Mothers' Sexual Identity and Children's Health

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Abstract

Sexual minority women face a plethora of structural, socioeconomic, and interpersonal disadvantages and stressors. Research has established negative associations between women's sexual minority identities and both their own health and their infants' birth outcomes. Yet a separate body of scholarship has documented similarities in the development and well-being of children living with same-sex couples relative to those living with similarly situated different-sex couples. This study sought to reconcile these literatures by examining the association between maternal sexual identity and child health at ages 5–18 using a US sample from the full population of children of sexual minority women, including those who identify as mostly heterosexual, bisexual, or lesbian, regardless of partner sex or gender. Analyses using data from the National Longitudinal Study of Adolescent to Adult Health ($N=8978$) followed women longitudinally and examined several measures of their children's health, including general health and specific developmental and physical health conditions. Analyses found that children of mostly heterosexual and bisexual women experienced health disadvantages relative to children of heterosexual women, whereas the few children of lesbian women in our sample evidenced a mixture of advantages and disadvantages. These findings underscore that to understand sexual orientation disparities and the intergenerational transmission of health, it is important to incorporate broad measurement of sexual orientation that can capture variation in family forms and in sexual minority identities.

Keywords Health disparities · Sexual orientation · Sexual minority · Child health · Add Health

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Introduction

A growing body of research has aimed to document children's experiences in the context of lesbian, gay, bisexual, transgender, and queer (LGBTQ) families (Reczek, 2020). A large proportion of LGBT individuals in the United States are parents: Six million adults and children report having a LGBT parent (Gates, 2011), and more than a quarter of households headed by a female-female couple have a child under 18 in the household (Gates, 2011). It is unlikely that the proportion of LGBT adults having children will decrease, and it may continue to increase, for at least two reasons. First, there have been increases in same-sex behavior and identification in recent years (England et al., 2016). Second, pregnancy rates among sexual minorities—people who identify as mostly heterosexual, bisexual, or lesbian or report same-sex behavior or attraction—will continue to increase. In a 2007 community-based study, 91% of sexual minority women reported seeing themselves having children in the future (D'Augelli et al., 2007).

A burgeoning literature has documented disadvantages in sexual minority women's health (Austin et al., 2013; Fredriksen-Goldsen et al., 2013; Hughes, 2011; McCabe et al., 2019) and that of their newborn children (Everett et al., 2019, 2021). At the same time, a separate literature has shown that living with same-sex parents typically does not disadvantage, and sometimes advantages, children's development (Adams & Light, 2015). The literature on sexual orientation disparities in health and well-being must reconcile these disparate sets of findings, considering both measurement-oriented and substantive issues. We do that here by focusing on the developmental and physical health of sexual minority women's biological children, which can serve as a link between maternal and infant health and broader child development and academic achievement. Health in childhood and adolescence is fundamental both for school readiness and for future health and socioeconomic attainment (Crosnoe, 2006; Haas, 2007, 2008). We apply a broader-based measurement strategy for maternal sexual identity than many past studies of children of sexual minority women have done. Population-level research has yet to examine the health of children and teenagers of the full range of sexual minority women, and we aim to address this goal.

In this study, we examine how having a mother who identifies as a sexual minority (mostly heterosexual, bisexual, or lesbian) is related to a set of children's health outcomes that includes both overarching and specific measures of general, developmental, and physical health. Using individual sexual identity, rather than gender of partner, as the indicator of sexual minority status is important for several reasons. First, studies have shown that mostly heterosexual and bisexual women experience minority stress, including higher levels of discrimination and victimization than exclusively heterosexual women (Bostwick et al., 2015; Vrangalova & Savin-Williams, 2014). Many bisexual and mostly heterosexual women, however, partner with men, and thus have largely been excluded from previous research in this area. Second, research has shown that bisexual and mostly heterosexual women face additional and unique sources of minority stress as they struggle to be accepted in either heterosexual or queer communities

(Bostwick, 2012; Klesse, 2011), potentially leading to greater disadvantages as they lack the social support networks established among lesbian women (Farr & Patterson, 2013; Patterson & Riskind, 2010). Finally, using identity as a measure allows us to incorporate unpartnered sexual minority women. Single mothers face a unique set of challenges both during pregnancy and while parenting (Broussard, 2010). The exclusion of single sexual minority women from the literature may obscure important gaps in children's health equity and therefore limit our ability to develop inclusive public health policy reforms.

Literature Review

Sexual Orientation Disparities in Health Among Mothers and Children

Research has documented substantial sexual orientation disparities in maternal health and infants' health outcomes at birth (e.g., low birth weight, preterm birth), as well as identifying variation in these disparities within groups of sexual minority women; e.g., women who do not identify as "exclusively heterosexual" or who report same-sex attraction or same-sex sexual or romantic relationships (Everett et al., 2019, 2021). Given that both health and social disadvantages are transmitted intergenerationally (Augustine et al., 2009; Cook et al., 2019; Elder, 1994), there is little reason to believe that the effect on a child of having a sexual minority mother—with the attendant discrimination and stress that experience brings—ends at the time of birth.

