The New Relationship History Calendar:
Improving Sexual Behavior Data among Youth in Kenya

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Abstract

Adolescence and early adulthood is a period of rapid change for young people worldwide. Demographers are particularly interested in how reproductive and sexual outcomes are shaped by these early life course transitions and contexts. Complex survey design and instrumentation, including ACASI, have yielded elaborate, high-quality data on adolescents in the U.S. Implementation of these methods is not always feasible or successful in developing countries, and therefore new approaches are needed. We develop a new survey method, the Relationship History Calendar (RHC), which collects detailed, 10-year retrospective data on the sexual histories and other life course events of youth. We assess the quality of sexual behavior data gathered with the RHC through a field experiment conducted in urban Kenya. We find that reporting on sexual behaviors is improved with the RHC, particularly for males, in comparison to a standard questionnaire, and that respondents enjoy and are more comfortable with the RHC.

Introduction

The transition to adulthood is a period marked by rapid changes in schooling, employment, family formation, and living arrangements for adolescents and young people worldwide. Transitions during these formative years have significant impact on individuals' development and well-being throughout the life course (Elder 1994). Demographers have been particularly interested in how reproductive and sexual outcomes, including premarital sexual activity, unintended pregnancy, and sexually transmitted infections, are shaped by these early processes and the contexts in which they take place (Furstenberg 2000). In order to understand these complex transitions and their relationship to reproductive and sexual health, equally complex data collection methods are required. Researchers in the U.S. have gathered elaborate data on the early life course in the National Longitudinal Study of Adolescent Health (Add Health), for example, which includes repeated waves of interviews with a large population-based sample, collection of information on multiple sexual partnerships for each respondent, and utilization of ACASI to ensure accurate reporting on sensitive issues, particularly sexual behavior. Analyses of these data have greatly contributed to our understandings of adolescents' transitions into sexual activity and multi-level influences on sexual behavior and outcomes in the U.S. (e.g., O'Sullivan et al. 2007, Upchurch et al. 2004, Harris et al. 2002).

A similar approach to collecting comprehensive data on young people's transitions in developing countries has not been undertaken, although it is arguably even more pressing. In sub-Saharan Africa, youth experience some of the highest rates of HIV infection and early pregnancy in the world, and many mature in contexts where poverty, school dropout, and multi-partnering are common. Implementation of complex survey designs and instrumentation is not always feasible or successful in these resource-poor settings, however. Longitudinal surveys are difficult to

conduct, due to frequent migration that makes tracking of young people over time problematic. The use of ACASI has produced mixed results (Mensch et al. 2003), and gathering sensitive information continues to be a major challenge. Furthermore, reproductive health surveys in developing countries routinely fail to collect data on respondents' multiple concurrent or sequential partnerships, the multi-dimensional aspects of these relationships, and the changing nature of sexual behaviors within them. Such shortcomings in commonly used large-scale surveys may be a partial explanation for why researchers have been unable to fully explain patterns of sexual behavior and their linkages to the HIV epidemic in sub-Saharan Africa. Consequently, new data collection approaches are needed that can improve both the scope and quality of data on sexual relationships and behavior among young people in developing countries.

Life history calendars that record detailed, retrospective information on the contextual and dynamic aspects of the life course are well known to demographers. Calendars have been used to collect accurate information on birth, migration, schooling, and illness histories from diverse populations around the world (Belli et al. 2001, Axinn et al. 1999, Goldman et al. 1998, Freedman et al. 1988). We believe that a calendar focusing on adolescents' romantic and sexual relationship histories could produce extremely rich, time-varying data on this important life course domain. Furthermore, the structure and interviewing techniques associated with life history calendars are designed to minimize recall and social desirability biases, which is particularly important for gathering data on sensitive sexual and reproductive behaviors. This paper describes our adaptation—the Relationship History Calendar (RHC)—and the variety and depth of data on adolescents' romantic and sexual relationships, as well as other pivotal life course domains, collected by this new method. We assess the validity and reliability of reporting

