



**Cognitive Interview Evaluation of Questions on Child Injury, Sleep
Pattern and Screen Time on behalf of the
National Health Interview Survey**

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1. Introduction

This report summarizes findings from an evaluation of survey questions on child behaviors, intended for inclusion in the 2020 National Health Interview Survey (NHIS)¹. NHIS is an interviewer-administered² nationally representative household survey, providing information on the health of the civilian non-institutionalized population of the United States. NHIS is one of the major data collection programs of the National Center for Health Statistics (NCHS), which is part of the Centers for Disease Control and Prevention (CDC).

When survey questions are modified or new questions added to the NHIS it is standard practice for these questions to be evaluated. This helps ensure that questions accurately collect data consistently across respondent groups, in accordance with the objectives of the research. In 2019, an evaluation of proposed child injury, child sleep and child screen time question modules was conducted by NCHS' Collaborating Center for Questionnaire Design and Evaluation Research (CCQDER) using cognitive interviewing methods.

Sixteen English-speaking adult respondents took part in face-to-face one-on-one cognitive interviews, over two rounds. Respondents answered questions about children under the age of 18, living in their household. The report includes a summary of the main findings for each module, as well as those related to the performance of each question evaluated.

2. Background

The NHIS questions on child behaviors were evaluated on behalf of NCHS' Division of Health Interview Statistics (DHIS) for possible inclusion in the 2020 survey. The rationale behind the inclusion of the three modules of child injury, child sleep and child screen time is as follows:

i) Child injury

Injuries are the leading cause of death in children in the United States. Non-fatal injuries are also a serious health problem³. The 21 general injury questions tested as part of this evaluation were adapted from those already administered to adults as part of the NHIS. The questions were designed to assess incidence, severity, and type of injury occurring among children in the past three months, as well as where the injuries occurred. In particular, head injuries leading to concussion can have an adverse impact on a child's health⁴.

An additional five questions were asked specifically about head injuries that had ever occurred in the child's lifetime, including symptoms associated with the head injury and whether a health care

¹ <https://www.cdc.gov/nchs/nhis/index.htm>

² Face-to-face interviewing is the primary mode of administration for NHIS. The telephone may be used for follow-ups or at the request of the respondent.

³ <https://www.cdc.gov/safecchild/index.html>

⁴ <https://www.cdc.gov/injury/features/pediatric-mtbi-guideline/index.html>

professional had diagnosed a concussion or brain injury. The questions on head injury were adapted from those used by the National Survey of Children's Health⁵.

ii) Child sleep

Insufficient sleep, poor sleep quality, and sleepiness are common problems in children that translate to both health problems and academic difficulties⁶. Five questions on sleep were selected for testing which borrow from the Pediatric Sleep Questionnaire (PSQ)⁷. These questions were designed to determine whether the child has a regular sleep pattern and whether or not the child experiences sleepiness during the day.

iii) Child screen time

As technology has evolved, the use of screened devices has become more common among children. The length of time children spend using these devices could have a negative impact on their health, because it may have an impact on the amount of time children spend being physically active⁸. A single question adapted from the National Survey of Children's Health was evaluated. Previous cognitive interviewing projects, such as that conducted by Massey et al., (2018), indicated that parents struggle to provide an exact number of hours a child used screens on a typical school day. The question evaluated provides a distinct two-hour cut-off, intended to provide a more reliable parental response.

3. Methods

3.1 Cognitive interviewing

This evaluation utilized face-to-face, one-on-one, cognitive interviews. During the interviews, the survey questions under investigation were administered and cognitive interviewing techniques applied in order to make an assessment of the mental processes that respondents went through when answering the survey questions, within the context of their individual life circumstances (Miller, 2011). Using this method, researchers are able to explore construct validity and identify any difficulties respondents encounter in understanding and answering the survey questions (i.e., learning whether respondents interpret the questions as asking about the construct of interest, and if not, why not) (Miller, 2014). Ultimately, the findings from the cognitive interviews help in determining whether questions may be prone to measurement error when administered in a quantitative survey.

⁵ <https://www.childhealthdata.org/learn-about-the-nsch/NSCH>

⁶ <https://www.cdc.gov/healthyschools/sleep.htm>

⁷ <https://pubmed.ncbi.nlm.nih.gov/10733617/>

⁸ <https://www.cdc.gov/nccdphp/dnpao/multimedia/infographics/getmoving.html>

3.2 Study sample and respondent recruitment

For this qualitative evaluation study a small-scale, purposive sample of respondents was selected for interview. With a purposive non-random sample the characteristics of the individual are used as the basis for sample selection, most often chosen to reflect the population under investigation. Indeed, the number of people interviewed is less important than the criteria used to select them (Wilmot, 2005).

CCQDER's operations staff recruited and screened respondents for interview. Respondents were recruited from advertisements placed in local newspapers and Craigslist, as well as through word-of-mouth. Staff reached out to people who expressed an interest in taking part, administered a set of screening questions, and scheduled appointments with those who fulfilled the screening criteria.

Screening criteria included basic demographics such as age, gender, race and ethnicity, as well as questions about the age of any children living in the household and the person's relationship to those children. Screening questions also established whether or not any children living in the household had been injured in the past three months.

In total, sixteen English-speaking adults (aged 18 or over) took part in the cognitive interviews. These respondents were asked to report about one child in their household, under the age of 18, who had been injured in the past three months. In most cases the respondent was the child's parent or grandparent. In a few cases the grandparent was also the child's legal guardian. The age of the children about which the respondents answered the survey questions ranged from age two to age 17. Respondents were asked to consider just one child in the household throughout the interview across the different modules. However, in one case the child initially discussed did not fulfil the age criteria for the module of questions administered and therefore the interviewer asked about a different child in the household.

Interviews were conducted over two rounds, each round comprising a separate sample of respondents. Nine respondents were interviewed during Round 1; seven respondents during Round 2. Round 1 interviews were conducted in August 2019 during the school summer break; Round 2 interviews were conducted shortly after the academic school year had begun in September 2019.

Table 1 shows the demographic breakdown for achieved interviews across both rounds. The sample skewed towards female respondents and those self-reporting as Black or African American. All respondents interviewed self-classified as non-Hispanic or Latino.

Table 1: Respondent Demographics

Demographics	Number of respondents (N=16)
Age group in years	
18-29	1
30-49	9
50-64	5
65 or over	1
Gender	
Female	13
Male	3
Education	
High School Diploma/GED or less	9
2- or 4-year college degree	5
Graduate degree	2
Race/Ethnicity	
American Indian or Alaska Native	0
Asian	0
Black or African American	13
Native Hawaiian or Other Pacific Islander	0
White	3
Two or more races	0
Hispanic or Latino	0

3.3 Data collection

Cognitive interviews were conducted at CCQDER’s cognitive testing laboratory in Hyattsville, MD. Each adult respondent took part in an interview lasting no more than one hour and received \$40 for participating. All interviews were conducted on a voluntary basis and informed written consent was obtained prior to the start of the interview.

In order to achieve a balanced assessment of how a particular respondent went about answering the survey questions, cognitive interviewers asked non-leading, expansive questions (or probes) at most questions, retrospectively, after first administering each module of questions. The approach to cognitive interviewing used by CCQDER staff is interpretivist. That is, it focuses on how respondents’ own life experiences inform their answers to survey questions. As such, staff rely on non-scripted, verbal probing to illuminate the respondent’s circumstances and inform how and why they answered the question the way they did (Cibelli Hibben & de Jong, 2020).

With respect to question administration, ‘don’t know’ and ‘refusal’ codes were available for interviewers to use if respondents answered spontaneously in this way. Consistent with the way the questions are asked by survey interviewers in the field, these response choices were not read to the respondent as part of the

question administration. For the purposes of this study, any interviewer ‘read-if-necessary’ instructions were not administered.

3.4 Data analysis and reporting

Analysis of cognitive interviewing data follows a systematic process of synthesis and reduction from interview to report (Miller et al., 2014). Firstly, all interviews were video and audio recorded to allow the interviewer the freedom to concentrate on the interview and enable a more thorough analysis than could be achieved by simply taking notes during the interview. Interviewers created summary notes about the way in which respondents interpreted and responded to the survey questions from the recordings, evidenced by verbatim statements made by respondents during the interview and observation of non-verbal behaviors. Where this report makes reference to verbatim statements, the respondent’s accounts are italicized. The summary notes were organized by question and entered into CCQDER’s Q-Notes software,⁹ a freely-available application designed to facilitate the management and analysis of cognitive interviews. All notes were anonymized. That is, they did not contain any personal information that could identify those respondents who took part in the interviews. Respondent confidentiality was maintained throughout the analytical process.

As mentioned previously, an interpretivist approach to cognitive interviewing assumes that respondents understand and process survey questions based on their own personal experience. Findings reported incorporate information elicited through probing the respondent narrative, which helps the analyst to identify the basis on which the survey question is answered, and the construct captured (Chepp and Gray, 2014).

