

## An Innovative, Effective and Cost Effective Survey Method Using a Survey-Check Response Format

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**Abstract** Maximizing the response rate to surveys involves thoughtful choices about survey design, sampling and collection methods. This paper describes an innovative survey method, to provide immediate reinforcement for responding and to minimize the response cost. This method involves using a questionnaire printed as checks on security (anti-fraud) paper with questions and responses separated using a perforated tear off section. Once a participant completes the survey, the response area is detached from the questions, thus protecting the confidentiality of the subject, and the check is returned via the banking system. This report describes the survey-check methodology, the survey flow process, and the results from four research studies which have used this method. These studies include (1) a technology accessibility survey of parents with children enrolled in a low-income preschool program; (2) a parent report of their child's behavior used as screening criteria for inclusion in a computer-mediated parent education project; (3) a follow-up questionnaire as part of a longitudinal study of child behavior, covering home and classroom interventions, and service utilization, and; (4) a survey of dentists in support of efforts to recruit them to participate in a randomized control trial of tobacco cessation in dental offices. The results of using this method show great improvement in response rates over traditionally administered surveys for three of the four reported studies. Results are discussed in terms of future applications of this method, limitations, and potential cost savings.

**Keywords** Survey methods · Participant engagement · Recruitment methods

Paper survey methods are very important for many areas of research, from economics and psychology to marketing research. In our review of the literature (Church, 1993; Dillman, 2000; Everett, Price, Bedell, & Tellijohann, 1997; Fox, Crask, & Kim, 1988; Gendall, Hoek, & Brennan, 1998; Hopkins & Gullickson, 1992; Martinez-Ebers, 1997; Oden & Price, 1999), we found that response rates averaged around 50% depending on the sample and methods employed. A meta-analysis of 85 studies found that the median response rate from initial mailing increased from 34.8% to 53.3% with a monetary incentive (Hopkins & Gullickson, 1992). A small prepaid monetary incentive (\$1) was found to greatly improve the response rates among nurses (from 37% to 55%; Oden & Price, 1999) and physicians (from 45% to 63%; Everett, et al., 1997). A meta-analysis of 38 studies using a monetary incentive to increase response rates found an average response rate of 49% with a range from 12% to 86.5% (Church, 1993). In an analysis of incentive use among hard to reach populations of Latino and Anglo parents of school-age children, Martinez-Ebers (1997) found a 47% return rate with no incentive and a 64% return rate with incentive. While prepaid (i.e. cash sent with blank survey) monetary incentives can reinforce response behavior for mailed surveys, prepaid methodologies can be too costly for most researchers. Therefore, we searched for an approach that provides only the responder with monetary reinforcement.

The survey-check provides the respondent with immediate monetary reinforcement while maintaining confidentiality of their responses. The survey-check features a large check & register form that is printed, typically on a 8.5 × 11 inch safety (anti-fraud) paper with a perforation down the side (see Figs 1 and 2 for an example). The survey

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**PARENT NET**

Dear Parent,

You are being invited to participate in the first part of a research study to evaluate parent support. The study is directed by Ed Feil, Ph.D., Herbert H. Severson, Ph.D., and Ted Taylor, Ph.D. of the Oregon Research Institute. We would like to ask you to complete this short questionnaire about your Head Start child. To thank you for your time in answering the questions we will pay you \$20. The answer-boxes have been printed on a check so you do not need to mail us anything — simply cash the check at any bank. **ALL INFORMATION WILL BE COMPLETELY CONFIDENTIAL.** When the bank returns the check to us, we would like to be able to contact you and tell you about future participation in this study, so please include your address and telephone number on the front bottom left hand corner of the check.

When you sign the back of this survey to cash the check, you are giving us permission to contact you. Your participation in this project is entirely voluntary and you are free to withdraw from the study at any time without consequence.

If you are eligible and agree to participate in the future, Oregon Research will lend you a computer and set it up in your home for a 4-month trial period to evaluate a computer-based-parenting program. We want to see how well the program is liked by Head Start parents in Oregon. No prior computer experience is required.

If you have any questions regarding the study, please contact Berry Broadbent or Ed Feil at Oregon Research Institute (541) 484-2123 or (toll free) 1-866-478-0585.

If you have questions about your participation as a research subject, or if you have a visual or other impairment and require this material in another format, please contact the Office for the Protection of Human Subjects at the Oregon Research Institute by calling (541) 484-2123. If you are hearing impaired, please call the TDD relay number 1-800-735-2900.

Your signature on the back of the check indicates that you; (1) have read and understand the information above; (2) willingly agree to be contacted by project staff; (3) may withdraw your consent and stop participating at any time without penalty; and (4) may keep the unused portion of this consent form for your records.

I understand that my signature on this check indicates that I have read and understand the information provided. I agree to be contacted by Oregon Research staff and understand that I may withdraw my consent and stop participating at any time without penalty.

