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# Same-Sex and Different-Sex Parent Households and Child Health Outcomes: Findings from the National Survey of Children’s Health

Henny M. W. Bos, PhD,\* Justin R. Knox, MPH,† Loes van Rijn-van Gelderen, PhD,\*  
Nanette K. Gartrell, MD\*‡

**ABSTRACT:** *Objective:* Using the 2011–2012 National Survey of Children’s Health data set, we compared spouse/partner relationships and parent-child relationships (family relationships), parenting stress, and children’s general health, emotional difficulties, coping behavior, and learning behavior (child outcomes) in households of same-sex (female) versus different-sex continuously coupled parents with biological offspring. We assessed whether associations among family relationships, parenting stress, and child outcomes were different in the 2 household types. *Methods:* Parental and child characteristics were matched for 95 female same-sex parent and 95 different-sex parent households with children 6 to 17 years old. One parent per household was interviewed by telephone. Multivariate analyses of variance and multiple linear regressions were conducted. *Results:* No differences were observed between household types on family relationships or any child outcomes. Same-sex parent households scored higher on parenting stress (95% confidence interval = 2.03–2.30) than different-sex parent households (95% confidence interval = 1.76–2.03),  $p = .006$ . No significant interactions between household type and family relationships or household type and parenting stress were found for any child outcomes. *Conclusion:* Children with female same-sex parents and different-sex parents demonstrated no differences in outcomes, despite female same-sex parents reporting more parenting stress. Future studies may reveal the sources of this parenting stress.

(*J Dev Behav Pediatr* 37:179–187, 2016) **Index terms:** National Survey of Children’s Health, same-sex parents, family relationships, parenting stress, child outcomes.

**B**ased on the 2013 National Health Interview Survey (NHIS), it is estimated that there are 690,000 same-sex couples living in the United States and that 19% of such couples and lesbian/gay/bisexual individuals are raising children under the age of 18.<sup>1</sup> As the number of children growing up in same-sex parent households increases, there remains ongoing debate about the impact of varied family forms on children’s well-being.<sup>2</sup> The debate focuses on whether children’s psychological adjustment is affected more by the quality of family relationships than by family structure (i.e., same-sex parent vs different-sex parent household).<sup>2</sup>

A substantial body of research has been conducted on same-sex parent families.<sup>2–10</sup> The phenomenon known as the “lesbian baby boom” began in the 1980s when sperm banks first opened their doors to lesbians.<sup>2,6</sup> As same-sex parent adoption became legalized, increasing numbers of gay men became fathers, resulting in the “gay baby boom.”<sup>2,6</sup> Since the lesbian baby boom preceded the gay baby boom by nearly 2 decades, female same-sex parent families have been studied most extensively. These investigations found that children reared in female same-sex parent families were comparable in well-being and problem behavior to those reared in heterosexual parent households and that children’s psychosocial adjustment was associated more with the quality of parenting than with parental sexual orientation.<sup>2–10</sup> Most of these studies relied on convenience samples<sup>2,4,6,7</sup> and/or fertility clinic recruitment.<sup>2,5–7</sup>

Using nationally representative data from the 1994–1995 National Longitudinal Study of Adolescent Health, Wainright conducted the first study in which matched groups of adolescents with same- and different-sex parents were compared. The findings revealed that regardless of family type, adolescents were functioning well and those who were closer to their parents had better school

From the \*Research Institute of Child Development and Education, University of Amsterdam, Amsterdam, the Netherlands; †Department of Epidemiology, Columbia University, New York, NY; ‡Williams Institute, UCLA School of Law, Los Angeles, CA.

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Address for reprints: Henny M. W. Bos, PhD, Research Institute of Child Development and Education, University of Amsterdam, Nieuwe Achtergracht 127, 1018 WS, Amsterdam, the Netherlands; e-mail: [H.M.W.Bos@uva.nl](mailto:H.M.W.Bos@uva.nl).

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outcomes.<sup>8</sup> In more recent population-based studies focused on different family forms, parental relationship (in) stability or (dis)continuity, and family transitions (including foster care and adoption) have been considered because of their strong associations with child health outcomes.<sup>11-16</sup> For example, using US Census data, Rosenfeld reported that residentially stable children of same- and different-sex parents showed comparable progress through school.<sup>11,12</sup> Likewise, using data from the US Early Childhood Longitudinal Study, when family transitions were taken into account, Potter<sup>13</sup> found no significant differences in academic achievement between children of same-sex parent and different-sex parent families. In contrast, Sullins reported higher rates of emotional problems in children of same-sex parents, based on aggregate 1997 to 2013 data drawn from the NHIS.<sup>15,16</sup> However, there have been concerns about the validity of Sullins' findings because they either altogether failed to account for family stability<sup>14,15</sup> or conflated home ownership (a measure of socioeconomic status) with family stability.<sup>14,16</sup>

