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Father absence, sociosexual orientation, and same-sex sexuality in women and men

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A recent evolutionary theory of female sexual fluidity suggests that women may not have sexual orientations in the same sense that men do, and that women's apparent sexual orientation may instead be a byproduct of their sociosexual orientation. One developmental factor that has consistently been shown to influence sociosexual orientation is father absence in childhood. Consistent with the prediction of the theory, the analyses of the National Longitudinal Study of Adolescent to Adult Health (Add Health) data show that father absence significantly increases women's, but not men's, same-sex sexuality in adulthood, whether it is measured by self identity, sexual behaviour, or romantic attraction. Further consistent with the theory, the association between father absence and same-sex sexuality in women is *entirely* mediated by their sociosexual orientation.

Keywords: Sexual fluidity; Homosexuality; Heterosexuality.

Homosexuality presents perhaps the greatest theoretical challenge to evolutionary psychology (Confer et al., 2010), whose theoretical "bottom line" is reproductive success. One of the first questions that evolutionary psychologists often receive as soon as they tell people—fellow academics and civilians alike—that they are evolutionary psychologists is "What about homosexuality?" A series of popular introductions to the field have asked, and failed to answer, why homosexuality exists (Miller, 2000, pp. 217–219; Miller & Kanazawa, 2007, pp. 180–182; Wright, 1994, pp. 384–386). While male homosexuality has at least partly been explained by the balancing selection hypothesis (Camperio-Ciani, Corna, & Capiluppi, 2004; Iemmola & Camperio Ciani, 2009; Rieger, Blanchard, Schwartz, Bailey, & Sanders, 2012; Schwartz, Kim, Kolundzija, Rieger, & Sanders, 2010) and the fraternal birth order effect (Blanchard & Bogaert, 1996; Bogaert, 2003; Cantor, Blanchard, Paterson, & Bogaert, 2002), there has not been comparable theoretical advances in the explanation of female homosexuality.

Following the ground-breaking work of Diamond (2007, 2008) and Bailey (2009), Kanazawa (2017) has recently proposed an evolutionary theory of female sexual fluidity.[1] The theory proposes that, given the human evolutionary history of mild polygyny, women may have been evolutionarily designed to be sexually fluid so that they could occasionally have sex with their cowives to reduce conflict and tension common among cowives of nonsororal polygynous marriages while at the same time maintaining their heterosexual relationships with their husband for the purpose of reproduction. There is ethnographic evidence from Africa, Imperial China and the United States (among fundamentalist Mormons) that cowives occasionally have sex with each other (Kanazawa, 2017, pp. 1261–1264) and primatologists have observed that female bonobos engage in genitogenital rubbing to reduce tension and build alliances with other females (Furuichi, 1989, pp. 186–190; Vasey, 1995, pp. 192–194; de Waal, 1995). Further consistent with the theory, the quantitative empirical analyses show that sexually more fluid women are reproductively more successful, suggesting that female sexual fluidity may have been evolutionarily selected, and that the experience of marriage and parenthood early in adulthood increases women's sexual fluidity later in adulthood (Kanazawa, 2017, pp. 1265–1267). An analysis of the National Survey of Family Growth in the United States also shows that menopausal or otherwise

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[1] *Sexual orientation* refers to whether the sex of preferred sexual partner is same-sex or opposite-sex, measured by self-identified labels, actual sexual behaviour, sexual feelings, and genital and brain responses (Mustanski, Chivers, & Bailey, 2002, pp. 122–127; Wilson & Rahman, 2005, pp. 13–16). *Sexual fluidity* occurs when someone's sexual orientation by any of the four measures is *nonexclusive, changes* over time and across situations, or is *at variance* with each other (Kanazawa, 2017, pp. 1253–1254).

biologically infertile women, who no longer have the need or capability to reproduce heterosexually, experience significantly greater same-sex sexuality than women who are fertile, while biological infertility is not at all associated with same-sex sexuality among men (Kanazawa & Larere, 2017).

Not only does the theory offer an evolutionary explanation for female sexual fluidity, it also provides potential solutions to many theoretical and empirical puzzles in evolutionary psychology and sex research. One such puzzle is the sharp sex difference in the correlation between the number of opposite-sex partners and the number of same-sex partners. Among men, the correlation is significantly negative, suggesting that there are straight men and gay men as largely separate categories of men. In contrast, among women, the same correlation is significantly positive (Kanazawa, 2017, p. 1259). Women who have sex with a large number of women simultaneously have sex with an even larger number of men than women who have sex with a small number of (or absolutely no) women do.

