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Research Report

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RESEARCH REPORT

Beyond Nuclear Families: Development of Inclusive Student Socioeconomic Status Survey Questions

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Social changes have resulted in an increase of students living in households that do not include both a mother and a father, reducing the efficacy of common survey questionnaire approaches to measuring student socioeconomic status (SES). This paper presents two studies conducted to develop and test a new, more inclusive set of student SES items appropriate for students from a range of household types. In the first study, we held group interviews with 57 students in Grades 4, 8, and 12 who lived in four nontraditional household types. The study goal was, first, to understand how students thought about their household members and learn what they knew about the educational background and employment status of their caregivers and, second, to develop draft items based on these findings. In the second study, we held 51 individual cognitive interviews with a similar sample to evaluate draft item clarity and function. We found that although students may live with a broad range of family members and other adults, they understood the term *caregiver* to refer to a person who provides resources and support. Students found it easier to answer items when the items included the titles of their caregivers. Our results demonstrate that a customizable approach to measuring student SES allows more students to report information about their caregivers than the current standard of asking about mothers and fathers. We provide recommendations for student SES measurement and potential next steps for research on this topic.

Keywords Socioeconomic status; survey questionnaires; item development; household composition

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Effective measurement of student socioeconomic status (SES) is an important topic for educational research. Student SES is related to both academic achievement (Chiu, 2010; Sirin, 2005; White, 1982) and cognitive development (Duncan et al., 1994; Sarsour et al., 2010). In the context of educational large-scale assessments (LSAs), student SES also serves as an important control variable and can be used to create indicators of inequity of educational opportunities (e.g., OECD, 2016). The Program for International Student Assessment (PISA) results show, for instance, that increasing educational equity goes along with increased achievement in a majority of countries (OECD, 2013). The socioeconomic gradient (defined as the relationship between SES and performance; OECD, 2013) can be altered by policies targeted at increasing educational equity. Student SES is also an important matching variable in educational intervention studies (Cowan et al., 2012).

In the case of some LSAs, student SES is a legally mandated data collection requirement. For example, the National Assessment of Educational Progress (NAEP) includes SES items as required by the Education Sciences Reform Act (U.S. Congress, 2002). In these situations, student SES is typically measured by collecting information on proxy variables such as parental educational attainment and employment information (NCES, n.d.; Cowan et al., 2012; Traynor & Raykov, 2013). In the case of NAEP as well as other LSAs (e.g., PISA), these items assume students live in a nuclear family household and traditionally ask about a student's mother and father.

Although these measures of student SES are somewhat well established (Willms, 2006), the validity of such measures has received increasing criticism more recently (e.g., Rutkowski & Rutkowski, 2013). According to recent data, 31.1% of U.S. households with children do not include both a mother and a father (Federal Interagency Forum on Child and Family Statistics, 2017). However, few changes have been made over the years to the measurement of student SES, resulting in items that account for only some students' living realities: These items assume all homes include a heterosexual couple living together with their children and do not ask about any other adults who may be contributing to the student's SES.

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In this paper, we contribute to the literature on the measurement of student SES by proposing a broader view of "home" and the people who live there. First, we will briefly review the traditional approach used to measure student SES. Next, we will outline the social and demographic changes that have altered the value of student SES items currently in use. We will then present our findings from two studies. In the first study, we used a series of group interviews conducted with students living in nontraditional households to develop new student SES items. In the second study, we administered the draft items in cognitive interviews to identify issues with item wording and function. We conclude the paper with a discussion of implications, recommendations, and suggestions for next steps.

Measurement of Socioeconomic Status

SES has been described as an individual's access to resources for meeting needs (Cowan & Sellman, 2008), the social standing or class of an individual or group, or as a gradient that reveals inequities in access to and distribution of resources (American Psychological Association, 2007). The first research on the educational impacts of student SES emerged in the 1920s when Taussig (1920) analyzed student fathers' occupational status and observed that students in families with low incomes or low-status jobs demonstrated lower academic achievement. Sims (1927) took a more comprehensive approach, using a scorecard consisting of 23 survey questions including also home possessions (e.g., books), rooms in the home, cultural activities, and parents' educational attainment. Cuff (1934) applied this approach and found relationships between the factors included in the scorecard and student intelligence and achievement. Later, large meta-analyses published by White (1982) and Sirin (2005) consistently demonstrated meaningful relationships between student SES and achievement and further showed that parental educational attainment was the most commonly used measure for SES, followed by occupational status and family income. Although different studies have taken slightly different approaches to the measurement of student SES, a common element across the various approaches is the identification of the so-called Big 3 components: parental education, income, and occupation (APA, 2007; Bryant et al., 1974; OECD, 2013; Sirin, 2005; White, 1982). These three components provide information about the amount of resources available to a child and are typically used independently or as parts of a composite index.

Although parental income provides a rough estimate of the wealth in a household (Hauser, 1994), children are often unable to provide this information, and questions about income may be perceived as too intrusive. Instead, parental income can be estimated in a less intrusive way by surveying children about household possessions that can act as indicators of wealth, such as computers, cars, or rooms with a bath or shower. Moreover, income information can be gleaned from the remaining components of the Big 3. Parental educational attainment correlates positively with income (Duncan et al., 1994; White, 1982), and children can often provide more information about their parents' education than they can about their income (Traynor & Raykov, 2013). Parental occupation is also a reliable proxy for current income (Ganzeboom et al., 1992; Hauser & Warren, 1997), but there is significant variation in how well job titles or descriptions communicate the function or prestige associated with that role. For example, certain occupations can be simply and unambiguously described (e.g., firefighter, teacher, nurse), but others, such as office worker, are less informative.

Prior research on the link between the Big 3 and student SES often relied on a set of implicit assumptions about the student's family. In their research on family units, Jaskiewicz et al. (2016) discussed the importance of considering family structure and the roles of individual family members. Many surveys collecting SES data from children or adolescents make assumptions about students' family structure and the roles of its members: nuclear families with a mother and a father, with one or both parents providing resources for their family through paid employment (Blums et al., 2016; Sewell & Shah, 1968). However, because of the assumptions made in these items about the family unit, these items may be less effective for children living in nontraditional family units, such as multigenerational households, where other adults contribute and draw on resources. Family structure and function are not fixed dimensions; they can vary between families and over time within a family. Family structure can include nonparental caregivers who are functionally similar to traditional parents and can include more caregivers than the standard mother and father pairing. Understanding the number and role of all caregivers in a household, regardless of gender and familial relationship, is valuable information for estimating student SES (Cowan et al., 2012; Hauser, 1994; Turner, 1969). In addition to being one of several determinants of student SES and predictive of academic success, information from children about these household composition details can be more readily obtained with properly structured survey instruments.

Social Changes and Family Composition

In the past 50 years, social norms have changed, reflected in the decrease in nuclear family households and an increase in other household types (Federal Interagency Forum on Child and Family Statistics, 2017; Gates, 2015). Cherlin (2014) argued that family structures are dramatically different than structures pre-1980s, stating,

> There has never been such a large, class-linked divergence in non-marital childbearing. There has never been such a split between marriage-based families on the top rungs of the social ladder and cohabitation- and single-parent based families on the middle and bottom rungs. (p. 195)

Although the idyllic 1950s family is often thought of as the "traditional" family composition, Cherlin argued that this structure (i.e., working father who provides for his family and homemaker mother) actually represents a distinctly unique moment in American family history when incomes and purchasing power dramatically rose, allowing many working class families to attain comfortable, middle-class lives. Prior to the 1950s, this family structure was not typical of most American families. Since the 1970s, a variety of economic, legislative, and cultural shifts (Cohen, 2014; Hussung, 2015; see also www.oyez.org/cases/2014/14-556) have resulted in the emergence of a wider array of common family structures, including single-parent families, same-sex parent families, and patchwork families comprised of divorced adults living with their new partners and their children.

The number of providers, nonproviding family members, and children directly impacts the financial resources available for the family. Today, although the majority of children live in a two-parent home comprised of their married biological mother and father, a significant minority of children live in one or more households with other living arrangements—for example, same-sex parents, unmarried parents, biological parent and stepparent, adoptive parents, or family relative(s) such as grandparents (Federal Interagency Forum on Child and Family Statistics, 2017; Kreider & Lofquist, 2014). According to 2017 U.S. Census data, approximately 69% of children live in two-parent homes and 27% live in a single-parent home, compared to 1960 when approximately 85% of children lived in a two-parent home and 12% lived in a single-parent home (U.S. Census Bureau, 1960). Moreover, about 2% of children under 18 years of age live with at least one adoptive parent, and approximately 4% of children under 18 live with at least one stepparent (Kreider & Lofquist, 2014).

