

Results of Cognitive Testing of Questions on Adverse Childhood Experiences for the Youth Risk Behavior Surveillance System

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I. Introduction

This report summarizes the findings of a cognitive interview study to test questions on Adverse Childhood Experiences (ACEs) for inclusion on the Youth Risk Behavior Surveillance System (YRBSS¹).

Adverse Childhood Experiences, or ACEs, are potentially traumatic experiences that occur in childhood (0-17 years) such as neglect, experiencing or witnessing violence, and other aspects of the child's environment that may undermine their sense of safety, stability, and bonding (e.g., household substance use, instability due to parental separation or incarceration).

YRBSS monitors high priority health-risk behaviors among youth. The surveillance system includes a national, school-based survey that is conducted by the Centers for Disease Control and Prevention (CDC), as well as state and local surveys that are coordinated by state and local education and public health agencies in collaboration with other partners.² Although not funded by CDC, some jurisdictions also conduct state and local surveys among middle school students.

The questions proposed for evaluation, which were originally developed as part of the CDC-Kaiser ACE Study,³ and subsequently used in the Behavioral Risk Factor Surveillance System ACEs Module, have been adapted for inclusion on the YRBS questionnaire (9th–12th graders)⁴. In addition to modifying the items to make them more appropriate for youth, several new items were added to capture positive childhood experiences (PCEs) such as sense of belonging at school and having support from friends, and other ACEs not included in the original measure (e.g., community violence, discrimination).

This evaluation is based on 40 cognitive interviews that were conducted by a team of researchers from the Center for Questionnaire Design and Evaluation Research (CCQDER) at the National Center for Health Statistics between November 2021 and January 2022. Testing was conducted over two rounds. In

¹ <https://www.cdc.gov/healthyouth/data/yrbs/index.htm>

² Underwood, J. M., Brener, N., Thornton, J., et al. (2020). Overview and Methods for the Youth Risk Behavior Surveillance System - United States, 2019. *MMWR supplements*, 69(1), 1–10. <https://doi.org/10.15585/mmwr.su6901a1>

³ About the CDC-Kaiser ACE Study | Violence Prevention | Injury Center | CDC. (2020, September 3). <https://www.cdc.gov/violenceprevention/aces/index.html>

⁴ Centers for Disease Control and Prevention. 2020 Youth Risk Behavior Survey Questionnaire. Available at: www.cdc.gov/yrbs.

the first round (n=30), all questions were tested. In the second round (n=10) only a revised version of the question on living with a parent/guardian with mental illness was tested.

The following report details the methods used in this question evaluation study and presents an in-depth question-by-question review of the findings. The complete instrument, as tested, is presented in Appendix A.

II. Methods

Cognitive Interviewing: Cognitive interviewing is a qualitative method designed to evaluate items on survey questionnaires. In particular, cognitive interviewing studies investigate how respondents understand and respond to questionnaire items and if their understandings are in line with the question intent. Through semi-structured interviews, cognitive interviewing provides an in-depth understanding of how respondents formulate their responses to questions based on their particular social and cultural contexts. Findings of a cognitive interviewing project often lead to recommendations for question improvement, provide evidence of question validity and can be used in post-survey quantitative analysis to assist in data interpretation.

Cognitive interviewing studies typically involve in-depth, semi-structured interviews with a small sample of approximately twenty to forty respondents. In these interviews, respondents are first administered the survey items under evaluation and then answer a series of probe questions that reveal how they arrived at their particular response choices. These probes can be either concurrent (asked with each survey item) or retrospective (asked after all survey items).

Sample selection for a cognitive interviewing project is purposive with respondents selected for specific characteristics -- such as race, health status or occupation-- that are relevant to the intended purpose of the survey instrument. When studying questions designed to investigate ACES, for example, the sample would consist mostly of teens who indicate that they have had some difficult childhood experiences. Within the purposive sample an effort is made to maintain a varied sample.

Sample: A team of researchers from CCQDER interviewed a total of 40 respondents over two rounds of interviews. In the first round, 30 teens were interviewed on the full set of questions. In round 2, ten teens were interviewed to test a revision to the question about living with a parent with mental illness (ACES 7.2). The research team recruited a purposive sample of middle and high school students aged 12-17 through email list contacts, flyers and word of mouth. Inclusion criteria included answering "yes" to a screening question asking about having experienced difficult childhood experiences such as divorce, racism or bullying. A screening process was employed over the telephone to determine eligibility for participation. Since respondents were all minors, parental consent as well as respondent assent were obtained. The sample included a nearly equal number of males and females as well as some respondents who identify as nonbinary. Additionally, over one quarter of the sample identified as Black/African American. Demographics for the full sample are shown in Table 1.

| Table 1. <i>Demographic profile of respondents</i> | | |
|--|----------------|----------------|
| | Round 1 (n=30) | Round 2 (n=10) |
| Race* | | |
| Black/African American | 7 | 4 |
| White | 22 | 6 |
| Asian | 4 | 1 |
| Ethnicity | | |
| Hispanic | 0 | 2 |
| Non/Hispanic | 30 | 8 |
| Gender | | |
| Female | 14 | 4 |
| Male | 12 | 5 |
| Nonbinary | 4 | 1 |
| Transgender** | 2 | 1 |
| Age | | |
| 12 | 5 | 2 |
| 13 | 4 | 1 |
| 14 | 7 | 2 |
| 15 | 7 | 2 |
| 16 | 3 | 1 |
| 17 | 4 | 2 |

*Race categories are not mutually exclusive. Some respondents identified as more than one race category.

**Respondents who identified as transgender also identified as either male or female and are therefore represented twice in the count.

Interviewing Procedures: All questions were administered to the respondents who chose their responses from the answer categories provided. During the interviews, intensive verbal probing was used to collect response process data. Audio recordings and written notes of interview summaries were collected and used as the basis of data analysis. All interviews were conducted either virtually via a videoconferencing platform or in-person at a mutually agreed upon private location. Interviews typically lasted 60 minutes and respondents were given \$40 once the interview was complete.