Some previous research has examined the health of children in different-sex versus same-sex married and cohabiting households, with mixed findings on the presence of health disparities and the degree to which underlying sociodemographic factors explain them (Cenegy et al., 2018; Reczek et al., 2016, 2017). Yet children living with same-sex couples constitute a select minority of all children of sexual minority women. They are a nonrepresentative group for several reasons. Children of same-sex parents are more likely to be planned and conceived either through the use of assisted reproductive technologies or adoption, both of which are costly and likely indicate higher parental socioeconomic status. Increasingly, studies have shown that some sexual minority women, particularly bisexual women, are more likely to report unintended pregnancies than their heterosexual peers (Charlton et al., 2019; Everett et al., 2017, 2020; Goldberg et al., 2016). These children are likely to be excluded from studies that use the gender of one's partner as an indicator of sexual minority status. Research that includes the full range of children of sexual minority women—including those living with different-sex parents and with single parents—is needed to understand the relationship between maternal sexual identity and child health (Reczek, 2020).

Cumulative disadvantage processes in health suggest that early insults to a child's health will result in later disparities (Goosby et al., 2016; Haas, 2007). Beyond path-dependent processes related to health in early life, new experiences during childhood related to having a sexual minority mother are also likely to influence children's health. LGB parents may experience supportive or unsupportive legal and

policy contexts that affect their well-being and livelihood and those of their children (Farr & Vázquez, 2020; Goldberg et al., 2011, 2020); the social support provided by their extended family and social networks may be shaped by their sexual orientation (Corrigan & Matthews, 2003; Ryan et al., 2015); and experiences of minority stress related to discrimination, stigma, and other processes may affect them and their children in a multitude of ways (Farr & Patterson, 2013; Goldberg et al., 2011; Meyer, 1995; Trub et al., 2017).

Same-Sex Parents and Child Development

Other research has shown that children raised by same-sex parents fare as well as, if not better than, those raised by different-sex parents (adams & Light, 2015; McNamara, 2019; Patterson, 1995). A growing body of scholarship has focused on the development of children living with same-sex couples, comparing them to children with similar family structures and sociodemographic backgrounds but with different-sex parents. This work has tended to find either no differences between these groups of children or advantages favoring children raised by same-sex couples (Mazrekaj et al., 2020; Reczek, 2020). Generally, research has identified that after accounting for sociodemographic differences, there are few differences between children raised by lesbian and heterosexual parents including measures of self-esteem, quality of life, psychological adjustment, and social functioning (adams & Light, 2015; Goldberg et al., 2014). Scholarship on the interpersonal dynamics of same-sex couples suggests particular strengths in terms of emotional and practical support relative to different-sex couples (Reczek & Umberson, 2012, 2016). For these reasons, it is possible that despite preexisting health disadvantages in infancy, we may find nonsignificant or positive associations between maternal sexual minority identity and child health. Again, however, these studies focus on a limited subset of sexual minority families and do not capture the diversity of sexual minority women who have given birth and raised children.

Pathways from Maternal Sexual Identity to Child Health

Building on these literatures, we articulate four pathways through which maternal sexual minority status may shape children's health. Given the conflicting findings in extant literatures, a negative relationship between maternal sexual minority identity and child health is by no means assumed. We view the four articulated pathways as conceptually distinct but not mutually exclusive—instead, we expect that all four likely operate on child health simultaneously. Although our data allow only for indirect testing of the pathways, they provide important context for the analysis.

The first is a *cumulative disadvantage pathway through earlier maternal and infant health* (Cook et al., 2019; DiPrete & Eirich, 2006; Ferraro & Kelley-Moore, 2003). Sexual minority women experience socioeconomic and health disadvantages both before getting pregnant and in the preconception period (Everett et al., 2017, 2020, 2016a, 2016b; Gonzales et al., 2019; Limburg et al., 2020), and for some groups, their infants' birth outcomes are compromised (Everett et al., 2019). These

earlier measures of health are expected to negatively influence health later in childhood (Boardman et al., 2002; Goosby et al., 2016).

The second pathway occurs during childhood, as *sexual minority mothers experience discrimination, stigma, and minority stressors that can create new insults to their children's health*. Mothers' negative experiences can lead to socioeconomic and material disadvantages (Mollborn & Everett, 2015; Ueno et al., 2013; Walsemann et al., 2014), as well as stressors and strains that may influence family interactions (Masarik & Conger, 2017), and maternal health behaviors and depression (Everett, et al., 2016a, 2016b; Lehavot & Simoni, 2011). These experiences may impact their children's health (Bandiera et al., 2011; Casey et al., 2004).

Third, *children of sexual minority mothers may themselves be more likely to experience discrimination, stigma, and related processes* such as bullying, which would be expected to negatively influence their health. Problematic levels of homophobia and homophobia-related bullying have been identified in schools (Hong & Garbarino, 2012), although less research has focused on the experiences of children of sexual minority mothers. To date, findings are still conflicting as to whether children of sexual minority parents experience higher rates of bullying relative to their peers (Goldberg & Gartrell, 2014).

A fourth pathway—which draws on a separate literature described above—may operate in the opposing direction, offering *protections from health insults to children who live with same-sex parents*. A growing body of work has documented virtually no disparities in the health and developmental well-being of children raised by same-sex parents (for reviews, see Biblarz & Savci, 2010; Stacey & Biblarz, 2001). Research suggests that same-sex couples' interpersonal dynamics can provide stronger practical and emotional support and a more equitable division of labor compared to different-sex partners (Reczek & Umberson, 2012, 2016), which may translate into protections for the health of children who live with same-sex couples.