In addition to different constellations of one-parent and two-parent homes, the impact of other adults in the home on student SES should also be considered. Cohn and Passel (2018) showed that approximately one out of every five Americans lived in a multigenerational household as of 2016. NAEP data from 2017 show that 14.4% of Grade 4 students and 14.9% of Grade 8 students reported living with at least one stepparent, and 10.5% of Grade 4 students and 5.7% of Grade 8 students reported living with at least one foster parent or other nonparent guardian. Moreover, student responses indicate that questions asking students specifically about their mother and father would not be applicable for 9.9% of students. These data show that adults besides mothers and fathers are present in students' households and may be contributing to the resources available to students.

In order to better understand how these SES indicators function for nontraditional family types, survey questionnaires must include items that allow students to report the composition and caregiver situation in their own homes. Rather than administering items that make assumptions about student household and families, customized questionnaires that account for the diversity in 21st century households can ensure the validity of SES measurement and help us better understand achievement outcomes (Bankston III & Caldas, 1998; Thompson et al., 1988).

The Present Studies

The purpose of these studies is to explore the three following research questions about students, their caregivers, and the structure of the households they live in:

1. What information can students in Grades 4, 8, and 12 provide about household composition?
2. Which caregivers should be identified in caregiver information items in order to ensure the items are applicable to students living in a broad range of households?
3. What information can students in Grades 4, 8, and 12 provide about caregiver education and employment?

We conducted two studies to answer our research questions and develop new items for measurement of household composition, caregiver education, and caregiver employment in educational assessments. In the first study, we conducted small-group interviews with children and adolescents in Grades 4, 8, and 12 to develop a better understanding of their comprehension of the details of their respective living situations, caregivers, and household structures as well as how they talk and think about these topics. Based on the information that emerged across discussions in these interviews, we then developed draft survey items to assess household composition, caregiver education, and caregiver employment in a variety of households. In the second study, we conducted cognitive interviews with a similar sample to assess whether students could understand and answer the draft items.

Study One

Method

We employed group interviews as the methodology for the first study. This choice is in line with recommendations by Mauthner (1997), who suggested that modeling interviews after a classroom discussion can set younger students at ease while being asked questions. We took several other steps to ensure students would feel comfortable discussing their households and relationships to household members. We segmented the groups by grade level to keep 4th, 8th, and 12th graders in separate discussions. Caregivers were asked to remain outside the rooms while the interviews were conducted so students could speak freely about their living situation. Our interview sessions with Grade 8 and 12 students were gender segregated to minimize potential for adolescent discomfort while discussing personal situations in front of students of the opposite sex.

Participants

The study participants were students we recruited from the four most common nontraditional household types in the United States: single-parent households (with or without roommates or live-in partners), households with adults other than parents (e.g., foster homes, relatives), extended family households (i.e., households including grandparents, aunts, or uncles in addition to parents), and two or more households (e.g., shared custody arrangements). These household types make up at least 33% of U.S. homes with children and represent common household types besides those with both a mother and a father (Federal Interagency Forum on Child and Family Statistics, 2017). Each interview session included students from only one household type, though the categories are not mutually exclusive, so some students' households met the criteria for multiple household types.

We conducted interview sessions in New York, NY; Portland, OR; Atlanta, GA; and Chicago, IL, in the fall of 2017. Students were recruited by focus group facility staff using existing databases and targeted contact lists, community organizations, and additional outreach methods and resources. Efforts were made to obtain a diverse sample in terms of race and ethnicity, neighborhood type, and socioeconomic background. Participant SES was assessed via a multiple-choice recruitment screening question about household income. In total, 57 children and adolescents participated in 12 group sessions, ranging in size from two to eight participants (median = 4). Two sessions were held with only two students due to inclement weather. See Table 1 for a summary of descriptive statistics for the sample, organized by grade and household type.

Procedure

Each group interview session was held at a focus group facility and was facilitated by a senior qualitative methodologist and a midlevel researcher. Prior to the sessions, parents and students age 18 and older signed informed consent forms, and all participants were asked to provide oral assent. The sessions lasted a maximum of 60 minutes. The senior methodologist acted as lead facilitator and followed a semistructured interview approach using a core set of questions to guide discussion but asking follow-up questions of students as needed (Krueger & Casey, 2009). The midlevel researcher acted as assistant facilitator—handing out materials, recording the session, and taking notes—but participating very little in the conversation. The recording was later transcribed to allow for analysis.

After completing introductions and an icebreaker activity, we asked students to complete a drawing (a sociogram) to depict the adults and other children in each household in which they lived. Sociograms are pictures created by students that

Table 1 Demographic Information of Group Interview Participants by Grade and Household Type

	Grade			Household type			
	4	8	12	Two or more	Extended family	Single parent	Nonparent adult
Gender							
Female	11	10	8	5	12	8	4
Male	12	10	6	6	6	11	5
Race							
African American	8	8	3	2	5	10	2
Caucasian	10	4	6	5	10	4	1
Hispanic/Latino	5	8	4	4	3	4	6
American Indian/Alaska Native	0	0	1	0	0	1	0
Family Income							
Under $30,000	6	3	4	2	2	7	2
$30,000 – $99,999	15	11	9	7	14	10	4
Over $100,000	2	6	1	2	2	2	3
Community type							
Urban	10	13	8	8	8	9	6
Suburban	11	7	5	3	9	8	3
Rural	2	0	1	0	1	2	0
Total (*N* = 57)	23	20	14	11	18	19	9

have been successfully used with younger students for describing classroom social networks (Ferrandiz & Jimenez, 2011; Leung & Silberling, 2006; Philip, 2010). In the present study, we opted to use sociograms for two reasons: First, we wanted students to be able to describe the important members of their households as they themselves saw them, not as the researchers might define them, and second, we wanted an activity that would be both easy and fun for participants. By using preprinted circles and brightly colored stickers to represent household members, the sociograms provided a fun way to engage all youth and adolescents in the discussion.

The moderators first offered participants pieces of paper with blank circles on them, saying that each circle represented a place where the student "sleeps some or all of the time." Students were told to take as many circles as they needed to adequately represent their situation. Following our instructions, students then used different color stickers to represent themselves, the adults in their home, and any other children who were living with them. The students labeled each sticker, writing the familial terminology (e.g., "mother") for each depicted household member. We then asked students to mark adults they perceived as caregivers with a star. See Figure 1 for an example of a sociogram created by a participant in the current study.

After the students finished completing the sociograms, we asked each student to orally share a description of their household(s). Students referred back to the sociograms when responding to our questions throughout rest of the interview. Students living in more than one home described each household one at a time and in the order of their choosing. We asked follow-up questions as necessary, probing about any unclear information, unusual terminology, and inconsistencies between the sociogram images and the student's description. We also asked students to describe how they decided whom to mark as a caregiver.