Data Analysis: Analysis of interviews followed the guidelines for cognitive interviewing methodology which is guided by the grounded theory approach. This approach does not aim to test existing hypotheses, but instead generates explanations of response error and various interpretive patterns that are closely tied to the empirical data. This includes the constant comparative method of analysis, in which analysts continually compare data findings to original data^{5,6}. This is an iterative process of data synthesis and reduction⁷. After each interview was conducted, summary notes were written for each

⁵ Glaser, B. and Strauss, A. (1967) *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Hawthorne, NY: Aldine de Gruyter.

⁶ Lincoln, Y. S. (1985). *Naturalistic Inquiry (Vol.75)*. Sage.

⁷ Strauss, A., & Corbin, J. (n.d.). *Basics of qualitative research (Vol. 15)*. Newbury Park, CA: Sage.

question. Summary notes included information on the way in which a respondent interpreted and processed individual questions, what experiences or perceptions a respondent included in formulating a response and any response difficulties experienced by the respondent. After all interviews and summaries were completed, interviews were compared to identify common patterns of interpretation and response difficulties for each question. Sub-group analysis looked at patterns of interpretation and responses as they varied across different groups within the sample.

A data entry and analysis software application (Q-Notes)⁸ was used to conduct analysis. Q-Notes, developed by CCQDER, ensures systematic and transparent analysis across all cognitive interviews as well as providing an audit trail depicting the way in which findings are generated from the raw interview data.

III. Overall patterns

Differences Across Subgroups

Various subgroups were examined to determine if there were any differences in question interpretation or if there were any other factors that affected the ways different groups responded to the questions.

Age: Respondents in middle school (ages 12 and 13) had more difficulties answering questions than older respondents and these difficulties sometimes led to response error. Middle school respondents were less familiar with certain terms than their older counterparts. For example, one 12-year-old thought *swear* in the question on verbal abuse (ACES 1) meant to hit with a stick. When asked if she'd been sworn at, she said, "They get, like, a stick and hit me with it, yeah." Several middle schoolers were confused by the term *sexual orientation* while others weren't familiar with the term *suicidal*. Younger respondents were also more likely to misunderstand questions. For example, several middle schoolers thought questions that asked about their parents were asking about other adults or about themselves. For example, one younger respondent thought the question about physical conflict between parents (ACES 5) was asking if her parents had ever had physical conflict with her instead of each other. The interviewer clarified that the respondent's parents hadn't hit each other or the respondent, so no response error was seen in her response of "never." However, in some cases, misunderstandings did lead to response error. In other cases, respondents were aware that they did not understand the question and refused to answer. For example, one respondent was unable to provide a response to the question on verbal abuse because she didn't understand what the question was asking. She said, "I don't know. What you said just confused me. Did you say curse at me or... I don't know."

Younger respondents (i.e., those in middle school) were also more likely to understand questions in simplistic, unsophisticated ways. In particular, younger respondents expressed much less familiarity with mental illness, sexual abuse and types of discrimination. When asked about mental illness in her household (ACES 7.1), one middle school-aged respondent said, "I mean it's like crazy, right? I don't really know anything about that. That's when you go crazy or maybe it's just when someone has to cry

⁸ <https://www.ndev.cdc.gov/QNotes/Account/Home>

for a little while.” When asked about sexual assault, another middle school-aged respondent said, “I was thinking of anything that might make me uncomfortable. Who would do that? If it happened, I would just run away and I wouldn’t let it happen.” A third middle school student seemed oblivious to racial discrimination. She said, “I’ve never heard of that happening.” In contrast, older respondents had much more nuanced understandings of the various circumstances asked about in the questions. Whereas younger respondents often thought of abstract scenarios to explain their responses, high-school-aged respondents were more often able to draw on concrete examples and real-life experiences that had occurred to them or people they knew personally. However, these simplistic ways of understanding questions did not necessarily lead to response error.

Race: For the most part, there were no differences in the ways respondents of different races and ethnicities understood or answered the questions including the question on discrimination based on race. However, in answering the question on physical abuse (ACES 2), minority respondents were more likely to discount incidents of physical punishment. For example, several African American respondents described being spanked or beaten as punishment but did not include these incidents in their responses. One African American respondent answered “rarely” but described having been spanked fairly often when younger. He downplayed the significance of the spankings by saying, “Well, it was just when I was being bad... when I was little.”

Gender: In general, gender did not affect the ways respondents understood or answered the questions. Trans and nonbinary respondents often had more nuanced understandings of gender when answering the question on discrimination based on sexual and gender identity (ACES 10), but respondents who were not gender minorities were equally able to answer the question effectively.

IV. Question-by-question Review

ACEs 1: During your life, how often has a parent or other adult in your home sworn at you, insulted you, or put you down? *Never, Rarely, Sometimes, Most of the Time, Always*

All respondents, except two were able to choose an answer from the response categories. The two respondents who couldn't answer said they didn't understand what the question was asking. One said, "What do you mean? Does that mean curse words?"

Most respondents interpreted the question as asking whether their parents intentionally speak to them harshly. This included having their parents direct curse words at them, yell at them or insult them. For example, one respondent who answered "sometimes" said, "When you try to argue with him [his father] or say something different than what he believes, he gets very upset and sometimes that escalates to a point where he would start cursing."

Respondents did not include their parents' routine, incidental swearing or curse words not directed at the respondent. For example, one respondent who answered "never" said, "I don't think my parents mean to, like, actually swear at me it's just sometimes when they get angry, they sometimes swear ... I don't feel like they are swearing at me." Another respondent answered "never" but acknowledged, "Oh. My parents use bad words all the time. I hear them, but it's not, like...it's not about being angry. It's just how they talk about everything."