Following Round 1 interviewing some questions included in the general injury module were amended or not included in Round 2 interviewing; some remained unchanged. INJURY3 was only asked during Round 1 interviewing; while an introduction to INJURY4 used in Round 1, reminded respondents that the survey reference period was the past three months and provided a definition of the severity of injuries to report, whereas in Round 2 these instructions were also incorporated as part of each question stem. Where it was evident that changes in question wording impacted respondents’ interpretation of the question, that impact is noted in the commentary. Where no impact was evident or where no amendment was made to a question between rounds, findings are reported for both rounds combined. For the question modules on head injury, child sleep and child screen time, all questions included were identical across both rounds. As such, findings are reported on both rounds of data combined for these modules.

⁹ <https://www.cdc.gov/nchs/ccqder/products/qnotes.htm>

4. Findings

4.1 Child injury modules of questions

Questions about child injury were split into two modules which asked about general injuries occurring to any part of the body and specifically head injury.

4.1.1 Child general injury module: Main findings

As mentioned previously, the child general injury questions were adapted from existing NHIS adult injury questions, some of which had been evaluated previously by CCQDER staff (see Jamoom and Massey, 2019). Each of the 16 respondents interviewed during this evaluation were asked to report about injuries sustained by one child living in their household. In total, 13 respondents reported that a child living in their household had sustained some type of injury in the past three months; in three cases they had not. Injuries ranged from minor scrapes to more serious injuries involving broken bones, hospitalization, and a period of convalescence. A few children had experienced more than one injury during the survey reference period of the past three months.

The questions were intended to capture any significant child injury that had occurred during the past three months. The way in which the survey defined significant injury varied between rounds. During Round 1, respondents were asked to consider injuries that had caused the child to miss at least one day of school or daycare, or that had made it difficult for the child to do things they usually do for one day or more. During Round 2, respondents were asked to only consider injuries that had limited the child's usual activities for at least 24 hours, although no definition of 'usual activities' was provided. One (Round 1) respondent reported a minor injury when answering INJURY7 about injuries occurring at home, but which did not qualify as being "significant" according to survey definition. This suggested that the respondent did not internalize the instructions provided in the introductory text, repeated as part of an introduction to INJURY7, about only reporting significant injuries. After discussions with DHIS this wording was changed for Round 2 to remind respondents to only include significant injuries as part of each question stem.

Differing interpretations of key concepts

Respondents made different interpretations of certain concepts used during the administration of this module of questions. These interpretations are described as follows:

Sports and exercise (INJURY4) versus leisure (INJURY6) activities. INJURY4 and INJURY6 asked during which type of activity the child's injury had occurred, either sport (INJURY4) or leisure activities (INJURY6). Respondents did not consistently distinguish between sport and leisure activities. This was irrespective of whether the sporting activity had been part of an organized school activity or whether the child had been playing sports with friends, outside of school hours. As a result, there was some overlap, and the same injury was reported to both questions. For example, a back injury that occurred during soccer practice for the school team was reported in INJURY4 as well as in INJURY6. Similarly, a broken ankle sustained while playing basketball with friends, and a leg fracture sustained while playing in the park, were

also reported to both INJURY4 and INJURY6. In addition, when answering INJURY4, respondents were not always certain whether to include injuries that had occurred as a result of simple play, especially where younger children were concerned who may not be considered old enough to take part in organized sports or deliberate exercise.

At home (INJURY10). A few respondents included injuries that had occurred nearby, but outside of, their home when reporting falls that had occurred at home.

Broken (INJURY14) or Sprained (INJURY16). A few respondents were uncertain about how to classify broken bones or sprains when answering INJURY14 and INJURY16, respectively, unsure of the difference between the two types of injury or assuming that one could automatically result in the other.

Days of school or daycare missed because of injury (INJURY17)

The timing of the interview in relation to the school academic year impacted respondents' answers to INJURY17, the number of school days missed due to injury. When the injury or recuperation time occurred during school break, respondents did not count that time as missing school. One respondent had difficulty answering the question about days missed due to an injury because she had not taken her child back to the daycare facility after the injury had occurred. In addition, when children had sustained more than one injury during the reference period respondents focused on the more serious injury and did not always consider the less serious injury. For example, one respondent reported only the school days missed due to a more serious head injury and not the one day of school also missed as a result of a different injury in which the child sprained an ankle.

Seeing a doctor (INJURY19). One respondent answered 'no' to INJURY19 which asked if the child had seen a doctor or other health professional about their injury because she had not taken her child to 'see' a doctor about the injury; she had only spoken to a doctor on the phone.

Knowledge of injury

With respect to older children, because parents or grandparents were not always present when the injury occurred they were not always aware of what had actually happened to cause it, relying on the teenager's description of the event. For example, when answering about whether or not the child's injury had been the result of a fall (INJURY9), one respondent answered 'yes,' but explained that she knew little of the detail surrounding the event: *"He told me he had fallen. Other than that, I have no knowledge. He just said he fell and then he realized he couldn't move his leg, his ankle."*

4.1.2 Child general injury module: question by question review

INJINTRO1	The next set of questions asks about injuries. People can be injured accidentally, or on purpose. They may hurt themselves or others may cause them to be hurt.
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In order to orient respondents, a transition statement was provided as an introduction to this module on child injury, describing the topic and how, in general, people could be injured or hurt. Although respondents' understanding of this introduction was not probed directly by interviewers, respondents reported injuries where their children had accidentally hurt themselves, “*She fell back on the steps*” or “*He sprained his ankle while playing basketball*” or had been hurt by others, for example, one child had been hit by a car, another had been hit by another player during a football game.

INJURY1	During the past 3 months, did [CHILD’S NAME] have an accident or an injury where any part of his/her body was hurt? <i>Skip: If Yes: go to INJURY2. If No, DK, or Refused: go to HEAD1.</i>	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
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Frequency distribution (N=16)

Response option	Count
Yes	13
No	3

All 16 respondents across both rounds of interviews were asked this question. Thirteen respondents reported that a child member of their household had had at least one accident or injury within the past three months. During probing it was apparent that the types of injuries reported by respondents when answering this question varied, along with severity. In one case a respondent reported an injury that had occurred outside of the reference period of three months.

Types of injury and level of severity

Revealed during probing, the types of injuries reported in response to this question, along with the severity of the injury, varied. They ranged from minor cuts and scrapes to much more serious head or back injuries, dislocations, fractures, and injuries requiring multiple stitches. In nine cases, the injury had involved the child seeing a doctor or other health care professional, including eight which had involved the child going to the Emergency Room (ER), and three which had further involved overnight hospital stays. While some respondents considered that an injury would need to be “*serious*” for them to report it in a survey, meaning the injury would most likely involve a visit to the ER, a few of those reporting injuries involving younger children reported injuries that did not involve any medical oversight. For example, one respondent who answered ‘yes’ reported an injury sustained by a two year old who had tripped and hit his head on a cabinet; another respondent reported her five-year-old son falling off his bike and scraping his knee.

Reference period

Respondents were able to remember approximately when the child’s injury had occurred. Indeed, when they had been present themselves, respondents were able to recount the event and describe the injury in some detail. Almost all reported injuries occurring within the three-month survey reference period although there was some evidence of a respondent thinking beyond the reference period (also referred to as ‘telescoping’) in one instance. This one respondent reported an event that happened four months prior to the interview. She described her daughter’s continuing treatment at the time of the interview. A similar phenomenon of reporting injuries that had occurred more than three months prior to the interview when treatment was ongoing, was described by Jamoom and Massey (2019).

INJURY2	Did any of these injuries limit [CHILD’S NAME]’s usual activities for at least 24 hours after the injury occurred? <i>Routing for Round 1</i> <i>SKIP: If No, DK, or Refused go to HEAD1. ELSE if Yes go to INJURY3.</i> <i>Routing for Round 2</i> <i>SKIP: If Yes: go to INJINTRO2. Else If No, DK, or Refused; go to HEAD1.</i>	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
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Frequency distribution (N=13)

Response option	Count
Yes	10
No	3

In total, 13 respondents were routed to this question. Although their definition of ‘usual activities’ varied, all answered with respect to the limiting effect of the injury on their child’s usual activity levels, either because of restrictions in movement resulting directly from the injury or because of activity limitations set by the parent/guardian or a medical professional.

Level of severity

Those considering less serious injuries, including the injuries described for the two-year old and five-year old in INJURY1 of this report, answered ‘no’ to this question.

Defining ‘usual activities’

No definition of ‘usual activities,’ or the degree to which those usual activities may be limited, was provided in the question text. Respondents who answered that the child’s usual activities had been limited for at least the 24-hour specified time period after the injury, described restrictions in movement, such as walking, or their child’s inability to take part in the activities they enjoyed, such as playing sports. One respondent described how her two year old had bitten his tongue when he fell off a chair. This child had difficulty eating for the requisite period of time after the incident, and this respondent considered eating to be a usual activity.