Once all students had described their households, we asked them several questions designed to get at caregiver SES. First, we asked students to indicate the level of educational attainment of each of their caregivers. We presented students with a numbered set of response options (1 = Did not finish high school; 2 = Graduated from high school; 3 = Had some education after high school; 4 = Graduated from college; 5 = I don't know) and asked students to mark each caregiver in their sociogram with the number corresponding to their level of education. Students were then asked to explain how they knew this information about each caregiver and describe whether or not they found it easy or difficult to provide this information. We then asked students about their caregivers' employment status, asking students to mark each working caregiver on their sociograms with a "W." Where possible, students were asked to share what they knew about each caregiver's occupation and whether they could provide an assessment of whether the caregiver is working full time or part time. The sessions concluded with students being provided a $30 gift card in appreciation for their participation in the interview.
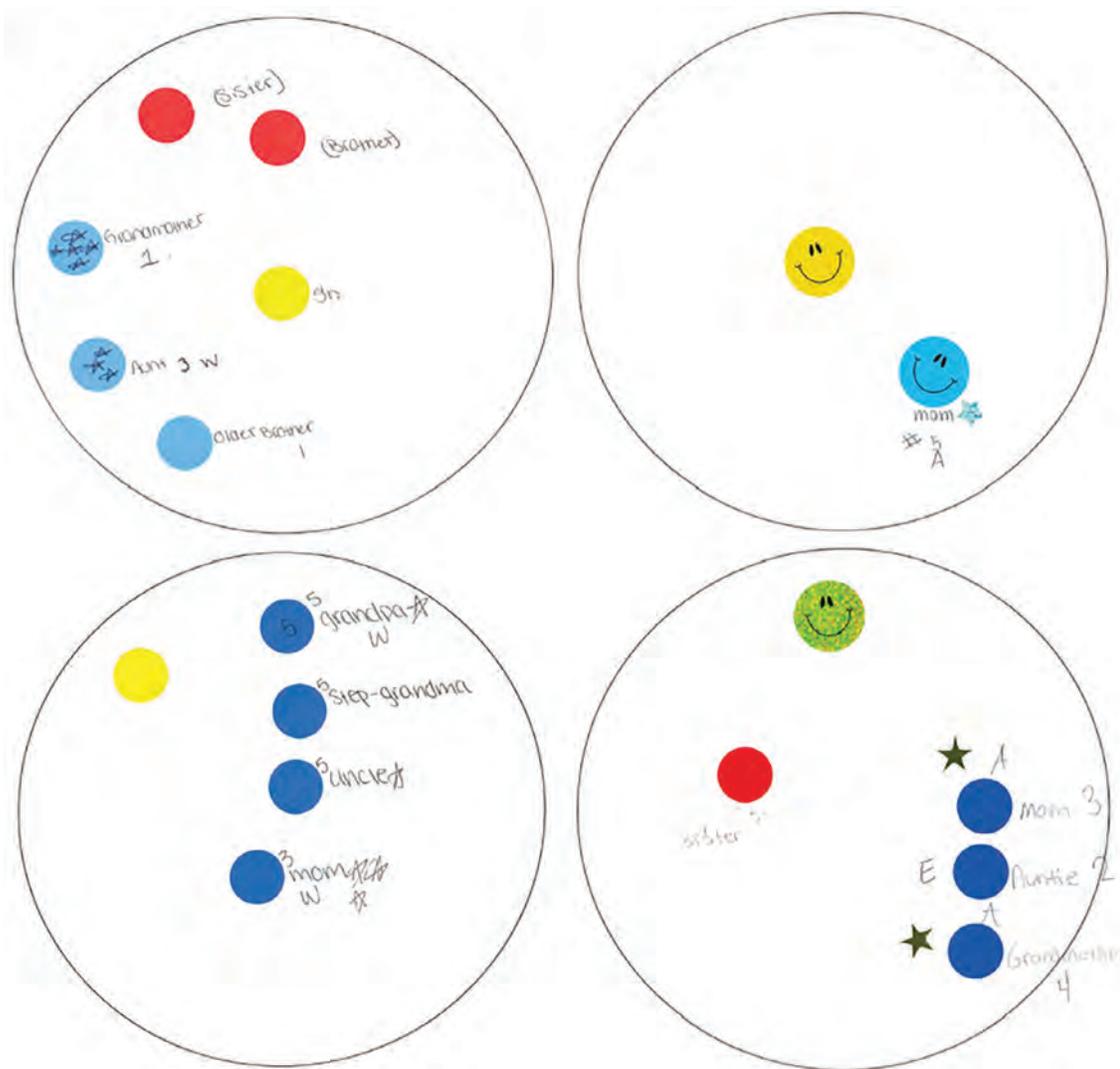
Figure 1 Example sociograms drawn by group interview participants N1, A5, P8, and H8.

Analyses

Our analytic objectives were fourfold: first, to learn about students' varied living situations and how they talk about them; second, to determine the feasibility of having students identify their caregivers rather than assuming that they were in one household with a mother and a father; third, to see how well students could identify the level of education for each of their designated caregivers; and fourth, to ascertain what students could tell us about the work status of their caregivers. Transcripts from the small-group discussions were read by team members with these four objectives in mind. The results of this approach, summarized below, informed the development of our new household composition items.

Results

Household Composition

Students reported living in one or more households with a wide range of people, including conventional household members (e.g., biological parents, siblings), additional family members (e.g., grandparents, aunts, uncles, cousins, or step-parents), and individuals not related to the youth (e.g., "mom's boyfriend"). Grade 4 Student N1 told us she lived with "My grandma, my mama, my cousin, [and] my brother." Similarly, Grade 12 Student H1 told us about her family constellation:

"I live with my sister, her husband, and my nephew." Grade 12 Student H7 described her family constellation, including her own young child: "These two are my mom and my stepdad. This is me, and then this is my son … this is my brother."

Students can also have a variety of different housing arrangements. One common arrangement included students living in two households, with one parent living in each home and the student going back and forth between the homes. Some of these arrangements included the student spending 50% of his or her time in each home. Grade 4 Student N16 told us the following: "I'm with my mom Wednesdays and Thursdays and with my dad on Mondays and Tuesdays. They switch off every weekend. … I mean, whoever has me, my brother, on the weekend will get us on Friday also." Other arrangements featured the student living in one home during the weekdays and another home on the weekends. Grade 4 Student N17 explained:

> I live with my dad, my stepmom, and my two brothers there. I go to my dad every weekend. I stay with my mom during the week. My stepmom is with my dad, I stay there, I sleep over until Sunday and then I go to my mom's.

In addition to situations where students lived in two homes, some focus group participants lived in three or more households. For example, Grade 4 Student A5 lived in four different homes:

> First on Friday nights, my dad, he picks me up and then drives me straight to my godmother's house. … Then, the next morning my dad would pick me up again and would drive me over to my grandma's house on Saturday. Then, my grandma on Sunday, she would drive me to my mom's house. I would be with my mom for about till Friday if there's nothing special that's happening or anything like that. Friday, and then my dad would pick me up again.

Caregivers

Students understood the concept of a caregiver, and most students were able to identify the caregivers in their lives. Caregivers were defined by students as household members who "take care of" or "watch" the student. Grade 8 Student N16 described his caregivers as "Somebody buying food and somebody who pays for your things, contributes with stuff, and money to the house because they care for you." Grade 12 Student P13 presented a simpler reasoning, saying "because she's the person that's responsible."

Across all sessions, students were able to identify their caregivers. When we asked students to mark the adults in their sociograms who were important caregivers, students often marked more than two caregivers who have regular, meaningful impacts on their lives. Approximately 88% of the adults were identified as caregivers in the first six sessions. During these sessions, the moderator provided examples of behaviors associated with caregiving (e.g., providing resources, signing permission forms) while explaining the task. In order to rule out the possibility that our examples were leading students to erroneously identify some adults as caregivers due to their occasional engagement in those behaviors (e.g., an uncle driving a student to basketball practice), we modified the procedure to elicit examples from the students. In the last six sessions, students were not given examples of caregiver behavior but were simply asked to indicate "the adults who you feel are responsible for taking care of you." In these sessions, the number of adults identified as caregivers was 77%. In their explanations of the meaning of caregivers, students in the later six sessions provided answers that aligned well with the examples provided to students in the first six sessions, and these students described both parent and nonparent caregivers in similar ways. For example, Grade 4 Student A2 participated in one of the later sessions and told us about the caregivers in one of his homes, including his stepmother:

> I put my dad and my dad's wife, which is my stepmom. I put [caregiver] for my dad because … he mostly also feeds me and he takes us out to play. I put my dad's wife because … she helps us with stuff that we need.

Other students in the later sessions expressed similar views on what makes a person a caregiver, including mention of the provision of food, resources, and emotional support. Grade 8 Student H8 gave the following explanation for why she marked some family members as caregivers but not others:

> I live with, me, my mom, my aunt, and my aunt's son, that's my cousin. I put only gold stars on my mom and my aunt because when you talked about someone taking care of you, I thought about your basic needs like food, making sure you're OK mentally or emotionally, and taking care of you in any basic need … my mom feeds me and stuff

and makes sure I have someplace to live. My aunt does the same thing and drives me to school sometimes if it's too cold to take a bus. My cousin is somebody I look to for advice … but it's not like I would look for him to feed me if something happened.