The present study uses data drawn from a nationally representative survey—the National Survey of Children's Health (NSCH).<sup>17</sup> The NSCH included questions that made it possible to identify continuously coupled, same-sex, and different-sex parents who were raising their own offspring.<sup>17</sup> To account for the potential impact of instability, discontinuity, and transitions,<sup>14</sup> the present study will focus only on 2-parent families in which the offspring were reared since birth by parents who neither broke up nor got divorced. For families with children between 6 and 17 years old, the NSCH also contained questions about family relationships, parenting stress, and child outcomes<sup>17</sup> that made it possible to assess different predictors and outcomes than those that were used in Wainright and other matching studies<sup>8,11,12</sup> and thus determine whether the findings would be consistent. As such, the NSCH data set provided a unique opportunity to investigate the following questions: (1) comparing same-sex 2-parent with different-sex 2-parent households with a biological target child, are there differences in family relationships (spouse/partner relationships and parent-child relationships), parenting stress, or child outcomes (general health, emotional difficulties, coping behavior, and learning behavior)? and (2) are the associations among family relationships, parenting stress, and child outcomes different between the 2 household types?

## METHODS

### Study Population and Procedures

The 2011–2012 National Survey of Children's Health (NSCH) was designed as a random-digit-dial telephone survey of 847,881 US households to identify those with children under 18 years old. Of the 187,422 qualifying households, 95,677 respondents (68.6% mothers, 24.2% fathers, and 7.2% other relatives/guardians) completed interviews. If the household contained multiple children

under 18 years old, one was randomly selected to be the sample child (SC) for the survey.<sup>18</sup> More information about the 2011–2012 NSCH, including the design, data collection procedure, questionnaire content, and sampling weight, can be found at: <http://www.cdc.gov/nchs/slaits/nsch.htm>.<sup>19</sup> Questions related to parent-child relationship, children's emotional difficulties, coping behavior, and learning behavior were only asked of responding households with a child between a specified age interval—6 to 17 years old.<sup>17</sup>

Same-sex parent households containing 6- to 17-year-old children were identified as those in which the respondent and cohabiting partner were of same sex and both identified as parents of the SC.<sup>17</sup> Initial analyses revealed 139 female and 17 male same-sex parent households, but families were excluded from further analyses if the SC had ever experienced parental divorce or separation or if the SC had been born in another family (i.e., experienced a family transition). After excluding these families, 106 same-sex parent households remained (68% of NSCH same-sex parent households with 6- to 17-year-old children), in all of which the parents were continuously coupled. As a result of the small number ( $n = 8$ ) of male same-sex parent households within this group, only female same-sex parent households were included in the present study.

Matching was used to minimize any potential confounding effect<sup>20</sup> on the relationship between growing up in a same-sex parent household and family relationships, parenting stress, child general health, emotional difficulties, coping behavior, and learning behavior. For 95 of the 98 continuously coupled female same-sex parent households, it was possible to conduct one-to-one matching (i.e., random sampling without replacement),<sup>21</sup> with 95 continuously coupled different-sex parent households based on parent characteristics (age, education, US birth status, and current geographic location) and SC characteristics (age, sex, race/ethnicity, and US birth status). Since the NSCH confidentiality policy prohibits analyzing or reporting on cell sizes smaller than 5, information is not available about the 3 same-sex parent households that could not be matched on all 8 characteristics.<sup>22</sup> The matching procedure required restricted NSCH variables (i.e., not publicly available)<sup>22</sup> that were accessed through the National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention (CDC). Restricted variables included questions that were used to identify same- and different-sex parent households, those indicating whether the participating parent and SC were born in the US, and those used to verify that the SC had not been born in another family.

The demographic characteristics of the matched sample are provided in Table 1. The parents were, on average, 48 years old. Most were high-school graduates, had been born in the US, and lived in urban areas. The children (44.2% girls and 55.8% boys) were, on average, 11 years old; most were born in the US and were identified as white non-Hispanic.

**Table 1.** Demographic Characteristics of the Studied Sample

	Household Type	
	Different-Sex Parent	Same-Sex Parent
Number of families	95	95
Parent characteristics		
Parent age in years (mean, SD) <sup>a</sup>	47.41 (6.29)	47.80 (6.64)
Parent education, %		
High school or less	4.2	4.2
More than high school	95.8	95.8
Born in US, %		
No	11.6	11.6
Yes	88.4	88.4
Family residence, %		
Urban	84.2	84.2
Rural	15.8	15.8
Child characteristics		
Child age in years (mean, SD) <sup>b</sup>	10.94 (3.20)	10.39 (3.36)
Child gender, %		
Female	44.2	44.2
Male	55.8	55.8
Child race/ethnicity, %		
Hispanic	11.6	11.6
White non-Hispanic	65.3	65.3
Black non-Hispanic	10.5	10.5
Multiracial, other, non-Hispanic	12.6	12.6
Born in US, %		
No	2.1	2.1
Yes	97.9	97.9

National Center for Health Statistics (NCHS) confidentiality policy prohibits analyzing or reporting cell sizes <5; therefore, percentages are used in this table.<sup>22</sup> <sup>a</sup>F = 1.32, and *p* = .252. <sup>b</sup>F = 0.17, and *p* = .679.