A few respondents qualified their ‘yes’ response to this question explaining that it was not that their child was unable to take part in their usual activities but because the doctors had instructed them not to or because the restriction had been imposed by them as parents.

“They [the doctors] told him no physical activities, no playing rough, no football and all that stuff.”

“It’s not that he was unable, we don’t want him to do it! I mean a child got injured and now you’re going to let him go out and play? No! It’s more of us, not him.”

This qualification was not apparent among those answering ‘no’ to this question.

INJURY3 (Round 1 only)	Did any of these injuries cause [CHILD’S NAME] to miss at least one day of [FILL (if age 5-17): school; (if age 3-4): school or daycare; (if age 0-2): daycare]? <i>SKIP: If Yes to INJURY2 or INJURY3 and Child’s age is 3 or older: go to INJURY4. If Yes to INJURY2 or INJURY3 and Child’s age <3; go to INJURY7. Else If No, DK, or Refused to INJURY2 and INJURY3; go to HEAD1.</i>	1. YES 2. NO 6. CHILD DOES NOT GO TO [FILL (if age 5-17): school; (if age 3-4): school or daycare; (if age 0-2): daycare] 7. REFUSED 9. DON’T KNOW
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Frequency distribution (N=7)

Response option	Count
Yes	3
No	4

This question was asked of seven respondents during Round 1 interviewing only. Respondents understood the question as asking about whether their child had missed any schooling as a result of their injury. For example, one respondent who answered ‘yes’ explained that her child was unable to attend school in-person but the school had provided a home tutor: *“...when I went up to the school, you know, to get information on the tutor, the school said it will be just like she was in school. She wasn’t going to miss anything.”* One respondent who answered ‘no’ explained that the injury had occurred during the school summer break. When the child attended daycare respondents’ considered attendance at the daycare premises.

Complementarity of INJURY2 and INJURY3

Those who answered that their child had not missed at least one day of school or daycare (INJURY3) also answered that the injury had not limited their child’s usual activities for at least 24 hours (INJURY2). Some of those who answered that their child had missed at least one day of school or daycare (INJURY3) also answered that their child had been limited in their usual activities for at least 24 hours (INJURY2). However, two respondents answered that their child had not missed school or daycare even though the child’s usual activities had been limited. One respondent, talking about her 17-year-old son, explained that his injury had occurred during the school summer break and therefore answered ‘no’ to INJURY3: *“No, since school is out.”* The other respondent, answering about her two-year-old child who had bitten his tongue when he fell off a chair, said that the child still attended daycare, even immediately after the injury, although he couldn’t eat: *“He just drank milk and had juice until his mouth healed.”*

INJURY3 was not asked during Round 2 interviewing. Instead, respondents were routed directly to INJURY4 and instructed only to consider injuries that had limited the child’s usually activities for at least 24 hours as a preamble to the set of questions about the type of activity during which the injury had occurred.

<p>INJURY4 (Round 1)</p>	<p>[ONLY IF CHILD’S age IS 3-17] Please think only about the injuries that occurred IN THE PAST 3 MONTHS that caused [CHILD’S NAME] to miss at least one day of [FILL (if age 5-17): school; (if age 3-4): school or daycare, or that made it difficult for him/her to do things that he/she usually does for one day or more.</p> <p>Did any of these injuries occur while [CHILD’S NAME] was playing sports or exercising, including walking, biking, or running, playing baseball, basketball, football or doing any other physical activity?</p> <p><i>Read if necessary: Include recreational sports such as skating, skiing, tennis, golf, bowling, or fishing.</i></p>	<p>1. YES 2. NO 7. REFUSED 9. DON’T KNOW</p>
<p>INJINTRO 2 (Round 2)</p>	<p>For the next questions, please think only about the significant injuries that occurred IN THE PAST 3 MONTHS. By significant, I mean those injuries that limited [CHILD’S NAME]’s usual activities for at least 24 hours after the injury occurred.</p> <p><i>SKIP: If Child’s age is 3 or older: go to INJURY4. If Child’s age <3; goto INJURY7.</i></p>	
<p>INJURY4 (Round 2)</p>	<p>[ONLY IF CHILD’S age IS 3-17]: In the past 3 months, did any significant injuries occur while [CHILD’S NAME] was playing sports or exercising, including walking, biking, or running, playing baseball, basketball, football or doing any other physical activity?</p> <p><i>Read if necessary: Include recreational sports such as skating, skiing, tennis, golf, bowling, or fishing.</i></p>	<p>1. YES 2. NO 7. REFUSED 9. DON’T KNOW</p>

Frequency distribution (N=8)

Response option	Count
Yes	5
No	3

All respondents who answered ‘yes’ to INJURY2, and whose child was aged three to 17, were routed to INJURY4 in both rounds. However, during Round 1, an introduction to this question reminded respondents to consider only injuries which had occurred in the past three months and instructed them to only consider injuries which had caused the child to miss at least one day of school or daycare, or had made it difficult for the child to do things that they usually do for one day or more. Respondents were then required to remember these instructions when answering subsequent questions in this module - although they were reminded intermittently with a similar introduction to INJURY7 and INJURY17. During Round 2, respondents were

instructed to report only 'significant' injuries, defined as those injuries that limited the child's usual activities for at least 24 hours after the injury occurred. This instruction along with the instruction to only report injuries occurring in the past three months was then incorporated as part of each question stem. Since the majority of respondents thought about and reported on only one injury that had occurred during the past three months, it was not possible to fully evaluate this particular change to the way in which the question was presented to respondents in Round 2.

Eight respondents were routed to this question across both rounds of interviews. All understood the question as asking about injuries which occurred while their child was taking part in sports or some form of deliberate exercise. Most were able to answer without difficulty. However, those reporting on younger children queried whether the activity their child had taken part in would be defined as such.

Definition of playing sports or exercising

Across both rounds of testing five respondents answered 'yes' to this question. Four cited injuries that had occurred while playing sports, including cheerleading, football, soccer and basketball, irrespective of whether the child had been playing the sport competitively or for fun with friends. However, respondents were not always sure whether to include injuries that had occurred as a result of simple play, especially where younger children were concerned who may not be considered old enough to take part in sporting activities or deliberate exercise. This uncertainty was demonstrated by two respondents both answering about an injury their five-year-old children had sustained while playing. One respondent answered 'yes' to this question; the other answered 'no.' The respondent who considered that the child's injury had occurred while playing sports or exercising initially questioned whether playing in the park counted as exercise, but rationalized that since her child had been running around she would include the injury under this heading: "*I don't know if the park counts as a physical activity...I guess running and playing.*" However, the person who answered 'no' explained that her son had been "*playing on the monkey bars*" at the daycare center but that she did not count that activity as sport or exercise:

"He's not into sports just yet. But he is active. He does like the kids stuff, the baby stuff. I don't know if daycares do football and things like that. But ya, he's just active. They do the playground stuff...he wasn't exercising on the monkey bars....What kids do. Acting crazy."

INJURY5 (Round 1)	[ONLY IF CHILD'S age IS 3-17] Did any of these injuries occur while [CHILD'S NAME] was doing household activities, such as housework, cooking, chores, or yardwork?	1. YES 2. NO 7. REFUSED 9. DON'T KNOW
INJURY5 (Round 2)	[ONLY IF CHILD'S age IS 3-17] In the past 3 months, did any significant injuries occur while [CHILD'S NAME] was doing household activities, such as housework, cooking, chores, or yardwork?	1. YES 2. NO 7. REFUSED 9. DON'T KNOW

Frequency distribution (N=8)

Response option	Count
Yes	0
No	8

No one said that any of their child's injuries occurred while doing household activities. Accidents that occurred in the home but which did not involve doing household activities such as housework, cooking, chores or yardwork, were not reported in this question. For example, one respondent did not include an injury that her older child had sustained when he tripped and hit his head while carrying a heaving object inside the home. This injury was reported in INJURY7 which asked if the injury occurred at home.

INJURY6 (Round 1)	[If age 3-17] Did any of these injuries occur while [CHILD'S NAME] was engaged in leisure activities, such as playing, hanging out with friends, doing a hobby, or just relaxing?	1. YES 2. NO 7. REFUSED 9. DON'T KNOW
INJURY6 (Round 2)	[If age 3-17] In the past 3 months, did any significant injuries occur while [CHILD'S NAME] was engaged in leisure activities, such as playing, hanging out with friends, doing a hobby, or just relaxing?	1. YES 2. NO 7. REFUSED 9. DON'T KNOW

Frequency distribution (N=8)

Response option	Count
Yes	6
No	2

This question was confusing for some respondents who considered the activity their child had been engaged in when their injury occurred as both a sport in INJURY4 and a leisure activity in INJURY6. As a result some double counting was evident in INJURY4 and INJURY6. In total, four respondents reported the same injury to both questions.

In three cases, respondents reported the same injury as having been sustained while engaged in leisure activities (hanging out with friends and playing basketball) in INJURY6 and while playing sports (organized basketball and soccer games) in INJURY4.

