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# Sexual Attraction, Sexual Identity, and Same-Sex Sexual Experiences of Adult Offspring in the U.S. National Longitudinal Lesbian Family Study

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## Abstract

The U.S. National Longitudinal Lesbian Family Study has followed offspring with sexual minority parents from conception into adulthood. It was initiated in 1986, and it has a 92% retention rate to date. In the current investigation, the 25-year-old offspring answered questions about sexual attraction, sexual identity, and sexual experiences; their responses were compared with those of same-age adults from a population-based survey. The analytic samples consisted of 76 offspring of lesbian parents and 76 demographically matched participants from the National Survey of Family Growth. All 152 respondents were 25 years old, 48.7% were female, 90.8% identified as White, 9.2% were people of color, and all had attended at least some college. Although most respondents in each sample identified as “heterosexual or straight,” compared to their matched counterparts in the population-based survey, the female and male offspring of lesbian parents were significantly more likely to report same-sex attraction, sexual minority identity, and same-sex experience. These findings suggest that adult offspring from planned lesbian families may be more likely than their peers to demonstrate diversity in sexual attraction, identity, and expression.

**Keywords** U.S. National Longitudinal Lesbian Family Study · Adult offspring · Sexual attraction · Sexual orientation identity · Same-sex sexual experiences · Sexual minorities

## Introduction

Approximately six million children and adults in the U.S. have a lesbian, gay, bisexual (LGB), or transgender parent (Gates & The Williams Institute UCLA School of Law, 2013). Although research has shown that the psychological health of adults is unrelated to the sexual identity of their parents (Gartrell, Bos, & Koh, 2018; Golombok & Badger, 2010; Golombok & Tasker, 1996; Tasker & Golombok, 1995), data on the sexual attractions, orientations, and experiences of adults who were born into sexual minority parent families are limited (Golombok &

Badger, 2010). The U.S. National Longitudinal Lesbian Family Study (NLLFS)—the largest, longest-running, prospective study of planned lesbian families—provides a unique opportunity to assess the sexuality of these adult offspring (Gartrell et al., 2018; Gartrell, Bos, & Goldberg, 2011, 2012).

In the 1970s, lesbian mothers who came out in the context of heterosexual relationships began to seek legal custody of their children during divorce proceedings (Hunter & Polikoff, 1976). Custody was often denied based on the assumption that lesbian mothers could influence the gender or sexual identity of their children (Golombok, 2015). The ensuing half century brought increased public acceptance and legal recognition of LGB people and parentage. Research revealed that the children of sexual minority parents were comparable in gender development to those raised by heterosexual parents, at the same time that non-traditional gender role behavior became more widely embraced (Golombok, 2015). Studies have also found that female and male sexual minorities have some notable differences: Females are more likely to identify as bisexual than exclusively lesbian, whereas males are more likely to identify as exclusively gay (Savin-Williams & Vrangalova, 2013). In addition, females are more likely to fluctuate in their identities,

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attractions, and behavior over time (Diamond, 2007a, 2008; Diamond, Dickenson, & Blair, 2017; Johns, Zimmerman, & Bauermeister, 2013).

Theories on the origins of sexual attraction, orientation, and behavior are that a variety of factors—hormonal, genetic, non-social environmental (e.g., in utero influences), and social environmental (e.g., social learning and cognitive behavioral)—may play a role (cf. Bailey et al., 2016, for a review). Among possible hormonal influences, prenatal androgen levels have been shown to be linked with adult gender and sexual identity (Hines, 2010, 2011). For example, adult females with congenital adrenal hyperplasia who were exposed to unusually high levels of androgens in utero are more likely to identify as male, and less likely to identify as heterosexual, than females without overexposure to fetal androgen (Hines 2010). Also, there is evidence that prenatal androgens affect the ratio of index to ring finger length, and that gynephilic women demonstrate ratios more frequently found in males (Grimbos, Dawood, Burriss, Zucker, & Puts, 2010). Whether females who later identify as lesbian were exposed to high levels of androgens in utero is unknown; likewise, there is no information about the in utero exposures of their biological children.

Other research suggests that genetic factors may be influential. In a population-based Swedish study, Långström, Rahman, Carlström, and Lichtenstein (2010) found that genetically identical monozygotic twins showed more concordance in same-sex sexual behavior than did dizygotic twins or other siblings. Based on these and similar findings, it has been suggested that sexual minority parents may be more likely to produce sexual minority offspring because of shared genetics (Goldberg, 2010).