The theory explains this puzzle by proposing that women may not have category-specific (Lippa, Patterson, & Marelich, 2010) sexual orientations in the same sense that men do, and instead that women's sexual orientation may be a byproduct of their *sociosexual orientation*, "differences in individuals' implicit prerequisites to entering a sexual relationship" (Gangestad & Simpson, 1990, p. 70). Women with *restricted* sociosexual orientation "require relatively more time and stronger attachment to, commitment to, and closeness with their romantic partners before they are willing to enter a sexual relationship with them," while women with *unrestricted* sociosexual orientation "require relatively less time with and weaker attachment to their partners before engaging in sex with them" (p. 71).

If most women are evolutionarily designed to be heterosexually attracted most of the time (say, 95%) but experience same-sex attraction in a small fraction of the time (say, 5%), then, if a woman has a small number of sexual partners, most or all of them are statistically likely to be men. However, as sociosexually less restricted women increase the number of sexual partners, many of them are statistically likely to be women, while at the same time having sex with an even larger number of men. Women's unrestricted sociosexual orientation thus increases the number of same-sex partners. This model of female sexual orientation as a byproduct of sociosexual orientation can explain why the correlation between the number of male sex partners and the number of female sex partners is significantly positive among women, when it is significantly negative among men, who are usually born either gay or straight (Bailey et al., 2016; LeVay, 2010; Wilson & Rahman, 2005). It is also consistent with the earlier finding that women with high sex drives are sexually attracted to both men and women, whereas men with high sex drives are sexually attracted only to women (if they are straight) or only to men (if they are gay) (Lippa, 2006). While this model cannot explain exclusive lesbians, Kanazawa (2017, p. 1267) shows that only 0.3% of American women belong in this category.

One developmental factor that has been reliably associated with less restricted sociosexual orientation among both men and women is father absence during early childhood (Belsky, 2012; Belsky, Steinberg, & Draper, 1991; Draper & Harpending, 1982), although it is more predictive of girls' developmental trajectories than boys' (Ellis, 2004; James, Ellis, Schlomer, & Garber, 2012). A life-history perspective suggests that girls in early childhood use the presence or absence of their biological father in the household either as an indicator of the stability of pair-bonding and the reliability of male parental investment (Draper & Harpending, 1982) or the degree of polygyny in the environment (Kanazawa, 2001). Either scenario would suggest to the developing girls that the more adaptive reproductive strategy to pursue in father absence would be to undergo puberty and begin reproductive careers earlier. The psychosocial acceleration theory (Belsky et al., 1991) therefore suggests that girls growing up without their biological fathers and in generally more stressful and less supportive environments would opt for quantity over quality in their reproductive strategies, whereas girls growing up with their biological fathers and in generally less stressful and more supportive environments would opt for quality over quantity in their reproductive strategies.

Consistent with the predictions of the psychosocial acceleration theory, studies show that girls whose parents divorce early in their childhood tend to undergo puberty earlier, start having sex at an earlier age, and have a larger number of short-term sexual partners than do girls whose parents stay married throughout their childhood (Ellis, Schlomer, Tilley, & Butler, 2012; Moffitt, Caspi, Belsky, & Silva, 1992). Because having more short-term sexual partners (the quantity-over-quality strategy), as opposed to fewer long-term sexual partners (the quality-over-quantity strategy), is a defining characteristic of unrestricted sociosexual orientation, the psychosocial acceleration theory suggests (and empirical evidence confirms) that girls who experience father absence during early childhood grow up to have less restricted sociosexual orientation.

The evolutionary theory of female sexual fluidity (Kanazawa, 2017) would therefore predict that father absence may increase same-sex sexuality in women but such an effect may be *entirely* mediated by unrestricted sociosexual orientation. The theory would further predict that father absence is not associated with same-sex sexuality in men, both because men's sexual orientation is not a byproduct of their sociosexual orientation and because father absence is a weaker predictor of men's sociosexual orientation.

EMPIRICAL ANALYSIS

Data

National Longitudinal Study of Adolescent to Adult Health (Add Health) is a prospectively longitudinal study of a nationally representative sample of American youths, initially sampled when they were in junior high and high school in 1994–1995 (Wave I, $n = 20{,}745$, mean age = 15.6) and reinterviewed in 1996 (Wave II, $n = 14{,}738$, mean age = 16.2), in 2001–2001 (Wave III, $n = 15{,}197$, mean age = 22.0), and in 2007–2008 (Wave IV, $n = 15{,}701$, mean age = 29.1). Because I used variables from all four waves, listwise deletion of cases for missing data reduced the actual sample used for regression analyses to respondents who participated in all four waves. See additional details of sampling and study design at http://www.cpc.unc.edu/projects/addhealth/design. Descriptive statistics (means, standard deviations, and full correlation matrix, separately by sex) for all variables used in the regression analyses below are presented in the appendix Table A1.

