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Jennifer Barber, Heather Gatny, and
Yasamin Kusunoki

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Jennifer S. Barber

Heather H. Gatny

Yasamin Kusunoki

University of Michigan

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Corresponding author: Heather Gatny, Institute for Social Research, University of Michigan, 426 Thompson St., Ann Arbor, MI 48106, USA, Email: hgatny@umich.edu.

Jennifer Barber: jebarber@umich.edu. Yasamin Kusunoki: kusunoki@umich.edu.

ABSTRACT

Some aspects of sexual behavior, pregnancy, and contraceptive use may be difficult for survey respondents to remember. The Relationship Dynamics and Social Life (RDSL) study conducted weekly survey interviews about these topics with 1,000 respondents. One potential drawback of this intensive longitudinal data collection strategy is that repeatedly asking respondents about these behaviors may affect the behaviors themselves. An experiment was conducted on 200 subjects, who were randomly assigned to either a control or experimental group. Subjects in the control group were interviewed at the beginning of the study (baseline interview) and twelve months later (closeout interview). Subjects in the experimental group were interviewed at the beginning of the study and twelve months later, but also completed a five-minute web- or phone-based survey every week during the twelve month study period. Rates of pregnancy and contraceptive use are compared for the control and experimental groups. There were no differences in pregnancy rates and overall levels of contraceptive use and consistency of use were not different in the control and experimental groups. We conclude that intensive longitudinal data collection does not appear to have a consistent or large impact on pregnancy, contraceptive use, or related attitudes.

INTRODUCTION

Survey measures of sexual behavior, contraceptive use, and pregnancy are used to generate important scientific information about levels and trends in these behaviors in the United States. For example, the National Survey of Family Growth (NSFG) is a nationally representative survey of women (and, more recently, men) of reproductive age that has been used to generate countless insights based on these measures. For example, early cycles of the NSFG revealed that about one-half of all pregnancies in the United States were unintended at the time of conception (Mosher et al. 2012). The data have been used to document that increases in contraceptive use among teens are largely responsible for the 40% decrease in teen pregnancy over the past two decades (Kost and Henshaw 2012; Santelli et al. 2007). NSFG data have generated a heated debate about the meaning of pregnancy intentions, including the rather striking finding that pregnancies resulting from contraceptive failure were not always defined as “unintended” by the mother (Trussell et al. 1999). And, the data have been widely used to generate “typical use” failure rates of the myriad contraceptive methods (Trussell 2004).

The NSFG collects retrospective data about sexual behavior, contraceptive use, and pregnancy using a life history calendar-based approach. The survey collects detailed retrospective histories of these behaviors – asking respondents to recall, for example, the specific months over the past four (or more) years when they did not have sex, and the specific contraceptive method(s) used each month over the same period. These behaviors are likely subject to substantial recall bias (for excellent discussions, see Belli 1998; Wu et al. 2001). Respondents are also asked, in reference to each pregnancy over the past several years, whether they wanted to have another baby at any time in the future. It may be difficult for respondents to remember these feelings about pregnancies that occurred in the past, as many as five years ago. Intervening experiences with miscarriage, abortion, pregnancy, or childbearing may influence these recollections.

One alternative to lengthy periods of retrospective recall is to collect prospective data via frequent, short surveys. The Relationship Dynamics and Social Life (RDSL) study took just such an approach. The study collected data for 2.5 years at weekly intervals. Thus, rather than asking respondents to recall sexual behavior, contraceptive use, pregnancy, and

related attitudes over the past 2.5 years, they were instead asked about their behavior over the past *week* and their desires for the upcoming month. This short period of reference is likely to increase respondents' ability to correctly recall events. Further, the prospective nature of the questions about desires – referring to the future rather than the past – minimizes the extent to which characterizations of pregnancies as “unintended” may be a consequence of experiences with the pregnancy itself.