## Measures

### Family Relationships and Parenting Stress<sup>17</sup>

A single question assessed spouse/partner relationship: "Would you say that your relationship is completely happy, very happy, fairly happy, or not too happy?" In the present study, the answers were reversed so that they ranged from "not too happy" (1) to "completely happy" (4). A single item assessed the parent-child relationship: "How well can you and (SC) share ideas or talk about things that really matter?" (reversed coding: "1 = not well at all" to "4 = very well"). The average score on 3 items was used to assess the stress of parenting the SC: "During the past month, how often have you felt... (1) (SC) is much harder to care for than most children (his/her) age?, (2) (he/she) does things that really bother you a lot?, (3) angry with him/her?" ("1 = never" to "5 = always"). Cronbach's alpha for this scale was .62.

### Children's General Health, Emotional Difficulties, Coping Behavior, and Learning Behavior<sup>17</sup>

One item was used to assess health status: "In general, how would you describe (SC)'s health?" (reversed coding: "1 = poor" to "5 = excellent"). For children's emotional difficulties, parents were asked to specify how often during the past month the SC was unhappy, sad, or depressed ("1 = never" to "5 = always"). Children's coping behavior was measured by a single item that inquired whether the SC stayed calm and in control when faced with a challenge ("1 = never" to "5 = always"). A scale was constructed by taking the mean scores of the 4 items assessing children's learning behavior (e.g., "He/She does all required homework"; "1 = never" to "5 = always"); Cronbach's alpha was .75.

### Analyses

To assess differences between same- and different-sex parent households on family relationships (spouse/partner relationship and parent-child relationship) and parenting stress, a 2 × 2 multivariate analysis of variance (MANOVA) was conducted, with household type and child gender as independent factors. Another 2 × 2 MANOVA was conducted with children's general health, emotional difficulties, coping behavior, and learning behavior as dependent variables. When Wilks's λ showed a significant household, gender, or interaction effect, univariate analyses of variance were conducted to clarify the multivariate findings.

To investigate associations among family relationships, parenting stress, and each child outcome variable and to assess whether these relations differed by household type, multiple linear regression analyses were conducted. In these analyses, household type, spouse/partner relationship, parent-child relationship, and parenting stress, as well as household type × spouse/partner relationship, household type × parent-child relationship, and household type × parenting stress were entered as simultaneous predictors. Continuously scaled predictor variables were mean centered before forming interaction terms, and dichotomous predictors were dummy coded. If an interaction between household type and a predictor (spouse/partner relationship, parent-child relationship, or parenting stress) associated with a child outcome variable was significant, this was an indication that the association between the predictor and this variable differed by household type. SAS version 9.2 was used for the analyses.

### Ethics Approval

The CDC/NCHS Research Ethics Review Board approved the data collection procedures. Data were gathered as a module of the State and Local Area Integrated Telephone Survey under contract with National Opinion Research Center at the University of Chicago.<sup>18</sup> Strict confidentiality and privacy regulations apply to all contract and federal project staff for all data (for more information about the NCHS confidentiality policy: [www.cdc.gov/nchs/about/policy/confidentiality.htm](http://www.cdc.gov/nchs/about/policy/confidentiality.htm)).<sup>23</sup> The

project proposal for the present study was approved by the CDC/NCHS.

## RESULTS

### Family Relationships and Parenting Stress

Multivariate analysis of variance showed a significant main effect for household type; Wilks's  $\lambda = .95$ ,  $F_{(3,181)} = 2.94$ , and  $p = .035$ . No main effect was found for child gender; Wilks's  $\lambda = .98$ ,  $F_{(3,181)} = 1.58$ ,  $p = .196$ . The interaction of household type  $\times$  child gender was not significant; Wilks's  $\lambda = .99$ ,  $F_{(3,181)} = .70$ , and  $p = .552$ . Follow-up univariate analyses of variance (ANOVAs) revealed that the observed effect for household type was only significant for parenting stress;  $F_{(1,181)} = 7.76$ ,  $p = .006$ , and  $\eta^2 = .04$ , meaning that same-sex parents reported significantly more stress than did different-sex parents. Mean scores, SDs, and 95% CIs for family relationships and parenting stress are shown in Table 2.

### General Health, Emotional Difficulties, Coping Behavior, and Learning Behavior

Multivariate analysis of variance showed no significant main effect for child outcome variables based on household type; Wilks's  $\lambda = .97$ ,  $F_{(4,183)} = 1.56$ , and  $p = .187$ . However, there was a significant main effect for child gender; Wilks's  $\lambda = .93$ ,  $F_{(4,183)} = 3.40$ , and  $p = .010$ , although the interaction of household type  $\times$  child gender was not significant; Wilks's  $\lambda = .97$ ,  $F_{(4,183)} = 1.45$ , and  $p = .219$ . Univariate ANOVAs showed significance only for learning behavior;  $F_{(1,181)} = 5.18$ ,  $p = .024$ , and  $\eta^2 = .03$ , with higher scores for girls than boys, suggesting that girls showed more interest in doing well in school. Mean scores, SDs, and 95% CIs for child outcome variables are shown in Table 3.