All of these pathways may well operate simultaneously, with new health disadvantages or advantages layered onto cumulative disadvantages resulting from earlier maternal and infant health statuses.

Disparities Between Sexual Minority Identities

Sexual minority women's identities and experiences differ, so the types of health disadvantages experienced by their children are expected to vary by the mother's sexual identity (e.g., bisexual versus lesbian). Although there is a growing body of work focused on the health and well-being of sexual minority women and their children, there has been considerably more attention paid to lesbians in same-sex relationships than to other sexual minority women. This is of importance because research has shown that a large proportion of children in LGB families were conceived in the context of different-sex relationships (Gates, 2011, 2013; Tasker, 2013). Additionally, parenting is significantly more prevalent for bisexual women (Gates, 2013), with 59% of bisexual women reporting having had children compared to 31% of lesbian women. Bisexual and mostly heterosexual women are important

groups to study alongside lesbian women (Power et al., 2012; Ross & Dobinson, 2013), but they may not be sufficiently captured in literatures that examine children living with same-sex couples. It remains to be seen whether such children may experience advantages in health relative to children of mothers from less visible sexual minority groups.

A lack of adequate data, especially using population-representative samples, has limited the availability of research on the relationship between parental sexual minority status and child outcomes. Using newly released US data from the National Longitudinal Study of Adolescent to Adult Health, this study provides innovative analyses that analyze longitudinal data following sexual minority women and their children over the course of nearly 20 years. To the best of our knowledge, our findings provide the first population-representative estimates of the association between maternal sexual identity and children's health.

The theoretical pathways articulated above suggest that different maternal sexual minority identities may yield different child outcomes. If lesbian mothers are more likely to live with a female partner, then their children may evince more favorable health outcomes than those for children of bisexual and mostly heterosexual mothers. If birth outcomes are an important mechanism through which maternal sexual identity shapes child health, then children of lesbian and bisexual mothers could be expected to have more negative health outcomes than others (Everett et al., 2019). Theory would suggest, but research has not documented, that this might be because lesbian and bisexual women face more minority stress, discrimination, and stigma than heterosexual and mostly heterosexual women. Although due to data limitations we could not document each of these potential pathways, our findings can speak indirectly to which mechanisms may be at work. We did not have *a priori* expectations about differences in the implications of maternal sexual identity across different measures of child health.

Methods

Data

This study analyzed data from the National Longitudinal Study of Adolescent to Adult Health (Add Health). The initial Add Health sample was drawn from 80 high schools and 52 middle schools throughout the United States with unequal probabilities of selection (Harris, 2011). A subsample of students ($n = 20,745$) were asked to complete additional in-home survey interviews during the 1994–1995 school year, then contacted for follow-up interviews in 2001–2002 (Wave III), 2007–2008 (Wave IV), and 2016–2018 (Wave V). Response rates were 80.3% and 69.3% for Waves IV and V, respectively. Wave IV and V data are important for understanding the relationship between maternal characteristics and child health, as they provide comprehensive health information for all children of women in the sample. Our dataset took children as the unit of analysis, allowing us to analyze child health as a function of maternal demographic characteristics.

Analytic Sample

Our analytic sample was restricted to the following criteria: (1) singleton-birth biological children, (2) children between the ages of 5 and 18 at the time of survey (Wave IV or V), and 3) children whose mothers responded to the child health questions at Wave IV or V ($n=9930$). Our sample was restricted to children who were between the ages of 5 and 18 because some health conditions may not yet be apparent in early childhood. 662 cases were excluded due to missing valid sample weights. Another 234 children were excluded who had missing data on covariates. We also excluded children who were missing mother's sexual identity at time of survey ($n=56$). Our analytic sample size was 8978 children born to 4800 women.

Measures

Table 1 reports all measures used in analyses, including descriptive statistics.

Dependent Variables

Child health was analyzed using eight mother-reported measures. Based on both human and animal models, previous research has demonstrated a negative relationship between prenatal maternal stress and children's health outcomes (Beydoun & Saftlas, 2008; Dunkel Schetter, 2011; Entringer et al., 2015). A number of health conditions have been identified as being impacted by prenatal maternal stress, including various cognitive and developmental delays (Dunkel Schetter, 2011), ADHD (Beydoun & Saftlas, 2008; Talge et al., 2007), and asthma and allergies (Andersson et al., 2016). Additionally, theory suggests that prenatal maternal stress may also shape child metabolic function and potential obesity (Entringer et al., 2012). We analyzed these outcomes here.

There were two primary outcomes, both measuring child health in a general way. First, mothers reported their child's *general health status*, ranging from poor to excellent, in response to the question: "In general, how good is this child's health?" Our analyses compared poor, fair, or good health (referent) to very good or excellent health. Second, *no conditions* was coded as not having been told by a doctor that the child had ever had any of the conditions asked about on the survey. This measure included the specific health conditions listed below, as well as breathing conditions, chronic heart conditions, sickle cell anemia, epilepsy, orthopedic problems, cerebral palsy, cystic fibrosis, cancer, hemophilia, HIV/AIDS, diabetes, uncorrected vision problems, hearing problems or deafness, and other conditions requiring a specialist.