3

on sensitive sexual behaviors with the RHC through a field experiment conducted with young women and men in urban Kisumu, Kenya, in the summer of 2007. Preliminary results are presented in this abstract, which show that reporting on sexual behaviors is improved, particularly for boys, with the RHC compared to a standard sexual partner questionnaire (SPQ) found in many existing studies. In addition, respondents enjoy the RHC interview more and display a greater comfort level discussing their sexual relationship histories compared to the standard SPQ. Further regression analyses using the full data set will provide additional details on comparisons between the RHC and SPQ. We will also supplement these quantitative findings with analysis of audio recorded interview data and research team field notes. Results from analysis of these qualitative data will shed light on the dynamics of the interview experience as well as logistical issues involved with implementation of the RHC in future field settings.

The RHC and Study Design

The study team consists of researchers from the African Population and Health Research Center, McGill University, and Brown University. Together we developed the Relationship History Calendar (RHC), a life history calendar specifically designed to collect retrospective information on romantic and sexual relationships of youth, as well as schooling, employment, and residence trajectories. A truncated version of the RHC is shown in Figure 1. Units of time in months are noted across the top of the calendar, and life domains, including residence, schooling, work, fertility, and romantic and sexual relationships, are represented as time lines that extend across a 10-year period before the survey. A reference period of 10 years allows us to gather full relationship histories of most female respondents and a large proportion of the relationship histories of male respondents in our sample, all of whom are aged 18-24. The full RHC extends from 1998 to summer 2007 (the date of our field trial), and includes space to report up to 8

separate relationships. For respondents with more than 8 relationships in the last 10 years, additional pages of the RHC were filled out.

The scope of information on sexual relationships and behavior collected by the RHC in comparison to other, more standard sexual behavior survey questionnaires is outlined in Table 1. We can see that the Kenyan DHS questionnaire contains a narrow range of questions in terms of the number and characteristics of sexual partners and the sexual behaviors within these partnerships. The limited extent of the sexual behavior data collected in existing surveys, such as the DHS, has led researchers to advocate for expansion of such standard sexual behavior questions (e.g., Cleland et al. 2004).

In our field trail, we compare reporting in the RHC to a standard Sexual Partnership Questionnaire (SPQ) that we develop specifically for this purpose. The SPQ includes all of the questions covered by the DHS plus additional questions, which allows us to make further comparisons between the sexual behavior information collected in the RHC and the SPQ. While the RHC records information on respondents' sexual histories and relationships over the last 10 years, the SPQ only records information on the sexual partners the respondent had in the last year, which is routine practice in existing developing country surveys. Despite the expanded questions on the SPQ, we see in Table 1 that the RHC collects more details on sexual behavior and how these sexual behaviors as well as other important partnership measures change over time within individual relationships. The DHS questionnaire gathers information only on up to three sexual partners in the last year and contains no questions on changing partnership characteristics.

To compare the RHC to the SPQ, we use an experimental design in which 1300 young people ages 18-24 were randomly assigned to receive the new RHC or the standard SPQ questionnaire. In addition, an exit interview elicited information from respondents and interviewers about the respondent's experience answering questions about their relationship histories and sexual behavior. The response rate for the survey was 95 percent. Fieldwork took place in June-July 2007, and data entry is scheduled for completion in October 2007. Preliminary results are reported in this abstract.

Hypotheses and Methods

The RHC is designed to reduce the effects of social desirability bias, and therefore improve the validity of reporting. Because the direction of misreporting can vary by gender for specific sexual behaviors, we can assess which questionnaire method is more effective in reducing social desirability bias. Specifically, behaviors that are deemed socially undesirable or stigmatized will be under-reported, while those that garner social approval or prestige will be over-reported. In most contexts in sub-Saharan Africa, this implies that most sexual behaviors will be under-reported for women, while sexual behaviors may actually be over-reported for men, unless they carry some stigma, such as visiting a commercial sex worker. Similar assumptions about the direction of systematic reporting biases have been used to evaluate the validity of other experimental data collection methods in sub-Saharan Africa (see Gregson et al. 2002, Mensch et al. 2003).

