brains, such as nurses, kindergarten teachers, and social workers, are more likely to have daughters (Kanazawa and Vandermassen 2005); big and tall parents are more likely to have sons (Kanazawa 2005, 2007a; Winkler and Kirchengast 1994); violent men are more likely to have sons (Kanazawa 2006); physically more attractive parents are more likely to have daughters (Kanazawa 2007b; Norberg 2004); and mothers (though not fathers) with developmental language impairment have more sons (Tallal et al. 1989).

Another heritable characteristic that increases sons' reproductive success much more than daughters' is unrestricted sociosexual orientation (Simpson and Gangestad 1991). Compared to those with *restricted* sociosexual orientation, individuals with *unrestricted* sociosexual orientation are more likely to: (1) engage in sex at an earlier point in their relationships; (2) engage in sex with more than one partner at a time; and (3) be involved in sexual relationships characterized by less investment, commitment, love, and dependency. While men in general are more unrestricted in sociosexuality than women, within-sex variance in sociosexual orientation is much larger than between-sex variance (Hendrick et al. 1985).

Due to the sexual asymmetry in reproductive biology (Trivers 1972), unrestricted sociosexual orientation could potentially and dramatically increase men's reproductive success, while it is likely to decrease women's. Men with unrestricted sociosexual orientation can impregnate a large number of women, and, even without paternal investment, some of these children are likely to survive to sexual maturity. In contrast, women with unrestricted sociosexual orientation can have no more children than their restricted counterparts with one regular sex partner, and are unlikely successfully to secure male parental investment from the fathers of their children because none of the men can be reasonably sure of their paternity. Further, women in committed relationships who are sociosexually unrestricted may incur significant somatic costs of spousal and partner violence, because male sexual jealousy is often triggered by real or imagined sexual infidelity (Buss et al. 1992, 1999) and many mated men often use violence as a tactic for mate retention (Buss and Shackelford 1997).

There is evidence to suggest that sociosexual orientation as well as risk of divorce, which often results from unrestricted sociosexual orientation, are highly heritable. Bailey et al.'s (2000) study of a large sample of Australian twins shows that nearly half of the variance in sociosexuality is attributable to genes ($h^2 = 0.49$). McGue and Lykken (1992) estimate that genetic contribution to the risk of divorce is about 53% ($h^2 = 0.53$), while Jockin et al. (1996) estimate heritability of divorce to be $h^2 = 0.55$ for men, and $h^2 = 0.59$ for women. The gTWH would therefore predict that individuals with unrestricted sociosexual orientation are more likely to have sons than those with restricted sociosexual orientation. We test this prediction of the gTWH with data from two representative American samples.

Empirical analysis

General Social Surveys 1994

Data. We first use the 1994 General Social Surveys (GSS). The National Opinion Research Center at the University of Chicago has administered the GSS either annually or biennially since 1972. Personal interviews are conducted with a nationally representative sample of non-institutionalized adults in the USA. The sample size is about 1500 for each annual survey, and about 3000 for each biennial one. The exact questions asked in the survey vary by the year.

Dependent variable. As is common with social science data, in which biological information about the respondents is assumed unimportant, the GSS normally do not make distinctions between biological and nonbiological (adopted, step, foster) children of the respondents.

Further, they normally do not even measure the sex of the children, treating boys and girls interchangeably. In 1994 (and only in 1994), however, the GSS assess the respondents' precise relationship with each of their children and measure their sex.

Some of the previous empirical tests of the gTWH (Kanazawa 2005, 2006; Kanazawa and Vandermassen 2005) have used the total number of children of one sex, while controlling for the total number of children of the other sex, as a measure of the offspring sex ratio. However, the use of the total number of boys and girls in the family is susceptible to the influence of 'stopping rules' (when couples choose to stop having children or when they choose to continue to have more). Different couples might use different stopping rules; for example, there is some evidence that couples with two boys or two girls are more likely to have a third child than couples with a boy and a girl (Yamaguchi and Ferguson 1995). In order to eliminate the influence of idiosyncratic and systematic stopping rules that couples may adopt, in this paper, as in Kanazawa (2007a) and Kanazawa (2007b), we use the sex of the first biological child (0 = female, 1 = male) as the binary measure of parents' propensity to have a boy or a girl uncontaminated by stopping rules.

