AUDIO COMPUTER-ASSISTED SELF-INTERVIEW (ACASI)

Surveys of a sensitive nature require a sensitive method of data collection: A study from Uganda

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Imagine being 9 years old. You arrive at school, and your teacher tells you to sit with a stranger and answer questions about your experiences being beaten in class and teachers or peers touching you inappropriately. Would you respond openly and honestly to this stranger? What if you were listening to these questions privately, through headphones, and responding to a computer instead?

Incidences of school-related gender-based violence (SRGBV[1]), such as the one above, are common in schools around the world. SRGBV pervades school environments for many reasons, one of which being it is incredibly difficult to measure. Quantifying SRGBV continues to puzzle data collectors and remains difficult for three major reasons:

1. Survey questions are sensitive, especially for SRGBV. Responding can prove emotionally distressing to the respondent.
2. Social-desirability bias can lead to responses that are based on what is perceived to be more socially accepted or desirable. This effect can skew data and lead to inaccurate reporting (Mierzwa et al., 2013).
3. There is no right or wrong answer. Unlike in an early grade reading assessment, an assessor cannot know if the respondent answered truthfully.

The traditional face-to-face (FTF) survey method cannot accommodate the privacy needed to mitigate the effect of social-desirability bias, particularly with the most sensitive topics such as corporal punishment and sexual violence, nor does it provide a means to elicit authentic responses. Indeed, an assessor asking a respondent questions about their experiences of violence will contribute to the stress of taking such a survey. However, audio computer-assisted self-interview (ACASI) does hold promise in addressing this issue with survey administration. This brief provides an overview of ACASI, discusses a 2019 large-scale study that compared the ACASI and FTF administration methods, and provides data for discussion regarding ACASI's viability as a more effective method of survey administration when collecting data on experiences of SRGBV.

BACKGROUND

In contrast to the conventional FTF interview method, ACASI "removes" the data collector from the interview and presents survey questions in an audio format through headphones. The

[1] SRGBV can include "acts or threats of physical, sexual, or psychological violence or abuse that is based on gender stereotypes or that targets students on the basis of their sex, sexuality, or gender identities." Three broad categories of SRGBV include bullying and non-sexual harassment, corporal punishment, and sexual violence or harassment (RTI International, 2016, pp. 2).

interviewee responds by selecting his or her choice through the tablet without interacting with a data collector. Researchers have used ACASI in studies throughout the world when the authenticity and accuracy of the data depends on the confidentiality that the survey administration provides the respondent. A vast amount of literature exists on the use of ACASI in collecting data from HIV-infected patients, on sexual behavior and drug use, and intimate partner violence (Ghanem et al., 2005; Potdar & Koenig, 2005; Jaspan et al., 2007; Mensch et al., 2008; Beauclair et al., 2013; Stark et al., 2017, Adebajo et al.; 2014; Population Council, 2019). ACASI is one method of survey administration that provides privacy to the respondent, which reduces social-desirability bias and allows the researcher to place confidence in the quality of data collected. Yet, at the time of writing this brief, no study has tested the effectiveness of ACASI when administering SRGBV or school climate[2] surveys nor tested ACASI administration with a younger population (students who are approximately 10 years old). The study described in this brief addresses these two gaps in the literature on ACASI.

Research Questions

1. Does the **factor structure** of the target surveys using ACASI conform to that of the target surveys using the FTF data collection?

2. Considering the target surveys using the conventional FTF method of data collection as the "focal test," what is the **convergent validity** of the target surveys using ACASI?

3. Are the data collected from the target surveys using ACASI showing **more variability and increased reporting** than the FTF method?

In 2018, RTI International piloted the use of ACASI in 12 Uganda public primary schools with Primary Class 5 or P5 (mean age=11.9 years) and P7 (mean age=13.8 years) students. The instrument administered via ACASI comprised a small selection of questions from the Student Experiences of Violence Survey.[3] Results from this pilot suggested that ACASI could hold promise for reducing social-desirability bias and elicit more authentic responses.

In 2019, RTI International scaled up this study, again in Uganda, to include a semi-randomized sample of students in 40 schools with a younger population of P3 students (mean age=10 years) and a suite of instruments related to SRGBV and school climate. The findings from this study are discussed herein.