Dependent variable: Same-sex sexuality

Sex researchers enumerate four different measures of sexual orientation (Mustanski et al., 2002, pp. 122–127; Wilson & Rahman, 2005, pp. 13–16): (a) self-identified labels ("homosexual," "bisexual," "heterosexual"); (b) actual sexual behaviour (with whom individuals have sex); (c) self-reported sexual feelings (fantasies and desires); and (d) genital or brain responses (physiologically measured arousal to male or female images). Add Health provided measures of the first three of these definitions.

Adult sexual identity (Definition 1)

At Wave IV, Add Health measured respondents' self-identified labels by asking them to describe their sexual identity from a list of five labels (1 = "100% straight," 2 = "mostly straight," 3 = "bisexual," 4 = "mostly gay," 5 = "100% gay). I excluded a small number ($n = 71$; 0.45%) of respondents who identified as "asexual." I called this measure "adult sexual identity," and analysed it with ordinal regression.

Actual sexual behaviour (Definition 2)

At Wave IV, Add Health asked its respondents three questions about their same-sex behaviour: "Considering all types of sexual activity, with how many same-sex partners have you ever had sex?", "Considering all types of sexual activity, with how many same-sex partners have you had sex in the past 12 months, even if only one time?", and "Considering all types of sexual activity, with how many same-sex partners did you have sex before you were 18 years old, even if only one time?"

The distributions of all three measures of same-sex behaviour were extremely skewed for both sexes (skewness: women: lifetime = 52.240, 12 months = 7.355, before 18 = 38.613; men: lifetime = 21.241, 12 months = 23.417, before 18 = 63.200). I therefore took their natural logs, which substantially reduced, though did not entirely eliminate, their skewness (skewness after natural log transformation: women: lifetime = 2.132, 12 months = 4.414, before 18 = 4.705; men: lifetime = 3.572, 12 months = 5.164, before 18 = 5.466). I analysed the natural log-transformed variables with OLS regressions.

Adult sexual attraction (Definition 3)

At Wave IV, Add Health asked two questions about their romantic attraction to men and women: "Are you romantically attracted to men?" and "Are you romantically attracted to women?" From these questions, I constructed a binary measure of same-sex attraction (1 if romantically attracted to same-sex individuals, 0 otherwise). I called this measure "adult sexual attraction," and analysed it with binary logistic regression.

Independent variable: Father absence

I measured father absence *inversely* and *continuously* as the number of years that respondents lived with their biological father before Wave I. Consistent with the past studies that showed that couples with sons were less likely to divorce than couples with only daughters (Katzev, Warner, & Acock, 1994; Morgan, Lye, & Condran, 1988), male respondents had on average lived longer with their biological fathers than female respondents did with theirs (11.2 years vs. 10.6 years, $t(17175) = -5.666$, $p < .001$). However, a nonparametric Levene's test (Nordstokke & Zumbo, 2010; Nordstokke, Zumbo, Cairns, & Saklofske, 2011) verified the equality of variances in the key independent variable between male and female respondents ($F(1, 17175) = .190$, $p = .663$).

Mediator: Sociosexual orientation

Add Health asked numerous questions that measured the sociosexual orientation of its respondents. At Wave IV, it asked "How old were you the first time you ever had vaginal intercourse?", "How old were you the very first time you had oral sex?", "How old were you the very first time you had anal intercourse?" (For these questions, respondents received their current age at Wave IV if they had never engaged in the sexual activity in question), "Considering all types of sexual activity, with how

many opposite-sex partners have you ever had sex?", "Considering all types of sexual activity, with how many opposite-sex partners did you have sex in the past 12 months, even if only one time?", and "Considering all types of sexual activity, with how many opposite-sex partners did you have sex before you were 18 years old, even if only one time?" In addition, at Wave III, Add Health asked two questions about respondents' attitude toward sexual exclusivity: "Using a scale from 1 to 10, where 1 means not important at all and 10 means extremely important, how important do you think being faithful—that is, not cheating on your partner by seeing other people—is for a successful marriage or serious committed relationship?" and "... how important do you think making a life-long commitment is for a successful marriage or serious committed relationship?"