The two respondents who had previously deliberated over including an injury suffered by their young children as having been sustained during sport or exercise while playing in the park or at daycare in

INJURY4 (one choosing to answer ‘yes’ and the other ‘no’), now felt that this question (INJURY6) was a better fit and both answered ‘yes.’ As one of these respondents explained, “*That was straightforward because I would say the park is kind of a ‘leisure activity’ play time.*”

<p>INJURY7 (Round 1)</p>	<p>The next two questions are about where [CHILD’S NAME] was when s/he was injured. Please continue to only consider those injuries that happened IN THE PAST 3 MONTHS that caused him/her to miss at least one day of [FILL (if age 5-17): school; (if age 3-4): school or daycare; (if age 0-2): daycare], or that made it difficult for him/her to do things that he/she usually does for one day or more.</p> <p>Did any injury occur while [CHILD’S NAME] was at his/her home?</p> <p><i>Read if necessary: Include the yards, garage, basement, and other places on the home property.</i></p>	<p>1. YES 2. NO 7. REFUSED 9. DON’T KNOW</p>
<p>INJURY7 (Round 2)</p>	<p>In the past 3 months did any significant injuries occur while [CHILD’S NAME] was at his/her home?</p> <p><i>Read if necessary: Include the yards, garage, basement, and other places on the home property.</i></p>	<p>1. YES 2. NO 7. REFUSED 9. DON’T KNOW</p>

Frequency distribution (N=10)

Response option	Count
Yes	2
No	8

Two respondents answered ‘yes’ to this question. The injury sustained within the home, but not reported in INJURY5 because the respondent did not consider that her child had been engaged in household chores, was reported in INJURY7 as an injury that had occurred at home. Another respondent reported an injury that had occurred outside but close to home on the sidewalk, when her son had fallen from his bike and scraped his knee.

INJURY8 (Round 1)	<p>[ONLY IF CHILD’S age IS 3-17] Did any injury occur while [CHILD’S NAME] was at [FILL (if age 5-17): school; (if age 3-4): school or a daycare center; (if age 0-2): a daycare center]?</p> <p><i>Read if necessary: Include classrooms, playgrounds, sports fields, swimming pools, parking lots and other places on school or daycare property.</i></p>	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
INJURY8 (Round 2)	<p>In the past 3 months, did any significant injuries occur while [CHILD’S NAME] was at [FILL (if age 5-17): school; (if age 3-4): school or a daycare center; (if age 0-2): a daycare center]?</p> <p><i>Read if necessary: Include classrooms, playgrounds, sports fields, swimming pools, parking lots and other places on school or daycare property.</i></p>	1. YES 2. NO 7. REFUSED 9. DON’T KNOW

Frequency distribution (N=10)

Response option	Count
Yes	4
No	6

When answering this question respondents considered the physical building or the grounds of their child’s own school or daycare facility when they considered where the injuries occurred. Those who answered ‘yes’ reported that the injuries had occurred while playing sports for the school team, or the injuries had occurred while the child was at daycare. One respondent, who answered ‘no,’ explained that even though the injury had occurred on school premises it was not the child’s school, and it had occurred during the summer break.

INJURY9 (Round 1)	<p>The next questions are about two ways that [CHILD’S NAME] might have been injured. Did [CHILD’S NAME] have any injury as a result of a fall or falling?</p> <p><i>SKIP: If Yes to INJURY7: go to INJURY10. ELSE If Yes to INJURY8; go to INJURY11. ELSE; go to INJURY12.</i></p>	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
INJURY9 (Round 2)	<p>In the past 3 months, did [CHILD’S NAME] have any significant injury as a result of a fall or falling?</p> <p><i>SKIP: If INJURY7=YES: go to INJURY10. ELSE If INJURY8=YES (and INJURY7 is No, DK, or RF); go to INJURY11. ELSE; go to INJURY12.</i></p>	1. YES 2. NO 7. REFUSED 9. DON’T KNOW

Frequency distribution (N=10)

Response option	Count
Yes	6
No	4

When answering this question respondents considered injuries sustained as the result of a fall from a height. Examples provided included falling from an object (such as a children’s climbing frame), or from jumping

and landing awkwardly (such as when playing basketball or doing flips while cheerleading), or from falling (as a result of a trip or being pushed over by other people).

Interestingly, one respondent changed his answer from a ‘no’ to a ‘yes’ response because he was considering how a shoulder injury had been sustained, whether from the initial impact with other people during a football game or the resultant fall: “They [doctors] are trying to say that the dislocation didn’t come from the hit, it actually came from the fall when he fell on the shoulder. So, that’s why I went back and said well ‘it was because of the way he fell on the shoulder.’” Another respondent who answered ‘yes,’ went on to explain that all of her two year old’s injuries were the result of falling because he was “not steady” on his feet at that age.

One Round 2 respondent answered ‘no’ to this question because the child was still undergoing tests to evaluate the extent of his injury and the respondent simply didn’t know yet if there had been any significant damage caused: “Because we’re still taking him to get checked out...Because they say sometimes you can find out things later on...He got hurt, but you said, ‘significant’... but I can’t give you significant.”

INJURY10	Did any fall occur while [CHILD’S NAME] was at his/her HOME? <i>Skip: If INJURY8 = Yes go to INJURY11. Else; go to INJURY12</i>	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
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Frequency distribution (N=2)

Response option	Count
Yes	2
No	0

Only two respondents were routed to this question since they had provided a ‘yes’ response to INJURY7, which asked if the injury had occurred at home. Both injuries were the result of falls, and both were said to have occurred at home, albeit one of the injuries occurring on the sidewalk outside of the home.

INJURY11	Did any fall occur while [CHILD’S NAME] was at [FILL (if age 5-17): school; (if age 3-4): school or daycare; (if age 0-2): daycare]?	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
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Frequency distribution (N=4)

Response option	Count
Yes	4
No	0

Those who answered ‘yes’ to INJURY8, which asked if the injury had occurred at school or daycare, also answered ‘yes’ to INJURY11 about the fall occurring at school or daycare, and answered the question on the same basis.

INJURY12 (Round1)	<p>Did [CHILD’S NAME] have any significant injury as a result of being in a motor vehicle crash or being hit by a motor vehicle while walking or biking?</p> <p><i>Read if necessary: Motor vehicles include cars, trucks, vans, buses, motorcycles, motorized scooters, motorized carts, tractors, ATVs, snowmobiles, dune buggies, and other motorized vehicles.</i></p> <p><i>SKIP: If INJURY12=YES: go to INJURY13. Else; go to INJURY14</i></p>	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
INJURY12 (Round 2)	<p>In the past 3 months, did [CHILD’S NAME] have any significant injury as a result of being in a motor vehicle crash or being hit by a motor vehicle while walking or biking?</p> <p><i>Read if necessary: Motor vehicles include cars, trucks, vans, buses, motorcycles, motorized scooters, motorized carts, tractors, ATVs, snowmobiles, dune buggies, and other motorized vehicles.</i></p> <p><i>SKIP: If INJURY12=YES: go to INJURY13. Else; go to INJURY14</i></p>	1. YES 2. NO 7. REFUSED 9. DON’T KNOW

Frequency distribution (N=10)

Response option	Count
Yes	0
No	10

This question was not systematically probed, therefore it is unclear why one respondent, who had previously explained that her son had been hit by a car, answered ‘no’ to this question.

INJURY13	<p>Was [CHILD’S NAME] a [if age>=6: a driver,] passenger, bicyclist, a pedestrian, or doing something else when this occurred?</p> <p><i>Read if necessary: Motor vehicles include cars, trucks, vans, buses, motorcycles, motorized scooters, motorized carts, tractors, ATVs, snowmobiles, dune buggies, and other motorized vehicles.</i></p>	<p><i>(MARK ALL THAT APPLY)</i></p> 1. Driver 2. Passenger 3. Bicyclist 4. Pedestrian 5. Something else 7. Don’t know 9. Refused
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As no respondents were routed to this question, it was neither administered or systematically probed. No findings are available.

INJURY14 (Round 1)	Did any of [CHILD'S NAME]'s injuries result in broken bones?	1. YES 2. NO 7. REFUSED 9. DON'T KNOW
INJURY14 (Round 2)	Did any significant injuries result in broken bones?	1. YES 2. NO 7. REFUSED 9. DON'T KNOW

Frequency distribution (N=10)

Response option	Count
Yes	4
No	6

Respondents based their answers largely on the fact that, as the parents or guardians of the child, they were responsible for ensuring the child had seen a medical practitioner. In all but two cases, where the child's injury was considered less severe, the child had been taken to a medical facility where X-rays had been taken. Respondents therefore knew whether or not the injury had resulted in any broken bones. For example, one respondent who answered 'no' said, *"They took an X-ray to make sure it wasn't broken,"* while another respondent who answered 'yes' explained, *"I took her to the emergency room right away, just to make sure...to have someone look at it."*

One respondent was unsure how to answer because the child had *"broke a disc in her back."* This respondent initially decided that a broken disc was not a broken bone, but changed her mind during probing and answered 'yes.'

