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Design and implementation of an online weekly journal to study unintended pregnancies

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Abstract

In this article we describe new research to investigate unintended pregnancies during the transition to adulthood. The Relationship Dynamics and Social Life (RDSL) study begins with a 60-minute in-person interview about family background and current relationship characteristics. At the conclusion of the interview, respondents are enrolled in an ongoing journal, which consists of a 5-minute survey via web or phone and occurs weekly for 2.5 years. We have enrolled over 1,000 young women in the study and have experienced excellent baseline response rates and high journal participation rates. Below we describe the limitations of past research on unintended pregnancy as a background for our study. Then we provide a detailed description of the study and its design strengths and weaknesses.

1 Limitations of the available resources for studying unintended pregnancy

One of the major obstacles to scientific research on unintended pregnancy is the very measurement of unintended pregnancy. Most study designs, such as that used in the United States' National Survey of Family Growth (NSFG), feature a single cross-sectional interview with lifetime retrospective reporting. As a result, all measures of unintended pregnancy are based on retrospective reporting of intention, contraception, happiness, and relationship status for pregnancies that occurred sometime - often years - before the interview. Each of these important dimensions is subject to somewhat different levels of retrospective reporting error, but methodological research on surveys suggests that these errors will be substantial and significant (Groves et al. 2001; Schwarz and Sudman 1994; Sudman et al. 1996). Of greatest concern is that individuals alter their feelings to become more consistent with behaviour (Festinger 1957; Williams et al. 1999), which may produce substantial underestimates of the true level of unintended pregnancy. A second, closely related concern is that retrospective reporting severely limits the extent to which these studies can measure temporal dynamics in intentions/attitudes, relationship characteristics or contraceptive use. In other words, existing measures of intentions, relationships and contraception are limited to a single referent time point per pregnancy and do not measure how behavioural, attitudinal and contextual aspects of relationships and contraceptive use may change directly before or after a pregnancy.

Longitudinal studies, which interview the same participants multiple times, address some potential shortcomings of the cross-sectional measures. The National Longitudinal Study of Adolescent Health (Add Health), the National Longitudinal Survey of Youth (NLSY), and the National Survey of Families and Households (NSFH) are all important alternatives to the cross-sectional measures of unintended pregnancy in the United States. Multiple interviews with the same young women at multiple times allow measurement of intentions, contraception, happiness about pregnancy and relationship characteristics at one time point, followed by subsequent measurement of pregnancy. This design greatly reduces the risk of retrospective reporting error. Unfortunately, even in these designs, lengthy gaps between interviews greatly increase the chance of changes in the immediate context of pregnancy and retrospective reporting errors about that context. Without very frequent re-interviews, it is impossible to fully capture the temporal dynamics in intentions, contraception, happiness toward pregnancy, and relationship characteristics. The costs of face-to-face interviews prohibit frequent re-interviewing - an alternative strategy is of high scientific priority.

2 An innovative new approach to studying unintended pregnancy

To address the critical limitations in existing measures of unintended pregnancy, the Relationship Dynamics and Social Life (RDSL) study is intensively measuring these key processes. Specifically, we are collecting weekly journal-based attitudinal and behavioural measures of pregnancy, relationships and contraceptive use, and conducting semi-structured follow-up interviews with young women who avoid pregnancy as well as those who become pregnant. These measures reduce the retrospective reporting period to one week, and capture the dynamics in attitudinal and behavioural aspects of relationships and contraceptive use during the early adult years, when both instability factors and the risk of unintended pregnancy are at their peak.

We believe that weekly measurement is the correct periodicity for several reasons. First, very frequent measurement is important to ensure accurate recall of coitus-specific methods, such as condoms. Second, NSFG Cycle 6 (2002) data suggest that more than 12% of women aged 18 to 22 years of age use multiple contraceptive methods per month, indicating high levels of instability and change. Third, previous diary studies suggest that high response rates are, in part, due to the fact that the diary becomes part of the respondent's routine and is thus less likely to be forgotten (Halpern et al. 1994; Jaccard et al. 2004; Searles et al. 1995). Overall, a weekly measurement strategy balances the need for a routine with the costs of minimising measurement error while not being overly burdensome to respondents.