The commentary from participants provides two important insights. First, students view a variety of different adults who are not their mother or father as their caregiver and show the ability to distinguish between caregiver adults in their home and noncaregiving adults who live with them. Second, the reasons the students view these adults as their caregivers vary from one caregiver to the next but do so in a manner similar to how a student might describe the parents of a nuclear family with a mother and father.

Caregiver Education

Most students could provide some kind of information about their caregivers' education. Students who were unaware of a caregiver's level of education often expressed that they knew some information about the topic but were unsure if they knew everything. Grade 12 Student H11 was in this position and told us, "I know my grandma graduated high school, but I don't know if she went to college for some time or not. I'm not sure." Grade 12 Student H7 knew about one caregiver but not all of them, saying "My mom told me she didn't graduate, was in high school, but she didn't finish it. My stepdad, I never really asked him." Grade 12 students were better able to provide caregiver education level information than younger students, though this could be due in part to the lower number of caregivers reported by older students (see Table 2).

Students reported learning about their caregivers' level of education in different ways. Grade 4 Student H5 described a conversation she had had with her mother: "She told me all of this. I knew that from when she graduated college, she had to graduate high school first, so since she did college, then she graduated high school." Another student, Grade 12 Student A11, knew his mother's level of education because "when I was younger, like 5, 4, I'd go to her job and then after her job, she'd go to school, and I'd sometimes be there with her." Providing another explanation, Grade 8 Student N10 explained that he had found out about his parents' education by accident: "I seen my mom and my dad's diploma; well, I actually found it. I never knew about it. I just found it."

Caregiver Employment

There was substantial variation in what information students could provide about their caregivers' work. Some students provided specific caregiver job titles or roles (e.g., optometrist, pharmacist, car mechanic), sometimes along with a short description of their caregivers' duties. However, many students did not know what their caregivers did for work. In some cases, students were able to provide some information but not a specific role or title, leaving ambiguity about the organizational level of the job held by the caregiver. Grade 8 Student P9 explained what she knew about her mother's job: "My mom she works at some sort of insurance thing. She works for [COMPANY] but the insurance part of it. I'm not exactly sure." Grade 8 Student H10 gave a similar level of detail in her answer: "My grandma, she works, I'm not sure exactly what it is, I think making stamps. She doesn't work at making the stamps. She does more the computer stuff, the computer work." Similar observations were made across grades and household types, though older students were less likely to not know anything at all.

Table 2 Summary of Group Interview Participant Caregivers With Unknown Education

Grade	Total caregivers	Use of "I don't know"	Caregivers with unknown education
Grade 4 ($n = 23$)	80	22	Mother (3×), Father (3×), Grandmother (2×), Grandfather, Uncle, Stepmother (3×), Stepfather, Step grandmother, "Dad's Friend's Daughter," Godmother, "Mom" (i.e., his cousin's mother)
Grade 8 ($n = 20$)	46	11	Father (2×), Grandmother (2×), Grandfather (3×), Uncle, Stepfather (2×), "Dad's girlfriend"
Grade 12 ($n = 14$)	25	3	Uncle, Brother-in-law, Stepfather

As students were unable to consistently provide caregiver job titles in the early sessions, students in the later sessions were also asked to provide information on full-time and part-time status as a potential indicator of SES. Students gave conflicting information on this topic, such as Grade 4 Student P14:

> It means, my mom, she'll work part time. She doesn't get off early, but she got to be there at 8:00. No. I don't know. She got to be there at 8:00 in the morning. She'll work until like 5:00 or 6:00, something like that. That's what my mom do.

Other students provided vague explanations for their answers. For example, Grade 12 Student N17 explained why he thought his mother worked part time: "I feel like my mom has a lot of free time. She's working a lot but at the same time, she gets to do a lot of stuff she likes to do. That's why I feel it's part time." Across the sessions, little consistency was observed in terms of when students were able to provide this information and whether or not the explanations supported their answer clearly.

Although students were mixed in their ability to provide full- or part-time status information, other details emerged. While talking about their caregivers' employment situations, students sometimes provided information on the times and days that their caregivers were going to work. Though the specific details varied, we found that some students demonstrated understanding of whether their caregiver worked during the day or at night and whether the timing of their shifts was stable or varied. Grade 8 Student N15 was able to provide specific times for several caregivers, explaining "Full time, meaning my uncle and my aunt, they work when I'm in school. From the morning till four o'clock, 4:30. My mom, she works at 9:00 to 5:00." Grade 4 Student P14 was able to provide rich detail about his father's schedule:

> My dad, he'll get up around 6:00. He got to be there 6:00 AM, so he'll wake up around 4:00 or something like that. He doesn't have to work the whole day, just [until] 6:00 PM. He'll get off and he'll take sleep, because he got to get up early.

In addition to information about the time of day that their caregivers typically worked, we also observed that students were able to provide information about the number of jobs their caregivers were working. This information may provide insight into student SES, as it is common for low-wage workers to hold more than one job. Grade 4 Student H3 was able to provide information about when her mother worked at both of her two jobs:

> My mom at her … shipping company. She'll sometimes work all week except the weekends. Her second job, I don't really know when she's going to work, but she works in the afternoon until late at night. Sometimes, it will be all day.

Older students provided this type of information as well, like Grade 12 Student H1, who was explaining why she would answer "yes" to an employment status item for her mother: "Because she had two jobs. She worked [for one nonprofit] and she was a CNA."

Work "For Pay" and Other Activities

As part of the discussion on caregiver employment, we explored the topic of work to better understand what activities qualify as work in the minds of students. Across sessions and grades, students told us that they thought that work was defined by having a job or completing tasks in return for money. Several students talked about how the caregivers did these things to take care of the people in their household. Grade 4 Student P7 described her view of caregivers, explaining "They have jobs and bring home money." Grade 12 Student P12 described how her mother contributed financial resources, saying, "She doesn't have a steady income, but she will sometimes contribute to buying coffee for me or something."

In the early sessions, we led discussions intended to explore the boundaries of the meaning of work. For example, when asked about whether or not it could be considered work if a person sits at home on a computer, Grade 8 Student N17 explained, "It kind of depends on if they're bringing money, and if they're employed, or if maybe they're just doing something to get cash online, which is a little bit different than being employed." This example was relatively clear for students, but opinions became more mixed when asked about whether certain unpaid activities would qualify as work.

Several students described volunteering and home caregiving done by their caregivers and that these acts qualified as work. Similar observations were made in regard to caregivers who were out of work or retired.

Given these observations during the first six sessions, we changed the wording of the employment question slightly for the remaining sessions in order to clarify that the work was "for pay." Students expressed less conflicting information after this change, were able to better separate work from the other discussed activities (e.g., "If they're retired, then I can say they're not working" (Grade 8 Student N15), and expressed that it was easy to provide this information.

Implications for Item Development

Based upon our observations from the group interview discussions with students living in a variety of household types, we developed a new, expanded set of survey questionnaire items that are relevant for a wider range of respondents. This set of items differs from typical Big 3 items in three ways. First, household composition measurement was expanded to include items about the number of homes the student lives in and the number of children and adults that live with them in those homes. Second, the assumption of mothers and fathers as caregivers was removed from the household composition items, allowing students to report who their caregivers are. The new set of potential caregivers considered in these items included a broad array of people — for example, mother and father figures, extended family members, and other adults. Third, the education and employment status items were also reframed to focus on the caregivers reported by the student.

Two versions of some of items were developed in order to assess the clarity and function of different item wording and temporal framings. These items were drafted with digital administration in mind, taking advantage of the survey customization functionality not available in conventional paper questionnaires (see Figure 2 for an explanation of the item customization). Digital administration allows for the specific items administered to be customized to the student's specific home situation, improving the relevance and validity of these items for students not living in nuclear families. The draft items were administered in the second study, described below.

Study Two

Method

In the second study, we administered the items we developed through one-on-one cognitive interviews. Cognitive interviewing is a method of pretesting that attempts to detect cognitive problems with a draft set of items (Roach & Sato, 2009; Willis, 2004). The respondents are typically administered special probing questions and possibly asked to think aloud about the questions. The responses to the probes and the other verbal materials can reveal problems respondents are experiencing in understanding the questions or in formulating their answers to them.

Participants

Students for this study were drawn from the same age ranges and household types as Study 1, using the same recruitment methods and with similar efforts made to ensure a diverse sample. The cognitive interviews were held in four locations, including Cleveland, OH; St. Paul, MN; Raleigh, NC; and Greenville, SC. In total, 51 children and adolescents participated in individual cognitive interview sessions. Descriptive information about the sample for Study 2 can be found in Table 3.