Six secondary, more specific measures of child health in the developmental and physical domains captured dichotomous responses to the following question: "Has a doctor ever told you that this child has or had any of these conditions?" Three outcomes were developmental. For *developmental delay*, mothers were asked if their child has ever had "a developmental delay or slowness in learning." Second, *delayed speech* captured whether a child ever had "delayed speech or

Table 1 Descriptive statistics (means, percentages, and proportions) for analytic sample stratified by maternal sexual identity

	Heterosexual	Mostly heterosexual	Bisexual	Lesbian
Control variables				
Sample size ($n=8978$)	7403	1307	228	40
Maternal age (years)	24.74	24.22*	22.55*	25.03
Child age (years)	9.28	9.21	9.59*	9.50*
Maternal race/ethnicity				
White/other	0.70	0.80*	0.71	0.58*
Black	0.19	0.10*	0.15	0.17
Hispanic	0.11	0.10	0.13	0.26*
Relationship status				
Dating/just friends	0.26	0.26	0.31*	0.45*
Married/cohabitating	0.74	0.74	0.69*	0.55*
Education				
< High school/High school degree	0.25	0.24	0.48*	0.25
Some college/> BA degree	0.75	0.76	0.52*	0.75
Household income				
< \$25 k	0.35	0.31*	0.55*	0.44*
≥ 25 k; < 50 k	0.29	0.32*	0.20*	0.27
≥ 50 k	0.33	0.36*	0.12*	0.18*
Missing	0.03	0.02*	0.13*	0.11*
Preterm birth	0.12	0.12	0.11*	0.04*
Low birth weight	0.08	0.08	0.09*	0.01*
Child health outcomes				
Sample size ($n=8930$)	7364	1299	228	39
Child health (E/VG; G/F/P binary)	92.96%	91.93%*	82.08%*	81.77%*
Sample size ($n=8978$)	7403	1307	228	40
No conditions	59.45%	50.24%*	51.29%*	50.65%*
Developmental delay	3.70%	5.13%*	8.42%*	7.51%*
Delayed speech	6.06%	7.63%*	8.89%*	0.19%*
ADHD	7.13%	10.94%*	11.46%*	5.76%*
Obesity	0.96%	1.85%*	4.54%*	4.74%*
Allergies/hay fever	13.99%	21.42%*	15.08%	4.53%*
Asthma	12.20%	15.00%*	18.75%*	19.23%*

Data Source: National Longitudinal Study of Adolescent to Adult Health (Add Health)

Each sexual minority identity was compared with confidence intervals for children of heterosexual women; * $p < .05$

$N=8978$ for all controls; 8930 for parent-reported health status; 8978 for all other health outcomes

other problems with speaking or understanding.” The third item captured *ADHD* (attention-deficit/hyperactivity disorder) diagnosis. Other items captured physical health, including *obesity*, *allergies* (whether their child ever had allergies or hay fever, not including allergic reactions to medications), and *asthma*.

Children with valid health information at Wave IV who were between the ages of 5 and 18 at time of survey had their Wave IV health information included in the sample. We then supplemented these cases with additional children between the ages of 5 and 18 who reported valid health information at Wave V. If children were between 5 and 18 at both waves, we relied on their Wave IV health information.

Independent Variables

All variables came from the same wave as the child's health information. For *sexual identity*, mothers were asked: "Please choose the description that that best fits how you think about yourself: 100% heterosexual (straight); mostly heterosexual (straight), but somewhat attracted to people of your own sex; bisexual, that is, attracted to men and women equally; mostly homosexual (gay), but somewhat attracted to people of the opposite sex; 100% homosexual (gay); or not sexually attracted to either males or females." Women were classified as having identified as heterosexual (referent), mostly heterosexual, bisexual, or lesbian/gay (which also included mostly lesbian/gay).

We used sexual identity measured at the time of survey (Wave IV or V) to capture the mother's sexual identity when the child's health information was reported, rather than identities reported before the child's birth. Supplemental analyses (reported below) compared this measure to a measure of a mother ever reporting a sexual minority identity. This measure was coded as three dichotomous, not mutually exclusive measures of ever having reported a: (1) mostly heterosexual identity, (2) bisexual identity, and (3) lesbian identity (measured at Waves III, IV, and V).

We included several *control variables*. Some small categories of responses were collapsed in order to preserve statistical power given small sample sizes for some sexual minority groups. *Maternal age at the child's birth* and *child age at survey* were measured in years. *Maternal race/ethnicity* was measured as a three-category variable, including non-Hispanic white or other race (referent), non-Hispanic Black, and Hispanic. *Educational attainment* at time of survey reported the mother's highest educational degree, coded as a high school degree or less (referent) versus some college or more. *Household income* at time of survey was coded as a four-category measure including: less than \$25,000 (referent), between \$25,000 and \$50,000, at least \$50,000, and missing. Supplemental analyses found that the indicator of missing income was not significant in our multivariate models. *Maternal relationship status*, created from a variable assessing relationship status with the pregnancy partner at the time of birth, was a binary indicator of being married or cohabitating (referent) or not (e.g., dating, just friends).

Birth outcomes have been shown to be related to adverse child health and are potential mechanisms through which maternal sexual identity could shape child health. *Preterm birth* indicated whether the child was born at less than 37 weeks' gestation (1=yes, 0=no). *Low birth weight* used the clinical cutoff for low birth weight births, indicating whether the child weighed less than 2500 g at birth (1=yes, 0=no). We initially included a control for maternal nativity; however, this control was not significant in any of our model specifications. Therefore, it was omitted to

improve statistical power, which was limited by small sample sizes for some categories of sexual minority women.