The strongest evidence in support of nonsocial environmental theory is that gay men tend to have more biological older brothers than heterosexual or lesbian individuals (Blanchard & VanderLaan, 2015; Bogaert et al., 2018). This fraternal birth-order effect has been found cross-culturally. It is hypothesized to be associated with the development of maternal antibodies to the Y chromosome, and exposure of the male fetus to these antibodies in utero. However, there are no data associating a fraternal birth-order effect with the offspring of sexual minority parents.

Finally, social environmental theory posits that social learning or cognitive behavior may influence the sexual identity of offspring. According to social learning theory, adults who grow up with sexual minority parents might have more expansive perspectives on gender and sexuality than those raised in heterosexual-parent families, because parents of the former are less likely to discourage them from exploring nonbinary gender identities or non-heterosexual relationships (Bos & Sandfort, 2010; Gartrell et al., 1999; Goldberg, 2007, 2010; Golombok, 2015). Sexual minority parents may also model gender non-conforming interests, dress, and behavior, thereby encouraging more fluidity in gendered role behavior (Goldberg, 2007,

2010; Golombok, 2015) Cognitive behavior theorists focus on the prevailing attitudes in the culture at large, noting the potential impact of growing up in environments that are accepting or rejecting of diversity in gender and sexuality (Golombok, 2015). Evidence against social environmental theories in males is the finding that genetic male infants who were surgically changed into girls at birth, and then strongly socialized as girls, continue to be gynephilic (Bailey et al., 2016).

Despite a body of research on sexual minority parent families (Bos & Sandfort, 2010; Gartrell et al., 2011; Goldberg & Gartrell, 2014; Golombok, 2015; Green, Mandel, Hotvedt, Gray, & Smith, 1986), relatively few investigations have focused specifically on the sexuality of adult offspring who were raised in these family forms. In 1991–1992, Tasker and Golombok (1995) and Golombok and Tasker (1996) carried out the second phase of a longitudinal convenience sample study on post-divorce lesbian mother families in the UK that began when the children—conceived in heterosexual relationships—were, on average, 9.5 years old. When the average age of these offspring was 23.5 years, the researchers interviewed 25 with lesbian mothers and 21 with single heterosexual mothers. Psychological well-being was not associated with family type. There were also no differences by family type in the proportions of offspring who reported same-sex attraction, identified as lesbian/gay/bisexual, or indicated on the Kinsey scale that they were not exclusively heterosexual. The only sexual minorities among the offspring were two lesbian daughters of lesbian mothers. None of those who reported sexual attraction to both females and males identified as bisexual. The offspring of lesbian mothers were significantly more likely to have had same-sex sexual contact, and to have considered the possibility of same-sex attraction or a same-sex sexual relationship.

Using the Wave I dataset (1994–1995; students in grades 7 through 12) of the U.S. National Longitudinal Study of Adolescent to Adult Health (Add Health), Wainright, Russell, and Patterson (2004) compared psychosocial adjustment, school outcomes, and romantic relationships in 44 adolescents from same-sex parent households with a demographically matched sample of 44 adolescents from different-sex parent households. Analyses revealed no differences in the personal, family, or school adjustment of the 12- to 18-year-olds based on family type. Additionally, no significant differences in the two samples were found in the percentages of adolescents who had engaged in sexual intercourse or had a recent romantic relationship. The Add Health data use stipulations did not permit a comparison of same-sex attractions or same-sex romantic relationships because too few adolescents reported such experiences. In addition, no information was available about the parents' sexual identity, their methods of child conception, or the duration of time that the adolescents lived in a same-sex parent household.

In 2005, Goldberg (2007) surveyed a convenience sample of adults with lesbian/gay/bisexual parents, most of whom

lived in the U.S. This qualitative study involved semi-structured telephone interviews with 46 adults—36 women and 10 men—ranging in age from 19 to 50 ( $M = 30$ ). Most participants grew up with lesbian or bisexual mothers, though their paths to motherhood (biological, adoption, or fostering) were not specified. Nearly all of those with gay fathers had never lived with them, but saw them regularly. Almost a third of participants viewed sexuality as fluid and dynamic—existing on a continuum—rather than as a binary construct. They also felt that their parents helped them to have more flexible ideas about sexuality and gender. Some participants indicated that having a sexual minority parent led them to question their own sexuality, to think deeply about binary constructs, and to view the process of sexual exploration as normative.