Diary-based methods of data collection are not new to social scientists. Diaries have been used for the measurement of a wide variety of frequent behaviors such as alcohol consumption (Lemmens et al. 1988); sexual behavior (Baer et al. 2002; Coxon 1999; Garry et al. 2002; Jaccard et al. 2002; Searles et al. 2000), and travel (Axhausen et al. 2002). In fact, Schroder et al. (2003) specifically review the advantages and disadvantages of diaries for measurement of sexual behaviors. Internet-based methods have been used successfully as well (Baer et al. 2002).

Of course, all data collection strategies have strengths and weaknesses. One obvious risk of methods with such frequent measurement is the potential for the measurement itself to affect behavior, particularly the behaviors under study. The idea that participation in a study can itself change the respondents' behaviors is not new – the “Hawthorne effect” has been discussed for at least fifty years in the social sciences (French 1950, 1953). Fortunately, an offshoot of the RDSL parent study implemented an experiment to assess these effects. Two hundred respondents were randomly assigned to an experimental or a control group. The experimental group received a protocol similar to the RDSL, and the control group received only a baseline and single follow-up interview.

DESIGN OF THE RDSL STUDY

The representative population-based sample of the RDSL included 1,003 women age 18 or 19 residing in a Michigan county. The first component of data collection was a baseline face-to-face survey interview, assessing sociodemographic characteristics, attitudes, relationship characteristics and history, contraceptive use, and pregnancy history. The baseline interview had an 86% response rate and a cooperation rate of 93% among located respondents.

The most innovative aspect of the study design was dynamic, prospective measurement of pregnancy desires, contraceptive use, and pregnancy, as well as relationship characteristics and behaviors such as commitment, conflict, sex, and contraceptive use, collected in a weekly journal format. The overriding concern for the journal was to keep the interview short, to minimize the burden for respondents and maximize participation.

Of the 1,003 women who completed the baseline interview, 99% agreed to participate in the weekly journal (N=992). 92% reported regular access to the Internet and agreed to complete the journal online each week. The remaining 8% regularly called in to the Survey Research Center's phone lab to complete their weekly journals. In addition, respondents were allowed to switch mode (from internet to phone and vice versa) at any time, for any duration (i.e., one week or more).

The study collected 58,594 weekly journals. 73% of the weekly 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+ days. 75% of respondents remained in the journal portion of the study for at least 18 months.

Respondents were paid \$1 per weekly journal with \$5 bonuses for on-time completion of five weekly journals in a row. Journal incentives were distributed via reloadable cash cards. Respondents also receive small tokens of appreciation for their continued participation in the journal, such as a pen, compact, lip balm, etc. We also provided regular “respondent reports.”

HYPOTHESES ABOUT REPEATED MEASUREMENT

There are a number of reasons that repeated measurement may affect behavior. At least two social psychological theories are particularly relevant: cognitive dissonance and mere exposure. Cognitive dissonance is the uncomfortable feeling that individuals experience when they simultaneously hold conflicting attitudes, or when their behavior conflicts with one or more of their attitudes. For example, believing that becoming pregnant now would be terrible, but also believing that asking a boyfriend to use a condom may damage the relationship. Similarly, holding negative attitudes toward pregnancy, while also holding negative attitudes toward contraception, may be cognitively taxing. Holding attitudes that conflict with actual behaviors are likely to be even more difficult.

In the case of the RDSL study, for example, it may cause dissonance for respondents to state their preference to avoid childbearing in the near future, but also report that they are not using contraception. Cognitive dissonance theory posits that individuals who are experiencing such dissonance will work to reduce it, by adjusting one or more attitudes or behavior (Festinger 1956). Thus, individuals who do not desire a pregnancy but are not using contraception may be motivated to adopt contraception, or alternatively to desire a pregnancy. Because the vast majority of the RDSL respondents, and 18- and 19-year old women more generally, want to delay pregnancy, repeatedly asking about pregnancy desires and contraceptive behavior, within a 5-minute interview, may motivate contraceptive use. Because the RDSL's main focus is on pregnancy – who gets pregnant, and what conditions produce early pregnancy – we are particularly concerned about whether the repeated measurement strategy of the weekly journal produces lower pregnancy rates than would otherwise be observed.

