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Sexual Identity Is Associated With Adverse Childhood Experiences in US Early Adolescents

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Abstract

Objective: To determine disparities in adverse childhood experiences (ACEs) by sexual identity in a national cohort of early adolescents.

Methods: We analyzed cross-sectional data from year 2 of the Adolescent Brain Cognitive Development study (N = 10,934, 2018–20, ages 10–14 years). Disparities in ACE scores across lesbian, gay, or bisexual (LGB), not sure, and heterosexual adolescents were assessed using multinomial logistic regression analyses. Logistic regressions estimated the associations between sexual identity and each individual ACE. Analyses were adjusted for potential confounders.

Results: In adjusted models, LGB adolescents had a higher risk of experiencing 2, 3, or ≥4 ACEs (relative risk ratios [RRR] = 1.57, 95% Confidence Interval (CI) 1.01–2.42), 3 (RR = 1.78, 95% CI 1.100–2.88), or ≥4 ACEs (RRR = 3.20, 95% CI 1.92–5.32), and not sure adolescents had a higher risk of having ≥4 ACEs (RRR = 2.17, 95% CI 1.22–3.87), compared to heterosexual adolescents. LGB and not sure adolescents had higher risks of reporting emotional abuse ("yes" OR = 4.21, 95% CI 1.84–9.61; "maybe" OR = 6.20, 95% CI 2.91–13.19) and parent mental illness ("yes" OR = 1.95, 95% CI 1.48–2.57; "maybe" OR = 1.63, 95% CI 1.21–2.18) compared to heterosexual adolescents.

Conclusions: LGB adolescents and those questioning their sexual identity were at greater risk of having higher ACE scores, with LGB adolescents experiencing the highest risk of experiencing ACEs. LGB adolescents also had higher odds of reporting emotional and parent mental illness. Recognizing this heightened risk of ACEs in early adolescence is critical for designing clinic and school-based interventions.

Keywords: adolescent health; adverse childhood experiences; disparities; sexual identity

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What's New

By early adolescence, lesbian, gay, and bisexual adolescents and those questioning their sexual identity, compared to their heterosexual peers, report disparities in total adverse childhood experience exposures and higher odds of emotional and physical abuse and parent mental illness.

Adverse childhood experiences (ACEs), defined as potentially traumatic events (eg, experiences of neglect, abuse, and household dysfunction) that occur before the age of 18, can have profound impacts on youth development.[1] Further, ACEs have cumulative negative effects because increasing stress levels generated by ACEs overwhelm one's ability to cope. This phenomenon, described in the cumulative stress model, is consistent with numerous pediatric studies that have demonstrated that experiencing ACEs in childhood is associated with increased adolescent risk-taking and physical and mental health consequences in a dose-dependent fashion.[2,3] For example, among adolescents, ACEs are associated with higher rates of depression, anxiety, behavioral problems, and asthma, with higher ACE scores associated with higher relative risks.[4,5]

Several studies have demonstrated that lesbian, gay, or bisexual (LGB) adults report experiencing ACEs at higher rates than their heterosexual peers.[6,7] A few studies have

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also demonstrated that LGB adolescents experience ACEs at higher rates than their heterosexual peers.[8,9] However, both adolescent studies focused on high-school-age students and did not evaluate risk in early adolescence.[8,9] Early adolescence, representing a transition period from middle childhood, is particularly important because this life stage represents a critical, understudied developmental period where youth undergo rapid changes in biological, psychological, social, and cognitive development, the onset of mental health issues, and establish potentially lifelong health behaviors, making them particularly vulnerable to adversity.[10] In addition, only one of these studies included adolescents unsure of their sexual identity, and the study that did include questioning adolescents only included survey data from Nevada High School students, potentially limiting its generalizability to diverse populations across the United States.[8]

Given that prior studies of early (ages 9–10) and middle (ages 14–18) adolescents show that LGB youth face a higher risk of depression, anxiety, and suicidality than their heterosexual peers,[11,12] it is critical to better understand whether they experience childhood adversity at higher rates than their heterosexual peers. Enhancing knowledge in this area will be foundational to providing better-targeted screening and treatment recommendations. Given the limited research on ACEs among early-adolescent LGB youth, this study sought to fill this gap by exploring disparities in ACE scores between LGB, not sure, and heterosexual adolescents among a diverse, national cohort of US early adolescents. We hypothesized that LGB adolescents would have higher ACE exposure than their heterosexual peers.