Table 1. Demographics of sampled students

Demographic	FTF *n*=442 [95% CI]	ACASI *n*=434 [95% CI]
Age	9.7 years	10.0 years
Percent girls	48.1% [45.3-50.9]	48.5% [44.8-51.1]
Disability	3.3% [1.0-5.5]	2.0% [0.6-3.3]
Is an orphan	17.1% [11.9-22.3]	47.3% [39.8-54.7]

METHODOLOGY

A total of 40 primary schools were visited for the FTF and ACASI data collection. These schools

[2] School climate, gender attitudes and social-emotional learning surveys were all included in this study, as they are mediators of SRGBV.
[3] Survey forms were adapted from RTI International. (2018) Survey of Student Experiences of SRGBV. Uganda Literacy Achievement and Retention Activity. Retrieved from https://shared.rti.org/content/survey-student-experiences-school-related-gender-based-violence-srgbv

were selected as the random sample of control schools under the USAID/Uganda Literacy Achievement and Retention Activity longitudinal study that was drawn in 2018. Under this study, the same treatment and control schools and students are visited every year, and students are assessed with school climate, gender attitudes, social-emotional learning (SEL), and experiences of violence surveys using the FTF method. The second round of data collection for the longitudinal study was conducted in July of 2019, during which the ACASI study took place[4]. Assessor teams visited the same longitudinal study control schools on the same day and sampled 12 P3 students in each school who were not already part of the longitudinal sample. Some basic demographic information on the FTF and ACASI sampled students can be seen in **Table 1**. The demographic make-up of both samples is similar, though about 50% of ACASI students reported being orphans, while only 17% of FTF students reported being orphans.[5]

FINDINGS

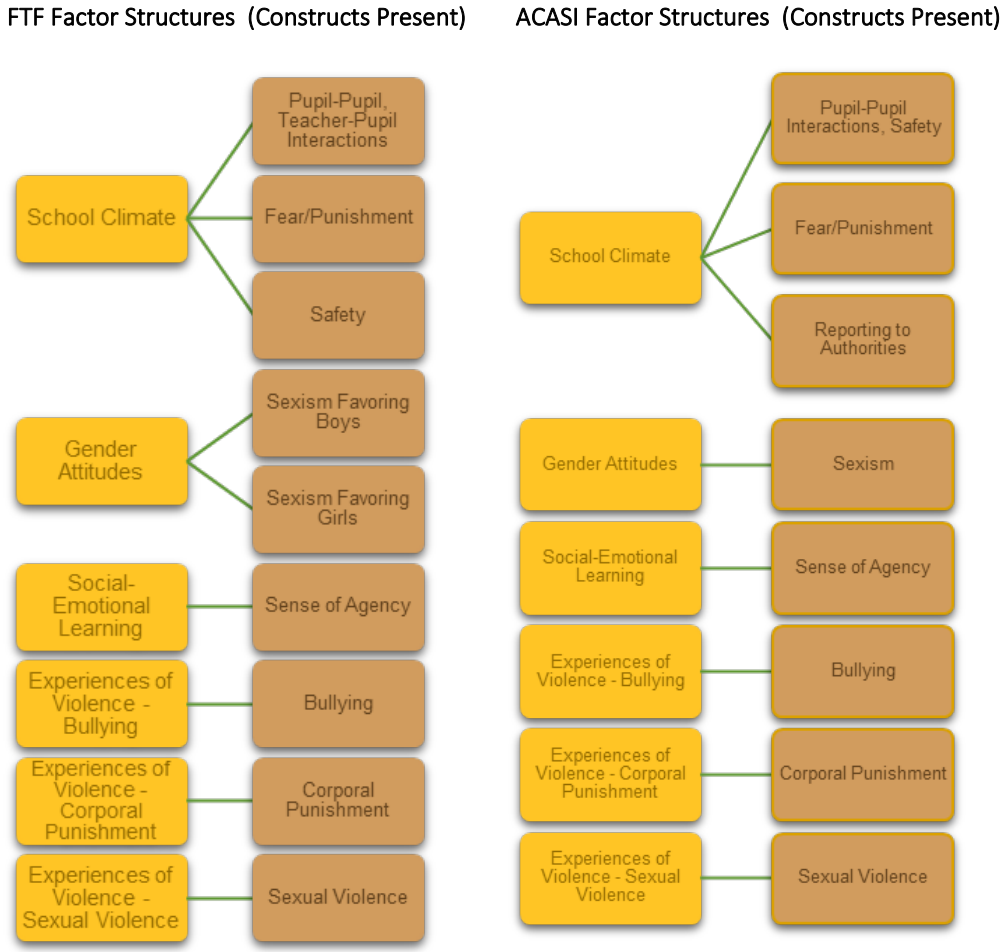
RQ1: Does the **factor structure** of the target surveys using ACASI conform to that of the target surveys using the FTF data collection?