Two respondents understood the question as referring to physical abuse. One of these thought *swear* meant to hit with a stick. This respondent answered "rarely" and said, "I mean, they swore at me with like a tree branch, just because I was being bad."

ACEs 2: During your life, how often has a parent or other adult in your home hit, beat, kicked, or physically hurt you in any way? *Never, Rarely, Sometimes, Most of the Time, Always*

Most respondents interpreted the question as asking if their parents had ever intentionally hurt them. For example, one respondent who answered "never" said, "I was thinking about maybe like forms of punishment that some people use on their kids." Another respondent who answered "rarely" said that her mom had never touched her and that her dad used to spank her but didn't anymore.

A few respondents discounted instances of physical punishment that did not cause a lasting injury. For example, one respondent answered "never" but described several instances when his parents had been physical with him during an argument. In describing a particular instance, he said, "My mom, she gets angry, very angry sometimes. And, she starts to pick up stuff. There was one time she picked up a pick and jabbed me in the arm a few times. It didn't really hurt, all it did was just leave a little scratch, you know...but..." He did not include this instance and others in his answer because they did not cause lasting injury.

A few of the respondents understood the question as asking whether their parents had ever accidentally or unintentionally harmed them. For example, one of the respondents who answered "sometimes" described how his mother occasionally bumps into him or steps on his toe. He said, it is "almost always

in accident.” This respondent explained that his parents just aren’t careful with him physically, but he noted that he does not see himself as being abused.

ACEs 3: Has an adult or person at least 5 years older than you ever made you do sexual things that you did not want to do? (Count such things as kissing, touching, or being made to have sexual intercourse.) Yes/no

Almost all respondents interpreted this question as asking if they had been forced to do something sexual. Respondents referred to a range of incidents including rape, sexual assault and being touched inappropriately. For example, one respondent who answered “no” said she was thinking of someone “touching your inappropriate place and feeling uncomfortable.” Like another respondent who answered “no,” many respondents mentioned consent. This respondent said, “I would give consent or not give consent. And every time that I’ve done that, people have listened to me.” Respondents who answered “yes” described incidents where they had not given their consent. One respondent answered “yes” and said that she had been sexually assaulted twice. Another respondent who answered “yes” had also been sexually assaulted. She described the incident, ““When I was, like, 12 and we lived in West Africa. This guy. He said, ‘Oh I know you. Your dad told me to give you a hug.’ and then he tried to hug and kiss me. So we ran.”

Some respondents included sexual things that happened online. For example, a respondent who answered “no” said he was thinking of “sending pictures, or something like coming with them, trading pictures.”

Two respondents thought about situations that made them feel physically uncomfortable but which were not explicitly sexual. For example, one respondent initially answered “no” but then changed his response to “yes” thinking about times that his parents make him hug them after a fight.

Adult or person at least five years older: Most respondents attended to this exclusionary phrase, referring to adults such as parents, friends, relatives and others. One respondent said she was thinking of “strangers, teachers, and even relatives like uncles.” A few respondents referred to incidents that occurred where they were not sure of the age of the other person. In particular, respondents who mentioned things that happened online were not always certain of the age of the other person.

ACEs 4: During your life, how often has there been an adult in your household who tried hard to make sure your basic needs were met, such as looking after your safety and making sure you had clean clothes and enough to eat? Never, Rarely, Sometimes, Most of the Time, Always

Most respondents interpreted this part of the question as asking if they had what they needed, including basic resources and services (such as access to education). For example, a respondent who answered, “always” interpreted the question as asking about “food, water, clothing, doctor – that type of thing.” Another respondent who answered, “always” said, “They [their parents] make sure that we have food and that kind of thing. I’ve never felt neglected in any real sense.” Respondents were able to clearly articulate a difference between basic needs and extra items. One respondent who answered, “most of the time” mentioned that “basic needs don’t include things like wanting another pair of shoes.”

Respondents all answered based on the availability of at least one parent or adult. For example, several respondents noted that when one parent wasn't available to take care of them, the other would step in. Some respondents answered based on having one primary caregiver despite spending time with other adults who were not always attentive. For example, one respondent said, "We'd stay a night or two [at dad's] and there wasn't always food in the house but we could have called our mom."

ACEs 5: During your life, how often have your parents or other adults in your home slapped, hit, kicked, punched, or beat each other up? *Never, Rarely, Sometimes, Most of the Time, Always*

Most of the respondents understood this question as asking if they had witnessed their parents or other adults engage in physical conflict. For example, a respondent who answered "never" said, "When they were together, occasionally they did argue, but they never physically laid hands on each other." Similarly, another respondent said, "I've never seen my parents get physical."

It is important to note that respondents who are children may not be aware of or may not remember everything that has occurred in their households. Respondents who don't remember incidents or who have been told about things that they did not witness may not know how to respond. A few respondents weren't sure if physical conflict had ever occurred between their parents, so they answered "never." One respondent who answered "never" said, "Well.. not in front of me." Another said, "I feel like things could have happened that I wasn't aware of."

One respondent answered "never" but then recalled an incident between her father and her father's then fiancée. There was an altercation, and the police were called. This respondent explained her answer of "never" by saying, "I try to block her out of my mind as best I can because she caused a lot of harm to my family... I try not to think about it."

A single respondent thought the question referred to physical violence against her rather than between her parents. She answered "never" and explained, "My family is good with that stuff and they try and keep me safe all the time and they would never try to do anything to try and harm me."

ACEs 6: Have you ever lived with someone who was having a problem with alcohol or drug use? *Yes/no*

When considering this question, respondents included a variety of people that they had lived with including parents, siblings, extended house guests and fellow campers at a wilderness camp. Almost all respondents answered this question based on whether they had ever lived with anyone who had serious difficulty with alcohol or drugs. For example, one respondent who answered "yes" discussed her father's drug and alcohol use saying, "My dad. He's very...he's friends with a lot of drug dealers. He used to use it with them a lot and he also drinks a lot of alcohol." Respondents who answered "no" often described their parents' very moderate alcohol consumption. For example, one respondent said, "My mom doesn't drink at all. My dad does drink but very responsibly. And pretty much all he drinks is wine. And neither of my parents do drugs." For this respondent, his father's responsible drinking was not a "problem," so he answered "no."