Bos and Sandfort (2010) examined psychosocial adjustment, gender identity, and anticipated future heterosexual romantic involvement in 8- to 12-year-old offspring of lesbian and heterosexual parents. This investigation was the second phase of a Dutch longitudinal study in which planned lesbian families were recruited through community outreach and a fertility clinic. Comparing the 63 offspring of lesbian parents with 68 offspring of heterosexual parents revealed no differences in psychosocial adjustment. However, the offspring of lesbian parents felt less compelled to conform to gender stereotypes, were less likely to view their own gender as superior, and were more uncertain about the prospect of future heterosexual romance.

Golombok and Badger (2010) conducted the only comparative study of young adults from planned lesbian families that contained questions on sexuality. A volunteer sample of 18 offspring from lesbian mother families was compared with 20 from single heterosexual mother families and 32 from two-parent heterosexual families. This was the third phase in a longitudinal study of fatherless, female-headed UK families that began when the offspring were, on average, 6 years old. At Phase III, the average ages of the offspring in the three family types ranged from 18 to 19.5 years. Reported differences were that the offspring in female-headed homes had more positive family relationships, demonstrated greater psychological well-being, and were more likely to have begun dating than those from heterosexual-parent families. Only one female with lesbian parents identified as bisexual, and all remaining offspring identified as heterosexual.

The U.S. National Longitudinal Lesbian Family Study (NLLFS) began in 1986 with a goal of prospectively following a cohort of planned lesbian families in which the offspring were among the first generation conceived through donor insemination by lesbian-identified women (Gartrell et al., 1996). When compared with peers in representative samples, the NLLFS offspring fared as well, or better, in psychological adjustment and quality of life (Gartrell & Bos, 2010; Gartrell et al., 2018;

van Gelderen, Bos, Gartrell, Hermanns, & Perrin, 2012). Data on the sexuality of the NLLFS offspring were first collected during the fifth wave, when they were 17 years old. The offspring reported on sexual identity, and same- and different-sex sexual contact. On the Kinsey scale, 48.6% of the adolescent girls and 21.6% of the adolescent boys indicated that they were not exclusively heterosexual (Gartrell et al., 2011). Of the girls, 15.4% acknowledged same-sex sexual experiences, as did 5.6% of the boys. However, when compared with an age- and gender-matched sample from the 2006–2008 National Survey of Family Growth (NSFG), the NLLFS adolescents were no more likely than the NSFG adolescents to have had these experiences (Gartrell et al., 2012).

The first generation of offspring who were conceived by lesbian mothers through donor insemination has now entered adulthood in substantial numbers (Goldberg, Conron, & The Williams Institute UCLA School of Law, 2018; Golombok, 2015). Genetic and social environmental theories predict that these offspring might be more likely than their peers to identify as sexual minorities and to report same-sex attractions, yet no comparative study to date, including the fifth wave of the NLLFS, found this to be the case. The sixth wave of the NLLFS provides a unique opportunity to assess the sexuality of these offspring as adults (Gartrell et al., 2011, 2012, 2018). At 25 years of age, the NLLFS offspring were older than participants in the two prior comparative studies of sexuality in offspring from planned lesbian families (Gartrell et al., 2011; Golombok & Badger, 2010). Also, there is evidence that sexual identity stabilizes at a later age among mostly heterosexual individuals (Calzo, Masyn, Austin, Jun, & Corliss, 2017). Moreover, the NLLFS has the largest sample size of any ongoing longitudinal study on planned sexual minority parent families.

The NSFG is an ongoing population-based study focusing on the health and family life of noninstitutionalized adolescents and adults in the U.S. (Centers for Disease Control and Prevention, 2016). In assessing the well-being and sexuality of the NLLFS offspring (Gartrell & Bos, 2010; Gartrell et al., 2011, 2012, 2018), nationally representative databases such as the NSFG have been used because the recruitment criteria for these surveys are unrelated to parental sexual identity, thus minimizing potential sampling bias. The 2013–2015 NSFG was chosen for the present investigation because a subset of participants was the same age as the NLLFS adult offspring at the time of data collection. In addition, the NSFG survey contained questions pertaining to sexual attraction, identity, and behavior that could be selected and administered to the 25-year-old NLLFS offspring. The aim of the current study was to compare the responses of NLLFS adult offspring with those of NSFG participants on sexual attraction, sexual identity, and same-sex sexual experience.