### Associations Among Family Relationships, Parenting Stress, and Child Outcome Variables

A series of multiple regression analyses were conducted to investigate the associations between the predictors family relationships and parenting stress and the child outcome variables, and whether these associations differed across household type. These regression analyses showed a significant  $R^2$  for all child outcome variables (Table 4). Reporting a more positive parent-child relationship was associated with higher levels of children's general health. Children's emotional difficulties were negatively associated with the predictor family relationships (spouse/partner relationship and parent-child relationship) and positively with the predictor parenting stress. Moreover, children reportedly experienced fewer emotional difficulties when the parents reported a more positive relationship with one another, a more positive relationship with the child, and lower levels of parenting stress. Coping behavior and learning behavior were positively associated with parent-child relationship and negatively with parenting stress. Finally, the quality of parent-child relationship emerged as

the sole predictor of both coping behavior and learning behavior, such that more positive relationships were associated with more effective coping and learning behavior. None of the interactions included in the equations were significant for any child outcomes (Table 4), meaning that the significant associations among family relationships, parenting stress, and child outcomes did not significantly differ across same- and different-sex parent households.

## DISCUSSION

This study used a population-based sample to explore family relationships, parenting stress, and children's general health, emotional difficulties, coping behavior, and learning behavior among households consisting of female same-sex continuously coupled parents with biological offspring and a matched sample of different-sex continuously coupled parents with biological offspring. With the exception of parenting stress, no significant differences were found between the 2 household types on family relationships and child outcomes. Across household types, regression analyses revealed that the predictor parent-child relationship was positively associated with children's general health, coping, and learning behavior; the family relationships predictors (spouse/partner relationship and parent-child relationship) were negatively related to children's emotional difficulties, and the predictor parenting stress was positively associated with children's emotional difficulties and negatively associated with their coping and learning behavior.

Despite higher levels of parenting stress for same-sex parents, their offspring did not differ in general health, emotional difficulties, coping behavior, or learning behavior when compared with the offspring of different-sex parents. This suggests that other factors may have mitigated the negative effects of parenting stress on child outcomes.<sup>24</sup> In the US National Longitudinal Lesbian Family Study (NLLFS), a community-based survey initiated in 1986 to provide prospective data on a cohort of lesbian-parent families, 41% of adolescent offspring described experiences of stigmatization associated with their mothers' sexual orientation.<sup>4</sup> Although these experiences were associated with more problem behavior, adolescents who had close, positive relationships with their mothers demonstrated more resilience in response to stigmatization.<sup>24</sup> Studies have also shown that lesbian mothers have concerns about rearing their children in a homophobic society<sup>4</sup> and feel more pressure to justify the quality of their parenting than their heterosexual counterparts.<sup>7</sup> As a result, lesbian mothers use support systems such as parenting groups and counseling services in their efforts to foster healthy child development.<sup>25</sup> Since the National Survey of Children's Health (NSCH)<sup>17</sup> did not contain specific questions about stigmatization based on household type, future investigations might explore whether the cultural spotlight on



**Table 2.** Family Relationships and Parenting Stress: Different-Sex Parent Versus Same-Sex Parent Households

	Mean (SD)	95% CI		Cohen's <i>d</i> <sup>1</sup>
		Lower CI	Upper CI	
Spouse/partner relationship <sup>a</sup>				
Household type				.06
Different-sex parents	3.12 (0.73)	2.98	3.26	
Same-sex parents	3.16 (0.65)	3.02	3.30	
Child gender				.12
Girl	3.10 (0.73)	2.95	3.25	
Boy	3.18 (0.66)	3.05	3.32	
Household type × child gender				
Girl				.14
Different-sex parents	3.15 (0.79)	2.93	3.36	
Same-sex parents	3.05 (0.66)	2.84	3.26	
Boy				.27
Different-sex parents	3.09 (0.69)	2.91	3.28	
Same-sex parents	3.27 (0.63)	3.08	3.47	
Parent-child relationship <sup>b</sup>				
Household type				.04
Different-sex parents	3.71 (0.54)	3.60	3.82	
Same-sex parents	3.69 (0.57)	3.58	3.80	
Child gender				.22
Girl	3.76 (0.55)	3.64	3.88	
Boy	3.64 (0.56)	3.53	3.75	
Household type × child gender				
Girl				.00
Different-sex parents	3.76 (0.48)	3.61	3.91	
Same-sex parents	3.76 (0.62)	3.57	3.95	
Boy				.07
Different-sex parents	3.66 (0.59)	3.50	3.82	
Same-sex parents	3.62 (0.53)	3.48	3.76	
Parenting stress <sup>c</sup>				
Household type <sup>d</sup>				.41
Different-sex parents	1.89 (0.52)	1.76	2.03	
Same-sex parents	2.16 (0.78)	2.03	2.30	
Child gender				.12
Girl	2.07 (0.70)	1.92	2.21	
Boy	1.99 (0.65)	1.86	2.11	
Household type × Child gender				
Girl				.46
Different-sex parents	1.91 (0.51)	1.71	2.11	
Same-sex parents	2.22 (0.83)	2.02	2.42	
Boy				.36
Different-sex parents	1.87 (0.54)	1.69	2.05	
Same-sex parents	2.10 (0.74)	1.92	2.28	