Some respondents included events that occurred before their memory and others did not. One respondent had not lived with his father since he was an infant, but he answered "yes" saying, "He [dad] used some kind of drugs. I think cocaine and other stuff." This respondent had heard about his father's

drug use from other family members. However, a different respondent had heard about her father's use of crack cocaine, but since she didn't remember ever living with him, she answered "no."

ACEs 7.1: Have you ever lived with someone who was depressed, mentally ill, or suicidal? Yes/no

When answering this question, respondents included a variety of people that they had lived with including parents, siblings, extended family and even themselves. Most respondents answered based on having lived with someone with depression or mental illness. For example, one respondent explained her "yes" answer, "My dad, when he left, my mother was very sad and I think for a couple of years she struggled with depression and she was very anxious a lot of the time so I would definitely describe her as depressed for those couple of years." Meanwhile, another respondent answered "no" and said, "We are a very positive family and no one has any of those issues."

Some respondents expressed uncertainty about how severe the problem had to be in order to warrant a "yes." One respondent described her uncertainty:

I don't think so but it's hard to know. And also, like to what extent? I don't think I've ever lived with someone who was like, debilitatingly depressed or mentally ill but my dad and sister have anxiety, so I don't know that I've ever lived with someone with mental illness not to an extent that it like affected me that much or really kept them from doing normal things. I don't know.

This respondent answered "Yes" based on her family members' anxiety even though it had never affected her. However, a different respondent was similarly uncertain but answered "no." She said, "Well, my mom has anxiety, but it doesn't really affect me. I'm not sure, but I'll say no." A third respondent noted that it can be difficult to really know if someone is suffering from mental illness. He said, "I have no reason to think so, but how do you know what's in peoples' minds?" He answered "no" since there were no outward signs.

Respondents were also uncertain about whether to include themselves when answering the question. One respondent said, "What about me? I'm the one." This respondent answered "yes" because she suffered from depression and suicidal thoughts. However, another respondent did not include herself. She explained, "I thought about if I counted for that, but I figured I'm not a member in my family. I am myself."

Depression, mental illness and suicide: Most respondents were familiar with mental illness and mood disorders from books and TV, from experiences with friends and family or from personal experience. All respondents described depression similarly to the respondent who said, "Depression is when you're sad for a long time and can't snap out of it." Most respondents included mood disorders such as anxiety under the umbrella of "mental illness." One said, "It could just be that you're up and down or back and forth with how you feel all the time." A few respondents were not sure what it meant to be suicidal, but most described it as "wanting to die."

ACEs 7.2 Have you ever lived with a parent or guardian who had severe depression, anxiety, another mental illness, or was suicidal? Yes/no

Because the first version of this question did not adequately capture the intended construct, a second version of the question was tested on 10 respondents in the second round of interviews. Respondents answering this version of the question thought only about their parents. One respondent described

living with her father's depression, "Before my dad moved out, he was depressed. He used to stay in bed all day and didn't want to do anything. My parents used to fight about it and then he moved out." Another respondent answered "no" and said, "My parents are very stable. They don't get anxiety or depression." Later this respondent described his experience with mental illness in another family member, "My aunt gets really nervous and anxious. When we visit her it's hard to leave the house because she's worried about everything."

Respondents considered severity when answering the question. One said, "My mom gets nervous, but I don't think it's severe." This respondent answered "no." However, some respondents noted that it is difficult to know how severe the problem is. One respondent answered "no" but said, "I'm not sure if it's that bad in my house or not. There are things that go on around here...but how would I know for sure?" When asked about the things that happen in his house, the respondent described parents who often yell or seem upset about small things.

Depression, anxiety, mental illness and suicide: Respondents answering version two of the question understood depression similarly to those answering version one. Respondents described anxiety as "something that makes you breath fast" and "when you're more nervous than usual." When asked about other mental illnesses a few respondents mentioned "DID" or dissociative identity disorder which they'd learned about on social media. Similar to those answering version one, respondents answering version two were not always sure what suicide was. One said, "I really don't know what that is." Others understood it as "...not wanting to be alive anymore." Respondents who didn't know what suicide was answered based on the other items in the question, and no response error was seen.

**ACEs 8: Have you ever been separated from a parent or guardian because they went to jail or prison?
Yes/no**

All respondents were familiar with the concept of jail/prison as a place "where people are locked away for breaking the law" and where "they lose their freedoms." Additionally, some had friends or family who had been to jail or to "juvy" (juvenile detention).

Most respondents understood this as asking whether they had been separated from a parent for a significant period of time because that parent was in jail. For example, one respondent answered "yes" because her mother had gone to jail. She said, "That was before the age of 2 My mom went to jail for god knows what, I don't remember but me and my sister...got put in foster care because of it." Another respondent answered "no" and explained, "My parents have never been arrested. They are very safe people and wouldn't put themselves at risk like that."

A few respondents answered "no" when they weren't sure whether a parent had ever gone to jail or when the incident happened before they were born. One respondent had heard about his father going to jail after being arrested at a protest. He said, "My dad worked as an activist for a while before I was born and he did like a civil disobedience display and I think went to jail for like a day or something, but that's all." Another respondent vaguely recalled a time when his father and the father's fiancée went to jail for a few hours for a domestic disturbance. This respondent described her uncertainty, "I don't think so...but I blocked this out. I don't know if it really happened or if it was a dream or a thought."

ACEs 9: During your life, how often have you felt that you were treated badly or unfairly because of your race or ethnicity? *Never, Rarely, Sometimes, Most of the Time, Always*

Almost all respondents understood this question as asking about negative ways others had acted towards them based on their race. Respondents mentioned a wide range of examples such as not being picked for sports, discrimination by a coach or teacher, racist jokes and comments, persistent comments about family composition, expectations from people of their own race and concerns about physical violence.