## Method

### Participants and Procedure

#### National Longitudinal Lesbian Family Study (NLLFS)

The NLLFS began in 1986 with a goal of prospectively following a cohort of lesbian-parent families from the time that the index offspring were conceived, through their childhood, adolescence, and adulthood (Gartrell et al., 1996). Participants in the current investigation were 25-year-old adults whose parents enrolled in the ongoing, prospective, community-based NLLFS between 1986 and 1992 while they were inseminating or pregnant with these index offspring. During that first wave, prospective lesbian mothers were solicited through ads placed in lesbian/gay newspapers and flyers distributed at lesbian events and in women's bookstores. Because of the extended recruitment period, there was a 5.5-year difference between the birth of the youngest and oldest index offspring. Data were subsequently collected when the offspring were 2 (second wave), 5 (third wave), 10 (fourth wave), 17 (fifth wave), and 25 (sixth wave) years old. The parents have been surveyed at each wave, and the offspring since 10 years of age (Gartrell & Bos, 2010; Gartrell et al., 1996, 2018). The NLLFS cohort initially consisted of 84 planned lesbian families. By the sixth wave—when the offspring were legal adults—77 families remained (78 index offspring, including one set of twins). The study has a 92% retention rate to date.

With Sutter Health Institutional Review Board approval, each offspring was contacted by email upon reaching the age of 25. The purpose and procedure of the study were explained; it was reiterated that participation was voluntary, assurance of confidentiality was given, and informed consent was received. The sixth wave survey was conducted through a protected online survey program. Each participant received a \$60 gift card in compensation. Data gathering for the sixth wave began in 2012 when the oldest offspring turned 25, and it was concluded after the youngest turned 25 in October, 2017. All responded at the age of 25, with the exception of one who responded at 26.

Because the NSFG is gender binary, with separate surveys for females and males, we provided the following instructions for the NLLFS sexuality section: “If you identify as female, please respond to all female questions; if you identify as male, please respond to all male questions; if you identify as transgender, please answer all female and all male questions, based on your life as a whole.” A preliminary data check revealed that none identified as transgender or intersex, one who identified as gender nonbinary did not complete the sexuality questions, and the remainder identified as cisgender (based on the questions they completed and their assigned sex at birth; Gartrell et al., 1999).

The NLLFS total analytic sample for the current study was 76 (48.7% female: 37 females and 39 males) after excluding one who completed the survey at age 26 and one who did not complete the sexuality questions. Of these, 90.8% identified as White (89.2% of females and 92.3% of males) and 9.2% as African American/Black, Latina/o or Hispanic, or other/mixed (i.e., people of color); all had attended college; and all were born in the U.S. (see Table 1).

#### National Survey of Family Growth (NSFG)

The 2013–2015 NSFG was used for the comparison. It was overseen by the US Centers for Disease Control and Prevention's National Center for Health Statistics (Centers for Disease Control and Prevention, 2016). This NSFG sample was nationally representative of civilian, noninstitutionalized women and men who were between 15 and 44 years of age at the time of data collection. Questions focused on general and reproductive health, family life, sexuality, marriage, and divorce (see

**Table 1** Demographic characteristics of the study participants

	NLLFS	NSFG
Females	<i>N</i> = 37	<i>N</i> = 37
Age	25.0	25.0
Race/ethnicity, <i>n</i> (%)		
People of color <sup>a</sup>	4 (10.8)	4 (10.8)
White	33 (89.2)	33 (89.2)
Born in U.S., <i>n</i> (%)	37 (100.0)	37 (100.0)
Education: attended college <sup>b</sup> , <i>n</i> (%)	37 (100.0)	37 (100.0)
Males	<i>N</i> = 39	<i>N</i> = 39
Age	25.0	25.0
Race/ethnicity, <i>n</i> (%)		
People of color <sup>c</sup>	3 (7.7)	3 (7.7)
White	36 (92.3)	36 (92.3)
Born in U.S., <i>n</i> (%)	39 (100.0)	39 (100.0)
Education: attended college <sup>d</sup> , <i>n</i> (%)	39 (100.0)	39 (100.0)