INJURY15 (Round 1)	Did any of [CHILD'S NAME]'s injuries require stitches or staples?	1. YES 2. NO 7. REFUSED 9. DON'T KNOW
INJURY15 (Round 2)	Did any significant injuries require stitches or staples?	1. YES 2. NO 7. REFUSED 9. DON'T KNOW

Frequency distribution (N=10)

Response option	Count
Yes	4
No	6

When answering affirmatively to this question respondents thought about any number of stitches that had been required at the time of the injury:

"They gave him some pain medication and a couple of stitches."

"Yes, and bust his head open. He had 16 stitches."

One respondent answered ‘yes’ because her daughter had required surgery a few days after sustaining a back injury, which meant that she had required stitches: *“She had surgery, so yes.”*

INJURY 16 (Round 1)	Were any of [CHILD’S NAME]’s injuries a sprain or strain?	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
INJURY 16 (Round 2)	Were any significant injuries a sprain or strain?	1. YES 2. NO 7. REFUSED 9. DON’T KNOW

Frequency distribution (N=10)

Response option	Count
Yes	5
No	4
Don’t know	1

One respondent, who had described her child having sprained his ankle, answered ‘no’ to this question because the sprain had not been diagnosed by a medical practitioner.

One respondent who answered ‘yes’ to this question had also answered ‘yes’ to question 14 about injuries resulting in broken bones. She was considering the same injury but explained that her son’s ankle was both sprained and broken: *“He sprained his ankle...He had a mix and it was broken.”*

Another respondent answered ‘don’t know’ because she was not sure if a fracture would also mean that the ankle was sprained. She had used both terms to describe the injury during probing: *“Yes...or can I say I don’t know?... Cause I don’t know if a fracture is a sprain, technically, so I’m not sure.”*

It is worth noting that this set of three questions (INJURY14, INJURY 15, and INJURY16) did not capture an injury resulting in a dislocated shoulder and for which the child had been taken to the ER for treatment.

INJURY17 (Round 1)	<p>The next questions are about the impact of [CHILD’S NAME]’s injuries. Please continue to only consider those injuries that happened IN THE PAST 3 MONTHS that caused him/her to miss at least one day of [FILL (if age 5-17): school; (if age 3-4): school or daycare; (if age 0-2): daycare], or that made it difficult for him/her to do things that he/she usually does for one day or more.</p> <p>DURING THE PAST 3 MONTHS, how many days of [FILL (if age 5-17): school; (if age 3-4): school or daycare; (if age 0-2): daycare], did [CHILD’S NAME] miss because of injuries?</p> <p><i>SKIP: If 0: go to INJURY19. Else; go to INJURY18.</i></p>	<hr/> Number of days
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INJURY17 (Round 2)	<p>The next questions are about the impact of [CHILD’S NAME]’s significant injuries. Please continue to think only about significant injuries that limited [CHILD’S NAME]’s usual activities for at least 24 hours after the injury occurred.</p> <p>DURING THE PAST 3 MONTHS, how many days of [FILL (if age 5-17): school; (if age 3-4): school or daycare; (if age 0-2): daycare], did [CHILD’S NAME] miss because of injuries?</p> <p><i>SKIP: If 1-99; go to INJURY18. ELSE; go to INJURY19.</i></p>	<hr/> Number of days
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Frequency distribution (N=10)

Response option	Count
0 days	3
>0 days	6
Don’t know	1

As the child’s parent or guardian, respondents theoretically had direct knowledge about whether or not the child they were reporting on had missed any school or daycare as a result of a particular injury. However, they generally provided estimates (instead of exact counts) of the total number of days missed in the past three months. For instance, as one respondent was answering she thought aloud and said, “*Umm, I’ll say three.*”

The timing of the interview in relation to the school academic year impacted on the answers provided. One respondent answered that her child had missed 20 days of school during the past three months as a result of a significant injury: “*I want to say 20 something days or a little more.*” This respondent would have reported more missed school days but the injury occurred 20 days prior to the end of the school semester, after which time the child was on summer break. Another respondent answered ‘zero’ as the injury had occurred during summer break and his son had recovered by the start of the school semester: “*...this happened before school started.*”

In one case a respondent only reported the school days missed due to the more serious head injury. This respondent did not include in her estimate the one day of school also missed as a result of a different injury in which the child sprained an ankle.

One respondent was unable to provide an answer to this question because after her son’s injury she did not take him back to the daycare facility: “*After the injury, he doesn’t attend daycare anymore... I don’t really know how to answer that then...But if he is not enrolled, then he is not missing days.*”

INJURY18	Do you expect [CHILD’S NAME] to miss any more days of [FILL (if age 5-17): school; (if age 3-4): school or daycare; (if age 0-2): daycare], because of injuries that occurred DURING THE PAST 3 MONTHS?	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
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Frequency distribution (N=6)

Response option	Count
Yes	1
No	5

The one respondent who answered ‘yes’ to this question did so on the basis that the her daughter was still attending physical therapy twice a week for which she needed to take the morning off school, and would further need to attend a final check-up appointment with the doctor.

INJURY19 (Round 1)	Did [CHILD’S NAME] see a doctor or other health professional about any of these injuries? <i>SKIP: If Yes: go to INJURY20. Else; go to HEAD1.</i>	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
INJURY19 (Round 2)	Did [CHILD’S NAME] see a doctor or other health professional about any of these significant injuries? <i>SKIP: If Yes: go to INJURY20. If No, DK, or Refused; go to HEAD1.</i>	1. YES 2. NO 7. REFUSED 9. DON’T KNOW

Frequency distribution (N=10)

Response option	Count
Yes	9
No	1

The children of those who answered ‘yes’ to this question had all been assessed by a medical doctor at the time of their injury, either in an emergency room or urgent care facility. The one respondent who answered ‘no’ understood the question to be asking whether the child had an in-person medical assessment. She explained that she had spoken to the doctor on the phone about the incident but had not taken the child to “see” the doctor.

INJURY20 (Round 1)	Did [CHILD’S NAME] go to an emergency room for any of these injuries?	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
INJURY20 (Round 2)	Did [CHILD’S NAME] go to an emergency room for any of these significant injuries?	1. YES 2. NO 7. REFUSED 9. DON’T KNOW

Frequency distribution (N=9)

Response option	Count
Yes	8
No	1

Those who answered ‘yes’ to this question had either taken the child to the ER themselves or the child had gone there by ambulance. One respondent explained that she had had no choice but to take her child to the ER because the injury (which required stitches) had “*happened pretty late*” in the evening, at around “8:30 or quarter to 9” and the ER was the only place they could go.

The one respondent who answered ‘no’ explained that she had taken her son to an urgent care facility rather than the ER.

INJURY21 (Round 1)	Was [CHILD’S NAME] hospitalized overnight for any of these injuries?	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
INJURY21 (Round 2)	Was [CHILD’S NAME] hospitalized overnight for any of these significant injuries?	1. YES 2. NO 7. REFUSED 9. DON’T KNOW

Frequency distribution (N=9)

Response option	Count
Yes	3
No	6

Those who said that their child had been hospitalized overnight for their injury explained that the child was either awaiting surgery following the injury which was why they had been hospitalized, or had been kept in just for one night for observation: “*They just wanted to run tests and make sure that nothing else was wrong. Because it was a fall, there are additional checks for young children.*”

4.1.3 Child head injury module: main findings

Following the general questions about injuries which had occurred in the past 3 months, respondents were asked five additional questions about any head injuries their child had ever sustained, and the injuries’ outcomes. As mentioned previously, these questions were adapted from questions used on the National Survey of Children’s Health. The same questions were asked over both rounds of cognitive testing. No amendments were made to the questions between rounds and therefore findings are reported for both rounds combined. In total, 16 respondents were routed to this module.

The introduction to the module asked respondents to consider all head injuries that may have been sustained during different activities, or from being hit by something or someone. HEAD1 through HEAD3 asked about the different symptoms, both physical and emotional, that may have resulted from a head injury.

Respondents who reported head injuries resulting in the child being knocked out or losing consciousness (HEAD1) were not asked about other symptoms, including memory loss, headaches, blurred vision and behavioral changes (HEAD2 or HEAD3). All respondents were asked HEAD4 and HEAD5 about being checked or diagnosed with concussion or brain injury, respectively.

Basis for reporting head injury

For most of the head injuries reported in this module, respondents had sought medical care for their child and therefore their reports were based on what they had been told by the medical provider. However, in a few cases, respondents noted that they had not considered the injury serious enough to warrant seeking medical care. Accordingly, some of these respondents reported the injury in this section, while others (who revealed the injury during probing) did not. Indeed, a few respondents mentioned that it was not unusual for children, especially younger children, to “hit” their heads, but that the injuries sustained were bruises and bumps that did not require treatment from a medical professional. The quotes below illustrate this point and were made by respondents whose children had not sustained any type of head injury.