We will compare the level of reporting for various sexual behaviors reported in the RHC compared to the SPQ using *t*- and chi-square tests to detect significant differences across questionnaire type. For adolescent females, we expect that the RHC will elicit significantly

6

higher levels of reporting than the SPQ with respect the percentage sexually active; mean number of lifetime and recent sexual partners; and the percentage who report having a casual, commercial, and stranger/one-time sexual partner in the last year. We expect reporting on the age at first sex to be lower with the RHC. For males, we expect that the RHC will elicit significantly higher levels of reporting than the SPQ for the percentage who report having commercial or stranger/one-time partner in last year as well as age at first sex. We also expect the RHC to generate decreases in reporting on the percentage sexually active and the mean number of lifetime and recent sexual partners.

We will undertake further investigations, including conducting OLS and logistic regression analyses of a variety of reported sexual behaviors, with questionnaire type serving as the main independent variable. Background variables will be added to the regressions to take account of any heterogeneity that was not controlled for by the experimental design. In addition, we audio recorded 25 RHC interviews in order to analyze interview dynamics. These audio recordings were simultaneously translated and transcribed in the field. We are in the process of analyzing these data using NVivo, coding for examples of interviewer probing, development of significant (or limited) rapport, ease or difficulty of recall, and satisfaction with the interview. We supplement these findings with information recorded in field notes from the study team to interpret our quantitative analyses.

Preliminary Results

As of September 2007, data entry and cleaning is not complete. Therefore, at this time, we present preliminary results drawn from information recorded on the first 1000 adolescents interviewed in our sample. Our study team kept a daily log file in the form of an Excel

7

spreadsheet, which recorded basic information on interviews completed by location, interviewer, and questionnaire type, in order to track our progress in the field. In this log file, we also recorded key information for each respondent, including if the respondent ever had sex, his/her number of lifetime sexual partners and partners in the last year, and the respondent's age at first sexual intercourse. In addition, we recorded the answers to several questions from both the respondents' and interviewers' exit interviews about the respondents' interview experience.

The preliminary results of *t*- and chi-square tests comparing responses across questionnaire type are show in Tables 2 and 3. The findings in Table 2 compare reporting of sexual behaviors for the RHC compared to the SPQ by sex of respondent. Looking at males, we see that three out of four associations are in the expected direction and show significant or marginally significant differences. Males report lower levels of ever having sex and fewer numbers of lifetime and recent (in the last year) sexual partners on the RHC. There is no significant difference in reported age at first sex across the RHC and SPQ. For females, reporting of the number of partners in the last year is marginally significantly higher for those who completed the RHC compared to the SPQ, which is in the expected direction. These preliminary results also reveal interesting differences in levels of sexual activity for males and females. A similarly large proportion of both samples had ever had sex by the time of the interview. Males' age of sexual debut appears to be almost 1 year earlier than females'. With respect to numbers of sexual partners, the adolescent boys have had about twice as many lifetime partners as girls but only a slightly more partners in the last year.

Overall, these results support the view that the RHC improves reporting, particularly among males. Nevertheless, we also recognize that possibility that under-reporting of ever having sex

8

and the numbers of sexual partners for both males and females may be due to the complex

structure of the RHC. The extensive questioning on relationships and sensitive sexual behaviors

for up to 10 years before the survey may exacerbate recall or alienate respondents. Our in-depth

analysis of the audio recorded interviews will hopefully help to clarify these issues.

Perceptions of the respondents' interview experience by questionnaire type as reported by both

respondents and interviewers are presented in Table 3. Because respondents may feel pressure to

offer positive reviews of their experience, we elicited interviewers' assessments as well, which

may be more objective. Looking across the results in Table 3, we find that interviewers judge

each measure of the respondents' interview experience to be less positive than respondents,

suggesting that respondents do, in fact, overstate their contentment.

