Social Science Research 49 (2015) 1–15

Contents lists available at ScienceDirect

Social Science Research

journal homepage: www.elsevier.com/locate/ssresearch

Response of sensitive behaviors to frequent measurement

William G. Axinn [a,*], Elyse A. Jennings [b], Mick P. Couper [a]

[a] University of Michigan, Survey Research Center, 426 Thompson Street, Ann Arbor, MI 48104-2321, United States
[b] University of North Carolina, Carolina Population Center, 123 West Franklin Street, Chapel Hill, NC 27516-2524, United States

ARTICLE INFO

Article history:
Received 26 March 2013
Revised 30 June 2014
Accepted 10 July 2014
Available online 22 July 2014

Keywords:
Measurement effects
Journal-keeping
Survey methodology

ABSTRACT

We study the influence of frequent survey measurement on behavior. Widespread access to the Internet has made important breakthroughs in frequent measurement possible—potentially revolutionizing social science measurement of processes that change quickly over time. One key concern about using such frequent measurement is that it may influence the behavior being studied. We investigate this possibility using both a population-based experiment with random assignment to participation in a weekly journal for twelve months (versus no journal) and a large-scale, population-based, journal-keeping study with weekly measurement for 30 months. Results reveal few of the measured behaviors are correlated with assignment to frequent measurement. Theoretical reasoning regarding the likely behavioral response to frequent measurement correctly predicts domains most vulnerable to this possibility. Overall, however, we found little evidence of behavioral response to frequent measurement.

1. Introduction

Like placing a cool thermometer into a warm beaker of liquid to measure the temperature of the liquid, every measurement we take has the potential of distorting the thing we aim to measure. This issue is just as relevant in social research as in other areas of science (Zwane et al., 2011). Every measurement we take from human beings has the potential to affect the human behavior we hope to measure (Fitzsimons and Moore, 2008; Warren and Halpern-Manners, 2012; Zwane et al., 2011). Even as scientific attention to these issues grows (Crossley et al., 2014; Schneider et al., 2007; Williams et al., 2006; Wilson and Howell, 2006), the demands for more repetitive measurement—especially multiple measures of the same person—are growing at an even faster pace (Dunton and Atienza, 2009; Ginexi et al., 2013; Schlam et al., 2012). We focus on repeated measures over time—an area of substantial investment of effort, with recent breakthroughs significantly enhancing our ability to conduct measurements of the same people frequently. Here we investigate the potential for frequent measurement—frequently repeated survey data collection—to affect the very behaviors we aim to measure.

The substantive focus of our investigation comes from family sociology/demography, in which a great deal of effort has been invested to create detailed measures of human behavior over time. Two of the largest national longitudinal surveys in the United States—the National Survey of Families and Households (1980s/90s) and the National Longitudinal Survey of Adolescent Health (1990s/2000s)—were devoted to these topics (Acock, no date; Carver et al., 2003; Sweet et al., 1988; Udry, 1997, 1998). Other regional panel studies and specialized measurement techniques have also been devoted to measuring change over time in family processes (Phelps et al., 2002; Thornton et al., 2007). Key reasons for these investments are that

* Corresponding author.
E-mail addresses: baxinn@umich.edu (W.G. Axinn), elysejen@live.unc.edu (E.A. Jennings), mcouper@umich.edu (M.P. Couper).

http://dx.doi.org/10.1016/j.ssresearch.2014.07.002
0049-089X/

young people's relationships, sexual behavior, and contraceptive use all change rapidly over early adulthood, are causally intertwined, and can have substantial long-term consequences (Bearman et al., 2004; Bumpass, 1990; Bumpass et al., 1991; Thornton et al., 2007). Thus, careful investigation of cause and effect in early-life family events requires detailed measurement of events over time to adjudicate timing and sequencing of specific events. Our investigation of measurement effects on behavior focuses on the latest advance in measurement methods in this substantive field—the use of electronic journal keeping—to gather weekly measures of relationship status, sexual behavior, contraception, and pregnancy.