Procedure

Similar to Study 1, parents and students age 18 and older provided informed consent, and all participants were asked to provide verbal assent. The sessions were scheduled for a maximum of 60 minutes. Each session included two phases. In the first phase, we administered the set of draft items to students using paper-based screenshots of each item. A summary of the item topics and information about alternate versions can be found in Table 4. Students were administered only one version of each item during this first phase in order to simulate the experience of students completing items in an operational setting. The second phase of the interview began after the student completed the series of items. The interviewer then returned to the beginning of the set of items and orally administered a set of probing questions (e.g., "Would you say it was very easy, easy, difficult, or very difficult to answer this question?") for each item. In cases where an alternate version of an item was available, students were shown the alternative version and asked additional probing questions. At the end
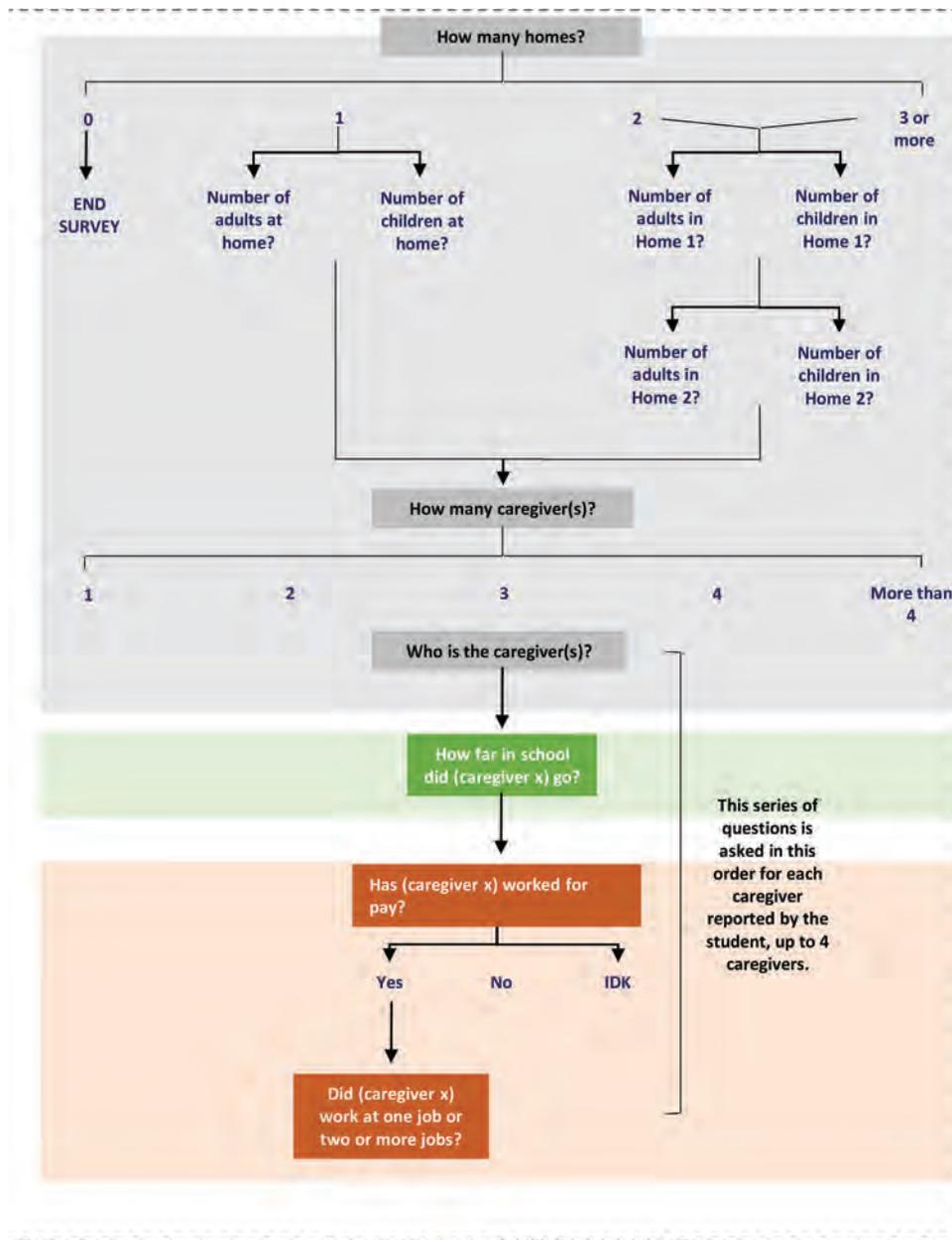
Figure 2 Household composition and caregiver information item customization map.

of the interview, students were asked to complete the sociogram activity. The interviewer kept the students engaged by asking the probe questions and asked follow-up questions where appropriate (e.g., "That's interesting; could you tell me a little bit more about that?"). When the sessions concluded, students were provided a $30 gift card in appreciation for their participation.

Analyses

We used two types of probing questions: standardized multiple-choice and free response. The multiple-choice probes were employed to assess whether or not students found the draft items confusing or difficult, which item version they thought was easier to answer, how sure they were about their answers, and whether or not they were comfortable answering the item. The free response probes were used to follow up on responses to the multiple-choice items as well as to inquire

Table 3 Demographic Information of Cognitive Interview Participants by Grade and Household Type

	Grade			Household type			
	4	8	12	Two or more	Extended family	Single parent	Nonparent adult
Gender							
Female	9	7	6	3	6	9	4
Male	11	9	9	7	8	10	4
Race							
African American	9	6	7	4	5	9	4
Caucasian	9	7	8	2	9	10	3
Hispanic/Latino	2	3	0	4	0	0	1
American Indian/Alaska Native	0	0	0	0	0	0	0
Family Income							
Under $30,000	4	2	1[*]	1	2[*]	3	1
$30,000–$99,999	15	12	9[*]	9	9[*]	14	4
Over $100,000	1	2	3[*]	0	1[*]	2	3
Community type							
Urban	6	5	6	3	3	9	2
Suburban	13	9	8	7	10	9	4
Rural	1	2	1	0	1	1	2
Total ($N = 51$)	20	16	15	10	14	19	8

Note: Participant counts marked with an asterisk do not include the two grade 12 students for whom SES information was not available.

Table 4 Cognitive Interview Items Topic and Version Summary

Big 3 topics	Item content	Alternate version?	Additional information
Household composition	Number of homes	Yes	Tested two temporal frames in item stem
	Number of children and adults	No	Item stem wording varied based on number of homes
Caregivers	Number of caregivers	No	Item wording is dependent on number of homes
	Caregiver titles	Yes	Tested two item presentation formats
Caregiver education and employment	Caregiver education	Yes	Tested two item stems with different wording
	Caregiver employment status	Yes	Tested generic and caregiver-specific item versions
	Caregiver work shift	No	Only administered for employed caregivers
	Caregiver number of jobs	No	Only administered for employed caregivers

about a specific concept and terminology used in the draft items. The information we collected during the interviews, summarized below, created the basis for our recommendations for draft item revision and use.

Results

Overall, students in all three grades and from all four household types responded to the draft items with little expressed confusion or difficulty. Students were generally sure of their answers. Only four of the 51 cognitive interview participants reported that they felt uncomfortable with being asked questions pertaining to household composition. In these cases, the students expressed discomfort with the idea of providing answers to these kinds of questions, providing answers in front of others, and providing information that their parents had explicitly warned them not to share. Student participants were not required to provide responses to any of the draft items that they were uncomfortable answering, and we assert that this is an important consideration when collecting information on students' home lives. In the following sections, we present some of the observations we made across the interviews regarding each item and item version, calling attention to student understanding of key concepts as well as details that ultimately led to recommendations for revision to the draft items. We provide student counts in our results as context for the results of this small sample study.

In the last month, how many different homes have you been living in? If you have moved in the last month, **do not** count the home where you used to live.

How many different homes do you live in right now?

Ⓐ One home
Ⓑ Two homes
Ⓒ More than two homes

Ⓐ One home
Ⓑ Two homes
Ⓒ More than two homes

Figure 3 Household composition draft items: Number of homes item (versions 1 and 2).

