Cognitive Skills, Social Acceptability, and Consistency of Adolescents' Self-Reports of Sexual Behavior: Evidence from a Longitudinal Study in Rural Malawi

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Most studies of adolescents' sexual behavior rely on self-reports. Although there is an increasing recognition in the literature that data collected through self-reports are subject to biases due to errors in recall, socially desirable reporting, low motivation to respond accurately, and misunderstanding of questions, little is known about the magnitude, causes, and consequences of such biases. This is particularly the case for developing countries where few studies have the requisite data for examining internal consistency. Within the U.S. context, studies have found that up to 12% of adolescents subsequently recant their initial reports of ever having had sexual intercourse (Upchurch et al 2002; Alexander et al, 1993; Rodgers, Billy and Udry 1982). From the available studies for developing countries, it seems that inconsistent reporting is a considerably larger problem. In a study of high-school students in South Africa, nearly 40% of adolescents reported being virgins after sexual activity had been reported at an earlier assessment (Palen et al 2008); no associations between inconsistent reporting with having repeated a grade in the past and basic demographic variables were found. In another study conducted in Jamaica that followed adolescents attending seventh grade at baseline, 37% of respondents provided inconsistent reports between the three rounds of data (Eggleston et al 2000); boys, respondents living in the lowest socioeconomic-status households, and respondents attending a school that was part of a family life education intervention were more likely to be inconsistent reporters.

Reliable data on adolescents' sexual behavior in developing countries is crucial for identifying groups that are at a higher risk of early pregnancy, becoming HIV positive or acquiring other sexually transmitted diseases. For example, studies have shown that girls enrolled in school are less likely to engage in premarital sex than their out-of-school peers (Hargreaves et al. 2008; Lloyd 2008), and that this association may exist because those who engage in premarital sex are more vulnerable to school exit (Biddlecom et al 2007; Soler-Hampejsek, Mensch and Hewett 2008) rather than because school participation deters premarital sex. However, this association may simply exist because girls in school are less likely to admit to ever having had sex than girls who are no longer in school.

In this paper we investigate the magnitude and causes of inconsistent reporting of sexual behavior measures between three rounds of a longitudinal study on school quality and adolescents' experiences in Malawi. In particular we aim to shed light on the extent to which adolescents' cognitive skills and their identified role in society are associated with inconsistent reporting by answering the following questions: (i) Are adolescents who have better literacy and math skills more likely to provide accurate responses in a complex survey that demands understanding of concepts and recalling of timing and order of past events than adolescents who are illiterate or have poor math skills? (ii) Are adolescents' who are in a stage of life where sexual activity is not socially accepted, such as unmarried girls and in particular those enrolled in school, more likely to provide inaccurate information than out of school and married adolescents?

Data

The data come from the first three rounds of a longitudinal study of approximately 1,770 in-school and 890 out-of-school Malawian adolescents aged 14–16 when first interviewed in 2007. The study successfully re-interviewed 91% and 90% of the original sample in 2008 and 2009, respectively. Fifty nine primary schools in two southern districts of Malawi were visited in the second term of the 2007 school year and again during the second term in 2008 and 2009. The 30 schools visited in Machinga represent nearly 20 percent of the primary schools in the district, whereas those in Balaka represent nearly 25 percent of the primary schools in that district. The probability of a particular school being included in the sample was proportional to its enrollment

in 2006.[1] At each school we interviewed approximately 30 students in standards 4-8, the last 4 years of primary school, stratified by gender and age.[2] The in-school adolescents were randomly selected from registers recording enrollment at the beginning of the 2007 school year. Adolescents were classified as out-of-school if they had not attended in the second term of the school year. Out-of-school adolescents were identified through key informants located at the school and within the randomly selected school catchment villages.

The adolescent instrument included an extensive set of questions on household and family characteristics, educational attainment, schooling history and experiences, household labor and employment, sexual behavior, marriage, and health. The majority of questions were asked in 2007 and again in 2008 and 2009. In 2007 all sampled adolescents were asked to read two sentences in Chichewa (the national language) and two sentences in English, tasks at which they should have been proficient by standard 4. Adolescents also completed a short mathematical evaluation consisting of 12 questions drawn from the Malawi Institute of Education (MIE) achievement tests for standard 3.[3] In 2008 and 2009, these assessments were repeated for comparability and expanded. A reading comprehension section (in both English and Chichewa) was added to further measure cognitive ability, while a selection of questions from the MIE mathematical tests for standard 5 was included in 2008 and for standard 7 in 2009 to capture more recently acquired knowledge.