Post hoc power analyses—household type: 1-β error probability = .715 and  $f^2 = 0.049$  ( $N = 190$ ,  $p < .05$ ), child gender: 1-β error = .430 and  $f^2 = 0.0262$  ( $N = 190$ ,  $p < .05$ ), and household type × child gender: 1-β error probability = .293 and  $f^2 = 0.012$  ( $N = 190$ ,  $p < .05$ ). <sup>a</sup>1 = “not too happy” to 4 = “completely happy.” <sup>b</sup>1 = “not well at all” to 4 = “very well.” <sup>c</sup>1 = “never” to 5 = “always.” <sup>d</sup> $p = .006$ .

**Table 3.** Children's General Health, Emotional Difficulties, Coping Behavior, and Learning Behavior: Different-Sex Parent Versus Same-Sex Parent Households

	Mean (SD)	95% CI		Cohen's $ d $
		Lower CI	Upper CI	
General health <sup>a</sup>				
Household type				.07
Different-sex parents	4.58 (0.72)	4.44	4.72	
Same-sex parents	4.63 (0.64)	4.49	4.77	
Child gender				.07
Girl	4.58 (0.66)	4.44	4.73	
Boy	4.63 (0.69)	4.50	4.76	
Household type × child gender				
Girl				.18
Different-sex parents	4.52 (0.67)	4.32	4.73	
Same-sex parents	4.64 (0.66)	4.43	4.85	
Boy				.03
Different-sex parents	4.64 (0.76)	4.46	4.83	
Same-sex parents	4.62 (0.63)	4.44	4.81	
Emotional difficulties <sup>b</sup>				
Household type				.05
Different-sex parents	1.93 (0.78)	1.78	2.09	
Same-sex parents	1.97 (0.73)	1.82	2.12	
Child gender				.26
Girl	2.05 (0.73)	1.89	2.21	
Boy	1.86 (0.76)	1.71	2.00	
Household type × child gender				
Girl				.14
Different-sex parents	2.00 (0.66)	1.77	2.23	
Same-sex parents	2.10 (0.79)	1.87	2.32	
Boy				.03
Different-sex parents	1.87 (0.86)	1.66	2.07	
Same-sex parents	1.85 (0.66)	1.65	2.05	
Coping behavior <sup>b</sup>				
Household type				.34
Different-sex parents	3.93 (0.82)	3.77	4.09	
Same-sex parents	3.66 (0.78)	3.50	3.82	
Child gender				.12
Girl	3.85 (0.81)	3.67	4.02	
Boy	3.75 (0.81)	3.59	3.90	
Household type × child gender				
Girl				.58
Different-sex parents	4.07 (0.71)	3.83	4.31	
Same-sex parents	3.62 (0.85)	3.38	3.86	
Boy				.11
Different-sex parents	3.79 (0.88)	3.58	4.01	
Same-sex parents	3.70 (0.72)	3.48	3.91	

*(Table continues)*

**Table 3.** Continued

	Mean (SD)	95% CI		Cohen's <i>d</i>
		Lower CI	Upper CI	
Learning behavior <sup>b</sup>				
Household type				
Different-sex parents	4.33 (0.61)	4.21	4.45	.13
Same-sex parents	4.25 (0.60)	4.13	4.37	
Child gender <sup>c</sup>				
Girl	4.39 (0.58)	4.26	4.52	.34
Boy	4.19 (0.61)	4.08	4.31	
Household type × child gender				
Girl				
Different-sex parents	4.51 (0.35)	4.33	4.69	.43
Same-sex parents	4.27 (0.72)	4.09	4.45	
Boy				
Different-sex parents	4.15 (0.71)	3.99	4.31	.15
Same-sex parents	4.24 (0.49)	4.08	4.40	

Post hoc power analyses—household type: 1-β error probability = .492 and  $f^2 = 0.034$  (N = 190,  $p < .05$ ), child gender: 1-β error = .860 and  $f^2 = 0.074$  (N = 190,  $p < .05$ ), and household type × child gender: 1-β error probability = .676 and  $f^2 = 0.032$  (N = 190,  $p < .05$ ). <sup>a</sup>1 = “poor” to 5 = “excellent.” <sup>b</sup>1 = “never” to 5 = “always.” <sup>c</sup> $p = .024$ .

child outcomes in same-sex parent families is associated with increased parenting stress.<sup>2,6</sup>

It should be noted that the effect size for differences in parenting stress for same- and different-sex parents in the present study was modest.<sup>26</sup> G\*Power version 3.1.9.1 was used to conduct post hoc power analyses ( $\alpha = .05$ ).<sup>27</sup> Analyses revealed adequate power (1-β error probability = .715) to detect a moderate effect size for a multivariate analysis of variance (MANOVA) comparison of the 2 groups on the family relationships and parenting stress variables, although the statistical power for the MANOVA assessing differences between the 2 household types on the 4 child outcome variables was low (1-β error probability = .492). Power analyses for the 4 regression analyses also showed an adequate power (1-β error probability is between .890 and 1.000).