I called the first three measures "onset," the second three measures "the number of opposite-sex partners," and the last two measures "attitudinal." I performed three separate principal components analyses, separately by sex, to extract latent factors for the three facets of sociosexual orientation in the Add Health data. Each principal components analysis extracted only one latent factor, with very high factor loadings (women: onset: vaginal = .784, oral = .840, anal = .687, %explained variance = 59.75; number of partners: lifetime = .870, 12 months = .593, before 18 = .818; %explained variance = 59.25; attitudinal: faithful = .859, commitment = .859, %explained variance = 73.82; men: onset: vaginal = .796, oral = .863, anal = .620, %explained variance = 58.80; number of partners: lifetime = .885, 12 months = .682, before 18 = .812. %explained variance = 63.62; attitudinal: faithful = .853, commitment = .853, %explained variance = 72.82). I used the three separate measures of sociosexual orientation as mediators. The latent factors computed by SPSS had a mean of 0 and a standard deviation of 1, and their signs were standardised so that positive values always indicated more *unrestricted* sociosexual orientation.

Control variable: Physical attractiveness

I controlled for the respondent's physical attractiveness because past studies showed that it was simultaneously associated with the dependent variable (same-sex sexuality) (Lyons, Lynch, Brewer, & Bruno, 2014) and with the mediator (sociosexual orientation) for both women (Perilloux, Cloud, & Buss, 2013) and men (Gangestad & Simpson, 2000).

At the conclusion of the in-home interview at each wave, the Add Health interviewer rated the respondent's physical attractiveness on a five-point ordinal scale (1 = very unattractive, 2 = unattractive, 3 = about average, 4 = attractive, 5 = very attractive). The Add Health measure of physical attractiveness is very reliable, with very high interrater reliability across waves (mean Rwg = .7861) (Kanazawa & Still, 2018, Table 1). I performed a principal components analysis with the four attractiveness scores given by four different interviewers at four different times spanning 13 years. The four scores loaded only on one latest factor, with reasonably high factor loadings (Wave I = .680, Wave II = .706, Wave III = .588, Wave IV = .514, %explained variance = 39.26). I used the latent factor computed by SPSS, with a mean of 0 and a standard deviation of 1, as a control variable in my multiple regression analyses.

Control variable: Age

Because the key independent variable of interest was father absence, inversely and continuously measured as the number of years that the respondent lived with the biological father before Wave I, I controlled for the respondent's age at Wave I.

Results

Table 1 presents the results for adult sexual identity. Column 1 shows that, net of physical attractiveness and age, the number of years living with the biological father (as an inverse measure of father absence) has a significantly negative association with adult sexual identity among women. Girls who grew up without their father in the household were significantly more likely to identify themselves as gay in early adulthood. However, as Column 2 shows, the association was no longer statistically significant once the measures of sociosexual orientation were controlled. All three measures of sociosexual orientation were significantly positively associated with same-sex identity, suggesting that more sociosexually unrestricted women were more likely to identify themselves as gay. Furthermore, Columns 3 and 4 show that, consistent with the prediction, father absence was not associated with adult sexual identity among men. Furthermore, consistent with earlier findings (Kanazawa, 2017), the number of *opposite-sex* partners was significantly positively associated with *same-sex* identity among women, whereas it was negatively associated among men.

Figure 1 graphically depicts the bivariate association between the number of years respondents lived with their biological father and their adult sexual identity, without any statistical controls and separately by sex. It shows that, among women, the association was largely monotonically negative, except for those who identify as "mostly gay." Women who identified as "100% straight" on average spent 10.9 years living with their father, whereas those who identified as "100% gay" on average spent two fewer years (8.9 years). Among men, there was no monotonic association between the number of years they lived with their biological fathers and their adult sexual identity, and there even appeared to be a curvilinear

TABLE 1
The effect of father absence on adult sexual identity, mediated by sociosexual orientation

	Women		*Men*	
	(1)	*(2)*	*(3)*	*(4)*
Physical attractiveness	−.186***	−.179***	−.118	−.035
	(.036)	(.038)	(.068)	(.070)
	.830	*.836*	*.889*	*.966*
Age	−.090***	−.054*	−.040	−.022
	(.021)	(.023)	(.036)	(.037)
	.914	*.947*	*.961*	*.978*
Number of years lived with biological father	−.017**	−.009	−.011	−.017
	(.006)	(.006)	(.010)	(.011)
	.983	*.991*	*.989*	*.983*
Sociosexual orientation				
Onset		.475***		.160*
		(.047)		(.074)
		1.608		*1.174*
Number of opposite-sex partners		.215***		−1.793***
		(.034)		(.248)
		1.240		*.166*
Attitudinal		.146***		.291***
		(.034)		(.050)
		1.157		*1.338*
Threshold				
Y = 1	−.158	.595	1.898	2.475
	(.317)	(.338)	(.543)	(.568)
Y = 2	1.569	2.414	2.691	3.277
	(.322)	(.344)	(.547)	(.572)
Y = 3	2.394	3.256	2.885	3.469
	(.331)	(.353)	(.548)	(.573)
Y = 4	3.065	3.901	3.354	3.949
	(.346)	(.367)	(.553)	(.578)
-2Log-Likelihood	4338.486***	5548.558***	1945.121	2421.082***
Cox and Snell pseudo R^2	.012	.062	.002	.032
Number of cases	4753	4543	3919	3767