3 Study design

The study's representative population-based sample includes 1,003 women aged 18 to 22 residing in a single county in the state of Michigan. (We do not name the specific county to protect the anonymity of our respondents.) We focused on women ages 18 to 22 because these ages are characterised by the highest rates of unintended pregnancy as well as significant instability and change in the dynamic determinants of unintended pregnancy. The Michigan county was chosen because of the significant number of African Americans residing there, and because the area is characterised by significant variation in economic circumstances, allowing us to compare poor African Americans, poor Whites, middle-class African Americans, and middle-class Whites within a single geographic area. A geographically concentrated sample also allows us to maximise investigator involvement.

To be eligible to participate in the study, the women had to be 18- or 19-year-old residents of the county at the time they were first sampled. The only exception to this rule was women temporarily living outside the county to attend school, job training, etc. The sampling frame

was the Michigan Department of State driver's license and Personal Identification Card (PID) data. The use of a list-based sample is a cost-effective alternative to a household-based sample because of the relatively sparse distribution of 18- to 19-year-olds in the general population. Comparison of the driver's license and PID data by zip code to 2000 Census-based projections reveal 96% agreement between the frame count and the projections for this population (Barber et al. 2010). In addition to providing an extremely high level of coverage, the Michigan Department of State also provided updated datasets every six months. To take advantage of these updates, we released the sample in a series of four replicates. Prior to each replicate sample release, the frame of licensed drivers and PID card holders was updated to capture newly eligible women (those who had just turned 18) as well as 18- and 19-year-olds who had moved into the sample county during the months since the prior replicate sample release. The length of the recruitment period for each sample release was 18 weeks: 15 weeks of general recruitment effort and a final 3 weeks of intensive recruitment effort.

3.1 Baseline interview

The first component of data collection in the study is a 60-minute face-to-face survey interview, including sociodemographic characteristics, attitudes, relationship characteristics and history, contraceptive use and pregnancy history. In short, the baseline interview collects information about present and past experiences. The baseline data collection produced 1,003 interviews, achieving an 83% response rate and a respondent-level cooperation rate of 94%.

3.2 Weekly journal

The most innovative aspect of the study's data collection strategy is dynamic, prospective measures of relationship characteristics and behaviours such as commitment, conflict, sex and contraceptive use collected in a weekly journal. Our overriding concern for the journal was to keep the interview short so as to minimise the burden for respondents and maximise participation. Even one extra question is important because respondents are asked to complete the instrument weekly, a total of 130 times over 30 months. Thus, time-consuming measures were included in the baseline questionnaire, and the items for the journal are short. In addition, the journal instrument uses information from prior weeks to drive skip patterns so that a minimum number of questions is asked each week. Also, questions measuring concepts that are less dynamic are asked less frequently. For example, questions updating contact information are asked monthly rather than weekly, and questions measuring attitudes and beliefs toward marriage, children, contraceptive use etc. are asked quarterly rather than monthly.

Of the 1,003 women interviewed, 99% agreed to participate in the weekly journal data collection which is still in the field (N=992). 92% have access to the Internet and usually complete the journal online each week. The remaining 8% call in to the Survey Research Center's phone lab to complete their weekly journals. In addition, we allow respondents to switch mode (from Internet to phone and vice versa) at any time, for any duration (i.e., one week or more).

3.3 Nonresponse and attrition

The overriding issue in our journal protocol is the reduction of nonresponse and attrition. Research clearly demonstrates that allowing respondents to select the mode in which they complete an interview can powerfully reduce nonresponse (Groves and Couper 1998; Groves et al. 2004). Therefore our first step in reducing nonresponse and attrition is allowing respondents to choose either Internet or phone to complete the journal interviews. Our second step is the provision of incentives. Respondents are paid \$1 per weekly journal