To address RQ1, the team conducted a factor analysis. One factor, which may contain several items, uses the variation in the items to reflect the variation in one *unobserved* variable. If factor structures change over time or across different administrations of the same survey, this can mean that there are different constructs present in the data.

The factor structures under the school climate, SEL, and experiences of SRGBV surveys for the FTF and ACASI administrations are roughly the same[6], The FTF and ACASI factor structures are shown in **Figure 1**.The gender attitudes survey shows slight differences—the ACASI data show a one-factor structure while the FTF data show a two-factor structure. It is important to note that the second factor in the FTF data only contains two items and the factor loadings are not large. It is also important to note that the gender attitudes survey has not shown a consistent factor structure in the longitudinal study's Occasion 1 and Occasion 2 data, and this should therefore not be regarded as the final factor structure. Though the item make-up of the factors is not exactly the same across FTF and ACASI for school climate and SEL, there is a large enough overlap in which items make up each factor to conclude that the overall constructs present are the same. Some variation would be expected in the item make-up of each factor since the factor loadings are low, suggesting that we may expect cross-over from one factor to another[4] . Through this Factor Structure Analysis, it is evident that the type of administration does not largely impact the constructs being measured, and using ACASI does not alter pupils' understanding of the items.

[4] The surveys used were not developed for this ACASI study. The same survey that was already being administered face-to-face was used for this study. This brief is not focused on the survey itself but rather the administration.
[5] This discrepancy could be due to the fact that the parents or guardians of the FTF students were asked about orphan status whereas ACASI students themselves were asked about their orphan status. It is possible that the young children did not understand the definition of 'orphan' when responding to the question.
[6] The item groupings under the different factors are determined by the factor loading values. Though factor structures should remain the same for a robust survey, there is always some expected variation in the factor-loading values in different data sets.

Figure 1. Factor structures present in the data



RQ2: Considering the target surveys using the conventional FTF method of data collection as the "focal test," what is the **convergent validity** of the target surveys using ACASI?

Convergent validity[7] is the degree of confidence that an identified construct is well measured by its associated group of items. The average variance extracted (AVE) is a metric that calculates the amount of variance of a group of items that is captured by a single construct (versus the amount of variance due to measurement error). A survey with factors that have high AVE values is considered to show convergent validity. Generally, AVE values of at least 0.70 are considered good, while 0.50 is sometimes seen as acceptable.

The AVE values are similar across the FTF and ACASI surveys, though many of them are smaller than the acceptable 0.50 threshold. The consistency of low AVE values across

[7] Convergent validity is the degree of confidence that an identified construct is well measured by its associated group of items. A low AVE indicates that the construct cannot successfully capture variance coming from the individual items and therefore may not be a strong representation of those items. A high AVE indicates that the construct can capture much of the variance coming from the individual items, making it a good representation of those items. Generally, AVE values of at least 0.70 are considered good, while 0.50 is seen as acceptable.