METHODS

We conducted a cross-sectional analysis of data from year 2 of the Adolescent Brain Cognitive Development (ABCD) study, the largest cohort study of adolescent cognitive development in the United States. The ABCD study recruitment, protocol, and measures have been described in detail previously.[13] We omitted study participants who were missing data for ACE score or did not answer the sexual identity survey question (n = 1157, Supplementary Table 1). After omitting these participants, the sample consisted of 10,405 adolescents, predominately aged 12 to 13 (mean 12.6), reflecting the socio-economic and demographic diversity of the United States. To participate in the ABCD study, written informed consent and assent were obtained from a parent/guardian and the child, respectively. Institutional review board approval was obtained from the University of California, San Diego, as well as each respective study site.

MEASURES

INDEPENDENT VARIABLE: SEXUAL IDENTITY

Adolescents reported their sexual orientation at year 2 by responding to the following question: "Are you gay or bisexual?" with options including "yes," "maybe," "no," "don't understand the question," "decline to answer."[14] Participants were divided into 3 categories: "yes" (LGB), "no" (heterosexual), or "maybe" (not sure). Those who did not understand the question or declined to answer were excluded from further analyses. In sensitivity analyses, participants were categorized into 2 groups: "yes" or "maybe" (LGB/not sure) and "no" (heterosexual) responses were analyzed.

DEPENDENT VARIABLE: ACE SCORE

Although the ABCD study did not use a validated screener, there are several questions across the protocol that ask about ACEs. To generate the ACE score used in this analysis, we used data from the baseline (2016–18), year 1 (2017–19), and year 2 (2018–20) surveys, following a procedure similar to our prior work.[15,16] The development of this score was informed by Hoffman et al[17]'s paper describing the assessment of childhood stress in the ABCD study and incorporates elements of the Child's Report of Parent Behavior Inventory Subscale,[18] the Family Environment Scale (parent and youth),[18] The Parental Monitoring Survey (youth), the Kiddie Schedule for Affective Disorders and Schizophrenia,[19] the ABCD Parent Demographics Survey, and the ABCD Family History Assessment. The scale was created through iterative discussions with the research team, which consists of adolescent medicine specialists, a criminologist, a social worker, and public health experts. Supplementary Table 2 illustrates how ABCD survey questions map onto validated ACE questions. ACE scores were classified into 0, 1, 2, 3, and ≥4. A cutoff of ≥4 was used as prior literature has established that this score is associated with a higher risk of medical and psychological consequences.[1,20]

COVARIATES

Potential sociodemographic confounders, based on parent reports at baseline, included age (years), race and ethnicity (Asian, Black, Latino/Hispanic, Native American, White, other), sex assigned at birth (male/female), household income (< $25,000, $25,000– < $50,000, $50,000– < $75,000, $75,000– < $100,000, $100,000–$200,000, and > $200,000), and highest education of participants' parents (high school or less vs college or more).

STATISTICAL ANALYSES

Multinomial logistic regression analyses and logistic regression analyses estimated associations between LGB status (yes/no/maybe) and reported ACE score (0 ACEs, 1 ACE, 2 ACEs, 3 ACEs, or 4 or more ACEs) and individual ACEs, respectively. Additional multinomial logistic regression and logistic regression analyses assessing the association between LGB/not sure adolescents ("yes"/"maybe") and heterosexual adolescents ("no") are shown in Supplementary Table 3. Analyses were adjusted for sociodemographic characteristics and included propensity weights based on the American Community Survey.[21]

RESULTS

Adolescent respondents had a mean age of 12.6 years (range 10–14) and were racially and ethnically diverse (5% Asian, 16% Black, 18% Latino/Hispanic, 4% Native American, 55% White, 1% other; Table 1). A majority (87.2%) of respondents identified as heterosexual ("no"), while 4.7% of youth self-defined as LGB ("yes"), 3.8% were not sure ("maybe"), 3.0% reported they "don't understand the question," and 1.3% selected "decline to answer."