<sup>a</sup>People of color NLLFS: African American/Black = 1, Latina or Hispanic = 1, other/mixed (not specified) = 2; People of color NSFG: African American/Black = 2, Latina or Hispanic = 2

<sup>b</sup>Education NLLFS: some college but no college degree = 3, Associate's degree = 1, bachelor's or registered nurse degree = 27, some graduate school but no graduate degree = 3, master's degree = 3; Education NSFG: 1 year of college or less = 11, 2 years of college = 10, 3 years of college = 5, 4 years of college/graduate school = 7, 5 years of college/graduate school = 1, 6 years of college/graduate school = 3

<sup>c</sup>People of color NLLFS: African American/Black = 2, other/mixed (not specified) = 1; People of color NSFG: African American/Black = 3

<sup>d</sup>Education NLLFS: some college but no college degree = 6, Associate's degree = 1, bachelor's or registered nurse degree = 25, some graduate school but no graduate degree = 4, master's degree = 3; Education NSFG: 1 year of college or less = 6, 2 years of college = 8, 3 years of college = 3, 4 years of college/graduate school = 13, 5 years of college/graduate school = 7, 6 years of college/graduate school = 2

2013–2015 NSFG Questionnaires: [https://www.cdc.gov/nchs/nsfg/nsfg\\_2013\\_2015\\_questionnaires.htm#description](https://www.cdc.gov/nchs/nsfg/nsfg_2013_2015_questionnaires.htm#description)). The NSFG data were gathered by computer-assisted personal interviewing. Questions about sexuality (including sexual attraction, orientation, and experiences) were administered by audio computer-assisted self-interviewing in which a respondent listened to the questions through headphones, read them on a screen, or both, and entered responses directly into a computer. The 2013–2015 sample consisted of 10,210 respondents—5703 women and 4507 men—with an overall response rate of 51.2% (see 2013–2015 National Survey of Family Growth: Summary of Design and Data Collection; [https://www.cdc.gov/nchs/data/nsfg/NSFG\\_20132015\\_Summary\\_Design\\_Data\\_Collection.pdf](https://www.cdc.gov/nchs/data/nsfg/NSFG_20132015_Summary_Design_Data_Collection.pdf)).

To minimize any potential confounding effect of age, education, and country of birth, in the comparison between the NLLFS and NSFG, inclusion criteria for the current study were that the NSFG participants must have been 25 years old at the time of data collection, they must have attended some college, and they must have been born in the U.S. In addition, each participant must have specified her/his race/ethnicity. After selection based on these inclusion criteria, case–control matching (random sampling without replacement) was conducted for race/ethnicity (recoded as 1 = people of color and 2 = white; SPSS version 24.0; IBM Corp., Chicago, IL). Because the comparison with the NLLFS was stratified separately for females and males, these selection criteria resulted in 37 NSFG females and 39 NSFG males—a total of 76 NSFG participants. Table 1 shows the demographics of the matched NSFG females and males.

## Measures

### Sexual Attraction, Orientation, and Same-Sex Experience

Sexual attraction was measured by the question: “People are different in their sexual attraction to other people. Which best describes your feelings?” (1 = only attracted to males, 2 = mostly attracted to males, 3 = equally attracted to males and females, 4 = mostly attracted to females, 5 = only attracted to females, 6 = not sure). For the cross-tabulation on sexual attraction (NLLFS vs. NSFG), preliminary analyses of the NLLFS data showed small cell frequencies for the individual answer categories (see Table 2), and therefore, the responses were pooled for the comparison. For females, “only attracted to males” was kept as a separate category, while combining “mostly attracted to males,” “equally attracted to males and females,” “mostly attracted to females,” and “only attracted to females.” The number of females ( $n = 2$ ; NLLFS = 2 and NSFG = 0) responding “not sure” was insufficient to include this category in the analyses. Similarly, for males, “only attracted to females” was separated from the remaining responses, which were pooled (with exception of the “not sure” category, because