Another social psychological theory – mere exposure – may also predict change in attitudes or behavior. The mere exposure theory posits that individuals may become more positively inclined toward something after being repeatedly exposed to it. Thus, RDSL respondents may become more positive toward any of the topics repeatedly mentioned in the weekly survey (e.g., intimate relationships, contraception, or pregnancy).

DESIGN OF THE EXPERIMENT

An experiment, separate from the RDSL study itself, enrolled 200 young women, ages 18 and 19. Participants were randomly assigned to either a (1) journal or (2) control group. Both groups received a 50-minute face-to-face interview, using the RDSL baseline survey. At the conclusion of the baseline interview, the experimental or “journal” group was invited to enroll in the weekly journal. 100% agreed to participate. The journal period lasted for twelve months (in contrast to the RDSL, where the journal period lasted for 30 months). The control group respondents were not invited to enroll in the journal portion of the study. Both groups received a close-out interview. (Note that the RDSL study did not include a close-out interview.) The close-out interview was conducted by phone, with a 93% response rate (N=186 of the original N=200 subjects were re-interviewed), and included a subset of the questions from the baseline interview.

The experiment was designed to detect differences between the journal and control groups, particularly in terms of the behaviors of central interest in the RDSL study: pregnancy and contraceptive use. Because the close-out interview also repeated some of the attitude measures included in the baseline interview, the experiment can also be used to compare attitude change in the experimental group versus the control group.

MEASURES

Sociodemographic Characteristics

Demographic characteristics of the sample for the larger RDSL study, control, and journal groups are reported in Table 1. Respondents were distributed among ages 18, 19, and 20, with the vast majority being 18 or 19. (Some respondents were 19 when they were chosen for the sample, but turned 20 before they were located.) Approximately 1/3 of the sample was African American. About 10% of the young women were high-school drop-outs, about 15% were enrolled in high school, and the rest were distributed among not enrolled in school, enrolled in a 2-year college, and enrolled in a 4-year college. Nearly one third were currently receiving public assistance. On average, they rated the importance of religion in their lives 2.69 on a scale of 1 (not important) to 4 (more important than anything else). 15% were living with a romantic partner. Slightly over a third had a teen mother. About one-half grew up with two parents, 40% with one biological parent only (no step-parent), and 8% in another arrangement (e.g., with grandparents or an aunt, etc.) Respondents were relatively equally distributed throughout four parental income categories, with 20% not knowing their parents' income.

The experimental sample (N=200) was similar to the RDSL main sample (N=1003). However, there are several key differences between the control and journal groups of the experimental sample which occurred by random chance. First, a higher proportion of the journal group was enrolled in high school – 12% of the control group and 22% of the journal group. There were no other statistically significant differences in school enrollment between the control and journal group. In addition, a higher proportion of the journal group was living with a romantic partner. This is despite being slightly younger (49% 18-year-olds in the journal versus only 41% in the control group), and higher levels of high school enrollment. Finally, only 28% of the journal group had a teen mother, compared to fully 46% of the control group.

TABLE 1. Descriptive Statistics for Sociodemographic Characteristics and Early Pregnancy-Related Experiences among the Main RDSL Sample, Control Group, and Journal Group (standard errors in parentheses for non-dichotomous variables)