**Fig. 1** Front of survey-check from head start screening & recruitment study

questions are printed on the “ledger” side of the survey-check while the response area is contained within the “check area,” which is cashed by the survey respondent and then returned to the distributor via the banking system in either paper or scanned copy format. Using this method, the survey distributor (i.e., researcher or survey group) only reinforces returned surveys. Using prepaid monetary in-

centives can be cost prohibitive since the researchers are providing monetary reinforcement to both responders and non-responders.

An extensive review of the literature found only one reference to the survey-check methodology in a clinical pharmaceutical trial to increase the response rate among physicians. Results from this study (Mizes, Fleece, & Roos, 1984) found



this research, we describe and report results from four studies using survey-check assessment methods for engaging respondents and collecting questionnaire data.

**Method**

Creating the survey-check

The first task in the development of the survey-check was to design a layout that would be compatible with standard check-processing procedures. In Studies 1–3 (see Table 1), the survey-check was developed in-house (i.e., at Oregon Research Institute) while Study 4 used an outside contractor to conduct the survey-check printing, data collection, and data entry.

In close coordination with a bank, a form was designed with a check routing number and a check number, with the remaining space being left blank for the survey’s description, directions and items. A check-printing company was enlisted that was able to create a check (response form) and check register (item questions) separated with a perforation down the side on an 8.5 × 11 inch safety (check) paper (see Figs 1 and 2). Using desktop publishing software (Adobe Photoshop) and this specially-prepared paper, the survey was designed with a letter of informed consent on the front side and the items, directions and response area on the reverse side. The respondent was asked to complete the responses and tear off the check at the perforation (i.e., dotted line in Figs 1 and 2). The returned cashed check contained only participant responses and not the questions they were responding to. This assured confidentiality so anyone who viewed the survey-check submitted for cashing could not decipher their responses except for innocuous information.

Throughout the design and paper printing process, the bank was consulted to insure system compatibility for timely collection. Representatives from our organization’s fiscal teams made a site visit to the chosen bank check-sorting center to ensure that checks would be returned in a timely manner. The bank returned the cashed checks in order to obtain the participants responses, an extra step beyond their normal procedures. Most checks are electronically stored and the original paper check shredded. While the electronic record is discernable for most responses, responses in pencil are not easily distinguishable in the electronic format. Computer survey scanning software that requires paper response forms in order to scan data into a database was employed in one of the four studies, thereby keeping accuracy high while greatly reducing data entry costs. Researchers contemplating this method should note that a small number of paper checks were destroyed inadvertently, but the data were recoverable from an electronic copy.

**Table 1** Survey-check study descriptions and response results

Study	Respondents	# items	Check amount	Distribution method	N distributed	N responded	Mean response latency in days (SD)
1. Use and familiarity of computer technology	Head Start parents	15	\$5	Distributed to parents by school staff	108	78 (72%)	15.77 days (22.59)
2. Child behavior screening for study recruitment	Head Start parents	25	\$20	Distributed to parents by school staff	1610	1267 (79%)	7.11 days (9.69)
3. Follow-up data collection for a school prevention study	Parents of children identified at risk for the development of conduct disorders already participating in the study	101 items spread across 4 survey-checks	\$5 per survey for a total of \$20	Mailed to parents already participating in the study for follow-up data.	166	151 (91%)	28.62 days weeks (35.80 SD)
4. Recruitment for a randomized control trial of tobacco cessation at dental offices	Community Dentists nationwide.	9	\$5	Mailed to dentists from list of dental providers from insurance plan (Aetna)	1508	420 (28%)	Not Available

**Table 2** Monthly return rates and return methods from dentists assessed for computer technology in dental offices

Bank statement date	# Of cashed survey-checks	# Of survey-checks mailed directly to DSS <sup>a</sup>	Survey-checks mailed to Columbia University	Total survey-checks completed	# Of survey-checks with incompleter responses
6/12/02	267	27	–	294	69
7/15/02	94	6	11	111	31
8/9/02	15	–	–	15	–
Totals	376	33	11	420	100

<sup>a</sup>Decision support systems, Dallas Texas.

Study descriptions, participants and survey distribution

*Study 1: Survey of usage and familiarity with computer technology*

This study investigated factors in the application of Internet technology for low-income families (i.e. children enrolled in Head Start) to ascertain their use and familiarity with computers (see Table 1). The questionnaire contained 15 items, and one hundred and eight survey-checks were distributed over a two-week period using a variety of distribution methods: handed directly to caregiver by staff (42%), via child backpack (12%), friend during pick-up (1%), and bus driver at drop-off (45%). Preschool staff kept a log of the survey-checks distributed and unused survey-checks were returned to the research assistant.