Analytic Strategy

First, we provided descriptive statistics for the analytic sample stratified by maternal sexual identity. We compared each mean or proportion among children with mothers from different sexual minority categories to the 95% confidence intervals for the children of heterosexual women. Second, we estimated multilevel random effect logistic regression models predicting child health measures as a function of mother's sexual identity. These models analyzed children as level 1 and mothers as level 2, effectively adjusting for the clustering of children within women.¹ Model 1 was an unconditional model estimating the relationship between sexual identity and each child health outcome. Model 2 included controls for maternal age, child age, maternal race/ethnicity, maternal relationship status, and education. Model 3 added the potential mechanism of birth outcomes. Finally, we calculated predicted likelihoods comparing otherwise average cases across maternal sexual identity. All analyses were weighted and adjusted for clustering within mothers, and all results discussed are $p < 0.05$ unless otherwise noted.

Results

Children of Mostly Heterosexual Mothers

Bivariate analyses in Table 1 found that children of mostly heterosexual mothers had mothers who were younger at birth than heterosexual mothers, on average. Their mothers were also disproportionately more likely to be white or other race and to have higher household incomes. They reported health disadvantages across all outcomes relative to children of heterosexual mothers.

These health disparities persisted in three of the binary logistic regression models (Table 2, Model 1). Compared to children of heterosexual mothers, children of mostly heterosexual mothers were less likely to have no reported health conditions across all models. They also had higher odds of ADHD and allergies or hay fever. The introduction of control variables, and of the potential mechanisms of preterm birth and low birth weight in Model 3, changed these relationships very little. After these adjustments, children of mostly heterosexual mothers were also less likely to have very good or excellent parent-rated health ($p < 0.10$) and more likely to have

¹ With data from Add Health, it is typical to adjust analyses for clustering within schools. However, in order to account for clustering of children within mothers, we instead estimated multilevel models with mothers as level 2. We conducted supplementary analyses that instead adjusted for clustering within schools, and there were no substantively important differences compared to the major relationships reported in our main models. We attempted to adjust for both clustering within both schools and mothers in a three-level model, but for our full models this was computationally infeasible given the small sample sizes in sexual minority categories.

Table 2 Odds ratios from binary logistic regression models predicting child health (ages 5–18)

Variables	Very good parent-rated health ^a			No health conditions		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Closest sexual identity (Ref: Heterosexual)						
Mostly heterosexual	0.71 (0.44–1.16)	0.65 + (0.40–1.06)	0.64 + (0.39–1.05)	0.62*** (0.49–0.79)	0.61*** (0.48–0.78)	0.60*** (0.47–0.77)
Bisexual	0.14*** (0.05–0.38)	0.18*** (0.07–0.49)	0.18*** (0.07–0.48)	0.59 (0.31–1.13)	0.52* (0.27–0.98)	0.50* (0.26–0.96)
Lesbian	0.15* (0.03–0.74)	0.21* (0.04–0.94)	0.18* (0.04–0.85)	0.70 (0.16–3.06)	0.71 (0.14–3.56)	0.66 (0.13–3.39)
Variables						
Developmental delay						
Delayed speech						
Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1
Closest sexual identity (Ref: Heterosexual)						
Mostly hetero-sexual	1.47 (0.93–2.33)	1.46 + (0.93–2.30)	1.49 + (0.94–2.36)	1.22 (0.75–2.00)	1.18 (0.73–1.90)	1.19 (0.73–1.92)
Bisexual	2.77* (1.04–7.40)	2.43 + (0.97–6.12)	2.53 + (0.99–6.43)	1.49 (0.47–4.77)	1.53 (0.49–4.75)	1.57 (0.49–4.98)
Lesbian	2.22 (0.41–12.12)	2.36 (0.39–14.22)	2.64 (0.43–16.18)	0.02** (0.00–0.25)	0.02** (0.00–0.25)	0.02** (0.00–0.27)
ADHD						
Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1
Closest sexual identity (Ref: Heterosexual)						
Mostly hetero-sexual	1.47 (0.93–2.33)	1.46 + (0.93–2.30)	1.49 + (0.94–2.36)	1.22 (0.75–2.00)	1.18 (0.73–1.90)	1.19 (0.73–1.92)
Bisexual	2.77* (1.04–7.40)	2.43 + (0.97–6.12)	2.53 + (0.99–6.43)	1.49 (0.47–4.77)	1.53 (0.49–4.75)	1.57 (0.49–4.98)
Lesbian	2.22 (0.41–12.12)	2.36 (0.39–14.22)	2.64 (0.43–16.18)	0.02** (0.00–0.25)	0.02** (0.00–0.25)	0.02** (0.00–0.27)
Asthma						
Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1
Closest sexual identity (Ref: Heterosexual)						
Mostly hetero-sexual	1.92 (0.85–4.31)	1.97 + (0.89–4.38)	1.98 + (0.90–4.39)	2.13*** (1.51–2.99)	2.15*** (1.52–3.02)	2.18*** (1.54–3.07)
Bisexual	6.73*** (1.63–27.77)	8.35*** (2.09–33.36)	8.46*** (2.12–33.78)	0.99 (0.44–2.23)	1.29 (0.56–2.96)	1.34 (0.58–3.07)
Lesbian	7.30 + (0.83–64.47)	6.47 + (0.75–56.19)	6.35 + (0.74–54.33)	0.25 (0.03–1.88)	0.23 (0.03–1.73)	0.23 (0.03–1.80)
Allergies						
Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1
Closest sexual identity (Ref: Heterosexual)						
Mostly hetero-sexual	1.92 (0.85–4.31)	1.97 + (0.89–4.38)	1.98 + (0.90–4.39)	2.13*** (1.51–2.99)	2.15*** (1.52–3.02)	2.18*** (1.54–3.07)
Bisexual	6.73*** (1.63–27.77)	8.35*** (2.09–33.36)	8.46*** (2.12–33.78)	0.99 (0.44–2.23)	1.29 (0.56–2.96)	1.34 (0.58–3.07)
Lesbian	7.30 + (0.83–64.47)	6.47 + (0.75–56.19)	6.35 + (0.74–54.33)	0.25 (0.03–1.88)	0.23 (0.03–1.73)	0.23 (0.03–1.80)
Asthma						
Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1
Closest sexual identity (Ref: Heterosexual)						
Mostly hetero-sexual	1.92 (0.85–4.31)	1.97 + (0.89–4.38)	1.98 + (0.90–4.39)	2.13*** (1.51–2.99)	2.15*** (1.52–3.02)	2.18*** (1.54–3.07)
Bisexual	6.73*** (1.63–27.77)	8.35*** (2.09–33.36)	8.46*** (2.12–33.78)	0.99 (0.44–2.23)	1.29 (0.56–2.96)	1.34 (0.58–3.07)
Lesbian	7.30 + (0.83–64.47)	6.47 + (0.75–56.19)	6.35 + (0.74–54.33)	0.25 (0.03–1.88)	0.23 (0.03–1.73)	0.23 (0.03–1.80)