Independent variable: Sociosexual orientation factor. The 1994 GSS ask the respondents five separate questions that are relevant to their sociosexual orientation: (1) 'How many sex partners have you had in the last 12 months?' (2) 'How many sex partners have you had in the past 5 years?' Both of these variables are measured on a quasi-logarithmic scale of 0 = no partners, 1 = one partner, 2 = two partners, 3 = three partners, 4 = four partners, 5 = 5–10 partners, 6 = 11–20 partners, 7 = 21–100 partners, and 8 = more than 100 partners. (3) 'How many male partners have you had sex with since your 18th birthday?' (4) 'How many female partners have you had sex with since your 18th birthday?' Both of these lifetime numbers of sex partners are measured on a continuous scale from 0 to 989 (989 or higher). (5) 'About how often did you have sex during the last 12 months'? (0 = not at all, 1 = once or twice, 2 = once a month, 3 = 2–3 times a month, 4 = weekly, 5 = 2–3 per week, 6 = 4+ per week) We perform a principal component analysis to extract a latent variable 'sociosexual orientation' from these five indicators.

Table I presents the bivariate correlation coefficients among these five indicators. All correlation coefficients except for one are statistically significant at $p < 0.0001$, mostly due to large sample sizes.[2] All five indicators load on one underlying factor, and no other factors are extracted. The factor loadings are presented in the diagonal cells. Understandably, the lifetime measures of sexual activities load less heavily on the sociosexual factor than more recent measures. We use the latent factor 'sociosexual orientation' as the independent variable in the following binary logistic regression analysis.

Control variables. In the multiple binary logistic regression equation, we control for measures of social class, which are predicted by the original TWH to affect offspring sex ratios: Education (years of formal schooling) and social class (1 = lower class, 2 = working class, 3 = middle class, 4 = upper class). We further control for race (1 = black, 0 = otherwise), sex (0 = female, 1 = male), and marital status (1 = currently married, 0 = otherwise). Further, because the effect of being currently married on sexual activities probably varies by sex, for example, married men are much more likely to engage in extramarital affairs than married women (Laumann et al. 1994; Liu 2000), we also enter the interaction term between sex and marital status. Finally, since many religions seek to regulate sexual behaviour, in particular, premarital and extramarital sex, we also control for the respondents' religion with a set of four dummies (Catholic, Protestant, Jewish, and Other, with None as the reference category).

Table I. Correlation matrix and factor loadings for the sociosexual orientation factor – General Social Surveys, 1994.

	(1)	(2)	(3)	(4)	(5)
(1) Number of sexual partners in 12 months	**0.8885**	0.7281**** (n = 16 796)	0.1994**** (n = 18 111)	0.1110**** (n = 17 960)	0.4402**** (n = 18 437)
(2) Number of sexual partners in 5 years		**0.8667**	0.2473**** (n = 15 739)	0.1044**** (n = 15 580)	0.3562**** (n = 16 374)
(3) Number of heterosexual partners since 18			**0.3818**	0.0896**** (n = 17 261)	0.0820**** (n = 17 290)
(4) Number of homosexual partners since 18				**0.2036**	0.0056 (n = 17 086)
(5) Frequency of sex in 12 months					**0.6395**

Off-diagonal cells denote bivariate correlation coefficients.
n = sample size.
Diagonal cells (in bold) denote factor loadings on the sociosexual orientation factor.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, ****$p < 0.0001$.

Results. Table II presents the results of a multiple binary logistic regression analysis of the GSS data. It shows that the sociosexual orientation factor has a significantly positive effect on the likelihood of the first child being a boy ($b = 0.1733$, $p < 0.05$). The effect is not only statistically significant but is also substantively large. The standardized coefficient shows that one standard deviation increase in the sociosexual orientation factor increases the odds of having a son as the first child by 19%. None of the other variables in the equation, including the Trivers–Willard controls, have significant effects on the sex of the first child.

If we include the sociosexual orientation × sex interaction term, its effect on the sex of the offspring is not significant ($b = 0.0010$, NS). It suggests that the proximate mechanism of offspring sex determination, at least with respect to sociosexual orientation, appears to work through both parents equally, not exclusively or primarily through the father or the mother.