With respect to RHC-SPQ comparisons, we find that respondents report significantly greater

ease at recalling their relationship histories with the SPQ than with the RHC. Interviewers also

note respondents' greater ease of recall with the SPQ, but the difference is not significant.

Several features of life history calendars are meant to facilitate recall and accuracy of dating, and

therefore we expected the RHC to elicit higher reports of ease in this area. We believe the

greater ease of recall with the SPQ may stem from the fact that respondents only had to report on

sexual relationships in the last year as opposed to the last 10 years in the RHC. In addition, the

information elicited on each partnership is much more detailed with the RHC. To standardize

the reference period across questionnaires, we next asked respondents to gauge the accuracy with

which they dated relationship events for the last 1 year. The differences between the RHC and

SPQ reported by both respondents and interviewers are much smaller and insignificant. Again,

9

the larger number of details obtained on the RHC may be a partial explanation as to why it did not produce perceptions of greater accuracy.

There is no difference between the RHC and SPQ with regard to respondents' comfort level discussing their relationship histories and sexual behavior. Interviewers are significantly more likely to believe that respondents are very comfortable discussing these issues with the RHC than the SPQ, however. According to both respondents and interviewers, respondents enjoy the interview experience with the RHC significantly more than with the SPQ. We expected the conversational, collaborative nature of the RHC interview to produce a more trusting, less judgmental environment, where interviewers develop greater rapport with the respondent than in standard surveys. This appears to have been realized in our interviews.

Conclusion

This paper describes the Relationship History Calendar (RHC), a new method aimed at improving the scope and quality of data collected on life course transitions, particularly sexual relationships and behaviors, among youth. To assess the accuracy of reporting, we conducted a field trial by randomly assigning 1300 adolescents in Kisumu, Kenya, to be interviewed with the RHC or a standard sexual partner questionnaire (SPQ). Using preliminary data from a subsample of respondents, we find that the RHC improves reporting on sexual behaviors, particularly among boys. In addition, respondents enjoy the RHC interview a great deal more than the SPQ, and they appear to display a greater level of comfort discussing their relationship histories and sexual behaviors. We expect these results will not be altered greatly when the entire data set is analyzed. Further quantitative analyses will provide more details on

comparisons between the RHC and the SPQ, and we will supplement these results with

qualitative analyses of the audio recorded interview data.

The new RHC method provides researchers with highly contextualized, time-varying data on

transitions to adulthood and sexual and reproductive behavior. These rich data can be analyzed

to understand how relationship histories and partnership dynamics affect the sexual risk

behaviors and reproductive health of young women and men worldwide. Our field trial also

demonstrates that the RHC provides relatively accurate data on sexual behavior and can be

implemented with little difficulty in resource-poor settings, such as urban Kenya.

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Figure 1. Relationship History Calendar

RESPONDENT ID ☐☐☐ ☐☐ ☐☐☐ ☐☐☐ ☐ Male ☐ Female

	YEAR	1998	1999	2000
1 Birthdate	MONTH	J F M A M Jn Jl A S O N D	J F M A M Jn Jl A S O N D	J F M A M Jn Jl A S O N D
M _____	Respondent Age			
Y _____	Landmarks	Embassy bombings ✚		
	2 Location			
	3 Urban/Rural			
	4 Person Responsible			
	5 Year in School			
	6 Occupation			
	7 Earned Income			
	8 Pregnancy (female R)			
	9 HIV Testing			

10 Partner initials		1998	1999	2000
_____	Relationship 1	J F M A M Jn Jl A S O N D	J F M A M Jn Jl A S O N D	J F M A M Jn Jl A S O N D
11 P age at rel. start	16 Duration			
_____	17 P Residence			
12 P Birthdate	18 P Year in School			
M _____	19 P Economic Status			
Y _____	20 Type of Relationship			
	21 Main Reason			
13 P yrs. of school	22 Secondary Reason			
at rel. start	24 Marital Aspirations			
_____	25 Frequency of Sex			
	26 Contraception			
14 P ethnicity	27 Condom Use			
_____	28 P Pregnancy (male R)			
15 Knew P before	29 Amount Given by R			
_____	30 Amt. Received by R			
	31 P Marital Status			
23 Reason for end	32 P # Other Wives			
_____	33 P # Other NM Partners			
	34 Knowledge of NMPs			