“When you have this many kids let me tell you. They love to horseplay and stuff happens. I can’t even give you a scenario because stuff is happening all the time. There is always someone crying, ‘oh, he threw the toy at my head.’ But it’s never been to the extent where we needed to go to the emergency room. It’s always back and forth, back and forth. He probably hit his head too.”

“He had an accident from running and tripped. He’s two years old and not coordinated a lot. Um, hit his head. He wasn’t real serious, or we would have brought him to the emergency room...And it protruded and we put ice on it and gave him Tylenol. He did all right. We didn’t let him go to sleep right away.”

“She has hit her head before because she is clumsy... This is just kid stuff – running into a wall or corner of a table or something. She hasn’t hit her head to the point of blacking out or anything like that - nothing more than an ice pack or something would help.”

Relationship with child

One grandmother, who had become the child’s guardian at a later point in their life, was not necessarily aware of all past injuries, but took her best guess when answering the questions. She had been told by doctors that her ward had sustained brain injury as a result of a head injury (HEAD4 and HEAD5) and assumed, therefore, that the head injury may also have resulted in loss of consciousness (HEAD1).

Questions not mutually exclusive

Answers provided to HEAD2 (about being dazed or experiencing a memory gap) and HEAD3 (about experiencing headaches, vomiting, blurred vision, or changes in mood or behavior) were not always mutually exclusive. Where the child had experienced symptoms that aligned with both questions one respondent answered ‘yes’ to both.

4.1.4 Child head injury module: question by question review

HEAD INJURY INTRO	The next questions are about head injuries that may have occurred anytime in [CHILD’S NAME]’s life. Please think about all head injuries, for example, from playing sports, car accidents, falls, or being hit by something or someone.
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In order to orient respondents a transition statement was provided as an introduction to this section on child head injury, describing the topic and examples of the ways in which a head injury could be sustained. Although respondents’ understanding of this introduction was not probed directly by interviewers, respondents considered different ways in which their children had sustained head injuries over the course of their lives. For example, they included head injuries as a result of a car accident, playing sports, falling into a coffee table at home, and the child bumping their own head against a wall in a tantrum.

HEAD1	As a result of a blow or jolt to the head, has [CHILD’S NAME] ever been knocked out or lost consciousness?	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
	<i>SKIP: If HEAD1= Yes go to HEAD4. Else; go to HEAD2.</i>	

Frequency distribution (N=16)

Response option	Count
Yes	2
No	14

Two respondents answered ‘yes’ and said that the head injury had resulted in their child being knocked out or losing consciousness. Of these, one had been told by a hospital doctor that her daughter had been concussed. The other had taken custody of her grandchild when the child was older. She knew that the child had sustained a head injury prior, but was not sure if that injury had resulted in loss of consciousness: *“I kind of heard she was, before [child] came to me, but I don’t know...lets say yes.”*

All other respondents answered ‘no’ to this question. In some cases the child had sustained a head injury requiring medical attention, just not one which had led to the child being knocked out or losing consciousness. These injuries were generally picked up at HEAD2 and HEAD3.

However, one respondent, who answered ‘no,’ commented on the way in which the question was phrased. She said that to her the phrase ‘as a result of a blow or jolt to the head’ implied that someone had hit her child: *“He hit his head, but it’s not like someone hit him. He hit his head and wasn’t like completely unconscious. Just a little disoriented. But that’s not unconscious...No, he wasn’t unconscious.”* Possibly because of the young age of the child and the location of the incident, this respondent expressed concern about the way in which the question was phrased. She said it might suggest that her child had been abused in some way:

“That’s very scary sounding. No, he’s not being abused or anything. We’re just trying to figure out what happened at daycare. But, no, no, no, no, no, no. Not at all. No! Because that language right there is like CPS language... ‘blow to a child’ ...is very serious language. For me it correlates with child abuse...Jolt, blow, hurt...”

In this case, this interpretation may have led to a false negative response to HEAD2 and HEAD3. This respondent answered ‘no’ to both questions despite describing the serious nature of the injury requiring stitches, mentioning that her child had been disorientated at the time of the injury and that she had observed subsequent changes in her child’s behavior, which she thought might be attributable to the head injury. Nevertheless the injury was reported in HEAD4 and HEAD5.

HEAD2	As a result of a blow or jolt to the head, has [CHILD’S NAME] ever been dazed or had a gap in his/her memory?	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
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Frequency distribution (N=14)

Response option	Count
Yes	4
No	10

Respondents interpreted this question differently. As a result there was some evidence of possible false positive or false negative reporting.

For some the term ‘dazed,’ or the use of that term in combination with ‘memory loss,’ used in the question stem, implied a more serious outcome. For example, one respondent, who answered ‘no’ understood the question to be asking if her son had been knocked unconscious: *“He hit his head and wasn’t like completely unconscious. Just a little disoriented. But that’s not unconscious.”* Another, who also answered ‘no’ explained that her son *“...got tackled one time and felt dizzy a little bit”* but that he had not had a gap in his memory *“knocked out, or anything like that.”* One respondent, who answered ‘yes’ said she assumed her daughter had hit her head because the child looked dazed *“Just the look on her face”* and complained of a headache.

One respondent answered ‘yes’ based on a medical appraisal of her child’s condition but was dubious as to whether her child’s memory loss was valid: *“...once they got her to the hospital. They were asking her a lot of questions and she was acting like she couldn’t remember. But I tell them that kids sometimes they don’t want to answer them.”*

In one case, a respondent only appeared to hear the last part of the question about gaps in memory. He answered ‘yes’ to the question but on probing said that his child had never experienced any type of head injury, just that his child had difficulty with remembering and concentrating. (A question about the child’s difficulty remembering or concentrating had been asked at the beginning of the interview as part of a different module of questions.¹⁰)

There was also some evidence of a question order effect. One respondent answered ‘no’ to this question thinking of the head injury her son had sustained within the past 3 months when he tripped and fell in the home and which she had been answering about during the previous injury module of questions. Only on probing did this respondent consider if her child had ever been dazed or had a gap in his memory as a result of another other head injury.

¹⁰ See Miller, et al. (forthcoming).

HEAD3	As a result of a blow or jolt to the head, has [CHILD’S NAME] ever had headaches, vomiting, blurred vision, or changes in mood or behavior?	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
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Frequency distribution (N=14)

Response option	Count
Yes	3
No	11

Those answering ‘yes’ to this question reported headaches and in one case also blurred vision.

Answers provided to HEAD2 and HEAD3 were not always mutually exclusive. Although one respondent considered different head injuries sustained by her child when answering these two questions, another respondent considered the same head injury and answered ‘yes’ to both questions because her son was dazed as a result of the injury (HEAD2) and had a headache as a result of the same injury (HEAD3).

HEAD4	Has [CHILD’S NAME] ever been checked for a concussion or brain injury by a doctor, nurse, athletic trainer, or other health care professional? <i>SKIP: If HEAD4=YES: go to HEAD5. ELSE; [if age>=6 go to CHILD SLEEP; if age<6 go to SCREENTIME]</i>	1. YES 2. NO 7. REFUSED 9. DON’T KNOW
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Frequency distribution (N=16)

Response option	Count
Yes	7
No	9

All but one of the respondents answering ‘yes’ to this question referred to the child having been checked by a medical doctor, most initially in the ER at the time of the incident. As evidence, some respondents also mentioned the kind of tests their child had undergone, such as medical imaging tests including an MRI¹¹ or CAT¹² scan. The one respondent said that her child had been attended to on the football field by the “*team’s medical professional,*” whom she said was not a doctor. She was told that the child did not have concussion and no further medical oversight was sought.

Those who answered ‘no’ to this question did so because they had not considered the injury serious enough to warrant medical attention, or their child had never sustained a head injury.

¹¹ Magnetic Resonance Imaging

¹² Computed Axial Tomography

HEAD5	<p>Did a doctor, nurse, athletic trainer, or other health care provider ever say that [CHILD’S NAME] had a concussion or brain injury?</p> <p><i>SKIP: if age ≥ 6 go to CHILD SLEEP; if age < 6 go to SCREENTIME</i></p>	<p>1. YES 2. NO 7. REFUSED 9. DON’T KNOW</p>
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Frequency distribution (N=7)

Response option	Count
Yes	2
No	5

Both respondents who answered ‘yes’ to this question confirmed that a medical professional had told them their child had been concussed or had a brain injury. The respondent who had been unsure as to whether the child had been concussed when answering HEAD1 had been told that the child had sustained a brain injury and answered this question with confidence.

4.2 Child Sleep module

This module of six questions was designed to identify sleep patterns and tiredness in children aged six to 17. Twelve respondents in total reported on children within this age range living in their household. The same questions were asked across both rounds of cognitive interviews. No amendments were made to the questions between rounds and therefore findings are reported for both rounds combined.