ACE SCORE

In adjusted models, LGB adolescents had higher relative risk ratios (RRRs) of having 2 (RRR = 1.57, 95% Confidence Interval (CI) 1.01–2.42), 3 (RRR = 1.78, 95% CI 1.100–2.88), or ≥4 ACEs (RRR = 3.20, 95% CI 1.92–5.32; Table 2) than heterosexual adolescents. Adolescents with "maybe" responses had a higher risk of having ≥4 ACEs (RRR = 2.17, 95% CI 1.22–3.87) than heterosexual adolescents.

INDIVIDUAL ACES

In adjusted models, compared with their heterosexual peers, LGB and not-sure adolescents had higher odds of reporting emotional abuse ("yes" odds ratio [OR] = 4.21, 95% CI 1.84–9.61; "maybe" OR = 6.20, 95% CI 2.91–13.19) and parent mental illness ("yes" OR = 1.95, 95% CI 1.48–2.57; "maybe" OR = 1.63, 95% CI 1.21–2.18; Table 2). LGB adolescents had 2.92 higher odds of experiencing physical abuse (95% CI 1.05–8.12) than heterosexual adolescents. Not sure adolescents had higher odds of sexual abuse (OR = 3.41, 95% CI 1.39–8.41) and parental separation/divorce (OR = 1.49, 95% CI 1.00–2.22) than heterosexual adolescents.

In combined analyses, adjusted models showed that, when compared to heterosexual adolescents, the combined groups of LGB and not sure adolescents had 4.21 higher odds of emotional abuse (95% CI 1.84–9.61), 2.91 higher odds of physical abuse (95% CI 1.05–8.11), and 1.95 higher odds of parent mental illness (95% CI 1.48–2.57) (Supplementary Table 3).

Table 1. Sociodemographic Characteristics of the ABCD Study (N = 10,405)

Demographic Characteristics	Mean (SD) or %
Age	12.6 (0.9)
Sex	
Female	48%
Male	51%
Race and ethnicity	
Asian	5%
Black	16%
Latino/Hispanic	18%
Native American	3%
White	55%
Other*	1%
Highest parent education	
High school education or less	82%
College education or more	18%
Household income	
< $25,000	16%
$25,000–$50,000	20%
$50,000–$75,000	18%
$75,000–$100,000	16%
$100,000–$200,000	22%
> $200,000	7%
Sexual minority status	
No	87%
Yes	5%
Maybe	4%
I do not understand the question	3%
Decline to answer	1%
Adverse childhood experiences	
No ACEs	16.5%
1 ACE	31.4%
2 ACEs	26.4%
3 ACEs	15%
4 or more ACEs	10%
ACE subtype	
Neglect	
Emotional neglect	1%
Physical neglect	8%
Abuse	
Emotional abuse	2%
Physical abuse	1%
Sexual abuse	1%
Household dysfunction	
Parent substance use	42%
Parent mental illness	32%
Household violence	58%
Divorce/separation	16%
Parent criminality	14%

ABCD indicates adolescent brain cognitive development; ACE, adverse childhood experience.

ABCD propensity weights were applied based on the American Community Survey from the US Census; SD, Standard Deviation.

* Other: If race/ethnicity not better defined by Asian, Black, Latino/Hispanic, Native American, or White.