Note: Main entries are unstandardized regression coefficients.
(Entries in parentheses are standard errors).
Entries in italics are standardised regression coefficients (e^b).
"Thresholds" are ordinal-regression equivalents of the OLS intercepts.
*$p < .05$. **$p < .01$. ***$p < .001$.

association. Men who identified as "100% straight" and those who identified as "100% gay" spent about the same number of years living with their biological father (11.5 vs. 11.0 years), while those who identified as "bisexual" lived with their biological fathers for the fewest number of years (8.9 years).

Table 2 shows that, in contrast to the results with adult sexual identity presented in Table 1, the results with regard to adult sexual behaviour were somewhat mixed. When the dependent variable was the lifetime number of same-sex partners (top panel), the results supported the hypothesis completely. Father absence was significantly positively associated with the lifetime number of same-sex partners among women, but the association disappeared completely once measures of sociosexual orientation were included in the regression equation. In contrast, father absence was not associated with men's lifetime number of same-sex partners. The results equally supported the hypothesis among women when the dependent variable was the number of same-sex partners in the last 12 months (middle panel); however, in contrast to the lifetime number of same-sex partners, men's father absence was also significantly positively associated with same-sex behaviour among men, once measures of sociosexual orientation were controlled. There was no evidence for the hypothesis when the dependent variable was the number of same-sex partners before Age 18 (bottom panel). Father absence was not associated with same-sex behaviour among women, with or without measures of sociosexuality controlled, while it was significantly positively associated with it among men, both with and without sociosexuality controls. Thus, only the lifetime number of same-sex partners provided unambiguous support for the theory, and the results for same-sex partners in the last 12 months and before Age 18 were somewhat equivocal.

Mediational analyses with bias-corrected confidence intervals (Hayes, 2018) demonstrated that, consistent with the theoretical prediction, sociosexual orientation significantly mediated the effect of father absence on adult

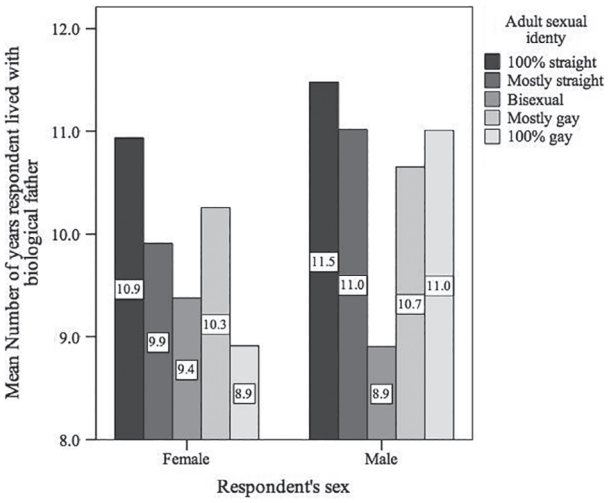

Figure 1. The association between the number of years respondents lived with their biological father and their adult sexual identity, separately by sex.

sexual behaviour for women, but not for men. Table 3 presents the "a path" (the direct effect of father absence on the mediators) coefficients. The indirect effect of father absence on same-sex sexuality, with 95% bootstrapped confidence interval, was: women: lifetime: onset: .0036 (.0016, .0058); partners: −.0096 (−.0141, −.0059); attitudinal: .0006 (−.0004, .0020); 12 months: onset: .0002 (−.0004, .0010); partners: −.0034 (−.0056, −.0015); attitudinal: .0002 (−.0002, .0008); before 18: onset: .0009 (.0002, .0019); partners: −.0029 (−.0046, −.0014); attitudinal: .0003 (−.0002, .0011); men: lifetime: onset: .0003 (−.0015, .0021); partners: .0044 (.0025, .0066); attitudinal: .0022 (.0006, .0043); 12 months: onset: .0000 (−.0011, .0011); partners: .0035 (.0024, .0050); attitudinal: .0011 (.0002, .0024); before 18: onset: .0018 (.0006, .0032); partners: .0028 (.0015, .0043); attitudinal: .0016 (.0005, .0033).