	Experiment Sample (N=200)			All Samples	
	RDSL (N=1003)	Control (N=100)	Journal (N=100)	Min.	Max.
	Mean/ Std. Dev.	Mean/ Std. Dev.	Mean/ Std. Dev.		
Sociodemographic Characteristics					
Age					
18 years old	.41	.41	.49	0	1
19 years old	.50	.48	.42	0	1
20 years old	.09	.11	.09	0	1
African American	.34	.34	.31	0	1
School enrollment/type					
Not enrolled and did not graduate	.08	.09	.08	0	1
Not enrolled and did graduate	.22	.29	.25	0	1
Enrolled in high school	.13	.12	.22	0	1
Enrolled in 2 year college/vocational/ technical/other	.29	.25	.24	0	1
Enrolled in 4 year college	.27	.25	.21	0	1
Receiving public assistance	.27	.27	.30	0	1
Religious importance (1 = not important, 4 = more important than anything else)	2.69 (.03)	2.61 (.09)	2.69 (.09)	1	4
Living with romantic partner	.15	.07	.15	0	1
Biological mother <20 at first birth	.37	.46	.28	0	1
Family Structure					
Two parents	.52	.48	.59	0	1
One biological parent only	.40	.43	.35	0	1
Other	.08	.09	.06	0	1
Mother's education < high school graduate	.09	.13	.10	0	1
Parents' Income					
≤ \$14,999	.15	.21	.24	0	1
\$15,000 - \$44,999	.28	.30	.27	0	1
\$45,000 - \$74,999	.19	.23	.25	0	1
\$75,000+	.18	.15	.18	0	1
Don't know/refuse	.20	.11	.06	0	1
Early Pregnancy-Related Experiences					
Age at first sex					
14 years or less	.17	.13	.22	0	1
15-16 years	.35	.34	.32	0	1
17+ years	.49	.53	.46	0	1
Number of sexual partners	3.39 (.15)	2.45 (.26)	3.30 (.40)	0	57
Ever had sex without birth control	.48	.43	.46	0	1
Number of prior pregnancies					
0 prior pregnancies	.74	.76	.75	0	1
1 prior pregnancy	.17	.19	.13	0	1
2 or more prior pregnancies	.09	.05	.12	0	1

Bold numbers indicate a statistically significant difference ($p < 0.10$) between proportions in the journal and control groups, two-tailed comparison of means t-tests.

Early Pregnancy-Related Experiences

Approximately 50% of the RDSL sample had not had sex by age 17. Among those who had sex by the baseline interview, they had an average of slightly more than three partners. Nearly half had sex without birth control at some point in the past. And approximately a quarter had a prior pregnancy.

The experimental group largely resembled the main RDSL sample. However, the journal group differed from the control group in terms of prior pregnancies. Although the proportion never been pregnant was similar for the groups, the young women in the journal group were split nearly evenly between one and more than two prior pregnancies, while most of the women in the control group with a prior pregnancy had only one. In addition, although the differences are not statistically significant, the journal group was slightly younger at first sex and had slightly more partners on average.

Sample Differences

It is important to emphasize that these sample differences between the journal and control group are due solely to random chance. Most of these differences would predict a higher risk of pregnancy for the journal group, relative to the control group (living with a romantic partner, number of prior pregnancies, earlier age at first sex, more sexual partners, etc.) A higher proportion of the control group, however, had a teen mother, which would predict a lower risk of pregnancy for the journal group relative to the control group.

Pregnancy and Contraceptive Use

Our key outcome – pregnancy – was measured in the baseline and closeout interviews, with the following question: “Please think of all the times you have been pregnant, whether you are currently pregnant or the pregnancy ended in live birth, miscarriage, stillbirth, abortion, or ectopic pregnancy. How many times have you been pregnant in your life?” This question was assessed during a CASI (computer-assisted self-interview) portion of the baseline interview – where the professional interviewer gave the laptop to the respondent and instructed her to enter her answers directly on the computer – and over the phone for the closeout interview. A dichotomous indicator of pregnancy during the past twelve months is constructed by subtracting the total number of pregnancies reported at the closeout interview from the total number of pregnancies reported at the baseline interview, for each respondent.

Contraceptive use was also measured at both the baseline and the closeout interview. The following screener question was asked of all respondents, “Are you currently using anything that can help people avoid becoming pregnant, even if you are not using it to keep from getting pregnant yourself?” Respondents who answered affirmatively were asked about specific methods, including birth control pills, birth control patch, NuvaRing, Depo-Provera/ shot, implant, IUD, or “avoid having sex because it might be a time of the month you might get pregnant.”