The findings on the child outcomes are in line with the results of other population-based studies<sup>8,11-13</sup> comparing children with same- and different-sex parents that, like this investigation, either matched the 2 groups<sup>8,11,12</sup> or accounted for family stability.<sup>13</sup> The observed similarity in child outcomes by household type is also consistent with numerous studies of lesbian- and gay-parent families using convenience- and/or fertility clinic-based samples,<sup>2,5-7</sup> although the convenience-based US NLLFS found that adolescents reared by lesbian mothers demonstrated more competencies and fewer behavioral problems than the normative sample of same-age youth<sup>4</sup> and the Dutch Longitudinal Lesbian Family Study found that adolescent offspring of lesbian mothers had higher self-esteem than peers in different-sex parent families.<sup>28</sup> The present study contributes to the mounting evidence that children reared by same-sex parents fare at least as well as those reared by

different-sex parents on a variety of measures used to assess psychological adjustment.<sup>2,6,8</sup>

The NSCH<sup>17</sup> did not collect information about the source of the sperm used for conceiving the children of same-sex mothers. It is conceivable that there might be differences in family relationships, parenting stress, or child outcomes associated with whether the sperm donor was known (i.e., a friend, acquaintance, or relative of the mother) or unknown (either open-identity, meaning that donor information will be available once the offspring reaches the age of 18, or unknown/anonymous). Yet, no differences in psychological adjustment or quality of life were found when 17-year-old NLLFS adolescents with known and unknown donors were compared.<sup>4,29</sup> In addition, the NLLFS mothers' satisfaction with the type of donor chosen (known, open-identity, or unknown) was unrelated to psychological health problems in the adolescent offspring.<sup>29</sup>

It is noteworthy that 68% of NSCH same-sex parents with 6- to 17-year-old children were continuously coupled. By the time the NLLFS offspring had reached the age of 10 (comparable to the mean age of children in the present study), no significant differences were found in relationship duration when separated NLLFS mothers were compared with their own heterosexual sisters who were divorced and also parents.<sup>25</sup> Longitudinal, population-based studies are needed to explore parental relationship (dis)continuity in same- and different-sex parent households during the time that the children are living at home.

A strength of the current investigation is that the data were drawn from a population-based survey on children's health that was not described to participants as a study of same-sex parent families,<sup>17</sup> thus minimizing

**Table 4.** Linear Regression of Household Type, Family Relationships, and Parenting Stress vis-à-vis Children's General Health, Emotional Difficulties, Coping Behavior, and Learning Behavior

	B	SE	95% CI		p	F	p	R <sup>2</sup>
			Lower CI	Upper CI				
General health <sup>a</sup>						2.63	.013	.09
Household type <sup>b</sup>	0.02	0.05	-0.08	0.12	.725			
Spouse/partner relationship <sup>c</sup>	0.02	0.07	-0.12	0.16	.773			
Parent-child relationship <sup>d</sup>	0.31	0.09	0.12	0.50	.001			
Parenting stress <sup>e</sup>	-0.01	0.09	-0.17	0.16	.946			
Household type × spouse/partner relationship	0.11	0.07	-0.03	0.25	.139			
Household type × parent-child relationship	-0.06	0.09	-0.25	0.13	.533			
Household type × parenting stress	-0.10	0.09	-0.27	0.07	.248			
Emotional difficulties <sup>e</sup>						4.68	<.0001	.15
Household type <sup>b</sup>	-0.02	0.05	-0.12	0.09	.749			
Spouse/partner relationship <sup>c</sup>	-0.16	0.08	-0.31	-0.01	.032			
Parent-child relationship <sup>d</sup>	-0.28	0.10	-0.48	-0.08	.006			
Parenting stress <sup>e</sup>	0.24	0.09	0.07	0.42	.008			
Household type × spouse/partner relationship	-0.02	0.08	-0.17	0.13	.793			
Household type × parent-child relationship	-0.10	0.10	-0.30	0.10	.321			
Household type × parenting stress	-0.01	0.09	-0.19	0.17	.936			
Coping behavior <sup>e</sup>						7.27	<.0001	.22
Household type <sup>b</sup>	-0.06	0.06	-0.17	0.05	.293			
Spouse/partner relationship <sup>c</sup>	0.04	0.08	-0.12	0.19	.637			
Parent-child relationship <sup>d</sup>	0.24	0.10	0.03	0.44	.024			
Parenting stress <sup>e</sup>	-0.43	0.09	-0.62	-0.25	<.0001			
Household type × spouse/partner relationship	-0.02	0.08	-0.18	0.13	.752			
Household type × parent-child relationship	0.03	0.10	-0.18	0.23	.796			
Household type × parenting stress	-0.00	0.09	-0.19	0.18	.965			
Learning behavior <sup>e</sup>						7.35	<.0001	.22
Household type <sup>b</sup>	0.01	0.04	-0.07	0.09	.765			
Spouse/partner relationship <sup>c</sup>	0.04	0.06	-0.08	0.16	.507			
Parent-child relationship <sup>d</sup>	0.19	0.08	0.04	0.35	.014			
Parenting stress <sup>e</sup>	-0.31	0.07	-0.45	-0.17	<.0001			
Household type × spouse/partner relationship	-0.03	0.06	-0.14	0.09	.624			
Household type × parent-child relationship	-0.01	0.08	-0.17	0.14	.857			
Household type × parenting stress	-0.07	0.07	-0.20	0.07	.348			