with \$5 bonuses for on-time completion of five weekly journals in a row, distributed via reloadable, prepaid cash cards (Gatny et al. 2009). Respondents also receive small tokens of appreciation for their continued participation in the journal study, such as a pen, as well as regular ‘respondent reports’ that provide updates on the scientific findings of the study to which they were contributing. Even with mode tailoring and incentives, there is some failure to complete the weekly journals as well as some delayed completion. Therefore, our third step aimed at reducing nonresponse and attrition was to develop procedures designed to help respondents remember to do their journals. Automated reminder email and/or text messages are sent to respondents weekly. At any point in the study, respondents may request to change the mode they receive reminders by calling or emailing study staff. Also, every four weeks the journal includes a question asking respondents if they would like to change their reminder mode, thus ensuring reminders are sent via a mode that is convenient to the respondent throughout the course of the study. If a respondent is late, study staff first contact her by phone and later by email and letter in an attempt to regain her participation. Respondents who become 60 or more days late are offered an increased incentive for completing the next journal.

This protocol has been working extremely well, as evidenced by rates of continued participation and timeliness of journals. To date we have collected 56,389 weekly journals. 73% of these journals were completed 5–9 days after the first or any subsequent journal, 21% were completed 10–19 days later, and 6% were completed after 20 or more days. Thus far, we have been successful in following up with respondents who become late completing the next journal, and resolving issues that may prevent them from doing future journals on-time. In addition, we have at least six months of journal data from 84% of respondents, at least twelve months of journal data from 77% of respondents, and at least eighteen months of journal data from 72% of respondents to date.

3.4 Testing-response interactions

A key concern of the RDSL study is that the repetitive nature of the journal questions being asked might affect the behaviour of the young women we study. Prior research shows no effect of repeatedly asking these types of questions on the actual behaviours reported by respondents (Halpern et al. 1994; Jaccard et al. 2004). Halpern and colleagues (1994, p.51) find, for example, that “comparisons... indicate that frequent, even weekly, assessment of sexual activity over a two-year period does not systematically change behaviour to any greater degree than does a single pretest completed two years prior to a second assessment”. Thus, it is unlikely that asking questions will pose a risk for behavioural changes. However, our study contains a comparison group of respondents randomly selected to not receive the weekly journal. This group will instead receive a single follow-up interview 12 months after the baseline interview. These data will allow us to provide a definitive answer to the question of whether participation in the journal affects behaviour.

3.5 Measures of pregnancy desires

A key strength of our project is a more detailed and nuanced measure of prospective pregnancy intentions. The main criticism of measurement strategies used in prior research included their inability to account for the complexity, dynamic quality and context-specific nature of pregnancy desires. In both the baseline interview and the weekly journal, we measure prospective intentions using two questions, one about the positive desire to get pregnant and have a baby and one about the negative desire to get pregnant and have a baby. Respondents are asked, “First, how much do you want to get pregnant during the next month? Please give me a number between 0 and 5, where 0 means you don’t at all want to get pregnant and 5 means you really want to get pregnant”. They are then asked, “And next, how much do you want to avoid getting pregnant during the next month? Please give me a

number between 0 and 5, where 0 means you don't at all want to avoid getting pregnant and 5 means you really want to avoid getting pregnant". We believe this alternative approach to measuring pregnancy intentions on a weekly basis better captures their complexity and dynamics (Barber et al. 2011).

4 Conclusion

This article presents a brief background for the RDSL study as well as a detailed description of the study design. To address the critical limitations in existing measures of unintended pregnancy, the RDSL study collects weekly journal-based attitudinal and behavioural measures of pregnancy, relationships and contraceptive use. These measures reduce the retrospective reporting period to one week and capture the dynamics in attitudinal and behavioural aspects of relationships and contraceptive use during the early adult years, when both instability factors and the risk of unintended pregnancy are at their peak. We are now in the process of investigating the vast set of time-varying measures we have collected, to account for intention status, and to estimate the risk of first as well as subsequent reports of a pregnancy using appropriate event history techniques. Our preliminary results indicate that these young women experience many important life events and changes from week to week, which have implications for unintended pregnancy. These insights will inform future research on unintended pregnancy and may help inform the policies and programmes which intervene to reduce the risk of unintended pregnancy in the United States.

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