Table 2 (continued)

Data Source: National Longitudinal Study of Adolescent to Adult Health (Add Health). *N*=8930 for parent-reported health status; 8978 for all other outcomes

* $p < .05$ ** $p < .01$ *** $p < .001 + p < .10$. 95% confidence intervals in parentheses

^a 1 = excellent/very good, 0 = good/fair/poor. All other outcomes coded as 1 = yes, 0 = no

Model 1 includes listed variables; Model 2 adds maternal and child age and maternal race/ethnicity, maternal relationship status, and maternal education; Model 3 adds preterm birth and low birth weight

experienced a developmental delay ($p < 0.10$). The findings suggested that the health disparities experienced by children of mostly heterosexual women were not explained by maternal characteristics or birth outcomes.

Figure 1 presents predicted likelihoods from Table 2, Model 2 (controls included) for hypothetical cases that vary by maternal sexual identity and otherwise set all variables to their means. This figure emphasizes that children of mostly heterosexual mothers experienced consistent (though not always significant) health disadvantages with widely varying magnitudes depending on the outcome. An average child with a mostly heterosexual mother had a predicted likelihood of reporting no health conditions that was nine percentage points lower than an otherwise identical child with a heterosexual mother.

Children of Bisexual Mothers

Table 1's bivariate analyses show that children of bisexual mothers had younger mothers, and were themselves older, than the average for children of heterosexual mothers. Their mothers were less likely to be married to or cohabitating with the pregnancy partner and had much lower average educational attainment and household income. These children were less frequently born preterm than children of heterosexual mothers but were more frequently born with low birth weight. Children of bisexual mothers had compromised health outcomes for all measures except allergies.

Despite limited statistical power given the small number of children of bisexual mothers, several of these relationships persisted in Table 2's binary logistic regression models. Children of bisexual mothers were less likely than children of heterosexual mothers to have very good or excellent parent-reported health ($p < 0.001$), less likely to have experienced no health conditions ($p < 0.05$ in Models 2 and 3), more likely to have experienced a developmental delay ($p < 0.05$ in Model 1, $p < 0.10$ in Models 2 and 3), and more likely to be obese ($p < 0.01$). The large odds ratios for several other health measures suggest that future analyses using more robust sample sizes might potentially identify additional health disparities at the population level for children of bisexual mothers.

Figure 1 emphasizes that children of bisexual mothers experienced health disadvantages that were consistent, though not always significant, and that varied less in their magnitude than those experienced by children of mostly heterosexual mothers. Predicted disadvantages for an average case of a child with a bisexual versus heterosexual mother were 11–12 percentage points for parent-reported very good or excellent health status and having no health conditions.

Children of Lesbian Mothers

Finally, Table 1 shows that children of lesbian mothers were older and less likely to be preterm or low birth weight. Their mothers were more frequently Hispanic and less frequently white or other race, less frequently married to or cohabitating with the pregnancy partner, and had lower average incomes. Unlike other children

Fig. 1 Predicted likelihoods of child health outcomes, compared to heterosexual mother. Data Source: National Longitudinal Study of Adolescent to Adult Health (Add Health). $N = 8930$ for parent-reported health status; 8978 for all other outcomes. $+p < .10$ $*p < .05$ compared to heterosexual in Table 2, Model 2. Predicted likelihoods calculated from Table 2, Model 2 (maternal sexual identity and all controls, but not birth outcomes). All other variables set to means.

of sexual minority mothers, children of lesbian mothers displayed a mix of significant health advantages and disadvantages in bivariate models. A lower proportion (81.77%) of these children was reported by a parent to be in very good or excellent health compared to children of heterosexual women (92.96%). A higher percentage of children of lesbian mothers had experienced any reported health conditions, developmental delays, obesity, and asthma. But in contrast, a lower percentage of children of lesbian mothers had experienced delayed speech, ADHD, and allergies relative to children of heterosexual women.