DISCUSSION

In this cross-sectional study of 10,405 diverse early adolescents from across the United States, LGB adolescents were at greater risk of having higher ACE scores than their heterosexual peers. While this trend was most notable among LGB adolescents, adolescents questioning their sexual identity also demonstrated higher rates of having an ACE score of 4 or more. These findings contribute to the current literature showing that, in early adolescence, both LGB youth and those exploring their sexual identity are at higher risk of having elevated ACE scores.[8] Given that early adolescence is a sensitive developmental period when both positive and negative factors can have especially potent and long-term consequences,[10] this information has important clinical and public health implications. Specifically, pediatric clinicians and public health officials focused on early adolescents can use this information to inform interventions or promote connections to services that can bolster protective factors and mitigate the harms of high ACE exposure among LGB youth. In addition, youth who reported "maybe" are in the process of undergoing major identity formation; during this period of uncertainty and exploration, they may be especially vulnerable to the

Table 2. Associations Between Sexual Identity (LGB, Unsure, and Heterosexual) and ACEs in the ABCD Study

Sexual Minority Status	Model 1. Unadjusted		Model 2. With Confounding Variables	
	LGB Versus Heterosexual	Unsure Versus Heterosexual	LGB Versus Heterosexual	Unsure Versus Heterosexual
	RRR	RRR	RRR	RRR
	(95% CI)	(95% CI)	(95% CI)	(95% CI)
ACE score[†]				
ACEs—0	Reference	Reference	Reference	Reference
ACEs—1	1.15	0.9	1.16	0.94
	(0.80, 1.65)	(0.68, 1.42)	(0.76, 1.78)	(0.61, 1.43)
ACEs—2	1.68**	1.36	1.57*	1.47
	(1.17, 2.41)	(0.94, 1.96)	(1.01, 2.42)	(0.95, 2.27)
ACEs—3	2.00***	1.4	1.78*	1.44
	(1.36, 2.94)	(0.92, 2.13)	(1.10, 2.88)	(0.87, 2.40)
ACEs—4+	3.15***	2.06**	3.20***	2.17**
	(2.10, 4.73)	(1.31, 3.23)	(1.92, 5.32)	(1.22, 3.87)
ACE subtype[‡]				
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Neglect				
Emotional neglect	1.41	1.52	1.02	3.00
	(0.42, 4.70)	(0.42, 5.53)	(0.13, 7.44)	(0.81, 11.17)
Physical neglect	1.33	1.17	1.61	1.47
	(0.92, 1.93)	(0.76, 1.82)	(0.99, 2.64)	(0.85, 2.54)
Abuse				
Emotional abuse	2.84**	4.10***	4.21**	6.20***
	(1.53, 5.27)	(2.24, 7.50)	(1.84, 9.61)	(2.91, 13.19)
Physical abuse	1.70	1.48	2.92*	1.16
	(0.71, 4.06)	(0.50, 4.39)	(1.05, 8.12)	(0.15, 9.11)
Sexual abuse	1.35	4.87***	0.52	3.41**
	(.49, 3.76)	(2.48, 9.57)	(0.10, 2.75)	(1.39, 8.41)
Household dysfunction				
Parent substance use	1.43**	1.32*	1.28	1.29
	(1.16, 1.77)	(1.05, 1.67)	(0.99, 1.67)	(0.98, 1.70)
Parent mental illness	2.04***	1.62***	1.95***	1.63**
	(1.64, 2.52)	(1.28, 2.04)	(1.48, 2.57)	(1.21, 2.18)
Household violence	1.21	1.03	1.23	1.07
	(0.98, 1.50)	(0.82, 1.30)	(0.94, 1.61)	(0.80, 1.42)
Divorce/Separation	1.36*	1.38*	1.42	1.49*
	(1.02, 1.79)	(1.02, 1.86)	(0.99, 2.04)	(1.0, 2.22)
Parent criminality	1.72***	1.21	1.39	1.06
	(1.31, 2.25)	(0.86, 1.69)	(0.96, 2.03)	(0.67, 1.69)

ABCD indicates adolescent brain cognitive development; ACE, adverse childhood experience; LGB, lesbian, gay, or bisexual; RRR, relative risk ratio; and CI, COnfidence Interval.