Post hoc power analyses—general health: 1-β error probability = .890 and  $f^2 = 0.099$  (N = 187,  $p < .05$ ), emotional difficulties: 1-β error probability = .999 and  $f^2 = 0.210$  (N = 187,  $p < .05$ ), coping behavior: 1-β error probability = 1.000 and  $f^2 = 0.331$  (N = 187,  $p < .05$ ), and learning behavior: 1-β error probability = 1.000 and  $f^2 = 0.378$  (N = 187,  $p < .05$ ). <sup>a</sup>1 = “poor” to 5 = “excellent.” <sup>b</sup>-1 = different-sex parent household, +1 = same-sex parent household. <sup>c</sup>1 = “not too happy” to 4 = “completely happy.” <sup>d</sup>1 = “not well at all” to 4 = “very well.” <sup>e</sup>1 = “never” to 5 = “always.”

potential bias. In addition, there are also limitations. First, face-to-face interviews with multiple sources would have provided more comprehensive family assessments. Second, the small number of male same-sex coparents in the NSCH precluded our including them in the analysis. Future studies that collect larger sample sizes will allow more comprehensive analytic techniques (e.g., structural equations modeling). A third limitation was that income data were missing for nearly all continuously coupled same-sex coparents in the NSCH; thus, parental education, which is highly correlated with income,<sup>30</sup> was the prin-

cipal measure of socioeconomic status. Furthermore, as is often the case in large-scale surveys,<sup>31</sup> most studied topics could only be assessed through single-item NSCH questions that were narrowly construed.<sup>17</sup> Reliability may have been increased if all dependent measures had consisted of multiple-item questions. In addition, the NSCH contained no questions about the sexual orientation of the respondent. A limitation of population-based surveys in general is that they yield extremely small numbers of nonheterosexual individuals,<sup>32</sup> often because sexual orientation questions are not asked.



Despite these limitations, this NSCH-based study makes a unique contribution to the literature through a comparison of family relationships, parenting stress, and children's general health, emotional difficulties, coping behavior, and learning behavior in a sample of female continuously coupled same-sex parents with biological offspring matched to continuously coupled different-sex parents with biological offspring. Our analyses reveal that although female same-sex parents acknowledge more parenting stress, their children demonstrate no differences in general health, emotional difficulties, coping behavior, and learning behavior from children reared in different-sex parent households. These findings are relevant to clinicians, public policy analysts, litigators, and legislators who are consulted on matters pertaining to same-sex parent families.