Add Health

Data. We now use the National Longitudinal Study of Adolescent Health (Add Health) to test our prediction. A sample of 80 high schools and 52 middle schools from the US was selected with unequal probability of selection. Incorporating systematic sampling methods and implicit stratification into the Add Health study design ensures this sample is representative of US schools with respect to region of country, school size, school type, and ethnicity. A sample of 20 745 adolescents were personally interviewed in their homes in 1994–1995 (Wave I), and again in 1996 (Wave II; $n = 14\,738$). In 2001–2002, 15 197 of the original Wave I respondents, now age 18–28, were interviewed in their homes. Our sample consists of Wave III respondents who have had at least one biological child ($n = 2972$).

Dependent variable. As with our analysis of the GSS data above, we use the sex of the first biological child (0 = female, 1 = male) as our dependent variable.

Independent variable: Sociosexual orientation factor. Add Health, Wave III, asks its respondents five questions that measure their sociosexual orientation: (1) 'How old were you the first time you had vaginal intercourse?' (2) 'With how many partners have you had vaginal intercourse in the past 12 months?' (3) 'With how many partners have you ever had vaginal

Table II. Logistic regression model for the sex of the first child – General Social Surveys 1994.

		Unstandardized regression coefficient	Standardized errors	Standardized effects on odds
Sociosexual orientation factor		0.1733*	0.0880	1.1892
Trivers–Willard controls				
Education		0.0045	0.0268	1.0143
Social class		0.0345	0.1189	1.0226
Race (black = 1)		−0.0739	0.2422	0.9749
Sex (male = 1)		−0.3204	0.2752	0.8530
Marital status (currently married = 1)		−0.0132	0.1873	0.9935
Sex × marital status		0.1879	0.3263	1.0865
Religion				
Catholic		0.0443	0.2982	1.0193
Protestant		−0.1211	0.2804	0.9426
Jewish		0.2341	0.7078	1.0341
Other		0.0663	0.4534	1.0115
Constant		0.1404	0.4739	
χ^2 (d.f. = 11)	6.8005			
−2log likelihood	1110.2293			
% correctly classified	53.09			
Number of cases	808			

*p <0.05, **p <0.01, ***p <0.001, ****p <0.0001.

intercourse, even if only once?' (4) 'Using a scale from 1 to 10, where 1 means not important at all and 10 means extremely important, how important do you think each of the following elements is for a successful marriage or serious committed relationship? Being faithful – that is, not cheating on your partner by seeing other people' (reverse coded so that higher values indicate more *unrestricted* sociosexual orientation). (5) '. . . . Making a life-long commitment' (reverse coded). We perform a principal component analysis with direct oblimin rotation to extract oblique latent factors on sociosexual orientation.[3]

Table III presents bivariate correlation coefficients among the five indicators of sociosexual orientation. All but one of the correlation coefficients are statistically significant at least at $p < 0.05$. A principal component analysis extracts two latent factors. The age at first sex, the number of heterosexual sexual partners in the last 12 months, and the lifetime number of heterosexual partners all very heavily load on the first factor, which we name *behavioural* sociosexual orientation factor. Attitude toward commitment and attitude toward sexual exclusivity both load heavily on a second factor, which we name *attitudinal* sociosexual orientation factor. No other factors are extracted in the principal component analysis. The correlation between the behavioural and attitudinal sociosexual orientation factors is 0.0443.

Control variables. In our analysis of the Add Health data, we enter the same control variables as before with the GSS data, with one slight change. In Add Health, the respondents' marital status is measured as the total number of marriages they have had, rather than as a binary variable measuring whether or not they are currently married. However, 99.6% of Add Health respondents have been married at most once, so this is essentially a binary variable. In addition, because an earlier analysis of the Add Health data shows that the value

Table III. Correlation matrix and factor loadings for the sociosexual orientation factors – National Longitudinal Survey of Adolescent Health 2001–2002.