* $P < 0.05$.

** $P < 0.01$.

*** $P < 0.001$.

† Associations estimated using multinomial logistic regressions.

‡ Associations estimated using logistic regressions.

impact of ACEs, making their heightened risk of elevated ACE score especially notable.

In addition, this study found that LGB and not sure adolescents have a distinct pattern of ACEs. LGB adolescents demonstrated higher odds of emotional abuse, physical abuse, and parent mental illness. This finding is consistent with prior literature that has identified household dysfunction and emotional abuse as prevalent in the lives of sexual and gender minority youth.[9] This may be secondary to parents or other community members rejecting their child's sexual identity and/or not having the protective parenting skills to support their child who is exploring their sexual identity, a process that remains stigmatized.[22] Given that emotional abuse is associated with an increased risk for depressive disorders,[3,4,23] higher levels of emotional abuse may partially explain the higher rates of anxiety and depression seen in LGB adolescents. Indeed, a previous study of ACEs in adults found that after adjustment for cumulative ACEs, associations between sexual minority status and poor mental health were attenuated.[7] However, it is important to note that ACEs represent only part of the trauma landscape that

LGB adolescents experience. LGB adolescents experience unacceptable rates of discrimination, prejudice, and stigma, which may interact with the stress experienced by ACEs.[24] The minority stress model theorizes that minoritized groups, such as LGB adolescents, experience unique stressors related to stigma that elevate risk for a broad range of mental health disorders.[24] We hypothesize that this may be why adjustment for ACEs alone does not eliminate the increased risk that LGB adolescents face.

While LGB adolescents in this study reported high levels (19%) of 4 or more ACEs, levels are notably lower than prior studies of sexual and gender minorities ages 14 to 18 in the United States and Canada (43%).[9] This observation may be attributed to the lower age range of our study population, differences in ACE assessment, and incomplete responses. For example, the ABCD assessment for emotional abuse assesses whether parental report endorses death threats to their child. As this is only one component of emotional abuse, it likely underestimates the rates of emotional abuse. Additionally, those excluded from the study due to incomplete data had lower income and lower parental education, both of which are risk factors for higher ACE scores.

One advantage of our study is the ability to triangulate early adolescent and parent perspectives on ACEs. We believe that this approach best captures both perspectives and minimizes underreporting. Another strength of the paper is the focus on youth in late childhood and early adolescence, unlike prior research that has centered on middle and late adolescence.[8,9] In addition, we focus on both "yes" and "maybe" responses, allowing us to explore differences among adolescents still questioning their sexual identity. Prior literature has shown that by early adolescence, LGB identity development is emerging and many now identify same-sex attractions (mean age 12.6) and are questioning their sexual orientation (mean age 13.2).[25] While focusing on this younger age range will not capture all adolescents who later identify as LGB, given the importance of this developmental period, this information will help clinicians provide developmentally appropriate care to this age group.

This study has several important limitations. This study did not characterize the timing of ACE exposures or use a validated questionnaire. Future studies should employ validated ACE screeners and provide detailed information on the timing of ACES to better understand if early adolescence is a period that is particularly vulnerable to adversities. Also, we observed a relatively low proportion of LGB (4.7%) and unsure adolescents (3.8%); this is likely due to the young ages of our population and differences across our inclusion and exclusion population, which may limit generalizability. Prior research has demonstrated that the average age when individuals self-identified as LGB+ and started coming out is 17.8 years,[25] so it is probable that many respondents in our study have not formed a clear understanding of their sexual identity. Additionally, responses of "don't understand the question" and "decline to answer" were not included in the analyses given the unclear interpretation of these responses. These responses may reflect varying levels of development. In addition, willingness to disclose sexual identity may be impacted by the social, geographic, and religious contexts in which the youth live. Also, transgender identities and additional sexual identities, such as pansexuality and asexuality, were not included; we recommend that future studies examine these sociodemographic groups as well as examine middle- and late-adolescent developmental periods.