**Table 2** NLLFS female and male reports on sexual attraction and sexual identity

	<i>N</i>	%
Females	37	
Sexual attraction <sup>a</sup>		
Only attracted to males	11	29.7
Mostly attracted to males	16	43.2
Equally attracted to males and females	5	13.5
Mostly attracted to females	3	8.1
Only attracted to females	0	0.0
Not sure	2	5.4
Sexual identity		
Heterosexual or straight	26	70.3
Lesbian, gay, or homosexual	2	5.4
Bisexual	9	24.3
Males	39	
Sexual attraction		
Only attracted to males	1	2.6
Mostly attracted to males	1	2.6
Equally attracted to males and females	2	5.1
Mostly attracted to females	6	15.4
Only attracted to females	27	69.2
Not sure	2	5.1
Sexual identity <sup>a</sup>		
Heterosexual or straight	35	89.7
Gay, or homosexual	2	5.1
Bisexual	2	5.1

<sup>a</sup>Due to rounding, the percentages do not total 100%

only two NLLFS and no NSFG males selected this response). Regarding sexual identity, the question was: “Do you think of yourself as...” (1 = heterosexual or straight, 2 = lesbian, gay, or homosexual, 3 = bisexual). Again, preliminary analyses of the NLLFS data showed small cell frequencies (see Table 2), and therefore, bisexuals were pooled with those identifying as “lesbian, gay or homosexual.” In addition, females and males were asked whether they ever had any sexual experience of any kind with another person of the same sex (0 = no, 1 = yes).

## Analysis

All analyses were conducted separately for females and males. The NSFG data were weighted to ensure that the female and male samples were similar to the U.S. population in age and race/ethnicity. In addition, design variables for the sampling stratum and cluster were used (Centers for Disease Control and Prevention, 2016), and the weighted NSFG percentages reported in Table 3 are based on the complex sample analyses option in SPSS 24.0. Chi-square tests were conducted to compare the matched NLLFS and NSFG samples. If the chi-square

tests showed that at least 20% of the expected frequencies were less than 5, Yates'  $\chi^2$  tests and Yates'  $p$  values were reported.

## Results

As shown in Table 3, the NLLFS females were significantly more likely than NSFG females to report sexual minority attraction (i.e., that they were not “only attracted to males”). NLLFS females were also significantly more likely to identify as sexual minorities (i.e., lesbian or bisexual) and to report same-sex sexual experiences. Of all females, 70.3% in the NLLFS sample and 87.8% in the NSFG sample identified as “heterosexual or straight.”

Significantly more NLLFS than NSFG males reported that they were not “only attracted to females.” NLLFS males were significantly more likely than NSFG males to identify as gay or bisexual, and to have had same-sex sexual experiences. In the two samples, 89.7% of NLLFS males and 97.6% of NSFG males identified as “heterosexual or straight” (see Table 3).

In order to check the sensitivity of our results, chi-square tests were used to determine whether there were differences on the studied variables between the matched and unmatched 25-year-old, U.S. born NSFG participants with some college education. The complex sample analyses option in SPSS 24.0 was used; data were weighted, and design variables for the

sampling stratum and cluster were taken into account. The analyses were conducted separately for females and males. None of these comparisons was statistically significant with the exception of one: Fewer matched NSFG females indicated that they were “only attracted to males” (53.9% vs. 76.7%,  $p = .049$ ).

Through additional analyses, the responses of the NLLFS offspring were compared by gender. Significant differences were found on two of the three studied variables. Significantly fewer NLLFS females than males reported feelings of attraction only to the other sex (females 31.4% vs. males 73.0%,  $\chi^2 = 12.46$ ,  $p = .001$ ). NLLFS females were also less likely to identify as “heterosexual or straight” than NLLFS males (females 70.3% vs. males 89.7%,  $\chi^2 = 4.55$ ,  $p = .033$ ). There was no significant gender difference in the percentages of NLLFS offspring who reported same-sex behavior (females 54.1% vs. males 33.3%,  $\chi^2 = 3.32$ , ns).

## Discussion

Although 70 percent of NLLFS females and nearly 90 percent of NLLFS males identified as “heterosexual or straight,” compared to demographically matched adults from the NSFG national probability sample, the 25-year-old female and male offspring of lesbian parents were significantly more likely to