Unfortunately, respondents were not asked about coital-specific methods at the baseline interview. However, during the closeout interview, respondents who reported that they had sex within the past twelve months were asked about coital-specific methods in the closeout interview. First, they were asked, “In the past 12 months, (since [M/Y]), did you or your [partner/partners] use some method of birth control every time you had intercourse (even if you are not trying to prevent pregnancy)? This could be a method you mentioned earlier, or a method you haven’t mentioned such as condoms, pills, or another method.” This was followed-up by questions about specific methods. For example, “In the past 12 months, since [M/Y], did you ever use a condom?” Similar questions followed about diaphragm/cervical cap, spermicide, female condom, morning after pills, withdrawal, and “anything else to avoid becoming pregnant that you haven’t mentioned today?”

RESULTS

Table 2 presents the behavioral comparisons between the control and journal groups, in terms of pregnancy and contraceptive use. The first two columns refer to characteristics at the baseline interview, or the beginning of the period of observation. The next two columns refer to characteristics at the closeout survey, twelve months later.

First, note that in terms of our primary outcome – pregnancy – the journal group is not significantly different from the control group. 15% of women in the control group and 20% of the women in the journal group reported a pregnancy. Although this is a 5% difference, it is not statistically significant, and it is a difference of only four pregnancies (18 vs. 14 pregnancies). Further, this difference is not in the hypothesized direction – that the

journal would reduce pregnancy rates because it would motivate some respondents to reduce the cognitive dissonance between their stated desire to avoid pregnancy and their lack of consistent contraceptive use. The direction is, however, consistent with the hypothesis that exposure to weekly questions about pregnancy might motivate respondents to desire pregnancy (and to act accordingly.)

The control and journal groups are also similar in terms of contraceptive use. At the baseline interview, 54% of the control group and 56% of the journal group were currently using some form of contraception. Those proportions had increased by the closeout interview twelve months later – 71% and 63%, respectively. In other words, contraceptive use rates rose throughout the study period among both the control and the journal groups. Similarly, 76% of the control group and 77% of the journal group had ever used any form of contraception when asked at the baseline interview. At the close-out interview twelve months later, 85% of the control group and 78% of the experimental group had ever used contraception. Thus, although contraceptive use rates were nearly identical at the baseline interview, and remained *statistically* indistinguishable at the closeout interview, a slightly higher proportion of the control group was currently using, and had ever used, any contraceptive method. Note that this does not support our hypothesis that the journal group would use contraception at a higher rate.¹

We also examined whether respondents in the journal group used their contraception more consistently than the control group – this could be the case, for example, if the weekly survey functioned as a reminder. Only those respondents who reported that they had sex during the past twelve months were asked about their consistency of contraceptive use. 60% of the control group and 58% of the journal group reported that they used a contraceptive method “every time” they had sex during the past twelve months. Thus, control and journal groups were similar in terms of contraceptive consistency.

¹ Because the increase in the proportion is a population-level variable (i.e., N=1 observation), there is no statistical test to determine whether the *increase* in the control group is statistically significantly different from the *increase* in the journal group.

TABLE 2. Proportions at Baseline and Closeout, Journal versus Control Group (number of respondents in parentheses)