Number of Homes

We tested two different versions of the number of homes item, one version using the temporal frame "right now" and another version using "in the last month" (see Figure 3) to explore how best to frame the question and elicit the desired information. Students reported little confusion or difficulty with either version of the item. Three out of the 26 students administered the right now version expressed specific confusion or difficulty with the item's temporal frame, but no confusion was expressed about the in the last month temporal frame. No preference emerged when we asked students which version of the item was easier to answer. In a follow-up discussion, Grade 12 Student G12 expressed that the last month wording was easier to answer because he had interpreted the right now wording literally, explaining "It doesn't ask about the last month, so instead of moving you could currently live with two different parents, like a mom and a dad that are separated." When comparing the two item versions, Grade 12 Student G8 specifically noted that she found the similarity of the response options "two homes" and "more than two homes" to be confusing. Student S9, a Grade 12 student, rephrased the options as "one house, two homes, or three." In addition to there being multiple interpretations of the temporal frame of the items, students interpreted the term "home" differently. In most cases, students understood home to refer to a household where they live with other people (e.g., "where I live" [Student S7, Grade 4]), but other students viewed home as referring to a physical place (e.g., a house). This understanding of the word was made clear by students who explained that their family had moved from one home to another, or that their family lacked the financial resources to own second homes or vacation homes. Unlike the differences in interpretation of the temporal frame, both interpretations of home resulted in accurate responses when answers were compared against the results of the sociogram(s) completed by the student.

Number of Children and Adults

We tested multiple versions of the items that assessed the number of children and adults with whom students live (see Figure 4). Unlike other items, where alternate versions were included to identify the best wording choice, the version of this item that the student was administered was dependent on the student response to the number of homes item. Students living in one home were administered one version of the item, and students living in more than one home were administered two other versions. All three versions were similarly worded and asked for the same information. Due to concerns about questionnaire complexity and perceived intrusiveness, students were asked only about children and adults in up to two homes.

Only five of the 51 students said they found the items difficult or very difficult to answer, and 10 students expressed that they found the items confusing. However, most of that confusion did not lead to any problems in responding accurately to the question. A few students were confused by the wording "first home" and "second home." These students understood the terms "first" and "second" to refer to time, meaning that the item was asking about homes where the student had lived in the past. This wording was used only for students who indicated that they lived in more than one home. Additionally, some students were confused about whether to count themselves in the "number of children" item. Though the wording of the item specifically asked about people "living with you," four students stated that they were unsure about whether to include themselves in the counts. This discrepancy was identified in follow-up probing by the interviewer. Grade 8 Student C2 gave the answer "more than two," indicating that he had counted himself when answering the question. Student C2 explained that there were three children in the home "including myself."

Single Home Version

Think about all the people who live with you in your home and answer the following
questions. **Do not** include yourself. Select **one** answer choice on each row.

	0	1	2	More than 2
a. How many children (17 or younger) live with you?	Ⓐ	Ⓑ	Ⓒ	Ⓓ
b. How many adults (18 and older) live with you?	Ⓐ	Ⓑ	Ⓒ	Ⓓ

Two or More Homes Version, First Item

You said you live in more than one home. Think about all the people who live with you in one
of these homes and answer the following questions. **Do not** include yourself. Select **one**
answer choice on each row.

	0	1	2	More than 2
a. How many children (17 or younger) live with you?	Ⓐ	Ⓑ	Ⓒ	Ⓓ
b. How many adults (18 and older) live with you?	Ⓐ	Ⓑ	Ⓒ	Ⓓ

Two or More Homes Version, Second Item

You have told us about the people in one of your homes. Now think about all the people who
live with you in your other home and answer the following questions. **Do not** include yourself.
Select **one** answer choice on each row.

	0	1	2	More than 2
a. How many children (17 or younger) live with you?	Ⓐ	Ⓑ	Ⓒ	Ⓓ
b. How many adults (18 and older) live with you?	Ⓐ	Ⓑ	Ⓒ	Ⓓ

Figure 4 Household composition draft items: Number of homes item (single and two or more homes versions).

Number of Caregivers

We tested an item that assessed the number of caregivers that students have across their homes (see Figure 5). During the interviews, students provided a variety of example caregiver behaviors that were similar to the themes present in the focus group discussions. Examples included provision of material resources (e.g., "feed you, get you clothes" [Grade 12 Student G12]), expression of concern for well-being (e.g., "taking care of you when you're sick" [Grade 4 Student G2]), provision of guidance (e.g., "teaching me responsibility" [Grade 8 Student C2]), and transportation (e.g., "taking you out to places, getting [you] to school on time" [Grade 4 Student C10]).

Students expressed some confusion about the number of caregivers item. Two Grade 4 students expressed confusion about the parenthetical plural "home(s)" used in the item. Three others were unsure if the item referred to caregivers in one home or all of their homes (e.g., "Which house specifically?" [Grade 8 Student G5]). Grade 8 Student G6 expressed that she was unsure about whether to include her mother's boyfriend, who was living in the home. Student G6 ultimately

Think about all of the adults that live in your home(s). How many of these adults are taking care of you?

- (A) 1
- (B) 2
- (C) 3
- (D) 4
- (E) More than 4

Figure 5 Household composition draft items: Number of caretakers item.

included this adult in her answer, explaining, "He gives me what I need to, like, get ready for school and stuff like that, like shoes and clothes."

Caregiver Titles

We tested two versions of items that assess caregiver titles (see Figure 6) to examine how students would respond to different item formats. In one version, items asking about each adult were presented separately, with the number of those items determined by the student response to the "number of caregivers" item. The second version of the item asked about all four caregivers at once (i.e., four open drop-down menus that were presented on paper). When asked which was the easier to answer, older students were mixed in their preferences, with little consistency in their rationales. However, 13 of the 16 Grade 4 students preferred the first version, and almost all of them explained that the items were easier (e.g., "Because you don't have to go through different sections; it's just one" [Grade 4 Student R9]). In order to strike a good balance between brevity and comprehensiveness, students were limited to telling us about up to four caregivers. During cognitive interviews, we asked students whether or not the number of caregivers we asked about was sufficient. Most students stated they had enough room to tell the interviewer about all their caregivers. Across the sample, one student reported inability to specify all of their caregivers, five students expressed concern that the limit might be problematic for others, and five students felt there were too many options. However, more than half of the student respondents (i.e., 28 of 51) expressed satisfaction with the four-caregiver maximum.

Students expressed almost no confusion with the list of possible caretakers provided as response options. Across grades and household types, there was very little use of the "some other female adult" and "some other male adult" options. Only two of our participants used these options, including Grade 8 Student R6, who lived with a foster parent, and Grade 8 Student R15, used this option to represent her adult brother, who lived in the home. Other students who identified relatives (besides parents) as caregivers expressed difficulty in finding the correct response. Multiple students noted that the "other female relative, such as grandmother or aunt" response option (and the male analog) were difficult to use, stating that they had difficulty finding their caregivers in the list (e.g., "I had a hard time finding the grandfather category" [Grade 12 Student C5]).

Confusion aside, we also found the options "adoptive mother" and "adoptive father" were not functioning as intended. Two students disclosed that they were adopted but did not use the options for adoptive parents to describe their caregivers. When asked to explain why he selected "father" instead of "adoptive father," Grade 8 Student R2 stated, "I consider him my father because I've known him all my life." Grade 8 Student S1 felt similarly, explaining "She adopted me when I was a baby, so I call her mom, not 'adoptive mother'."

Caregiver Education

We tested two versions of the caregiver level of education item (see Figure 7) to evaluate the clarity of two different versions of item stem wording. In addition to differences in the wording of the question, the first version included the title of a caregiver the student referred to in their responses to the caregiver title items. The second version used the general phrase "this adult." The response options were the same across both versions. No clear consensus emerged on which of the versions was easier to answer, but multiple students expressed confusion about the response options.