This negative behavior was reported both by White respondents and respondents from a racial or ethnic minority group. For example, one multiple-race respondent said, “There was this one time, and this random guy was just calling everyone racial slurs.” This respondent answered “rarely” because this was an isolated incident. Another respondent, who is White, answered “sometimes” and explained, “Back in elementary school, I would get bullied a lot. I was the only White kid on my bus in my area, so people would find ways to blame it on me and get stress out on me.”

However, many White respondents answered “never” and attributed this to the fact that they’re White. For example, one respondent said, “Never. Probably because of my skin color. I’m White.” Another White respondent said, “I’m White, so I’ve never been discriminated against for my race.” A third White respondent thought about disproportionate police brutality against minorities when explaining his answer. He said he answered “never” because “I don’t get beat up by the police because of how I look.”

Respondents from a racial or ethnic minority group tended to downplay potentially racist behavior from others. For example, one respondent described how the other kids at his school make jokes about Asian persons and other persons from a racial or ethnic minority group. This multiracial Asian respondent dismissed their behavior by saying, “At the end of the day, they’re not trying to be racist. They’re just joking around.” He answered “never” although he admitted that he did not always enjoy the behavior. Another multiple-race respondent described how she is frequently bothered by comments about her race and her multiple-race family. She said, “I get comments [about being mixed] every day but sometimes it’s kind of funny.” Because she could sometimes “laugh along” this respondent answered “sometimes” even though she described often being very upset by the constant comments.

Race/ethnicity: There was little consensus on the definitions of race or ethnicity. Most respondents indicated they didn’t know what “ethnicity” meant or they thought it was the same thing as race. Taken together, respondents understood race and ethnicity to mean some combination of skin color, heritage, place of origin and personal identity. Although there was little agreement on the exact definition of these terms, there was no response error seen. Respondents were all aware of their own racial/ethnic identities and how that affected other people’s behavior towards them.

ACEs 10: V1. During your life, how often have you felt that you were treated badly or unfairly because of your sexual orientation? *Never, Rarely, Sometimes, Most of the Time, Always*

This question was asked to 12 respondents. A few respondents thought that the question was asking about discrimination based on whether they were gay or bisexual. For example, one respondent explained her answer of “sometimes,” saying, “I’m bisexual and every time I tell someone that I’m bisexual they don’t treat me the same afterwards.”

However, most respondents understood this as a question about whether others treat them poorly due to their gender identity. One respondent said, "I think sexual orientation is like what you identify as, as in, who you are based on your gender. I'm transgender." This respondent answered "rarely" because he felt that usually people did not treat him differently based on his gender. When asked what "sexual orientation" meant, another respondent who answered "never" indicated that she thought it was "like if you're a boy or a girl."

Because this version of the question did not fully capture the intended construct and because the term "sexual orientation" was confusing to some respondents, the question was revised.

ACEs 10: V2. During your life how often have you felt that you were treated badly or unfairly because you are or people think you are LGBTQIA+? This could include being treated badly because of who you are sexually attracted to or because you express your gender in a way that is different than what people expect. *Never, Rarely, Sometimes, Most of the Time, Always*

The revised question was asked of 18 respondents in round one. One respondent refused to answer the question not because he didn't understand it but because the question made him uncomfortable. All other respondents understood the question as asking about negative behavior towards them based on their status as a sexual or gender minority. For example, one respondent answered "sometimes" and gave the example, "I got called the f-slur a few days ago." Another respondent said, "Never...because I'm straight." A third respondent answered "sometimes" and explained, "People assume I'm gay or a certain type of guy that expresses a feminine side even though I'm not." Even though this respondent did not consider himself to be a sexual or gender minority, he answered based on how others treated him based on their erroneous perceptions of him.

LGBTQIA+: All respondents were able to demonstrate understanding of the acronym. One respondent defined it as referring to "marginalized sexuality or queerfolk" while another said, "It means not being cis or heterosexual." A few respondents were able to define all of the individual identities represented in the acronym. One respondent immediately said, "That stands for lesbian, gay, bisexual, trans, queer, intersex, ally or asexual and all the rest." However, most respondents weren't sure what all the letters stood for. One said, "I know the LGBT part but not the rest." This did not cause response error because even when they did not know what the individual letters meant, they understood the acronym as a whole. A few respondents noted that because the acronym includes the "+," it technically refers to everyone, "even straight people." This, however, did not cause any confusion or response error.

ACEs 11: Have you ever seen someone get physically attacked, beaten, stabbed, or shot in your neighborhood? Yes/no

Respondents all answered this question thinking about physical conflict between people that they had personally witnessed. Respondents described a variety of physical encounters between people in their neighborhoods such as fist fights, punching, mugging, shooting and carjacking. For example, one respondent who answered "yes" described a fight that he had seen. This respondent was at the subway station and "there were people fighting on the landing by the escalator." Similarly, another respondent said, "In my neighborhood there are a lot of fights that happen.... It's usually between kids or teenagers." This respondent also answered "yes." Respondents did not include violence that had been reported to them by others. For example, one respondent said, "My parents told me about a shooting, so I didn't go in that direction." This respondent answered "no."

Some respondents who answered “no” described the non-violent ways people in their neighborhoods deal with conflicts. For example, one respondent answered “no” and said, “Conflict in my neighborhood is just people fighting on the listserv about dogs off-leash at the park.” However, most respondents who answered “no” did not think about potential violence or conflict between neighbors. Instead, these respondents used the heuristic of living in a “good” neighborhood when deciding how to respond. For example, one respondent explained his answer of “no,” saying, “My neighborhood is ok. It’s not ‘bad’ or anything.”