The binary logistic regression models reported in Table 2 show that three of these relationships—parent-reported health status, delayed speech, and obesity ($p < 0.10$)—persisted in multivariate models. The findings for parent-reported health status and obesity ($p < 0.10$) disadvantaged children of lesbian mothers, whereas those for delayed speech advantaged these children relative to children of heterosexual mothers. Several other relationships were large in magnitude but not significant and similarly suggested a mixture of advantages and disadvantages for children of lesbian mothers. Given these findings, it is possible that limited statistical power arising from the small number of children in the sample who had lesbian mothers may have prevented us from documenting additional health disparities and advantages for these children in the population.

Figure 1 reiterated the mixture of health disadvantages and advantages experienced by children of lesbian mothers. The predicted likelihood of very good or excellent parent-reported health for an average case was between 10 and 11 percentage points lower than for an otherwise identical child of a heterosexual mother. In contrast, the predicted likelihood of experiencing a speech delay was six percentage points lower.

Supplementary Analyses

Supplementary analyses compared these findings—which were based on a concurrent measure of maternal sexual identity—with a measure of *ever* having identified as mostly heterosexual, bisexual, and lesbian, even years before or after the child's birth. The health disparities experienced by children of sexual minority women differed substantially depending on the time point at which sexual identity was measured. Supplementary analyses found that even though statistical power increased when measuring whether a mother had ever identified as a particular sexual minority category, there were far fewer significant relationships with child health outcomes in multivariate models equivalent to Table 2. Only the children of mostly heterosexual mothers experienced any significant disadvantages in multivariate models ($p < 0.05$; for no condition and allergies), and the magnitude of these relationships was smaller than when analyzing mothers' sexual identity at the time of survey.

A second set of supplementary analyses explored whether the relationship between maternal sexual identity and child health differed by racial/ethnic group. Due to very low statistical power for many intersections of sexual identity and race/ethnicity, we did not include these results among our main analyses. Across all outcomes, three interactions were significant at the $p < 0.05$ level, and another

two were significant at the $p < 0.10$ level. These interactions indicated a mixture of disproportionate health disadvantages and advantages for the children of Black or Hispanic sexual minority mothers compared to children of white sexual minority mothers with the same sexual identity. This number of interactions was higher than what would have been expected due to chance. These preliminary findings suggest that further analysis using larger samples is warranted once data become available.

A final set of supplementary analyses controlled for additional variables that could impact the relationship between maternal sexual identity and children's health, including: (1) survey wave, (2) whether a same-sex partner was living in the home at time of survey, and (3) pregnancy intendedness. Differences in the distribution of maternal sexual identity as a function of survey wave could be indicative of historical changes in sexual identity that could have important impacts on child health, although supplementary descriptive analyses found no substantial differences. In addition to sexual identity, the sex of a partner living in the home at time of survey could also impact children's health (as noted by previous research described above) and represents the fourth pathway through which maternal sexual orientation may influence child health. However, very few children ($n = 18$) had mothers who reported having a same-sex partner at the time of survey. Although it represents an unfortunate data constraint for disentangling the four pathways, this small number of children underscores the importance of incorporating indicators beyond same-sex coresident partnerships when examining the relationship between maternal sexual minority status and child health. Finally, pregnancy intendedness may mediate the relationship between maternal sexual identity and child health because sexual minority women have been shown to have higher rates of unintended pregnancy, which in turn has implications for birth outcomes and children's health outcomes. The inclusion of these three variables did not change the significant relationships between our primary dependent and independent variables. They were therefore not included in the final analyses because their inclusion led to further reductions in statistical power.

Discussion

In this study, we examined how having a mother who identifies as a sexual minority (mostly heterosexual, bisexual, or lesbian) was associated with a variety of children's health outcomes. Health in childhood and adolescence is of documented importance for school readiness and for future health and socioeconomic attainment. Socioeconomic and health disadvantages experienced by sexual minority women earlier in life and prenatally, and disadvantages in birth outcomes experienced by children of some groups of sexual minority women, make it possible that cumulative disadvantage processes yield health problems for children of sexual minority mothers later in childhood and adolescence. Discrimination, stigma, and stressors experienced by both sexual minority women and their children may fuel this health disadvantage pathway and also create new health insults for children that are not simply a reflection of their own or their mother's earlier health status. Yet scholarship also suggests

the existence of potential protections from health insults for children who live with same-sex parents.

Our bivariate analyses demonstrated that health disadvantages for children of mostly heterosexual and bisexual women were present across 15 out of the 16 measured relationships with 8 outcomes. The highly diverse health outcomes studied here—from general health status to obesity to ADHD to speech delays—makes the consistency of these findings all the more striking. Although low statistical power may have limited significance in multivariate analyses, children of mostly heterosexual ($p < 0.10$) and bisexual women still experienced lower odds of very good or excellent parent-rated general health relative to children of heterosexual women, and children of mostly heterosexual and bisexual women experienced reduced odds of having no diagnosed health conditions. Multiple specific health conditions also evidenced disadvantages for children of bisexual and mostly heterosexual mothers. These findings suggest that the experience of having a bisexual or mostly heterosexual mother may find its way into a child's body through diverse health pathways, making future research on social and biological mechanisms particularly important.