**Table 3** Females and males: Sexual attraction, sexual identity, and sexual experiences

	NLLFS		NSFG		NLLFS versus NSFG		
	<i>N</i>	%	Unweighted <i>N</i>	Weighted %	$\chi^2$	<i>p</i>	Cramer's $\Phi^a$
<b>Females</b>							
<b>Sexual attraction<sup>b</sup></b>							
Only attracted to males	11	31.4	20	53.9	7.15	.008	.004
Not only attracted to males	24	68.6	17	46.1			
<b>Sexual identity</b>							
Heterosexual or straight	26	70.3	31	87.8	8.95 <sup>d</sup>	.003 <sup>e</sup>	.005
Lesbian or bisexual	11	29.7	6	12.3			
Same-sex sexual experience	20	54.1	13	37.6	4.27	.039	.003
<b>Males</b>							
<b>Sexual attraction<sup>c</sup></b>							
Only attracted to females	27	73.0	35	91.2	13.11 <sup>d</sup>	<.001 <sup>e</sup>	.005
Not only attracted to females	10	27.0	4	8.8			
<b>Sexual identity</b>							
Heterosexual or straight	35	89.7	38	97.6	10.35	.001	.004
Gay or bisexual	4	10.3	1	2.4			
Same-sex sexual experience	13	33.3	4	8.8	26.44 <sup>d</sup>	<.001 <sup>e</sup>	.007

<sup>a</sup>0.10 represents a small effect size, 0.30 medium, and 0.50 large

<sup>b</sup>Females who answered “not sure” (NLLFS: 2, NSFG<sub>unweighted</sub>: 0) were not included in the analyses

<sup>c</sup>Males who answered “not sure” (NLLFS: 2, NSFG<sub>unweighted</sub>: 0) were not included in the analyses

<sup>d</sup>Yates'  $\chi^2$  test because at least 20% of the expected frequencies were less than 5

<sup>e</sup>Yates'  $p$  value because at least 20% of the expected frequencies were less than 5

report same-sex attraction, sexual minority identity, and same-sex sexual experiences. Among the NLLFS female offspring, the percentage identifying as sexual minorities decreased from 48.6 to 29.7% between the ages of 17 and 25 (Gartrell et al., 2011). In contrast, the percentage of NLLFS females who had engaged in same-sex sexual behavior increased from 15.4 to 54.1% over this 8-year interval. During this same time period, the percentage of NLLFS male offspring identifying as sexual minorities decreased from 21.6 to 10.3%, and the percentage reporting same-sex sexual experiences increased from 5.6 to 33.3% (Gartrell et al., 2011). These findings support prior studies demonstrating variability and fluidity in sexual development, expression, and self-identification over time, particularly in the span from adolescence to early adulthood (Diamond, 2007a, b, 2008; Diamond et al., 2017; Johns et al., 2013; Katz-Wise, 2015).

Research has shown that sexual responsiveness can be situationally triggered. For example, Diamond (2007a, 2008) has found that some females, regardless of sexual identity, may experience attraction to females or males, depending on the circumstances. In a comparison of 18- to 40-year-old heterosexual and LGB individuals, Diamond et al. (2017) found more fluidity in women's attractions than men's, with bisexuals reporting less post-adolescent stability in attractions than those whose attractions were exclusively same-sex or heterosexual. Diamond (2007b) theorizes that female sexual fluidity evolved in conjunction with the capacity to become aroused during the nonovulatory period of the menstrual cycle and to engage in same-sex sexual activity without reproductive disadvantage.

Other studies have reported variability in the development of some sexual identities. A longitudinal latent class analysis of female and male 12- to 23-year-olds in a population-based sample found that the mostly heterosexual identity emerged gradually and later than the lesbian/gay/bisexual identity, with the proportion of mostly heterosexuals increasing consistently from mid-teens into adulthood (Calzo et al., 2017). In addition, data suggest that mostly heterosexual females periodically experience same-sex attractions even though they see themselves as heterosexual (Bailey et al., 2016).

The results of the present study may provide support for genetic theories on the origins of sexuality (Bailey et al., 2016; Golombok, 2015). It is possible that the higher rates of same-sex attraction, orientation, and behavior among the NLLFS offspring result from their genetic linkage to sexual minority parents. The observed differences between the NLLFS and NSFG may also be consistent with social environmental theory. It is conceivable that the NLLFS offspring might have more expansive perspectives on gender and sexuality because they were raised by parents who are nonjudgmental about their exploration of non-heterosexual relationships (Bos & Sandfort, 2010; Farr, Bruun, Doss, & Patterson, 2018; Gartrell et al., 1999; Golombok, 2015; Robinson & Frost, 2018; Sumontha, Farr, & Patterson,

2017). Likewise, the offspring of sexual minority parents may be more attuned to their own same-sex sexual feelings because of the environment in which they were raised.