Table 2. AVE for each factor of the FTF and ACASI surveys		
Survey	Administration	AVE Range: [0-1.0]
School Climate	FTF	Factor 1: 0.299 Factor 2: 0.447 Factor 3: 0.378
	ACASI	Factor 1: 0.291 Factor 2: 0.451 Factor 3: 0.371
Gender Attitudes	FTF	Factor 1: 0.175 Factor 2: 0.542*
	ACASI	Factor 1: 0.281
SEL	FTF	Factor 1: 0.150
	ACASI	Factor 1: 0.438
Experiences of SRGBV – Bullying	FTF	Factor 1: 0.315
	ACASI	Factor 1: 0.381
Experiences of SRGBV – Corporal Punishment	FTF	Factor 1: 0.339
	ACASI	Factor 1: 0.406
Experiences of SRGBV – Sexual Violence	FTF	Factor 1: 0.379
	ACASI	Factor 1: 0.514**

**Only 2 items make up this factor.*
***Meets the 0.50 threshold for an acceptable AVE.*

administration types is indicative of the tool itself not showing strong convergent validity, regardless of administration type.

Only two factors in the FTF and ACASI surveys reported an AVE greater than 0.50, and only one is noteworthy: the ACASI sexual violence survey. (The second factor that met this 0.50 threshold is the second factor in the FTF gender attitudes survey; however, this factor only contains two items, making it more likely to have a higher AVE value.) The AVE for the sexual violence factor under ACASI indicates that the survey has decent convergent validity—the individual items in the survey converge toward one construct that effectively captures a decent amount of the variability in those seven items. The AVE for each factor in the FTF and ACASI surveys is given in **Table 2**.

RQ3: Are the data collected from the target surveys using ACASI showing **more variability and increased reporting** than when using the FTF method?

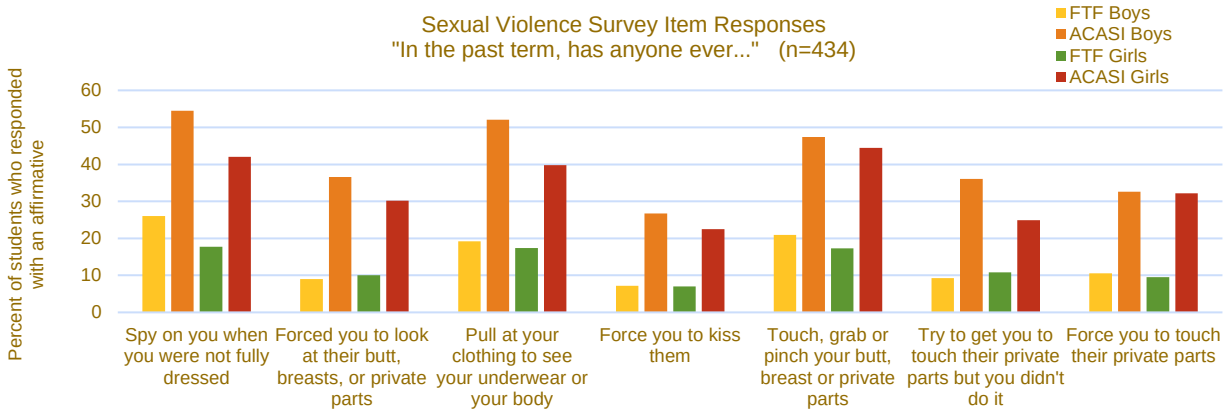
Data collected using ACASI show reporting and variability for the school climate, gender attitudes, SEL, bullying, and corporal punishment surveys that are similar to those collected FTF, while the sexual violence survey shows drastically increased reporting and high variation under ACASI.

Data collected for each survey are summarized into key reporting metrics. For the school climate, gender attitudes, and SEL surveys, a percent score is derived that represents the percent of responses that are favorable to a positive school climate, positive views on gender equity, or a strong sense of agency and social awareness. The experiences of violence surveys are summarized with the prevalence rates for each of the three forms of violence. **Table 3** displays these key metrics.

Table 3. Key metrics for FTF and ACASI sampled students		
Key Metric	**FTF** *(n=442)* [95% CI]	**ACASI** *(n=434)* [95% CI]
Percent of favorable responses to the school climate survey	71.8% [70.3 – 73.3]	71.0% [69.5 – 72.5]
Percent of favorable responses to the gender attitudes survey	41.7% [39.9 – 43.5]	44.3% [42.7 – 45.9]
Percent of favorable responses to the SEL survey	67.7% [65.6 – 69.8]	65.0% [62.5 – 67.5]
Prevalence of bullying	96.0% [94.0 – 98.0]	97.1% [95.4 – 98.8]
Prevalence of corporal punishment	92.8% [90.4 – 95.2]	95.9% [93.9 – 97.9]
Prevalence of sexual violence*	43.3% [37.9 – 48.7]	77.3% [71.9 – 82.7]
**indicates statistically significant at p<0.001*		