	Time 1 (N=200) (Baseline)		Time 2 (N=186) (Closeout)	
	Control	Journal	Control	Journal
Among all Respondents				
Pregnant in past 12 months	N=100	N=100	N=94	N=92
Currently using any type of contraception	.54 (54)	.56 (56)	.15 (14)	.20 (18)
Ever used contraception	.76 (76)	.77 (77)	.71 (67)	.63 (58)
Among Those Who Had Sex in Past 12 Months			N=57	N=60
“Used method every time” in past 12 months			.60 (34)	.58 (35)
Among all Respondents not Using Contraception at the Baseline Interview			N=45	N=42
Not using contraception at baseline, began using before closeout			.51 (23)	.36 (15)
Among all Respondents Using Contraception at the Baseline Interview			N=49	N=50
Switched from less to more effective method during 12 month study period			.10 (5)	.14 (7)
Among all Respondents Currently Using Contraception	N=54	N=56	N=67	N=58
(1) IUD/Implanon ^a	.07 (4)	.05 (3)	.04 (3)	.09 (5)
(2) Depo-Provera	.20 (11)	.13 (7)	.12 (8)	.07 (4)
(3) Patch/Ring ^a	.04 (2)	.02 (1)	.06 (4)	.00 (0)
(4) Pills	.48 (26)	.63 (35)	.54 (36)	.74 (43)
(5) Other	.20 (11)	.18 (10)	.24 (16)	.10 (6)
Among Those Who Had Sex in Past 12 Months			N=57	N=60
Coital-specific methods used in past 12 months:				
Condom			.88 (50)	.70 (42)
Female condom ^a			.00 (0)	.03 (2)
Morning after pill			.12 (7)	.12 (7)
Withdrawal			.64 (36)	.82 (49)
Something else ^a			.11 (6)	.07 (4)

Note: Bold numbers indicate a statistically significant difference ($p < 0.10$) between proportions in the journal and control groups, two-tailed comparison of means t-tests.

^a Fisher's Exact Test performed instead of Chi-Square test due to very small counts of women reporting use of method.

The experiment was designed to detect *changes* in contraceptive use, particularly whether those who were initially not using contraception began to use contraception during the study period. Specifically, we want to know whether nonusers adopt a contraceptive method at a higher rate in the journal group than in the control group. 46% of the control group and 44% of the journal group were not using any type of contraceptive at the baseline interview. 51% of the nonusers in the control group, and 36% of nonusers in the journal group adopted a method during the 12-month study period. This difference is not statistically significant, and is not in the hypothesized direction.

Another potentially important change in contraceptive use is the switch from less to more effective methods, among those who are using a method. Using five broad categories, ordered in terms of typical use (1: IUD/Implanon, 2: Depo-Provera, 3: patch/ring, 4: pills, 5: other)², we computed the proportion of respondents who switched to a lower-numbered (more effective) category -- for example, a respondent who was using condoms or withdrawal, but switched to birth control pills during the twelve-month period. 10% of the contraceptive users in the control group and 14% in the journal group switched to a more effective method during the study period. Although this difference is not statistically significant, it *is* consistent with our hypothesis that cognitive dissonance or exposure may affect contraceptive use.

It may be that the journal group is particularly likely to adopt some specific contraceptive methods, while eschewing others. The remainder of Table 2 explores these differences.

First, note that birth control pills are the most popular methods in this age group, which is consistent with existing research (Welti et al. 2011). 54% of the control group and 74% of the journal group were using birth control pills at the end of the study period.

² Note that “other” is a residual category. All respondents who reported current use of contraception, but who were not using an IUD, Implanon, Depo-Provera, the patch, the ring, or birth control pills are included in this category. Thus, “other” includes condoms, withdrawal, rhythm/calendar, and other less common methods.

Second, note that differences in use between the control and journal groups in terms of current method use at the closeout interview largely mirror those at the baseline interview – in other words, although more of the journal group than the control group was using pills at the closeout interview, this appears to be largely because a higher proportion of the journal group was using pills at the baseline interview. Similarly, a higher fraction of the control group was using Depo-Provera as well as the patch/ring, and a smaller fraction of the control group was using an IUD/Implanon, at both the baseline and closeout interviews. (Recall that differences at the baseline interview are due entirely to random chance – subjects were randomly assigned to either the control or journal group *before the study began.*)

Third, note that use of “other” methods appears to be substantially larger among the control group than the journal group at the closeout interview, and this was not true at the baseline interview. 24% of the control group and only 10% of the journal group was using these “other” methods at the end of the study, but nearly equivalent proportions in each group were using “other” methods at the baseline (20% and 18%, respectively). Unfortunately, it is difficult to further our understanding of this group because the survey questions about these methods were not detailed, and because respondents were asked about coital-specific methods in the closeout interview, but not in the baseline interview.