	(1)	(2)	(3)	(4)	(5)
(1) Age at first sex	**−0.7215**	−0.2855**** (n = 14 828)	−0.4445**** (n = 14 785)	−0.0174* (n = 14 953)	0.0128 (n = 14 953)
(2) Number of heterosexual sexual partners in 12 months		**0.7627**	0.5049**** (n = 14 757)	0.0686**** (n = 14 876)	0.0516**** (n = 14 876)
(3) Number of heterosexual partners in lifetime			**0.8522**	0.0483**** (n = 14 821)	0.0179* (n = 14 823)
(4) Attitude toward lifelong commitment (R)				**0.8546**	0.4706**** (n = 15 161)
(5) Attitude toward sexual exclusivity (R)					**0.8569**

Off-diagonal cells denote bivariate correlation coefficients.
n = sample size, (R) = reverse coded.
Diagonal cells (bold) denote factor loadings on the behavioural (1–3) and attitudinal (4–5) sociosexual orientation factors.
*p < 0.05, **p < 0.01, ***p < 0.001, ****p < 0.0001.

on sexual exclusivity is significantly correlated with intelligence among men (though not among women) (Kanazawa 2008), we also control for the respondents' intelligence (measured in the standard IQ metric, with a mean of 100 and standard deviation of 15).

Results. Table IV presents the results of the multiple binary logistic regression analysis of the Add Health data. It shows that, while the effect of the behavioural sociosexual orientation factor is positive, as predicted, the effect is not statistically significant ($b = 0.0326$, NS). In contrast, the attitudinal sociosexual orientation factor is significantly positive ($b = 0.1146$, $p < 0.05$). Its standardized coefficient suggests that one standard deviation increase in attitudinal sociosexual orientation increases the odds of having a son as the first child by 12%. No other variables included in the equation have significant effects on the sex of the first child.

Once again, if we include interaction terms between sex and the two sociosexual orientation factors in the regression equation, neither coefficient is significant ($b = 0.0796$, NS, for behavioural, and $b = 0.1304$, NS, for attitudinal), suggesting that the proximate mechanism of sex determination with respect to sociosexual orientation may work through both parents equally.

Men's sociosexual orientation varies with genetic and developmental quality of the individual (Gangestad and Simpson 2000); physically more attractive men are more likely to have unrestricted sociosexual orientation than physically less attractive men because women seek out physically attractive men for extra-pair copulations (Gangestad and Thornhill 1997; Rhodes et al. 2005). However, controlling for such indicators of genetic and developmental health as physical attractiveness, height, and general health in the regression equation does not alter the findings reported in Table IV at all. Attitudinal sociosexual orientation still has a significant effect on offspring sex ($b = 0.1130$, $p < 0.05$), net of physical attractiveness, height, and general health as well as all the other control variables already in the equation.[4]

Table IV. Logistic regression model for the sex of the first child – National Longitudinal Survey of Adolescent Health, 2001–2002.

		Unstandardized regression coefficient	Standardized errors	Standardized effects on odds
Sociosexual orientation factor (behavioural)		0.0326	0.0524	1.0331
Sociosexual orientation factor (attitudinal)		0.1146*	0.0527	1.1215
Trivers–Willard controls				
Education		0.0245	0.0268	1.0493
Income		0.0000	0.0000	0.9638
Race (black = 1)		−0.0161	0.0694	0.9907
Sex (male = 1)		0.0471	0.1309	1.0238
Number of marriages		−0.1410	0.0999	0.9443
Sex × number of marriages		0.1442	0.1722	1.0393
Intelligence		−0.0015	0.0032	0.9744
Religion				
Catholic		0.0282	0.1327	1.0123
Protestant		0.2017	0.1476	1.0734
Jewish		−0.5496	1.2306	0.9539
Other		0.1686	0.1192	1.0860
Constant		−0.1613	0.4023	
χ^2 (d.f. = 13)	14.4830			
−2log likelihood	3047.5112			
% correctly classified	52.78			
Number of cases	2209			

*$p<0.05$, **$p<0.01$, ***$p<0.001$, ****$p<0.0001$.

Discussion

Our analyses of the 1994 sample of the General Social Surveys (GSS) and Wave III of the National Longitudinal Study of Adolescent Health (Add Health) support one prediction from the gTWH and show that individuals who have more unrestricted sociosexual orientation are significantly more likely to have sons than those with more restricted sociosexual orientation. The gTWH suggests that this may be because unrestricted sociosexual orientation, just like strong systemizing brains (Kanazawa and Vandermassen 2005), larger body size (Kanazawa 2005, 2007a), and tendency toward violence (Kanazawa 2006), may increase male reproductive success to a greater extent than female reproductive success. In fact, given men's strong concern for paternity certainty and the possibility of cuckoldry, and their reluctance to invest in children unless they are reasonably assured of their paternity, women with more unrestricted sociosexual orientation are less likely to secure male parental investment for their children and to achieve reproductive success than women with more restricted sociosexual orientation.