Neighborhood: Response error may be seen when respondents don’t consider all of their neighborhoods when answering the question. Respondents generally understood “neighborhood” to encompass the geographic area surrounding their homes. For example, one respondent said, “My neighborhood is, like, the blocks around my house.” However, some respondents weren’t sure what to count as their neighborhoods. In particular, respondents who lived with more than one parent, who had moved or who lived in more than one place did not always think about all of their neighborhoods when responding to the question. For example, one respondent answered “no” and described the neighborhood where his mother lives as very quiet and peaceful. This respondent went on to describe the rougher neighborhood where his father lives where he had seen several physical altercations such as people pushing and shoving each other or trying to hit each other with cars. The respondent did not consider his father’s neighborhood when answering the question even though he lives with his father at least 50 percent of the time.

Fights at school: Some respondents included fights at school while others did not. Some respondents didn’t consider school to be a part of their neighborhood regardless of how close it was to their houses. One respondent who walked to school about 2 blocks away said, “School is school. That’s not my neighborhood.” Other respondents discounted fights at school either because they aren’t “serious” or because they are so common that respondents didn’t think of them. For example, one respondent answered “no” and said, “I’ve seen fights in school, but it’s never like a real fight. Just like people run at each other and tackle each other and whatever.” Similarly, another respondent qualified their “no” response by saying, “Well...school fights but that’s different. That’s every day.”

ACEs 12: During the past 12 months, how many times has a parent or other adult in your home hit, beat, kicked, or physically hurt you in any way? 0 times, 1 time, 2-3 times, 4-5 times, 6 or more times

Most respondents’ answers to this question were consistent with their answers to the question on lifetime prevalence of physical abuse in the home (ACES 2). When answering this question, respondents thought about physical incidents that had occurred within the last year. One respondent answered “zero” and said, “Yeah I’m just thinking since it’s been zero times in my whole life, I’m just like...zero.” Another respondent who answered “rarely” to ACES 2 because he had been spanked a few times when he was younger, answered “zero” to this question. He explained that he had not been spanked in the past 12 months “because, like, I didn’t do anything that bad yet [this year].”

One respondent initially answered “1 time” but then changed his response to “2-3 times.” Initially he described a single incident with his father. “There was this one time, I got mad, and I started talking back to my dad, and he held me with – I think it was his right hand, no, it was his left hand, and he just punched me right in my chest. And, I had this chain on at the moment, and it kind of jabbed me.” After

describing this incident, the respondent also remembered an incident with his mother where she threw him to the ground and held him down with her knee, so he changed his answer to "2-3 times."

Three respondents provided discordant answers to the two questions on physical abuse. One respondent answered "never" to ACES 2 but "2-3 times" to this question thinking about times in the past year his father "hit him in the back of the head for being sarcastic or something." When asked to explain the discrepancy, he said he was thinking only about physical punishment such as spankings when answering ACES 2. Similarly, another respondent who provided discordant answers to the two questions was thinking about spanking as punishment for ACES 2 while for this question, she thought of incidents when her parents had unintentionally caused her pain. A third respondent thought of beatings from his parents when he answered "rarely" to ACES 2 while thinking of people who were NOT his parents who may have come into his house and hit him when he answered "zero" to this question.

ACEs 13: During the past 12 months, how many times has a parent or other adult in your home sworn at you, insulted you, or put you down? 0 times, 1 time, 2-3 times, 4-5 times, 6 or more times

Most respondents' answers to this question were consistent with their answers to the question on lifetime prevalence of verbal abuse in the home (ACES 1). One respondent explained "Yeah, I think for [this question] it was pretty much exactly what I thought of the first time [for ACES 1], just on a time table."

Respondents who answered "1 time" or "2-3 times" usually answered based on recollection of specific incidents. For example, one respondent answered "1 time" and recounted a time his dad got frustrated with him during lacrosse practice. "My dad said, 'Are you doing your best?' and I wondered if I should even keep playing. Why should I play if I'm going to be hated on?" A different respondent answered "2 - 3 times" and recalled two specific incidents. He said, "In the past year? Yeah. Like, one time I broke a glass, and another time I put a spoon in the microwave... and part of the microwave turned black, and my mom was like, 'Are you fucking serious?'"

Respondents who answered "4-5 times" and "6 or more times" weren't thinking of particular incidents but rather about the general frequency of such occurrences. One respondent who answered "4-5 times" explained, "Like I said my dad and I sometimes get into arguments and those arguments often end up escalating and he starts cursing." Similarly another respondent who answered "6 or more times" said, "Yeah I have to be honest, in the course of a year I probably get into more than six serious arguments with my parents."

Some respondents included incidents that they did not consider particularly serious while others did not. For example, one respondent answered "2-3 times" but then downplayed the severity of the incidents explaining:

I want to say two times. But I don't think it was on purpose. I'm trying to figure out how to explain it. So, [sigh] my dad he said – I don't remember the exact word he said. I think it was 'retarded' or something. I don't know if I remember the word, but he said, 'Y'all kids act retarded.' I just went out of my room and just looked at him. And I went back and just slammed my door. But I don't think he meant it in that way.

Meanwhile, a different respondent initially answered “once or twice.” She explained why she ultimately chose “1 time” rather than “2 or 3 times”:

It feels like the question kind of implies a level of cruelty or deliberacy (sic) that I feel like there wasn't in my situation. Like typically when things like that happen, it's not trying intentionally to make me feel bad, it's that the other person is angry at me and just says something that happens to make me feel bad out of anger.

A few respondents did not adhere to the reference period. For example, one respondent who interpreted the question as referring to physical abuse with a stick recalled several incidents that had occurred when she was significantly younger. She described one incident, “[In second grade], I wanted to wear these types of pants to school but my mom wouldn't let me. And I would get the butt whooping because I always get a butt whooping when I don't listen. And my mom had to hold me down and she had to whoop me.”