Table 4 shows that the results completely supported the hypothesis with respect to adult romantic attraction. Column 1 shows that, net of physical attractiveness and age, father absence significantly increased women's same-sex romantic attraction, but, as shown in Column 2, the association disappeared entirely once measures of sociosexual orientation were controlled. All three measures of sociosexual orientation were significantly positively associated with same-sex romantic attraction, suggesting that more sociosexually unrestricted women were more likely to experience same-sex romantic attraction. Columns 3 and 4 show that father absence was not associated with adult romantic attraction among men. Once again, the number of *opposite-sex* partners was significantly positively associated with *same-sex* romantic attraction among women, whereas it was significantly negatively associated among men.

Analyses of the full sample with sex as a moderator

Even though I presented the results of the regression analyses above separately by sex for ease and clarity of presentation, it would be statistically equivalent to analyse the full sample with sex as a moderator for the key independent variables of interest. Such analyses showed that the interaction between sex and father absence in the reduced models was not statistically significant (adult sexual identity: $b = .008$, $p = .484$; lifetime: $b = .010$, $p = .344$; 12 months: $b = .005$, $p = .451$; before 18: $b = -.009$, $p = .131$; adult romantic attraction: $b = -.008$, $p = .576$), but the interaction between sex and sociosexuality mediators were, with a few exceptions, statistically significant (adult sexual identity: onset: $b = -.287$, $p = .001$; partners: $b = -2.067$, $p < .001$; attitudinal: $b = .160$, $p = .008$; lifetime: onset: $b = -.360$, $p < .001$; partners: $b = -.1033$, $p < .001$; attitudinal: $b = .002$, $p = .975$; 12 months: onset: $b = -.028$, $p = .544$; partners: $b = -.478$, $p < .001$; attitudinal: $b = .030$, $p = .490$; before 18: onset: $b = .012$, $p = .786$; partners: $b = -.385$, $p < .001$; attitudinal: $b = .041$, $p = .307$; adult romantic attraction: onset: $b = -.420$, $p < .001$; partners: $b = 5.891$, $p < .001$; attitudinal: $b = -.291$, $p < .001$).

DISCUSSION

The analyses of the Add Health data provided mixed and only partial empirical support for the recently proposed evolutionary theory of female sexual fluidity (Kanazawa, 2017). The theory suggests, among other things, that women may not have sexual orientations in the same sense as men do, and that, instead, women's apparent sexual orientation—whether they experience same-sex or opposite-sex sexuality—may be a byproduct of their sociosexual orientation. The analyses showed that the number of years that Add Health respondents lived with their biological father in their childhood (as an inverse and continuous measure of father absence) significantly decreased same-sex sexuality among women, but not among men. Further, the association between father absence and same-sex sexuality among women was entirely mediated by their sociosexual orientation, measured by the onset of their opposite-sex activities, the number of opposite-sex partners, and their attitude toward sexual exclusivity.

There are a number of significant limitations of the study. First, the empirical results were extremely mixed in their support for the theory. For example, unrestricted sociosexual attitude was consistently positively associated with same-sex sexuality *for both women and men,* when the theory predicted sexually dimorphic effects. The fact that gay men are less sexually exclusive than straight men (Haupert, Gesselman, Moors, Fisher, & Garcia,

TABLE 2
The effect of father absence on adult sexual behavior, mediated by sociosexual orientation

Lifetime number of same-sex partners

	Women		*Men*	
	(1)	*(2)*	*(3)*	*(4)*
Physical attractiveness	−.246***	−.239***	−.145**	−.108*
	(.048)	(.047)	(.048)	(.049)
	−.075	*−.073*	*−.049*	*−.036*
Age	−.042	.001	.015	.023
	(.029)	(.029)	(.025)	(.026)
	−.021	*.001*	*.010*	*.015*
Number of years lived with biological father	−.016*	−.001	−.010	−.013
	(.008)	(.008)	(.007)	(.008)
	−.031	*−.002*	*−.022*	*−.029*
Sociosexual orientation				
Onset		.387***		.018
		(.055)		(.050)
		.110		*.006*
Number of opposite-sex partners		.782***		−.258***
		(.056)		(.053)
		.215		*−.084*
Attitudinal		.217***		.225***
		(.050)		(.048)
		−.062		*.077*
Intercept	−7.032	−7.852	−8.614	−8.692
	(.430)	(.428)	(.386)	(.396)
R^2	.007	.087	.003	.015
Number of cases	4761	4561	3911	3766