One source of confusion was the references to General Education Development (GED) and High School Equivalency Diploma (HSED) in the response options. Out of all 51 students, 11 specifically pointed out the acronyms GED and/or

Version 1: Single Caregiver)

You said one adult is taking care of you. How is this adult related to you?	Ⓐ Mother Ⓑ Stepmother Ⓒ Foster mother of adoptive mother Ⓓ Other female relative such as grandmother or aunt Ⓔ Some other female adult Ⓕ Father Ⓖ Stepfather Ⓗ Foster father or adoptive father Ⓘ Other male relative such as a grandfather or uncle Ⓙ Some other adult male

Version 1, Two or More Homes Version, First Item

You said more than one adult is taking care of you. Think about the first (you can tell us about up to four different adults). We will call them Adult #1. How is Adult #1 related to you?	Ⓐ Mother Ⓑ Stepmother Ⓒ Foster mother of adoptive mother Ⓓ Other female relative such as grandmother or aunt Ⓔ Some other female adult Ⓕ Father Ⓖ Stepfather Ⓗ Foster father or adoptive father Ⓘ Other male relative such as a grandfather or uncle Ⓙ Some other adult male

Version 1, Two or More Homes Version, Second Item

Think about the [second/third/fourth] adult taking care of you (you can tell us about up to four different adults). We will call them Adult #X. How is Adult #X related to you?	Ⓐ Mother Ⓑ Stepmother Ⓒ Foster mother of adoptive mother Ⓓ Other female relative such as grandmother or aunt Ⓔ Some other female adult Ⓕ Father Ⓖ Stepfather Ⓗ Foster father or adoptive father Ⓘ Other male relative such as a grandfather or uncle Ⓙ Some other adult male

Version 2

Think about the adults that live in your home(s). Which adults are taking care of you? Select one adult in each drop-down list.	Adult #1 select from drop-down options	Adult #2 select from drop-down options	Adult #3 select from drop-down options	Adult #4 select from drop-down options
Note. Response options included in each drop-down menu include mother, stepmother, foster mother or adoptive mother, other female relative such as grandmother or aunt, some other female adult, father, stepfather, foster father or adoptive father, other male relative such as a grandfather or uncle, some other adult male				

Figure 6 Caregiver information draft items: Caregiver identification item (versions 1 and 2).

<div style="text-align:center">Version 1</div>

<div style="text-align:center">Version 2</div>

How far in school did your [XXXXX] go?

Ⓐ [She/He] did not finish high school
Ⓑ [She/He] graduated from high school (or a GED/HSED)
Ⓒ [She/He] had some education after high school
Ⓓ [She/He] graduated from college
Ⓔ [She/He] had some education after college
Ⓕ I don't know

What is this adult's highest level of education?

Ⓐ [She/He] did not finish high school
Ⓑ [She/He] graduated from high school (or a GED/HSED)
Ⓒ [She/He] had some education after high school
Ⓓ [She/He] graduated from college
Ⓔ [She/He] had some education after college
Ⓕ I don't know

Figure 7 Caregiver information draft items: Caregiver education item (versions 1 and 2).

<div style="text-align:center">Version 1</div>

<div style="text-align:center">Version 2</div>

In the last month, has this adult worked for pay?
Ⓐ Yes
Ⓑ No
Ⓒ I don't know.

In the last month has your [XXXXX] worked for pay?
Ⓐ Yes
Ⓑ No
Ⓒ I don't know.

Figure 8 Caregiver information draft items: Caregiver employment item (versions 1 and 2).

HSED, noting that they were either unfamiliar with one or both of these terms or felt that the terms might be confusing to others (e.g., "What does that stand for, graduate … ?" [Grade 4 Student C9]). Another source of confusion was the response option "some education after college," which was intended to capture information on graduate and professional degrees. Seven students explained that they did not understand the intended meaning of this response option or felt uncertain about their response. Additionally, one student interpreted the response option as referring to advanced degrees and coursework as "college." Grade 8 Student C4 selected "he/she graduated from college" instead of "he/she had some education after college" but explained that her mother was "taking courses towards her Masters. So she is technically still in college."

Similar to observations made during the focus group phase of the study, younger students in the cognitive interview had more trouble providing education information for their caregivers. Students in Grades 4 and 8 had higher rates of the "I don't know" response option, including 18 of the 43 Grade 4 student responses and 13 of the 37 Grade 8 responses. By contrast, only 2 of the 34 Grade 12 student responses used the I do not know option.

Caregiver Employment

During the interviews, participants were asked about the phrase "worked for pay," which was included in both versions of the caregiver employment status item. Across the sample, 42 students showed a clear understanding that this refers to the act of working a job in return for compensation. Some students also made the explicit distinction between work and volunteering in their responses to the probe (e.g., "They weren't volunteering because a volunteer doesn't get money." [Grade 4 Student G9]).

We tested two versions of the caregiver employment status item (see Figure 8) to evaluate the clarity of item stem wording. Like the caregiver education items, one version of the item did not include the caregiver's title, and the other used the title of the caregiver as specified by the student (e.g., mother). When students were asked which version was easier to answer, 22 of 51 students selected the version that used the caregiver's title (e.g., mother), but only 13 selected the "this adult" wording (15 expressed no preference). Several students noted that use of the caregiver title provided clear information about which caregiver was being asked about (e.g., "It's simple, people are more familiar with it saying 'mother' over 'adult'" [Student C4, Grade 8]).

Does this adult usually work during the daytime, at night, or both?
Ⓐ Daytime
Ⓑ At night
Ⓒ Both
Ⓓ I don't know.

Figure 9 Caregiver information draft items: Caregiver employment—shiftwork item.

In the last month, did this adult work at one job, or did this adult
work at two or more jobs?
Ⓐ One job
Ⓑ Two or more jobs
Ⓒ I don't know.

Figure 10 Caregiver information draft items: Caregiver employment—multiple jobs item.

We also asked participants about the temporal frame used in the items. Although both versions of the item asked about employment "the last month," we asked participants if it would have been easier to answer the item about "the last year." Across the sample, 17 students thought that the last year time frame would be easier because it made the item more general. For example, Grade 12 Student R10 pointed out, "They could have taken a month off or something." By contrast, 25 students felt that the longer time frame would be more difficult because it required them to think further back into the past. Several of these students expressed concerns about potentially not being able to think that far back about the employment situation of one or more of their caregivers. Grade 12 Student G8 said, "Some people could have lost their job during part of the year but then got a new job," and Grade 4 Student R8 stated, "In a year, you might forget." In addition to these observations, we found multiple students would have issues answering the last year version because their caregivers were out of work during some parts of the year. Additionally, some students pointed out that a "yes" response to the in the last year version could mean that the caregiver worked for part of the year but had been unemployed more recently.

Additional Employment Items

We tested two additional items related to caregiver employment. One assessed the time of day or shift that caregivers work, and the other assessed the number of jobs held by caregivers (see Figures 9 and 10).

Students were generally able to answer the caregiver work shift item, with only two students using the "I don't know" response. However, multiple students experienced confusion and difficulty with the response option "both." Moreover, students interpreted both in different but equally accurate ways for caregivers with varied work schedules (e.g., "Sometimes she'll work 4pm to midnight … or, like today, she'll work 6am to 3pm" [Student S5, Grade 12]), caregivers whose work shifts began in the daytime and ended at night (e.g., "She goes in in the morning around 8 or 9, and she gets off sometimes at 10 at night or 11" [Student G1, Grade 8]), and caregivers who worked from home and had no set work hours (e.g., "He can actually make up his own hours but he usually works in the morning … but he usually works all day. He works from home" [Grade 12 Student C3]).

Students experienced less confusion and difficulty with the caregiver number of jobs item and were generally able to answer the item. Across the sample, only two students did not know about the number of jobs held by a caregiver. In these cases, the students were able to provide this information for other caregivers. Examination of probe responses showed that only one student, Grade 4 Student G2, used the response "two or more jobs" to refer to jobs held at different times (i.e., "She worked at DSS but now she work in a new business").

General Discussion

To our knowledge, this is the first study to examine potential alternative approaches to measuring student household composition that allows students from nontraditional households to provide SES proxy information similar to that collected from students in nuclear families. Based on the interviews we conducted, we contend that students of a variety of ages are able to provide such information about their households and the people who live with them. In the following sections, we summarize our findings as they relate to our research questions and provide recommendations for researchers and LSA practitioners measuring student SES.