Knowing that early adolescents who identify as LGB or are questioning their sexual identity are at higher risk for ACEs has important clinician and public health implications. Considering that early adolescence is a pivotal developmental period encapsulating identity formation and a stage when many mental health disorders emerge,[10] recognizing the heightened risk of ACEs in this younger age group is critical for designing clinic and school-based interventions, as well as potentially developing components that also focus on their parents. For example, clinicians should be aware of the higher ACE risk in this earlier age group and consider the role of trauma, as well as protective factors, when assessing mental health conditions. Additionally, school-based interventions, such as LGBTQ+ groups and LGB-affirmative counseling groups, should be offered in early adolescence.[26,27] We recommend that future studies further explore how discrimination and prejudice interact with ACE risk and identify sources of resilience for LGB adolescents.

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DECLARATION OF COMPETING INTEREST

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Julia Raney reports financial support

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SUPPLEMENTARY DATA

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.acap.2024.07.022.

REFERENCES

1. Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the adverse childhood experiences (ACE) study. *Am J Prev Med.* 1998;14:245–258. https://doi.org/10.1016/S0749-3797(98)00017-8
2. Hughes K, Bellis MA, Hardcastle KA, et al. The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *Lancet Public Health.* 2017;2:e356–e366. https://doi.org/10.1016/S2468-2667(17)30118-4
3. Petruccelli K, Davis J, Berman T. Adverse childhood experiences and associated health outcomes: a systematic review and meta-analysis. *Child Abuse Negl.* 2019;97:104127. https://doi.org/10.1016/j.chiabu.2019.104127
4. Bomysoad RN, Francis LA. Adverse childhood experiences and mental health conditions among adolescents. *J Adolesc Health.* 2020;67:868–870. https://doi.org/10.1016/j.jadohealth.2020.04.013
5. Wing R, Gjelsvik A, Nocera M, et al. Association between adverse childhood experiences in the home and pediatric asthma. *Ann Allergy Asthma Immunol.* 2015;114:379–384. https://doi.org/10.1016/j.anai.2015.02.019
6. Dosanjh LH, Hinds JT, Cubbin C. The impacts of adverse childhood experiences on socioeconomic disadvantage by sexual and gender identity in the U.S. *Child Abuse Negl.* 2023;141:106227. https://doi.org/10.1016/j.chiabu.2023.106227
7. Austin A, Herrick H, Proescholdbell S. Adverse childhood experiences related to poor adult health among lesbian, gay, and bisexual individuals. *Am J Public Health.* 2016;106:314–320. https://doi.org/10.2105/AJPH.2015.302904
8. Clements-Nolle K, Lensch T, Baxa A, et al. Sexual identity, adverse childhood experiences, and suicidal behaviors. *J Adolesc Health.* 2018;62:198–204. https://doi.org/10.1016/j.jadohealth.2017.09.022
9. Craig SL, Austin A, Levenson J, et al. Frequencies and patterns of adverse childhood events in LGBTQ+ youth. *Child Abuse Negl.* 2020;107:104623. https://doi.org/10.1016/j.chiabu.2020.104623
10. Dahl RE, Allen NB, Wilbrecht L, et al. Importance of investing in adolescence from a developmental science perspective. *Nature.* 2018;554:441–450. https://doi.org/10.1038/nature25770
11. Blashill AJ, Calzo JP. Sexual minority children: mood disorders and suicidality disparities. *J Affect Disord.* 2019;246:96–98. https://doi.org/10.1016/j.jad.2018.12.040