The current investigation is the first comparative study to find a greater likelihood of sexual minority identity among the offspring of lesbian parents. Although our data could lend support both to genetic and social learning theories on the origins of sexual identity, they offer conclusive evidence for neither, particularly since most NLLFS offspring identify as "heterosexual or straight." Scientists have attempted to uncover the determinants of sexual identity for more than 50 years, and the findings to date—including within the present report—suggest that multiple factors may contribute (Bailey et al., 2016). At the same time, research has shown that the psychological well-being of offspring is unrelated to their parents' sexual identity, and that those with sexual minority parents fare as well as, or sometimes better than, their counterparts in different family types (Gartrell et al., 2018; Golombok & Badger, 2010; Golombok & Tasker, 1996; Tasker & Golombok, 1995). On a behavioral checklist completed by parents of 17-year-olds, the NLLFS offspring scored higher in social, academic, and overall competence and lower in social problems, rule-breaking, and aggressive behavior than age- and sex-matched teens from a normative sample (Gartrell & Bos, 2010). A standardized mental health assessment administered to the offspring when they were 25 years old revealed no differences between the NLLFS cohort and demographically matched adults from a population-based sample (Gartrell et al., 2018). Overall, the data on mental health outcomes for the offspring of sexual minority parents (Golombok, 2015) provide no justification for restricted access to reproductive technologies, adoption, foster care, or civil liberties for lesbian, gay, or bisexual people.

A strength of the NLLFS is that it is the only study that has followed the biological offspring of sexual minority parents from birth to adulthood, prospectively and longitudinally. Moreover, the attrition rate is very small: Most of the seven non-participating families became unavailable or unreachable before their offspring reached adolescence (Gartrell et al., 2018). Since the NLLFS is an ongoing study, future waves will provide an opportunity to examine fluidity in sexual attractions, minority identities, and same-sex experiences among the adult offspring over multiple decades.

The current study had limitations. First, the NLLFS is a non-representative sample. In 1986, because of the long history of discrimination against sexual minority people, recruiting a population-based sample of prospective lesbian parents when most were closeted was unfeasible. In addition, the results of the present investigation, drawn from a small community-based sample, may not be generalizable to the population as a whole. Secondly, the NLLFS offspring are predominantly White and well educated. Because the timelines for sexual minority identification and same-sex sexual experience may differ by race/



ethnicity, education, and income (Johns et al., 2013), replication of this study with an intersectional approach and a more diverse, population-based sample is warranted (Badgett, Durso, Schneebaum, & The Williams Institute UCLA School of Law, 2013). Thirdly, because of the small effect sizes ( $< 0.10$ ) in the current study, the results should be interpreted cautiously. Fourthly, the 2013–2015 NSFG did not assess gender identity, and thus, the two samples could not be compared on this variable. Furthermore, the NSFG did not provide response options for intersex or gender nonbinary people, and questions that were heterocentric or gender-restrictive may have affected the comfort or compliance of gender and sexual minority participants. Opportunities to compare variability in identities and experiences in the two samples were limited by these shortcomings in the national survey. Collecting information on sex assigned at birth, gender identity and expression (e.g., nonconformity), and sexual attraction, orientation, and experience in all national health surveys will facilitate our understanding of gender and sexual minority people (Gates, 2017; Haider et al., 2017), as well as their offspring.

The above limitations notwithstanding, this investigation makes an important contribution to the literature and public debate on sexual attraction, sexual identity, and same-sex sexual experience among the adult offspring of sexual minority parents. The NLLFS is uniquely positioned as the only study that has followed offspring conceived through donor insemination from conception into adulthood. Our findings suggest that being raised by sexual minority parents may lead to more diverse sexual expression for both female and male offspring, and a greater likelihood of same-sex attraction and sexual minority identity. To the extent that other investigators replicate our results, they may be relevant to health professionals and social service agents who monitor the well-being of these offspring. How the sexuality of offspring with sexual minority parents will fluctuate over time, and whether these fluctuations will affect the proportion of the population identifying as sexual minorities at any one point in time, are topics for future study.

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## Compliance with Ethical Standards

**Conflict of interest** The authors have no conflicts of interest to disclose. No funding was secured for this study. The authors have no financial relationships relevant to this article to disclose.

**Ethical Approval** This study had IRB approval. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

**Informed Consent** Informed consent was obtained from all individual participants included in the study

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