Very little is known about the parenting experiences of bisexual and mostly heterosexual women (Manley & Ross, 2020). However, what is known from the health literature suggests mostly heterosexual and bisexual women are more likely to report multiple health risk behaviors than either lesbian or heterosexual women (Bostwick, 2012; Bostwick et al., 2015; Vrangalova & Savin-Williams, 2014). Moreover, mostly heterosexual and bisexual women may experience social isolation from other LGB community support systems prior to, during, and after pregnancy, limiting their ability to access important social resources that may improve both their own health and the health of their children (Goldberg et al., 2019; Manley et al., 2018). Mostly heterosexual and bisexual women may also be more likely to have male pregnancy partners or be in relationships with men while they raise children compared to lesbian women. Qualitative research on same-sex couples has found that women in same-sex relationships report more egalitarian divisions of labor than couples in other-sex relationships, particularly around health work (Reczek, 2012; Reczek & Umberson, 2012; Reczek et al., 2020). The benefits of a same-sex partner, therefore, may not be extended to mostly heterosexual or bisexual women, who face multiple sources of discrimination and experience social isolation without the community or partner benefits that lesbian women may have.

These differences may help explain why the bivariate analyses told a different story for children of lesbian women compared to children of mostly heterosexual and bisexual women. Children of lesbian mothers experienced a mixture of health advantages and disadvantages relative to children of heterosexual women. These findings are all the more striking given the frequent health disadvantages experienced by women and children in the racial/ethnic, family structure, and income groups to which children of lesbian mothers disproportionately belonged.

These mixed results also make sense given past findings that documented disadvantaged birth outcomes among children of lesbian and bisexual women (Everett et al., 2019, 2021), combined with the body of research that has not found differences in child health and well-being between those with similarly situated same-sex and different-sex parents, as well as research showing that women in

same-sex relationships report more partner support. These significant relationships did not persist in multivariate analyses, perhaps because of the very small sample size in this group. The need for greater statistical power, the intriguing mixture of risks and advantages experienced by children of lesbian mothers across different domains of health, and the ways in which having a sexual minority mother can be protective despite substantial demographic disadvantages and stresses all make the health of children of mothers from a variety of sexual minority identities and family forms an urgent topic for future research when appropriate data become available.

Our study's results indirectly support the combination of theoretical pathways laid out above. The first pathway of cumulative disadvantage from earlier maternal health insults is supported by the pattern of findings that most consistently disadvantages children of bisexual mothers, followed by mostly heterosexual mothers. Similar patterns have been found in research on maternal preconception health and infant birth outcomes (Everett et al., 2019, 2021; Limburg et al., 2020). The second and third pathways—discrimination, stigma, and stressors experienced by both sexual minority women and their children during the child's lifetime—garner more substantial indirect support, although our findings cannot adjudicate between them. The particular importance of maternal sexual identity measured during childhood, rather than prior to the child's birth, may provide indirect support for the notion that contemporaneous stress- and discrimination-related processes experienced by sexual minority women and/or their children are important influences on children's health. This finding lends less support to the first, cumulative disadvantage pathway. The unique mix of risks and protections to health among children of lesbian mothers makes sense if the combination of all four pathways is in play. Children of lesbian mothers experience minority stress disadvantages from the first three pathways as do children whose mothers come from other sexual minority groups, but children of lesbian mothers differ from other groups in disproportionately experiencing pathway four: protections arising from living with same-sex parents. Of the few children in our data who lived with same-sex partners at the time of survey, 39% lived with lesbian mothers despite children of lesbian-identified women representing just 0.4% of the sample. This combination of risks and protections for children of lesbian mothers supports the notion that multiple pathways are at work.

This study's limitations included low statistical power in the bisexual and lesbian groups, a limited set of control variables necessitated by the low statistical power, a binary measure of gender that did not permit greater nuance reflective of people's actual identities, and a lack of child-level variables that could explore potential mechanisms for the relationship between mother's sexual minority status and child health. Future research should address these limitations.

The suggestive findings from supplementary analyses—that maternal sexual identity may have different implications for child health depending on when it is measured, and thus perhaps also depending on its fluidity, and that children of sexual minority women of color may experience unique health risks and protections—suggest fruitful avenues for future research using datasets that include larger numbers of sexual minority women. Following the children as they grow older, as future waves of Add Health will eventually allow researchers to do, will

provide more information on the life course implications of intergenerational processes related to sexual identity.

Most importantly, this study's findings speak to the need to study sexual minority status in ways that are not restricted to cohabiting or married same-sex couples. The experiences of the much larger, "hidden" population of sexual minority women and their children may differ substantially, exposing disparities that might not otherwise come to light. The unique health challenges experienced by children of bisexual and mostly heterosexual mothers, most of whom did not live with a same-sex partner, emphasize the importance of this broader operationalization of sexual minority status for improving the health of children of sexual minority women. Even though the sexual identities of these potentially hidden populations can seem "invisible," they have crucial implications for the intergenerational transmission of health and well-being. Researchers, practitioners, and policy makers should look beyond partnership status to a more expansive understanding of sexual orientation in order to improve population health.

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