Number of same-sex partners in the last 12 months

	Women		*Men*	
	(5)	*(6)*	*(7)*	*(8)*
Physical attractiveness	−.080**	−.069*	−.029	.003
	(.027)	(.028)	(.032)	(.033)
	−.042	*−.037*	*−.015*	*.002*
Age	−.017	−.014	.015	.019
	(.016)	(.017)	(.017)	(.018)
	−.015	*−.012*	*.014*	*.018*
Number of years lived with biological father	−.011*	−.006	−.008	−.012*
	(.004)	(.005)	(.005)	(.005)
	−.035	*−.019*	*−.026*	*−.039*
Sociosexual orientation				
Onset		.027		−.000
		(.032)		(.034)
		.013		*−.000*
Number of opposite-sex partners		.275***		−.208***
		(.033)		(.036)
		.133		*−.101*
Attitudinal		.079**		.113***
		(.029)		(.032)
		.040		*.057*
Intercept	−8.415	−8.519	−9.007	−9.014
	(.247)	(.251)	(.260)	(.267)
R^2	.004	.024	.001	.014
Number of cases	4766	4563	3914	3767

TABLE 2
Continued

Number of same-sex partners before Age 18				
	Women		*Men*	
	(9)	*(10)*	*(11)*	*(12)*
Physical attractiveness	−.107***	−.104***	−.078**	−.069*
	(.025)	(.026)	(.029)	(.030)
	−.061	*−.059*	*−.043*	*−.038*
Age	−.055***	−.043**	.027	.041*
	(.015)	(.016)	(.016)	(.016)
	−.052	*−.041*	*.028*	*.043*
Number of years lived with biological father	−.003	.000	−.016***	−.016***
	(.004)	(.004)	(.004)	(.005)
	−.009	*.001*	*−.059*	*−.059*
Sociosexual orientation				
Onset		.102***		.129***
		(.030)		(.031)
		.054		*.073*
Number of opposite-sex partners		.236***		−.165***
		(.031)		(.032)
		.121		*−.088*
Attitudinal		.118***		.161***
		(.027)		(.029)
		.063		*.089*
Intercept	−7.983	−8.190	−9.153	−9.372
	(.229)	(.235)	(.236)	(.242)
R^2	.007	.034	.006	.022
Number of cases	4760	4561	3909	3764

Note: Main entries are unstandardized regression coefficients.
(Entries in parentheses are standard errors.)
Entries in italics are standardized regression coefficients.
*$p < .05$. **$p < .01$. *** $p < .001$.

TABLE 3
"A path" coefficients in the mediation analysis (the direct effect of father absence on mediators)

	Women	*Men*
Dependent variable = lifetime number of same-sex partners		
Mediator		
Onset	−.0092*** (−.0136, −.0048)	−.0138*** (−.0188, −.0088)
Partners	−.0123*** (−.0166, −.0080)	−.0170*** (−.0218, −.0122)
Attitudinal	−.0026 (−.0072, .0019)	−.0096*** (−.0146, −.0046)
Dependent variable = number of same-sex partners in last 12 months		
Mediator		
Onset	−.0092*** (−.0136, −.0048)	−.0133*** (−.0183, −.0083)
Partners	−.0123*** (−.0166, −.0080)	−.0169*** (−.0217, −.0122)
Attitudinal	−.0027 (−.0073, −.0018)	−.0099*** (−.0149, −.0049)
Dependent variable = number of same-sex partners before 18		
Mediator		
Onset	−.0092*** (−.0136, −.0048)	−.0138*** (−.0188, −.0087)
Partners	−.0123*** (−.0166, −.0080)	−.0171*** (−.0218, −.0123)
Attitudinal	−.0026 (−.0072, .0019)	−.0097*** (−.0147, −.0047)

Note: Main entries are standardised path coefficients. (Entries in parentheses are 95% bias-corrected confidence intervals.)
*$p < .05$. **$p < .01$. ***$p < .001$.

2017) can potentially explain this unpredicted finding. Second, even when the results were statistically significant in support of the theory, the effect sizes were often very small. Third, there may be alternative explanations for the findings. For example, the association between unrestricted sociosexual orientation and same-sex sexuality among women may be due to unmeasured third variables, such as high testosterone levels. However, such hormonal effects represent *proximate* mechanisms and are not incompatible with the evolutionary theory of

TABLE 4
The effect of father absence on adult romantic attraction, mediated by sociosexual orientation