Recommendations for Measurement of Household Composition

One goal of this paper is to explore which household composition items would be needed for student SES measurement. Cowan et al. (2012) identified two important factors not measured with typical Big 3 items: the size of the household, including the number of household members and household adults, and household structure, including the presence of one or both parents as well as any other relatives.[1] We found that students in both studies reported a wide variety of household membership, even within household types (e.g., extended family households can include any combination of grandparents, aunts and uncles, and others). Such variability can have real impact on the socioeconomic resources available to each member of the household. We recommend that student SES survey questionnaires include items that ask about the number of homes a student lives in as well as items on the number of children and adults in each home. These items are recommended alongside the items for measurement of the conventional Big 3 student SES variables. Students had little trouble providing answers to these items and explaining their reasoning, though multiple students were unclear about whether we meant for them to include themselves in the number of children they reported. A clarifying phrase or sentence could be added to address this confusion without creating a substantial additional reading burden.

Students in our cognitive interview study provided important feedback on the draft household composition items we administered. The temporal frame of "in the last month" caused less confusion for students than "right now," though some students interpreted the former to be asking about homes that the student had lived in but moved from in the past month. We recommend that the last month time frame be used, but also suggest clarifying that the item is not asking about whether or not the student had moved in that time. Students also expressed confusion about the "more than two homes" option, which was used to create consistency with response options in other items. We suggest using "three or more homes" to ensure the response options are as distinct from each other as possible. Lastly, we also suggest avoiding use of plural parentheticals such as "home(s)." Although this wording makes survey items more general, some students in our sample were unfamiliar with this convention and were distracted from thinking about the answer to the item.

Recommendations for Caregiver Identification

Another goal of this paper was to provide guidance regarding which caregivers should be included in student SES items. In both studies, we presented students with the idea of a caregiver as such rather than a mother or father. With the exception of the Trends in International Mathematics and Science Study (TIMSS) survey questionnaire (Hooper et al., 2017), which uses the language "Parent/Guardian A" and "Parent/Guardian B" to ask about the educational and citizenship status of parents, asking about caregivers instead of parents is a major departure from convention. Survey questionnaire items in LSAs (e.g., NAEP, PISA) have historically asked students about mothers and fathers (including related figures, such as foster parents). We observed that students in all grades and in both studies understood people who take care of them to refer to a parentlike figure who provides material resources, access to opportunities, and emotional support. Moreover, students in all grades and in both studies were able to identify their own caregivers (including parents and other adults) and provide examples of caregiver behavior. These caregivers are fulfilling the roles and duties held by mothers and fathers in nuclear family households. Students live with a variety of caregivers, and we recommend using the caregiver wording to make student SES items applicable to as many students as possible.

The specific caregiver titles we included in the draft caregiver title items were based on the information provided by students in our group interview study. These students told us about their homes and families, and it was clear to us from these discussions that the potential list of caregivers should include parents, other family members, and even other adults to whom the students were not related. In the cognitive interviews, none of our participants reported that the response options we employed were incomplete. In the case of adopted students, we found that our response options were too specific and assumed that the distinction between adoptive and biological parents would be useful. We recommend including a wide variety of potential caregiver options when inquiring about student caregivers but caution other researchers that students may find differentiation of adoptive parents in response options to be distracting or even offensive. We also recommend allowing students to identify more than two caregivers, as students in both studies and in multiple household types identified several caregivers.

In terms of item clarity and function, students told us that we needed to make the titles of family member caregivers easier to see in the list of response options. The response option "other female relative, such as grandmother or aunt" presents the titles near the end, and students appeared to be reading only the first few words of the response options while

looking for their caregiver. We recommend putting the caregiver titles at the beginning of the response options for all caregivers, just as they are for students whose caregivers are their parents.

In addition to the family types we sampled from, students living in same-sex couple households do not live with a mother and father and therefore require consideration. This will need to be balanced with concerns about item clarity, as simply including the options "mother" and "father" twice would be confusing to other students. Something as simple as "second mother" or "other mother" may be sufficient, but more research on this topic is needed. Regardless of the form, we recommend consideration of same-sex families in the construction of student SES items.

Recommendations for Measurement of Caregiver Education and Employment

The third goal of this paper was to provide insight on what questions could be answered by students in Grades 4, 8, and 12 about caregiver education and employment. Across these items, we observed that students tended to prefer items that used caregiver titles like "mother" instead of generic phrases like "this adult" or "adult #1." This customization reduces the burden on working memory and can reduce student confusion and reporting of invalid data. Such customization can be implemented easily on most digital survey platforms through the use of skip patterns, fill language, and other functionality that allows respondents to be administered selected items or to view tailored language based on their responses to prior items. We recommend using caregiver titles in these items wherever possible.

We administered two different wordings of the employment item, and we found that no clear preference for wording emerged across the sample. However, we did observe that some ideas are foreign to students. References to GED/HSED equivalency diplomas were confusing to students, and the concept of education "after college" was understood by only a subset of the sample. Although specificity is generally a good thing in survey questionnaire items, we recommend avoiding these references, as the presence of the acronyms can be distracting for those students who are unfamiliar with them. Moreover, we do not recommend administering these items to younger students. Grade 4 students were unable to provide educational attainment information for 18 of their 43 caregivers, as compared to 2 of 34 caregivers for students in Grade 12. More students in Grade 8 were able to provide information than students in Grade 4.

Even though young students in particular were challenged in providing information about caregiver education, we found that students across all grades were more challenged in providing caregiver employment information. Caregiver employment serves as a substitute for information on occupation prestige, which is traditionally part of the Big 3. During the group interviews, we found that few students were able to provide the job titles of their caregivers. Occupational prestige is difficult to evaluate without job title information, so we chose to focus on employment status and attempted to collect additional information that might be useful for assessing the prestige of caregiver jobs.

Regarding the caregiver employment items, we found that students in the group interviews better understood the differences between work and other activities like volunteering and caring for home and family when we used the phrase "for pay" in the item stem. This difference is especially important for estimating student SES, as caregivers who are volunteering instead of working for pay are not bringing resources into the home. This phrase has been used in PISA questionnaire items, and we recommend its use elsewhere.

In addition to the employment status items, we also drafted a work shift item and a number of jobs item. Both of these items could potentially be used to provide additional caregiver employment information beyond simple employment status. The work shift item was problematic for several reasons, including student difficulty in classifying caregiver work shifts as "day" or "night" shifts, caregivers working shifts that include daytime and nighttime hours, and the nature of gig economy jobs like working for Uber or Lyft that allow workers to work when they choose. These common situations make the measurement and interpretation of work shift information difficult. The number of jobs item, by contrast, was less complicated for students to answer. Caregivers with multiple jobs likely have more than one job in order to increase household income. This information, combined with employment status information, could provide some clarity about the SES of the students providing this information in the survey questionnaire. However, more research is needed. We recommend researchers explore this and other alternative survey questionnaire items for collecting information on student SES.

Limitations and Future Directions

This paper is a first step toward a more inclusive set of student SES items and provides some important observations and conclusions, but it also has some important limitations. First, both studies presented in this paper were conducted

with small samples of students from nontraditional households. These groups were the focus of this project specifically because they have been underrepresented in household composition measurement, but any student SES items will need to work for students in more traditional households as well. Future research on this topic should attempt to replicate our findings, potentially with larger groups of students including those living in traditional households as well as same-sex parent households.

Another limitation of this research is the reliance on students to provide accurate information about their households and caregivers. Other researchers have examined student-reported data on caregiver education and have observed that Grade 4 students sometimes overestimate their parents' education (Jewsbury & Jerry, 2017). In the present study, older students tended to demonstrate a clearer understanding of their caregivers' education and employment information than younger students, but additional research is needed to evaluate the accuracy of student-provided information on this topic. Caregiver education and employment data collected from paired samples of students and their caregivers could serve as the basis for this validation, including a wider variety of caregivers than just biological parents. Such analyses should be conducted with students from different age ranges and household types.

An important next step for future research in this area should include an administration of these new household composition and caregiver information items alongside other indicators of SES and an achievement test. The purpose of these items is to provide context for student achievement, and it remains unclear how the shift of focus from parents to caregivers in general will impact the relationship between these types of items and both student achievement and SES indicators such as eligibility for free or reduced-price school lunch. Strategies will need to be developed for analyzing and interpreting such data, as both household composition and caregiver information may not be related to student achievement in the same manner across household types and caregivers. Despite these added complexities, we believe that these new items, and more importantly, the ideas behind them, can provide better and more inclusive insights into student SES and how it relates to student success.

Note

1 The size and structure of households and occupations help to implement the SES measures, either by adjusting for household income or by identifying individuals for whom SES information is needed.

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