A single respondent thought this question referred to verbal abuse from any adults other than his parents. He answered “zero” and said he couldn't imagine being at a friend's house and having the friend's parents yell at him or swear at him.

ACEs 14: During your life, how often have you felt that you were able to talk to an adult in your family or another caring adult about your feelings? *Never, Rarely, Sometimes, Most of the Time, Always*

When answering this question, respondents thought about sharing a variety of feelings including sadness, anger, depression, happiness, excitement, feelings about “life in general” and getting good grades. Respondents mentioned sharing their feelings with a variety of adults including parents, extended family, therapists, coaches, counselors and adult friends.

Respondents understood this question as either about the availability of adults or about their willingness to share their feelings with adults. In the first group, respondents thought about whether they had adults who were available to listen. For example, one respondent answered “sometimes” and said, “The reason I say “sometimes” is that I'm afraid of the outcome- what she's going to think of me or maybe she's feeling down and I don't want to bother her.” Another respondent explained his answer of “rarely” saying, “I don't connect good with adults.” For these respondents, their responses reflected the availability of adults rather than their willingness to share.

Other respondents thought about how often they choose to share their feelings with adults. For example, one respondent answered “sometimes” and explained, “Well, I don't think it's necessarily the people around me. It's just me. I don't necessarily talk about my feelings that much.” Similarly, another respondent said, “It's not necessarily that I couldn't talk to my parents about them, but I don't feel compelled, or I don't even want to talk about them. I guess I have certain feelings that I feel better about keeping to myself.” This respondent answered “most of the time.” Respondents noted that it is sometimes easier to share feelings with friends rather than parents or adults noting that sometimes adults overreact, don't approve, try to help too much, don't take their children's concerns seriously or make jokes.

ACEs 15: During your life, how often have you felt that you were able to talk to a friend about your feelings? *Never, Rarely, Sometimes, Most of the Time, Always*

Overwhelmingly, this question was understood as asking about sharing negative feelings. When asked what feelings they considered when answering this question, respondents mentioned sadness, anger, depression, daily problems, mental health problems and conflicts with friends and family. Respondents also mentioned qualities that they associate with being able to share these feelings with their friends. These qualities included, being trustworthy, being a good listener and being empathetic. Respondents also noted that it's easier to share feelings with their friends than with their parents because friends can relate to them better and friends have less negative reactions than their parents.

Respondents understood this question as either about the availability of friends or about their willingness to share with friends. In the first group, respondents thought about whether they had friends who were available to listen. For example, one respondent answered "always" and said, "It depends on the friend. I would say pretty much always. Although I don't, I could." Similarly, another respondent answered "sometimes" and described her situation saying, "I don't have many friends I can talk about that with...I can do it but it needs to be the right person. I don't think I have the right person around me to do it."

Other respondents thought about how often they choose to share their feelings rather than about the availability of friends. For example, one respondent answered "sometimes" and explained, "I'm really private." This respondent indicated that she had plenty of friends but preferred to keep most of her thoughts to herself. Other respondents in this category talked about censoring themselves because they were concerned about the way their feelings would be received. One respondent said, "I do feel comfortable sharing most of my problems with [friend]. I just don't want to overshare." This respondent answered "sometimes." A different respondent answered "rarely" because even though he has a lot of friends, he doesn't think they would understand his feelings. He said, "I can't share how I truly feel with the people closest to me."

Timeframe: The question asks respondents to think about "during your life" and indeed many respondents did consider friendships they'd had over their whole lives. These respondents often tried to average over their lifetime. For example, one respondent used to have a lot of friends in elementary school but currently, in high school, has few friends, so this respondent answered "sometimes" as an average of "always" and "rarely." Other respondents thought more about their recent experiences. For example, one respondent was getting used to a new school and didn't have many good friends. This respondent answered "rarely" although he acknowledged that he'd felt much closer to his friends at his old school. When asked if he could share his feelings with his friends at his old school, this respondent said, "I was a lot younger. I don't remember having any feelings to share." For this respondent, and others, their current feelings were much more prominent and salient than their feelings from when they were younger.

ACEs 16. v1: How often do you feel close to people at your school? *Never, Rarely, Sometimes, Most of the Time, Always*

Twelve respondents were asked this version of the question. These respondents understood the question as asking either about their feelings of connection to their school community or whether they had friends. For example, one respondent answered "rarely" and explained that he had very few friends

because he was at a new school, and he had not gotten to know his new classmates very well. He said, “I don’t know anybody there.” Other respondents thought about how connected they felt to others. One said, “I just don’t feel like I connect to any group of people enough to really be a contributing member.” This respondent answered “sometimes.” Another respondent answered “most of the time” and said, “I’m fortunate that I have really nice friends and would do so much for them. I love them....You know, you can feel so alone even though there are 30 people around you. Sometimes it’s hard to remember you have those people for you.”

A second version of this question was tested as well (ACES 16.v2).

ACES 16.v2: How often do you feel that you fit in at your current school? *Never, Rarely, Sometimes, Most of the Time, Always*

This version of the question was asked to 18 respondents in round one and performed similarly to the first version (ACES 16.v1). When answering this version of the question, respondents focused on feeling connected to friends and feeling accepted in the school community. For example, one respondent thought about his two different friend groups. He said, “I have two friend groups and one I don’t know as well and don’t really see them that often.” This respondent answered “sometimes” as an average of his feelings of connection across the two groups. Another respondent answered “never” and explained, “I’ve been bullied really badly and lost all my friends.” Other respondents thought beyond their friend groups to the school environment in general. For example, one respondent who answered “always” talked about knowing lots of students and teachers at her small school. She said, “People accept me as I am. I feel comfortable.” Another respondent described some recent protests at his school where students were shouting and refused to go into the classrooms. This respondent answered “sometimes” because he felt like the protests had caused a hostile environment at the school.

A single respondent understood “fitting in” at school to mean “not being disruptive and paying attention.” He described how sometimes he got in trouble at school for talking in class or playing fantasy football instead of reading the assignments. This respondent answered “sometimes” and described himself as “not always a good student.”