As discussed in the introduction to this report, during the cognitive interviews respondents answered questions about their own child or grandchild. For this module of questions, because of the age restriction (starting at age six), one respondent was asked by the interviewer to report on a different child living in her household, with whom she was not related and with whom she had a more distant relationship than the child she had previously reported on. Of interest in this case, the respondent answered ‘don’t know’ to all of the questions forming part of the sleep module.

One respondent answered ‘some days’ to SLEEP1 through SLEEP4 about frequency of tiredness. Her child had sustained a back and head injury around four months prior, which was the reason provided for the child sometimes having problems with her sleep and getting up in the morning: *“Because her back might be hurting her, or her head hurt.”* No other respondents cited their child’s previous injuries as a reason for sleep difficulties.

4.2.1 Child sleep module: Main findings

When answering this set of questions respondents generally differentiated between weekdays (or school nights) and weekends. Some accounted for a different pattern of sleep behavior at weekends compared with weekdays when making their response selection; others only thought about sleep behaviors on weekdays.

Those whose children had regular sleep times (bedtime and wake time), sometimes assumed that this meant the child was getting enough sleep, based on the commonly held eight hour rule, even though others admitted

the child may not necessarily be asleep during those times and they may not necessarily know one way or the other if the child was getting enough sleep.

4.2.2 Child sleep module: question by question review

SLEEP1	In a typical week during the school year, how often does [CHILD's NAME] wake up well-rested? Would you say never, some days, most days, or every day?	1. Never 2. Some days 3. Most days 4. Every day 7. REFUSED 9. DON'T KNOW
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Frequency distribution (N=12)

Response option	Count
Never	1
Some days	2
Most days	8
Every day	0
Don't know	1

Assessment of 'well-rested'

Across both rounds of interviewing 12 respondents reported on a child aged six to 17 living in their household. All but one respondent was able to provide an answer to this question, although no one said that their child was well-rested every day. The one respondent who was unable to provide an answer explained that although she knew what time the teenage child went to his bedroom in the evening and what time he came out the morning, she did not actually know if he was asleep or not: "... I don't know if he is up or not up... he could be up in his room well rested. He could be on the games. I don't know if he's up or asleep."

Two main patterns emerged across respondents' comprehension of the term 'well-rested' based on the amount of time the child spent asleep each night or observation of the child's behavior during the day.

Time asleep. Those who described the child as waking up well-rested most days, generally described a regular weekday sleep schedule, basing their judgement of the quality of the schedule on an eight hour threshold. For instance, one respondent who answered 'most days,' explained her answer by saying, "I'm saying that he went to sleep at about 10pm and woke up at 7am...Eight hours or more." Others focused on the amount of time that the child was in their bedroom (from bedtime to wake time) - assuming that meant the child had had enough sleep.

"She goes to be bed about 8:30-9'clock at night. She wakes up about 6:30 in the morning."

"Cause she's got to be in the bed by 9:30. I can't say she's asleep by 9:30, but she has to be in the bed."

The parent who answered that their child never wakes well-rested described the child as having insomnia and playing video games late into the evening, meaning the child almost never got "a full eight hours" of sleep.

Observed behavior. Some respondents, also reporting that their child was well rested most days, based their assessment on their observation of the child’s energy levels or whether the child demonstrated tiredness during the day.

“I don’t have to wake him up before going to school. He’s up and energetic about going to school.”

“He doesn’t come home complaining, you know ‘I’m tired,’ and once he gets up and in the shower he’s full of energy.”

“She wakes up, maybe for about the first 10 minutes she’s a little groggy. But after 10 minutes, she’s full of energy and joyous.”

Weekdays versus weekends

Respondents distinguished between weekdays (or school nights) and weekends, explaining that the child tended to stay up later at the weekends. Indeed, one of the reasons given for selecting the response category ‘most days’ rather than ‘every day’ was in order to account for this difference at the weekend when the child may get less rest. Those who responded ‘some days’ described there being a “few days a week” when the child was not well-rested. One respondent explained that this was typically at the start of the week when the child was readjusting from the weekend schedule to the school-day schedule.

SLEEP2	In a typical week during the school year, how often does [CHILD’s NAME] have difficulty getting out of bed in the morning? Would you say never, some days, most days, or every day?	1. Never 2. Some days 3. Most days 4. Every day 7. REFUSED 9. DON’T KNOW
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Frequency distribution (N=12)

Response option	Count
Never	3
Some days	4
Most days	3
Every day	1
Don’t know	1

Eleven of the twelve respondents routed to this question provided an answer. One respondent, who had a more distant relationship with the child in the household, continued to provide a ‘don’t know’ response. Most understood that the question as asking if their child was tired in the morning and, as a result, had difficulty getting out of bed. A few explained that the difficulty was not because their child was tired but because they were not motivated to go to school or it was simply a factor of them being a teenager. One respondent answered on the basis that the child had difficulty physically getting out of bed in the morning due to back pain. Most based their assessment on whether or not they (or in one case a sibling) needed to wake the child and the frequency. For example, one respondent, who answered ‘never’, said “*I don’t have to wake him up before going to school,*” while another who answered ‘most days’ explained, “*I get him up in*

the morning. So if I don't get him up he'll oversleep. He has an alarm but he don't pay it no mind. So I have to make sure he gets up. So that's why I said most days he has problems."

As with the previous question a few respondents based their answer on observed behavior. For example, one respondent who answered 'everyday' explained that the child did not sleep well, while another who answered never said *"he's very alert."* A few said that their child had difficulty getting out of bed in the morning not because they were tired but because they didn't want to go to school

Those who answered 'some days' explained that it was typically at the beginning of the week that their child had difficulty getting out of bed while they adjusted from a weekend back to a weekday schedule. One respondent, who answered 'some days' explained that her son had difficulty getting out of bed on a Monday: *"It gets easier for him throughout the week."* While most based their responses on their child's difficulty getting out of bed during the school week, one respondent answered 'some difficulty' because her child had difficulty getting out of bed on the weekend. She explained that during weekdays, her child *"gets up and it's time to get to school."*

In general the answers to SLEEP2 corresponded with those provided to SLEEP1. That is to say, when the child was described as never waking up well-rested in SLEEP1, the child was described as always having difficulty getting out of bed in the morning in SLEEP2. When the child was described as being well-rested most days in SLEEP1, the child was described as having difficulty getting out of bed on some days or never has difficulty getting out of bed in SLEEP2.

However, in a few cases the responses to these questions appeared contradictory. Three children in their late teens, described as being well-rested on most days in SLEEP1 (albeit based on their sleep and wake schedule) were said to have difficulty getting out of bed on most days or every day in SLEEP2. This was explained simply on the basis of the fact that they were teenagers or just not motivated to get out of bed.

"He just don't want to get up...it's a teenager thing."

"It's the idea of going [to school]. But once she gets there and she's there, the day done went too fast and she don't want to come home."

One respondent commented that his 10 year old just didn't like getting up in the morning and considered that this may be because *"probably...he don't like to go to sleep,"* despite saying that the child was well-rested most days and full of energy during the day, in SLEEP1.

SLEEP3	In a typical week during the school year, how often does [CHILD's NAME] complain about being tired during the day? Would you say never, some days, most days, or every day?	1. Never 2. Some days 3. Most days 4. Every day 7. REFUSED 9. DON'T KNOW
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Frequency distribution (N=12)

Response option	Count
Never	2
Some days	6
Most days	1
Every day	1
Don't know	2

Respondents generally understood this question to also be asking whether or not their child was tired during the day, and if so, with what frequency. A few focused on the word ‘complain,’ and one answered on that basis, understanding the question to be asking about the frequency with which his child ‘complained’ about being tired during the day.

When answering this question, respondents appeared to do so with greater evidential certainty than when answering the previous questions in this module, describing how some days their child would take a nap, or in one case tell them that they had fallen asleep in class: “*Yes or he’ll say ‘Ma I went to sleep in class today. I didn’t mean to, but I was tired.’*” Those who answered ‘never,’ again described their child as being “*full of energy*” during the day (similar to SLEEP1). The two respondents who answered ‘don’t know’ did so because they did not have the evidence to support an answer one way or another. One explained that she had a more distant relationship with the child and so “*wouldn’t know.*” The other said that she wouldn’t know because she was not with the child during the day when the child was at school:

“Um, tired during the day [thinking]. Well, she’s at school, so she’s not with me. If you’re talking about the weekend...well, she’s not going to complain on the weekend because she’s going to sleep till she wakes up. And during school time she’s not with me, so I don’t know about that question...she might complain to her teacher. They never brought it to my attention.”

One respondent focused on the word ‘complain’ used in the question stem, explaining that his daughter would say she is tired but never complain about being tired: “*She doesn’t complain about being tired during the day...she will say she is tired but she never complains about it.*” Nevertheless this respondent answered ‘some days’ to this question.