For the sexual behavior section, we employed audio computer-assisted self-interviewing (ACASI) with handheld computers. With ACASI, the respondent hears both the question and the response categories through headphones connected to a computer. The respondent answers each question by pressing a number on the computer screen associated with a response option. The advantage of ACASI over face-to-face interviews is that the respondent is afforded greater privacy and confidentiality when answering questions and interviewer influence in the survey is minimized. Computerized interviewing has been used successfully by the investigators in household-based surveys in Kenya and Malawi (Hewett et al. 2004; Mensch et al. 2008).

Analysis

Some preliminary descriptive data from Rounds 1 and 2 are shown in the following tables. Table 1 provides rates of inconsistency of ever had sex reports between Round 1 and Round 2, for boys and girls separately, by school attendance and marital status at Round 1.[4] Several findings stand out. Boys are more likely than girls to report sexual activity at Round 1 but there are no gender differences in the overall percentage denying ever having had sex in Round 2. Interestingly, girls in school at Round 1 have the highest rates of retracting while girls out of school were the least likely to retract their reports. What is of concern, however, is the fact that almost half of the girls who reported being married at Round 1 denied ever having had sex.

Table 2 shows rates of inconsistent age reporting for two different groups and by performance in the math evaluation from Round 1. The first group consists of adolescents who acknowledge ever having had sex in both rounds: the age at first sex reported in each round is compared. Over 80% of this group report a different age in Round 2 from the age originally reported in Round 1. As is the case in other studies that have looked at inconsistencies in reported age at first sex (Upchurch et al 2002; Lauritsen and Swicegood 1997), ages

[1] The number of schools visited in each district was based on estimates of (1) the proportion of students in the age group attending primary school, (2) estimated attendance rates (3) estimated attrition rates, (4) estimates of transitions to secondary school and school dropout.
[2] The overwhelming majority (93%) of 14-16 year olds attend standards 4-8 (National Statistical Office and ORC Macro 2003).
[3] The Malawi Institute of Education is a para-statal organization that is charged by the Ministry of Education with curriculum development, assessment and teacher training programs.
[4] No distinction between married and never married boys can be done as only one boy reported having ever been married at Round 1. One in-school girl reported ever been married at Round 1; she is not included in these figures.

reported at round 2 tend to be older than the age at first sex initially reported (data not shown here). The second group consists of adolescents who reported never having had sex in Round 1 and ever having had sex in Round 2. Almost 59% of adolescents in this group reported an age at first sexual intercourse younger than the age at last birthday reported at Round 1.

In future analyses we will estimate rates of inconsistent reporting of ever had sex and age at first sex between the three rounds of data. We will then run multivariate logistic regressions to explore the relation between inconsistent reporting and adolescents' school attendance, marital status, and literacy and math skills.

Table 1. Self-reports of ever had sex, by school attendance and ever married status at Round 1

	N	% of N who report ever had sex in Round 1	% of reports retracted in Round 2
Girls	*1093*	*30.7*	*31.6*
In school and never married at Round 1	753	25.1	40.4
Out of school and never married at Round 1	225	36.4	23.2
Out of school and ever married at Round 1	113	56.6	17.2
Boys	*1051*	*47.4*	*31.2*
In school at Round 1	777	47.2	30.3
Out of school at Round 1	274	47.8	33.6

Table 2. Inconsistent reports of age at first sex, by performance in the math evaluation at Round 1

	N reported ever had sex in Rounds 1 & 2	% of N who reported different ages at first sex in each round	N reported never had sex in Round 1 & ever had sex in Round 2	% of N who reported age at first sex in Round 2 younger than age at last birthday in Round 1
All	571	82.3	433	58.7
Scored below mean math score at Round 1	189	83.6	179	62.6
Scored above mean math score at Round 1	382	81.7	254	55.9

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