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## REFERENCES

- Gates GJ. *LGB Families, Relationships: Analyses of the 2013 National Health Interview Survey*. Los Angeles, CA: Williams Institute, UCLA School of Law; 2014. Available at: <http://williamsinstitute.law.ucla.edu/wp-content/uploads/lgb-families-nhis-sep-2014.pdf>. Accessed June 15, 2015.
- Golombok S. *Modern Families Parents and Children in New Family Forms*. Cambridge, United Kingdom: Cambridge University Press; 2015.
- Perrin EC, Siegel BS, Pawelski JG, et al. Promoting the well-being of children whose parents are gay or lesbian. *Pediatrics*. 2013;131:827-830.
- Gartrell N, Bos HMW. The US national longitudinal lesbian family study: psychological adjustment of the 17-year-old adolescents. *Pediatrics*. 2010;126:1-9.
- Vanfraussen K, Ponjaert-Kristoffersen I, Brewaeys A. Family functioning in lesbian families created by donor insemination. *Am J Orthopsychiatry*. 2003;73:78-90.
- Goldberg AE. *Lesbian, Gay Parents and Their Children: Research on the Family Life Cycle*. Washington, DC: American Psychological Association; 2010.
- Bos HMW, Van Balen F, Van den Boom DC. Child adjustment and parenting in planned lesbian-parent families. *Am J Orthopsychiatry*. 2007;77:38-48.
- Wainright JL, Russell ST, Patterson CJ. Psychosocial adjustment, school outcomes, and romantic relationships of adolescents with same-sex parents. *Child Dev*. 2004;75:1886-1898.
- Golombok S, Badger S. Children raised in mother-headed families from infancy: a follow-up of children of lesbian and heterosexual mothers, at early adulthood. *Hum Reprod*. 2010;25:150-157.
- Golombok S, Perry B, Burston A, et al. Children with lesbian parents: a community study. *Dev Psychol*. 2003;39:20-33.
- Rosenfeld MJ. Nontraditional families and childhood progress through school. *Demography*. 2010;47:755-775.
- Rosenfeld MJ. Reply to Allen et al. *Demography*. 2013;50:963-969.
- Potter D. Same-sex parent families and children's academic achievement. *J Marriage Fam*. 2012;556:556-571.
- Brief of Amicus Curiae American Sociological Association in Support of Petitioners. Washington, DC: Supreme Court of the United States. 2015. 14-556, 14-571, 14-574. Available at: [http://www.asanet.org/documents/ASA/pdfs/ASA\\_March\\_2015\\_Supreme\\_Court\\_Marriage\\_Equality\\_Amicus\\_Brief.pdf](http://www.asanet.org/documents/ASA/pdfs/ASA_March_2015_Supreme_Court_Marriage_Equality_Amicus_Brief.pdf). Accessed June 15, 2015.
- Sullins DP. Child attention-deficit hyperactivity disorder (ADHD) in same-sex parent families in the United States: prevalence and comorbidities. *Br J Med Res*. 2015;6:987-998.
- Sullins DP. Emotional problems among children with same-sex parents: difference by definition. *BJESBS*. 2015;7:99-120.
- National Center for Health Statistics Division for Health Interview Statistics. *National Survey of Children's Health Quarter 1*. Hyattsville, MD: National Center for Health Statistics Division for Health Interview Statistics; 2012:1-126. Available at: <http://www.cdc.gov/nchs/data/slaits/2011nschquestionnaire.pdf>. Accessed June 15, 2015.
- National Center for Health Statistics Division for Health Interview Statistics. *Frequently Asked Questions 2011-2012 National Survey of Children's Health*. Available at: <http://www.cdc.gov/nchs/slaits/nsch.htm>. Accessed June 15, 2015.
- National Center for Health Statistics Research Data Center. *National Survey of Children's Health*. Available at: <http://www.cdc.gov/nchs/slaits/nsch.htmq>. Accessed: June 2015.
- Klein-Geltink JE, Rochon PA, Dyer S, et al. Readers should systematically assess methods used to identify, measure and analyze confounding in observational cohort studies. *J Clin Epidemiol*. 2007;60:766-772.
- Rothman KJ, Hatch E. *An Introduction: Epidemiology*. New York, NY: Oxford University Press; 2002.
- National Center for Health Statistics Research Data Center. *Disclosure Manual. Preventing Disclosure. Rules for Researchers*. 2012. Available at: <http://www.cdc.gov/rdc/Data/B4/DisclosureManual.pdf>. Accessed June 2015.
- National Center for Health Statistics Research Data Center. *Confidentiality and Security of Information Collected by the National Center for Health Statistics*. Available at: <http://www.cdc.gov/nchs/about/policy/confidentiality.htm>. Accessed June 15, 2015.
- Bos HM, Gartrell N. Adolescents of the U.S. national longitudinal lesbian family study: can family characteristics counteract the negative effects of stigmatization? *Fam Process*. 2010;49:559-572.
- Gartrell N, Rodas C, Deck A, et al. The USA national lesbian family study: 5. Interviews with mothers of ten-year-olds. *Fem Psychol*. 2006;16:175-192.
- Cohen J. *Statistical Power Analysis for the Behavioral Sciences*. 2nd ed. New Jersey, NJ: Lawrence Erlbaum; 1988.
- Faul F, Erdfelder E, Buchner A, et al. Statistical power analyses using G\*Power3.1: tests for correlation and regression analyses. *Behav Res Methods*. 2009;41:1149-1160.
- Bos H, van Gelderen L, Gartrell N. Lesbian and heterosexual two-parent families: adolescent-parent relationship quality and adolescent well-being. *J Child Fam Stud*. 2014;24:1031-1046.
- Gartrell NK, Bos H, Goldberg NG, et al. Satisfaction with known, open-identity, or unknown sperm donors: reports from lesbian mothers of 17-year-old adolescents. *Fertil Steril*. 2015;103:242-248.
- U.S. Census Bureau. *Historical Income Tables—Households*. Available at: <http://www.census.gov/hhes/income/histinc/h13.html>. Accessed June 15, 2015.
- Cheung F, Lucas RE. Assessing the validity of single-item life satisfaction measures: results from three large samples. *Qual Life Res*. 2014;23:2809-2818.
- Prickett KC, Martin-Storey A, Crosnoe R. A research note on time with children in different- and same-sex two-parent families. *Demography*. 2015;52:905-918.