SLEEP4	In a typical week during the school year, how often does [CHILD's NAME] nap or fall asleep during the day, such as in school, watching TV, or riding in a car? Would you say never, some days, most days, or every day?	1. Never 2. Some days 3. Most days 4. Every day 7. REFUSED 9. DON'T KNOW
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Frequency distribution (N=12)

Response option	Count
Never	3
Some days	5
Most days	1
Every day	2
Don't know	1

Eleven of the twelve respondents routed to this question provided an answer. Again, the one respondent, who had a more distant relationship with the child in the household, continued to provide a ‘don’t know’ response.

Focus on activities listed in the question stem

When answering this question respondents focused on the examples provided of activities during which their child may take a nap or fall asleep, such as in school, watching TV or riding in a car.

“When we take a road trip every now and then.”

“Most days. She’ll have on the TV and she’ll go to sleep.”

One respondent confirmed that she had been told by the school that her son falls asleep in class.

However, despite the question asking about their child falling asleep during the day, some respondents didn’t interpret it this way. For instance, after answering ‘most days’ one respondent explained her response by describing how her daughter watched TV in the evenings: *“She’ll have on the TV and she’ll go to sleep.”* Another respondent answered ‘some days,’ explaining that her daughter *“...falls asleep in the evening... Maybe like 6’o’clock, 7’o’clock. But nothing like schooltime.”*

Weekdays versus weekends

Some respondents distinguished between weekdays and weekends. For example, one answered ‘some days’ to account for the fact that her child fell asleep watching TV on Friday and Saturday evenings.

Naps a regular preschool activity

One respondent, answering ‘every day’ on behalf of her child aged six, explained that naptime was included as an everyday activity at her child’s pre-school.

SLEEP5	In a typical week during the school year, on nights [CHILD's NAME] had school the next day, how often did he/she go to bed at the same time? Would you say never, some days, most days, or every day?	1. Never 2. Some days 3. Most days 4. Every day 7. REFUSED 9. DON'T KNOW
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Frequency distribution (N=12)

Response option	Count
Never	1
Some days	1
Most days	5
Every day	4
Don't know	1

Eleven of the twelve respondents routed to this question provided an answer. Most answered 'most days' or 'every day.' Again, the one respondent, who had a more distant relationship with the child in the household, continued to provide a 'don't know' response.

Perhaps unsurprisingly, those reporting 'most days' or 'every day' had a set or regular bedtime each day for their child, even if that time was set later at weekends. For example, one respondent answering 'everyday' explained that "*Monday through Thursday it's 9, Friday and Saturday it's 11.*" Bedtime was said to vary to a degree. Some respondents provided a time slot, or a specific reason for some occasional variation, hence the response selection 'most days' rather than 'every day.' For example, one respondent explained that the child's bedtime varied "*Between 9 and 10 every day.*" Another explained that he did not select "*every night*" because occasionally his daughter stayed up later completing homework: "*Depending on if she has a project or something. Depending if she has a class and she is finishing up her homework.*" The parent who answered 'never' to this question told the interviewer that the child did not have a fixed schedule. This was the child who was said to suffer from insomnia and who played video games in the evening.

SLEEP6	In a typical week during the school year, on school days, how often did [CHILD's NAME] wake up at the same time?	1. Never 2. Some days 3. Most days 4. Every day 7. REFUSED 9. DON'T KNOW
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Frequency distribution (N=12)

Response option	Count
Never	1
Some days	1
Most days	5
Every day	4
Don't know	1

Eleven of the twelve respondents routed to this question provided an answer. Most answered ‘most days’ or ‘every day.’ Again, the one respondent, who had a more distant relationship with the child in the household, continued to provide a ‘don’t know’ response.

Respondents understood the question as asking whether their child woke up at the same time every day during the school year. However, some accounted for a different weekend versus weekday schedule, while others focused only on the child’s schedule during the school week, commenting that the child had to get up at the same time in order to get to school on time.

Impact of needing to get to school

Most of those answering ‘every day’ to this question again described how their child had a set bedtime and set wake time every school day (albeit they may go to bed and get up a little later at the weekend). Some made reference to the child having to be at school at a set time and therefore needing to get up at a set time - including the parent of the child who never went to bed at the same time (see SLEEP5).

Wake time range

Some of those answering that their child woke up at the same time on ‘most days’ accounted for the slight variation in their morning routine within a certain time frame e.g., 15-20 minutes, rather than the variation being due to their child not getting enough sleep. For example, one respondent explained that because there was only one bathroom in the home, between all household members: “...we have a lot of bathroom in the morning time.” Another said that her daughter was reliant on being woken up in the morning and that if she spends a bit longer in the bathroom: “I might be five minutes later waking her up.” On the other hand, the one respondent who answered ‘never’ to this question also described variation within a 20 or 30 minutes time frame: “At the same time? Never. Cause we’re either running late or we’re ahead.”

Even though the frequency distribution of responses for SLEEP6 was the same as for SLEEP5, the individual respondents’ answers did not always correspond. This was mainly due to the impact of other household members on the child’s morning schedule, and different interpretations of the term ‘same time’ with respect of the selected response option.

4.3 Child screen time question

SCREEN	<p>On most weekdays, does [CHILD’S NAME] spend more than 2 hours a day in front of a TV, computer, cellphone or other electronic device watching programs, playing games, accessing the internet, or using social media?</p> <p><i>Read-if-necessary: Do not include time spent doing schoolwork.</i></p>	<p>1. YES 2. NO 7. REFUSED 9. DON’T KNOW</p>
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Frequency distribution (N=16)

Response option	Count
Yes	12
No	4

There was just one question which asked whether children spend more than two hours a day looking at a screened device, outside of the time they spend for schoolwork. The same question was asked during both rounds of testing, without amendment, and therefore findings are reported for both rounds combined. Sixteen respondents in total were asked about their child’s screen time. The children’s ages ranged from two to 17 years old.

In general, respondents understood the question to be asking whether, during the week, their child spends more than two hours a day using screened devices during their leisure time. This determination was reached either through calculating the average amount of time the child spends on each device each day, or the estimate was made based on the child’s usual behavior.

Device type

The types of devices used by children and mentioned by respondents included: the television, phone, computer, iPad, tablet and PlayStation.

Length of screen time

The length of time spent using a screened device varied from half an hour per day to several hours a day on weekdays, and was associated with the child’s age. Indeed, one seventeen year old was said to be capable of spending up to 7 or 8 hours per day on a PlayStation.

Making the calculation

Respondents answered with confidence about whether or not their child spends more than two hours a day in front of a screened device, though they used different strategies to make that calculation.

Device time. Some respondents considered the different types of devices used by their child and the amount of time their child spends on each of those devices, each weekday, before determining whether the amount of total screen time was more than two hours. This approach to making the calculation was easier for respondents when the child had a scheduled amount of time allocated for watching television or using other devices: “*She has a time schedule on her computer,*” and the parent took a more active role in limiting the amount of screen time exposure: “*He does be on the phone a lot. I try to take him off before two hours.*” One

respondent explained that his child only watches TV for about 30 minutes on school nights (which included a Sunday evening): *“She can watch TV on Sunday up to 6-7 o’clock. Then after that, she can’t watch it no more.”*

Time frame. For other respondents breaking down the time by device type was more difficult because device type exposure varied or because the child interacted with more than one device at a time: *“He may be the PlayStation, or on the computer, or on his cell phone all at once.”* These respondents considered the time frames during which the child had access to electronic devices (also reported by Massey et al., 2018).

“Basically from the time she gets home from school to when she goes to bed she’s either watching TV, playing with her phone or ipad.”

“I’ll say in the morning about an hour and in the evening about an hour and a half maybe – before we start baths and all those things.”

For very young children of pre-school age, it was more difficult to calculate the amount of screen time because it varied day-to-day. As one respondent who answered ‘yes’ to this question explained: *“Because he’s a two-year-old. So his attention span isn’t very long. It could be two hours, one hour...it just depends. If Spongebob is on, he’s not on that phone. No one comes between him and Spongebob.”*

Recreational screen time

Consistent with findings from Massey et al. 2018, respondents generally did not include any screen time spent during the school day, nor doing homework, when responding to the question, and without prompting considered their child’s use of screened devices for recreational purposes only: *“Phone, Instagram, Facebook, Youtube, TV, but all this is after his homework.”* However, this was not always the case and one respondent did include time spent doing homework in her response: *“Like homework, she’ll be on there like two hours, three hours.”* The interviewer read-if-necessary instruction might be incorporated into the question stem to ensure consistency.

In a few, but not all cases, the screen time for younger children was considered to be more educational than leisure time but was nevertheless included in their calculation: *“I have a tablet. And it’s got bold print and everything. It’s not social media. It’s more educational...I can say yes, two hours a day.”*

Term time versus school break

During school breaks the amount of time children spend in front of a screen might increase. As one respondent interviewed during Round 2 commented: *“For the two months of the summer, yes, but now that school has started, I’m back on my rules about homework.”* However, cognitive interview respondents based their answers to this question on the amount of time their child spent on devices during the school week, irrespective of whether they were interviewed during the summer break (Round 1) or after the school semester had begun (Round 2).

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