School climate, gender attitudes, and SEL show similar results when comparing ACASI to FTF. There is likely less desire to understate the severity of an experience if that experience is not taboo or sensitive in nature. The bullying and corporal punishment prevalence rates are also very similar for ACASI when compared to FTF. In contrast, the sexual violence survey conducted under ACASI shows drastically different results. About 43% of students who completed the sexual violence survey with the FTF administration reported experiencing an act of sexual violence at least once in the past term, while this number was 77% for the ACASI group. This substantial difference in reporting supports the literature on ACASI, which provides evidence for the effectiveness of ACASI particularly when collecting sensitive data. Respondents who use ACASI report their experiences differently (than those using the traditional FTF method) when those experiences may be of sensitive nature, taboo, or socially undesirable (Falb et al., 2017; Mierzwa et al., 2017). A closer look at each individual item within the sexual violence survey shows a similar trend across all items and substantiates the claim that a platform like ACASI that protects the privacy of the individual is needed for more sensitive surveys.

Figure 2 (below) displays item-level responses. This chart shows an increase in reporting for all items when respondents used ACASI to answer the sexual violence survey questions. This increase seems to be slightly larger for boys in the group. The sexual violence survey likely shows the greatest impact from social-desirability bias, and therefore, based on the literature, the expectation is that ACASI respondents would respond more openly given privacy and anonymity (Adebajo et al., 2014; Falb et al., 2017; Mensch et al., 2008; Mierzwa et al., 2017). This may be particularly true for boys, whose increased disclosure due to ACASI was greater than that of girls.



(above) Figure 2. Item-level responses to sexual violence survey for FTF and ACASI sampled pupils

CONCLUSION AND RECOMMENDATIONS

The data generated from this study provide evidence that ACASI administration provides equally, and in certain cases stronger, valid and reliable data as the FTF administration. The increased variability in and increased affirmative responses of the sexual violence survey indicate that using ACASI to administer surveys that contain sensitive or culturally taboo questions can mitigate social-desirability bias. The additional tests related to measurement, specifically factor analysis and tests of convergent validity, indicate that using a different administration method does not largely impact the constructs being measured nor drastically change the convergent validity. However, evaluating the validity and reliability of the surveys is always indicated when applying them to a new population. More importantly, the data herein provide strong evidence for rejecting the FTF interview method in favor of ACASI for the administration of the Student Experiences of Violence Survey. The importance of using ACASI for surveys of a sensitive nature is clear.

This study contributes to the international literature on ACASI's use in measuring experiences of a sensitive nature by addressing two gaps in existing research: (1) It reveals that students as young as 10 years old are able to use the ACASI platform to complete sensitive surveys; and (2) It finds that reporting of experiences of sexual violence is drastically different when using ACASI, while other less-sensitive surveys within the school climate and SRGBV space do not show increased variability or reporting. As surveys about experiences of sexual violence often are at greater risk of social-desirability bias, this finding aligns with the international literature on ACASI's effectiveness at mitigating this bias and use for sensitive surveys.

Sample Limitations

Since the same exact students were not assessed with both methods, the administration of the survey may not be the only variable factor. However, since the samples of FTF and ACASI students were both chosen at random, these potential sample differences could be mitigated.

Students who were part of the FTF sample had already been exposed to these surveys during the prior year at Occasion 1, while the ACASI students had not.

Technical issues with tablets sometimes caused interruption in the middle of the ACASI-administered assessment, which resulted in incomplete results.

The research community must take responsibility when testing human subjects by ensuring the most confidential and comfortable survey administration is used. ACASI provides a safer space in which children can feel more comfortable disclosing their experiences, knowing their privacy is safeguarded. Obtaining data through proper privacy measures, that are prone to the least amount of bias, is the first step toward determining the full breadth and depth of SRGBV. The data can be used to better inform programming that addresses the experiences and drivers of SRGBV to eradicate violence against children in schools.

CITATIONS

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