Our final analysis focuses on coital-specific method use reported in the closeout interview, among those who had sex in the past twelve months. Note that the survey questions ask about *any* use of these methods during the prior twelve months, and thus rates for condom use and withdrawal are quite high. Condom use is higher in the control group than in the journal group; withdrawal is higher in the journal group than in the control group. Rates of the other coital-specific methods are similar across the two groups.

Table 3 presents means for attitude change scores, between the baseline and closeout interviews, for those in the control and journal groups. A change score is computed for each individual, which is that individual’s score on the close-out interview minus her score on the baseline interview, for each attitude measure. The numbers in the table represent the mean across the sample for the individual difference scores by group. Positive numbers indicate an increase in agreement with the statement (items 1, 2, 3, 5, 6, 7, 8, and 9), more extreme feelings about the question (items 4 and 10), or an increase in desired family size (item 11).

TABLE 3. Mean Change Scores for Attitude Measures, Journal vs. Control Group (higher numbers = agreement)

	Control	Journal
Condoms		
1 If a woman asks her partner to use a condom, he will think that she doesn't trust him. ^a	.21	.43
Sex		
2 Young people should not have sex before marriage. ^a	-.06	.14
Cohabitation		
3 It is alright for a couple to live together without planning to get married. ^a	.37	.15
Marriage		
4 Suppose that your life turned out so that you never married, how much would that bother you? ^b	-.07	-.16
Pregnancy		
5 Getting pregnant at this time in your life is one of the worst things that could happen to you. ^a	.60	.41
Childbearing		
6 Being a mother and raising children is the most fulfilling experience a woman can have. ^a	-.32	.09
7 Relationships between men and women improve after they have a baby together. ^a	.21	.12
8 If a woman waits for the perfect time to have a baby, she will probably have trouble getting pregnant. ^a	-.33	.14
9 It is alright for a woman to have a child without being married. ^a	-.11	.02
10 Suppose your life turned out so that you never had children, how much would that bother you? ^b	-.14	-.12
11 What do you think is the ideal number of children for the average American family?	.04	.14

Note: Bold numbers indicate a statistically significant difference ($p < 0.05$) between the journal and control groups, two-tailed comparison of means t-tests.

^a 1 = strongly disagree, 2 = disagree, 3 = neutral/neither, 4 = agree, 5 = strongly agree

^b 0 = not at all, 5 = extremely

Note that there is only one statistically significant difference between the control and journal groups, for question 6 – on average, respondents in the control group become less positive toward being a mother, and respondents in the journal group become more positive toward being a mother. Both groups become less positive toward condoms (#1), pregnancy (#5), marriage (#4), and childlessness (#10), but more positive toward cohabitation (#3), and parenting relationships (#7). The mean preferred family size increases slightly in both groups (#11). And, for the other topics, one group becomes more positive and the other group less positive. Thus, in addition to the lack of statistically significant differences, the results do not represent a consistent pattern. Overall, we do not see a consistent pattern of increasingly positive attitudes toward topics that are repeatedly mentioned in the journal interviews, nor do we see a consistent pattern of changes in attitudes in the direction of pro- or anti-family formation.

DISCUSSION

We found no difference in pregnancy rates for the control and experimental group. Overall levels of contraceptive use and consistency of use were not different in the control and experimental groups. Although contraceptive use increased over the study period for both groups, it increased slightly more in the control group – 51% of the nonusers in the control group, and 36% of nonusers in the journal group adopted a new method. However, the reverse was true for method switching – a slightly larger proportion of respondents in the journal group, relative to the control group, switched to a more effective method during the study period (14% versus 10%). A higher proportion of respondents in the journal group were using birth control pills, but that difference was largely due to initial differences in the subjects assigned to the control and journal groups, which were due to random chance. A higher proportion of respondents in the control group were using “other” methods at the end of the study period, relative to the journal group. Attitude change also did not differ between the control and journal groups.