ACES 17: Has there ever been a time when your basic needs were not met by a parent or adult in your life, even when that parent/adult could have met your needs? Basic needs include things like having enough to eat, being able to go to a doctor when you were sick, or having a safe place to stay. *Yes/no*

This question is long and complicated. Therefore, quite a few respondents asked for this question to be repeated and several respondents were confused about how to respond. Several respondents weren’t sure whether they should answer “yes” or “no” if their basic needs had been met. One respondent was unable to answer and explained, “I just couldn’t figure out – did you ask did it, or did it not?” Another respondent hesitated for a long time before responding, “I think...no?” A third respondent said, “I mean they gave me the stuff,” and then stopped abruptly and asked, “Wait. Is this a yes or no question?”

This confusion led to response error with one respondent who answered “yes” but then explained that her basic needs had always been met. She said, “Well, it [basic needs] has been met. It has been hard sometimes, but I’ve stayed safe, doctors have always – doctors, dentists, hospitals, anything like that. We’ve always gotten there and figured out a way to pay for it. For the most part I’m pretty good.”

Despite the confusion, most respondents' answers to this question were consistent with their answers to the previous question on lifetime prevalence of neglect (ACES 4). Most respondents answered "never" to ACES 4 and then "no" to this question. For example, one respondent said, "Again, I have everything," and then he gave the example, "If I need a new toothbrush, we go get one right away."

A few responses answered "yes" to this question while having answered "never" to ACES 4. The specific examples in the question prompted these respondents to think of very specific incidents that had not occurred to them when answering ACES 4. For example, one respondent answered "yes" and recounted an incident that had occurred just a few days prior to the interview:

Like, so what happened is my mom told me to take out the trash, and I didn't feel like doing it at the moment. And she said, 'If you do that then I'm going to do the same.' Then, a day later I asked for something to eat, and she said, 'I don't feel like it right now. I'm going to do it later.' She was just returning the favor that I did with her. And that was just the only time that happened, out of my life.

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Appendix A: Teen ACES Instrument

ACES 1. During your life, how often has a parent or other adult in your home sworn at you, insulted you, or put you down?

- A. Never
- B. Rarely
- C. Sometimes
- D. Most of the time
- E. Always

ACES 2. During your life, how often has a parent or other adult in your home hit, beat, kicked, or physically hurt you in any way?

- A. Never
- B. Rarely
- C. Sometimes
- D. Most of the time
- E. Always

ACES 3. Has an adult or person at least 5 years older than you ever made you do sexual things that you did not want to do? (Count such things as kissing, touching, or being made to have sexual intercourse.)

- A. Yes
- B. No

ACES 4. During your life, how often has there been an adult in your household who tried hard to make sure your basic needs were met, such as looking after your safety and making sure you had clean clothes and enough to eat?

- A. Never
- B. Rarely
- C. Sometimes
- D. Most of the time
- E. Always

ACES 5. During your life, how often have your parents or other adults in your home slapped, hit, kicked, punched, or beat each other up?

- A. Never
- B. Rarely
- C. Sometimes
- D. Most of the time
- E. Always

ACES 6. Have you ever lived with someone who was having a problem with alcohol or drug use?

- A. Yes

- B. No

ACES 7.1. Have you ever lived with someone who was depressed, mentally ill, or suicidal?

- A. Yes
- B. No

ACES 7.2. Have you ever lived with a parent or guardian who had severe depression, anxiety, another mental illness, or was suicidal?"

ACES 8. Have you ever been separated from a parent or guardian because they went to jail or prison?

- A. Yes
- B. No

ACES 9. During your life, how often have you felt that you were treated badly or unfairly because of your race or ethnicity?

- A. Never
- B. Rarely
- C. Sometimes
- D. Most of the time
- E. Always

ACES 10.1. During your life, how often have you been treated badly or unfairly because of your sexual orientation?

- A. Never
- B. Rarely
- C. Sometimes
- D. Most of the time
- E. Always

ACES 10.2. During your life how often have you felt that you were treated badly or unfairly because you are or people think you are LGBTQIA+? This could include being treated badly because of who you are sexually attracted to or because you express your gender in a way that is different than what people expect.

- A. Never
- B. Rarely
- C. Sometimes
- D. Most of the time
- E. Always

ACES 11. Have you ever seen someone get physically attacked, beaten, stabbed, or shot in your neighborhood?

- A. Yes
- B. No

ACES 12. During the past 12 months, how many times has a parent or other adult in your home hit, beat, kicked, or physically hurt you in any way?

- A. 0 times
- B. 1 time
- C. 2 or 3 times
- D. 4 or 5 times
- E. 6 or more times

ACES 13. During the past 12 months, how many times has a parent or other adult in your home sworn at you, insulted you, or put you down?

- A. 0 times
- B. 1 time
- C. 2 or 3 times
- D. 4 or 5 times
- E. 6 or more times

ACES 14. During your life, how often have you felt that you were able to talk to an adult in your family or another caring adult about your feelings?

- A. Never
- B. Rarely
- C. Sometimes
- D. Most of the time
- E. Always

ACES 15. During your life, how often have you felt that you were able to talk to a friend about your feelings?

- A. Never
- B. Rarely
- C. Sometimes
- D. Most of the time
- E. Always

ACES 16.1. How often do you feel close to people at your school?

- A. Never
- B. Rarely
- C. Sometimes
- D. Most of the time
- E. Always

ACES 16.2. How often do you feel that you fit in at your current school?

- A. Never
- B. Rarely
- C. Sometimes
- D. Most of the time
- E. Always

ACES 17. Has there ever been a time when your basic needs were not met by a parent or adult in your life, even when that parent/adult could have met your needs? Basic needs include things like having enough to eat, being able to go to a doctor when you were sick, or having a safe place to stay.

- A. Yes
- B. No