It is not clear why behavioural sociosexual orientation factor does not have a significant effect on the offspring sex ratio in our analysis of Add Health data, when it does in our analysis of the GSS data. One possibility is that, because Add Health respondents are still very young (with the mean age of 22.0), they have not had sufficient opportunity to implement their attitudinal sociosexual orientation into actual sexual practice. The mean lifetime number of sexual partners is 5.48 (4.88 among women, 6.16 among men), and the correlation between their sociosexual attitude and actual sexual behaviour, while statistically significant due to large sample sizes, are nonetheless very small (rs <0.07) (Table III). This may be why their expressed sociosexual attitude has a significant effect but not their actual sexual experiences thus far. By the time Add Health respondents are much older and have had sufficient time to implement their sociosexual orientation attitude into sexual behaviour, their experience may begin to correlate more strongly with their attitude and to have a significant effect on their offspring sex ratio.

While the effect of unrestricted sociosexual orientation on the offspring sex ratio in our analyses of the GSS and Add Health data are both statistically significant and substantively large, more research is necessary to investigate the status of the gTWH before firmly establishing it as a biological principle. On the other hand, given how completely different the current environment of the contemporary American society is from the ancestral environment, to which our entire body is adapted, it is nonetheless remarkable that *any* effect is detectable in the representative samples in the USA, which is nominally monogamous and whose informal norms tend to look askance at men's and women's unrestricted sociosexual orientation.

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Notes

1 It is important to point out that the gTWH does *not* predict that parents with a given set of heritable (and immutable) traits will produce offspring of only one sex or the other. Assume that the sex of a child is determined by a toss of an imaginary coin, and the 'normal' or baseline parent has an 'unbiased' coin that comes up 'boy' 51.22% of the time and comes up 'girl' 48.78% of the time (to reflect the 'normal' secondary sex ratio of 105 boys to 100 girls). If a parent possesses some heritable trait that increases male reproductive success, then the coin becomes 'biased' in favour of sons and now comes up 'boy,' say, 55% of the time. Such a parent is therefore significantly more likely to have a boy than the 'normal' or baseline parent; however, it does not mean that such a parent will only have boys. It is still possible (albeit less likely than for others) for a parent with a probability of having a boy $p=0.55$ to have a girl, or even three girls in a row.

2 One interesting point to note on the side is that the correlation between the lifetime number of heterosexual partners and the lifetime number of homosexual partners is significantly positive. The correlation is larger among women ($r=0.2642$, $p<0.0001$, $n=9715$) than among men ($r=0.0518$, $p<0.0001$, $n=7546$). The positive correlations are not created entirely by outliers. If we limit the sample only to those who have had fewer than 100 heterosexual and 100 homosexual partners, the correlations actually increase both among women ($r=0.4162$, $p<0.0001$, $n=9703$) and men ($r=0.2257$, $p<0.0001$, $n=7430$). The correlation becomes negative among men only if we limit the sample to those who have had fewer than 50 partners of each kind ($r=-0.0380$, $p<0.01$, $n=7066$). It never becomes negative among women, even when we limit the sample to those who have had fewer than 10 partners of either kind ($r=0.0107$, NS, $n=8877$).

3 Preliminary analysis shows that, unlike the GSS data analysed above, the frequency of sex in the last 12 months in the Add Health data is not correlated with these five measures of sociosexual orientation and does not load on

the same factor; it instead extracts its own factor. We have therefore excluded the frequency of sex as an indicator of sociosexual orientation here.

4 Among male Add Health respondents, physical attractiveness is positively correlated with *behavioural* socio sexual orientation (more attractive men are more unrestricted, consistent with Gangestad and Simpson (2000)) ($r = 0.0626$, $p < 0.00\,001$, $n = 6900$), but is negatively correlated with *attitudinal* sociosexual orientation (more attractive men are more restricted) ($r = -0.0674$, $p < 0.00\,001$, $n = 6900$). Among women, physical attractiveness is not correlated with behavioural sociosexual orientation ($r = 0.0046$, NS, $n = 7783$) and is negatively correlated with attitudinal sociosexual orientation ($r = -0.0498$, $p < 0.0001$, $n = 7783$).

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