Overall, there is no clear pattern of results suggesting that the journal motivates contraceptive use or changes attitudes. However, to the extent that the journal group appears particularly likely to switch *out of* “other” methods and *into* birth control pills, it may be that differences in the journal and control groups at the beginning of the study, due to random chance, could explain these changes. The journal group contained more young women with multiple prior pregnancies than the control group, and also more young women who lived with their romantic partner. Existing research suggests that these are powerful predictors of switching from non-hormonal to hormonal methods (Ku et al. 1994).

Limitations

Pregnancy desires may be particularly likely to be affected by the journal. Both social psychological mechanisms – cognitive dissonance and exposure – could work to increase respondents’ desire for pregnancy as a result of the journal. In the case of cognitive dissonance, for example, it may be easier to alter pregnancy desire than to alter contraceptive behavior. In terms of exposure, it is possible that asking each week about relationships and pregnancy may cause the young women in the study to think more about

pregnancy or family formation more generally. Unfortunately, the experiment described here did not assess pregnancy desires.

In addition to producing the idiosyncratic differences in the control and journal groups, the small sample size for this experiment also limits our ability to detect differences between the journal and control groups, particularly for a relatively rare event like teen pregnancy. The statistical power to find a 20% versus 15% pregnancy rate statistically significant at the 5% level in two populations of $N=100$ is only .24. The total sample for the experiment would have to be >1800 respondents (905 per group) to increase the power to 80%. The experiment was slightly better powered to detect differences in contraceptive use, which occur at a higher rate. For example, for the 71% versus 63% (current contraceptive use), the power is .33. However, even though the experiment was under-powered, the *pattern* of differences is not consistent with an effect of the journal on behavior. If the journal affected contraceptive use in the hypothesized ways, we would expect to see consistent differences in the journal versus control group, the majority of which would be in the predicted direction, even if they were not statistically significant.

The narrow geographic focus (a single county in Michigan) of the experiment, as well as the main RDSL study, is also a limitation. Although neither sample is nationally representative, Michigan falls around the national median of cohabitation, marriage, age at first birth, completed family size, non-marital childbearing, and teenage childbearing (see Lesthaeghe & Neidert, 2006). This is not, of course, to suggest that Michigan is representative of the nation, rather that it is not an outlier. In addition, the study includes only a small number of Latinas. We hope that this experiment, and the research findings of the RDSL, will motivate future researchers to implement journal methods on larger and more diverse populations.

Conclusions

Overall, we do not see strong effects of the journal on pregnancy and related behaviors. Although a higher proportion of the journal group, relative to the control group, was using birth control pills at the closeout interview, this difference is largely due to differences in the two groups *prior* to the study period, due to random chance. In addition, a smaller proportion of the journal group was using condoms, and a larger proportion was

using withdrawal, but it is impossible to know whether these differences existed before the study, or developed as a result of participation in the journal. Based on the small number of differences between the groups, and the overall inconsistent pattern of results, we conclude that the journal does not have strong or consistent effects on behavior. Further research will have to investigate more nuanced consequences of repeated questions about these topics.

We conclude that the benefits of the frequent measurement strategy used in the RDSL are likely to outweigh its costs in terms of potential effects on behavior. The data produced from these methods have many advantages for analyses of pregnancy and contraception. For example, weekly data provide the potential to closely track dynamic behaviors, such as condom use, that may not be easily summarized over longer periods. The data also provide the opportunity to examine sequential events, such as changes in relationships that precede changes in contraceptive method choice. And, finally, the data afford an unprecedented opportunity to determine the order of a series of interrelated events, such as pregnancy desires, pregnancy, and experiences with pregnancy.

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Population Studies Center
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