	Women		*Men*	
	(1)	*(2)*	*(3)*	*(4)*
Physical attractiveness	−.304***	−.306***	−.094	.041
	(.049)	(.052)	(.084)	(.090)
	.738	*.736*	*.910*	*1.042*
Age	−.063*	−.035	.033	.062
	(.029)	(.031)	(.045)	(.048)
	.939	*.965*	*1.034*	*1.064*
Number of years lived with biological father	−.017*	−.009	−.014	−.024
	(.008)	(.008)	(.012)	(.013)
	.984	*.992*	*.986*	*.976*
Sociosexual orientation				
Onset		.404***		.425***
		(.062)		(.090)
		1.498		*1.530*
Number of opposite-sex partners		.203***		−5.990***
		(.042)		(.561)
		1.225		*.003*
Attitudinal		.187***		.291***
		(.039)		(.065)
		1.206		*1.338*
Intercept	−1.126	−1.770	−3.456	−5.910
	(.432)	(.462)	(.683)	(.782)
χ^2	51.356***	170.703***	2.946	234.359***
Cox and Snell pseudo R^2	.011	.037	.001	.060
Number of cases	4778	4563	3932	3777

Note: Main entries are unstandardized regression coefficients.
(Entries in parentheses are standard errors.)
Entries in italics are standardised regression coefficients (e^b).
*$p < .05$. **$p < .01$. ***$p < .001$.

female sexual fluidity, which specifies *ultimate* evolutionary functions. Given these limitations, extreme caution is necessary in interpreting the empirical results.

The empirical results presented above provided support for the theory when the dependent variables were adult sexual identity or adult romantic attraction, but the results were mixed when the dependent variable was adult sexual behaviour. The results provided support for the theory when the measure of adult sexual behaviour was the lifetime number of same-sex partners, but not when the measure was the number of same-sex partners in the last 12 months or before Age 18. This result was not predicted by the theory, and there is no a priori theoretical reason to expect that the lifetime number of same-sex partners is qualitatively different from the number of same-sex partners in the last 12 months or before Age 18. I therefore hesitate to give further consideration to this unexpected finding until replicated by further research.

If the new evolutionary theory of female sexual fluidity turns out to be valid, it has significant implications for science, practice, and society. For example, there have been a few major missteps in the history of psychiatry and sex research. Fifty years ago, most psychiatrists and scientists believed that homosexuality was a form of mental illness. This was the official position of the American Psychiatric Association until 1973 (Drescher, 2015; Spitzer, 1981). Today few psychiatrists or scientists believe that homosexuality is a mental illness. Twenty-five years ago, most psychiatrists and scientists believed that, while homosexuality may not be a mental illness, if gay individuals so wish, they could be "cured" of their homosexuality through reparative or conversion therapy. Today few psychiatrists or scientists believe homosexuality can be "cured" (mostly because male homosexuality is largely innate), and they instead recognise that such practice is potentially harmful to the individuals (Fjelstrom, 2013). The practice is now illegal in an increasing number of jurisdictions (McMurchie, 2014). If the evolutionary theory of female sexual fluidity turns out to be correct, then the currently universally held view that women have sexual orientations in the same sense as (and *because*) men do (because it is our unquestioned political conviction that men and women are and must be biologically equivalent) may follow the course of the earlier (and then equally universally held) views in the history of psychiatry and science.

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APPENDIX

TABLE A1
Descriptive statistics

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	M_{women}	SD_{women}
(1)	—	.567***	.532***	−.065***	−.065***	−.049***	.208***	.279***	.083***	−7.840	3.437
(2)	.752***	—	.273***	−.050***	−.042**	−.040***	.078***	.152***	.058***	−8.786	1.960
(3)	.687***	.543***	—	−.038**	−.051***	−.062***	.130***	.205***	.074***	−8.825	1.889
(4)	−.033*	−.038**	−.050***	—	.065***	.201***	−.103***	−.090***	−.032**	10.604	6.692
(5)	−.046**	−.012	−.040**	.031	—	−.028*	.085***	−.016	−.065***	.149	1.031
(6)	−.001	.000	.011	.200***	−.013	—	−.187***	−.046***	−.005	15.612	1.870
(7)	−.012	−.015	.062***	−.109***	.075***	−.148***	—	.375***	.004	.000	1.000
(8)	−.043***	−.080***	−.011	−.100***	.065***	−.010	.310***	—	.028*	.000	1.000
(9)	.073***	.064***	.081***	−.063***	−.063***	−.046***	.026	.059***	—	.000	1.000
M_{men}	−8.478	−8.858	−8.895	11.179	−.180	15.767	.000	.000	.000	—	—
SD_{men}	2.754	1.865	1.755	6.597	.930	1.860	1.000	1.000	1.000	—	—

Note: (1) ln(lifetime number of same-sex partners), (2) ln(number of same-sex partners in last 12 months), (3) ln(number of same-sex partners before 18), (4) Number of years lived with biological father; (5) physical attractiveness, (6) age, (7) onset, (8) number of opposite-sex partners, (9) attitudinal. Correlation coefficients above the diagonal are for women; correlation coefficients below the diagonal are for men.
* $p < .05$. ** $p < .01$. *** $p < .001$.