12. Depa N, Desai S, Patel S, et al. Mental health disparities amongst sexual-minority adolescents of the US – a national survey study of YRBSS-CDC. *Psychiatry Res.* 2022;314:114635. https://doi.org/10.1016/j.psychres.2022.114635
13. Barch DM, Albaugh MD, Avenevoli S, et al. Demographic, physical and mental health assessments in the adolescent brain and cognitive development study: rationale and description. *Dev Cogn Neurosci.* 2017;32:55–66. https://doi.org/10.1016/j.dcn.2017.10.010
14. Calzo JP, Blashill AJ. Child sexual orientation and gender identity in the adolescent brain cognitive development cohort study. *JAMA Pediatr.* 2018;172:1090–1092. https://doi.org/10.1001/jamapediatrics.2018.2496
15. Raney JH, Testa A, Jackson DB, et al. Associations between adverse childhood experiences, adolescent screen time and physical activity during the COVID-19 pandemic. *Acad Pediatr.* 2022;22(8):1294–1299. https://doi.org/10.1016/j.acap.2022.07.007 Epub 2022 Jul 16. PMID: 35853601; PMCID: PMC9288265.
16. Raney JH, Al-Shoaibi AA, Ganson KT, et al. Associations between adverse childhood experiences and early adolescent problematic screen use in the United States. *BMC Public Health.* 2023;23:1213. https://doi.org/10.1186/s12889-023-16111-x
17. Hoffman EA, Clark DB, Hudziak J, et al. Stress exposures, neurodevelopment and health measures in the ABCD study. *Neurobiol Stress.* 2019;10:100157. https://doi.org/10.1016/j.ynstr.2019.100157
18. Gonzalez R, Thompson EL, Sanchez M, et al. An update on the assessment of culture and environment in the ABCD Study®: emerging literature and protocol updates over three measurement waves. *Dev Cogn Neurosci.* 2021;52:101021. https://doi.org/10.1016/j.dcn.2021.101021
19. Kaufman J, Townsend LD, Kobak K. The computerized kiddie schedule for affective disorders and schizophrenia (KSADS): development and administration guidelines. *J Am Acad Child Adolesc Psychiatry.* 2017;56(10 Suppl):S357. https://doi.org/10.1016/j.jaac.2017.07.770
20. Briggs EC, Amaya-Jackson L, Putnam KT, et al. All adverse childhood experiences are not equal: the contribution of synergy to adverse childhood experience scores. *Am Psychol.* 2021;76:243–252. https://doi.org/10.1037/amp0000768
21. Heeringa SG, Berglund PA. A guide for population-based analysis of the adolescent brain cognitive development (ABCD) study baseline data. *BioRxiv.* 2020. https://doi.org/10.1101/2020.02.10.942011 Feb 10:2020-02.
22. D'Augelli AR, Grossman AH, Starks MT. Childhood gender atypicality, victimization, and PTSD among lesbian, gay, and bisexual youth. *J Interpers Violence.* 2006;21:1462–1482. https://doi.org/10.1177/0886260506293482
23. Liu RT. Childhood adversities and depression in adulthood: current findings and future directions. *Clin Psychol Publ Div Clin Psychol Am Psychol Assoc.* 2017;24:140–153. https://doi.org/10.1111/cpsp.12190
24. Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychol Bull.* 2003;129:674–697. https://doi.org/10.1037/0033-2909.129.5.674

25. Hall WJ, Dawes HC, Plocek N. Sexual orientation identity development milestones among lesbian, gay, bisexual, and queer people: a systematic review and meta-analysis. *Front Psychol.* 2021;12:753954. https://doi.org/10.3389/fpsyg.2021 753954. PMID: 34777153; PMCID: PMC8581765.
26. Seelman KL, Forge N, Walls NE, et al. School engagement among LGBTQ high school students: the roles of safe adults and gay–straight alliance characteristics. *Child Youth Serv Rev.* 2015;57:19–29. https://doi.org/10.1016/j.childyouth.2015.07.021
27. Craig SL. Affirmative supportive safe and empowering talk (ASSET): leveraging the strengths and resiliencies of sexual minority youth in school-based groups. *J LGBT Issues Couns.* 2013;7:372–386. https://doi.org/10.1080/15538605.2013.839342