Widespread access to the Internet has made important breakthroughs in journal-keeping measurement possible (Bolger et al., 2003). On the web, respondents can easily provide frequent updates about their behavior with a high level of privacy and confidentiality. Geographic mobility need not hamper access, and alternative modes such as telephone can be used when Internet access is interrupted. As a result, this technique has the potential to greatly advance researchers' ability to measure behavior frequently. One key concern about using such frequent measurement is that it also has the potential to influence the behavior being measured. In the paragraphs below, we investigate this possibility by drawing on two complementary sources. The first is a population-based experiment with both pre and post measurement of outcomes and random assignment of half the participants to completion of a weekly journal for twelve months. The second is a large-scale, population-based, journal-keeping study that featured weekly measurement for 30 months. Both included the same journal-keeping measures focusing on relationships, sexual behavior, contraception, and pregnancy among young women. Together they provide a unique opportunity for understanding the potential for frequent measurement to influence behavior in these substantive domains.

2. Journal keeping

New technologies for acquiring measures from human subjects have the potential to revolutionize social research, in general, and the ability of researchers to measure the relative timing of personal events, in particular. Recent advances in computer-assisted interviewing technologies are at the core of this revolution. Computer-assisted interviewing has now become routine in social and behavioral data collection, opening many new possibilities for measurement of difficult topics, self-interviewing, electronic linking of data records, and enhanced quality control (Couper et al., 1998). In addition, relatively recent changes in the US population, such as widespread access to computers and the Internet as well as cellular and other telephone technologies, have opened substantial new avenues for social and behavioral measurement (Couper, 2005). These changes make large-scale electronic journal data collection a real and attractive option for social and behavioral measurement.

A small number of studies have both demonstrated the feasibility of and foreshadowed the scientific potential of these methods. These studies have been limited in their sample selection (e.g., Barrett and Barrett, 2001; Helzer et al., 2006; Kaminer et al., 2006; Kranzler et al., 2004; Lee et al., 2006; Toll et al., 2006; Vivoda and Eby, 2006), variety of method use (e.g., Armeli et al., 2008; Baer et al., 2002; Herbenick et al., 2011; Kiene et al., 2009; Moloney et al., 2009; Park et al., 2004), topical focus (e.g., Armeli et al., 2008; Baer et al., 2002; Herbenick et al., 2011; Kiene et al., 2009; Moloney et al., 2009; Park et al., 2004), and time span of data collection (e.g., Aldridge-Gerry et al., 2011; Merz and Roesch, 2011). Although these studies have made important contributions to the usage of new technologies in data collection, few, if any, studies have attempted frequent measurement using self-administered methods on a probability-based sample.

Broader populations have been reached using Internet and telephone data collections (e.g., Couper, 2000, 2008; Galesic et al., 2006; Kreuter et al., 2008; Tourangeau et al., 2002). However, these data collections rarely use repeated measurement within a short time frame. Furthermore, telephone and Internet have not been combined into a single tool to enhance both measurement quality and improve representation of the population for greater inferential value.

The study we report here takes the next step in this technological revolution in social and behavioral measurement—scaling up the technology by constructing a tool that can be used across a wide range of topics and in population-based studies. The key novelty is in moving the use of these methods beyond the limits of small-scale, lab-based studies among volunteers to probability-based samples (Barber et al., 2012). Furthermore, this new tool extends the time frame of the measurement beyond the limits of most studies conducted to date. The tool mixes two modes of data collection (Internet and phone), with the goal of maximizing the benefits and minimizing the drawbacks of each. Finally, the journal keeping system we describe involves measurement that is repeated weekly, covering a variety of topics and tailored to fit each respondent's individual circumstances. This last feature creates the greatest risk for measurement error: the potential for frequent repeated measurement to influence participants, biasing results.

2.1. The potential for frequent measurement to influence behavior

The theoretical basis for expecting frequent measurement—whether interview-based or self-administered—to influence human behavior is grounded in social and psychological theories of human behavior (Zwane et al., 2011). The fundamental idea is that the conditions and social interactions surrounding each individual person shape her or his understandings of the world, create beliefs and dispositions, and drive behaviors (Mead, 1967 [1934]). In day-to-day life, exposure to words, concepts, and ideas can shape beliefs and attitudes, and those attitudes become a guide to behavioral choices (Ajzen, 1988; Fishbein and Ajzen, 1975). Even while most theories of behavior recognize long-term continuity of behavior, driven by