Table 1. Sexual behavior and partnership data collected by questionnaire type

	Kenya DHS	SPQ	RHC
Partners reported on in survey			
First sexual partner	X	X	X
Sexual partners in last year	Up to 3	All	All
Sexual partners in last 10 years	None	None	All
Romantic partners in last 10 years	None	None	All
Sexual behavior of respondent			
Number of sexual partners (last year)	X	X	X
Number of partners (ever)		X	X
Partner and partnership information			
Sexual behaviors within each partnership			
Date of first sex	X[a]	X	X
Date of last sex		X	X
Condom use at first sex	X[a]	X	X
Condom use at last sex	X[b]	X	X
Frequency of intercourse in first month		X	X
Frequency of intercourse in last month		X	X
Partnership characteristics (time-varying by month)			
Type of partnership (marital, casual, etc.)	X[c]	X[f]	X[e]
Duration of partnership	X[b]	X	X
Main and secondary reasons for relationship			X
Marital aspirations		X[g]	X
Cohabitation/residence of partner		X[g]	X
Amount of economic transfers to/from partner		X[g]	X
Partner characteristics (time-varying by month)			
Partner year in school		X[g]	X
Partner economic status		X[g]	X
Partner pregnancy status		X[f]	X
Partner marital status		X[f]	X
Partner's number of other nonmarital partners		X[f]	X
Respondent's knowledge about the partner's other nonmarital partners		X[f]	X

[a] Only asked of first partner
[b] Only asked of partners in last year
[c] Only asked of current partners
[e] Partnership types on RHC include spouse/living as married; fiancé/ promised to marry; serious partner; dating; casual partner; CSW/client; one-night stand; relative; inherited wife; stranger; other (specify).
[f] Only asked of first and last month of partnership
[g] Only asked of first month of partnership

Table 2. Key sexual behavior measures by sex of respondent and questionnaire type

	Males			Females		
	RHC	SPQ		RHC	SPQ	
Ever had sex (%)	87.15	93.64	*	84.38	87.88	
Age at first sex (years)	15.26	15.31		15.94	16.14	
Number of lifetime sexual partners	4.46	5.50	*	2.23	2.39	
Number of sexual partners in the last year	1.16	1.35	+	0.90	0.81	+
N		472			489	

*p<0.05; +p<=0.10; one-tailed t-tests

Table 3. Perceptions of interview experience regarding relationship histories and sexual behaviors by respondents and interviewers and questionnaire type

	Respondent reports			Interviewer reports		
	RHC	SPQ		RHC	SPQ	
Ease of recall						
Very easy	50.52	59.67	**	45.80	49.48	
Somewhat easy	41.72	36.38		47.48	45.11	
Not easy at all	7.76	3.95		6.72	5.41	
Accuracy of dating events in last year						
Very accurate	79.79	81.59		63.94	61.22	
Somewhat accurate	19.58	17.99		33.96	37.74	
Not accurate at all	0.63	0.42		2.10	1.05	
Comfort level discussing behaviors						
Very comfortable	80.42	80.46		71.64	63.33	*
Somewhat comfortable	18.32	17.88		26.05	32.50	
Not comfortable at all	1.26	1.66		2.31	4.17	
Enjoyment of the interview						
Very enjoyable	84.70	71.90	***	67.79	36.65	***
Somewhat enjoyable	15.30	26.03		30.74	58.80	
Not enjoyable at all	0.00	2.07		1.47	4.55	
N	961			961		

***p<0.001; **p<0.01; *p<0.05; +p<=0.10; chi-square tests