*Study 2: Child behavior screening for study recruitment*

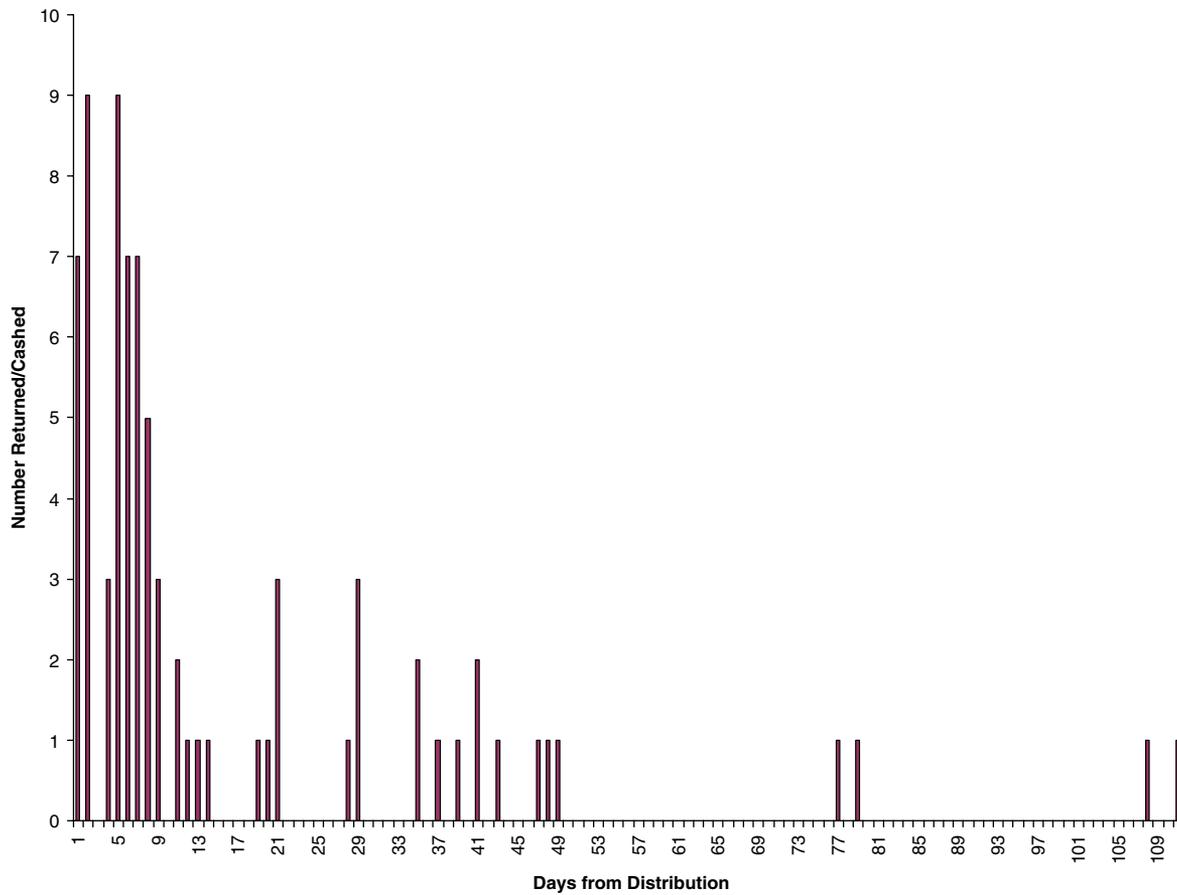
The purpose of this use of the survey-check was to engage and screen potential participants in an intervention study. The 25 item survey-checks were distributed to all 1,610 parents who had a child old enough to attend Kindergarten the next school year and were enrolled in participating Head Start programs. The methods of distribution were: direct to caregiver (84%), via mail (7%), via child (3%), other (3%), and unknown (3%). Preschool staff kept a log of the survey-checks distributed and returned unused forms to the research assistant.

*Study 3: Follow-up data collection for a school prevention study*

The survey-check was introduced as a follow-up assessment measure to parents of children participating in an evaluation of a school-wide intervention. The families ( $n = 166$ ) were mailed the survey-check in March of their child’s third-grade year. Prior to the survey-check, families were assessed on an annual basis using a standard (non-check) scannable form between 16 and 19 pages in length. Parents received \$30 for their completed survey, which could take anywhere from 45 to 90 minutes to complete. The check-survey had 4 pages, each with a removable \$5 check (a total payment of \$20).

*Study 4: Recruitment for a randomized control trial of tobacco cessation in dental offices*

General practice dentists were sent an integrated survey-check for \$5 in order to assess their knowledge, attitude and behavior regarding tobacco cessation, and to recruit them for an evaluation of a multimedia CD-ROM intervention program. The surveys on office technical capabilities were



**Fig. 3** Number of checks cashed per day from distribution date from study of the use and familiarity of computer technology

sent to 1508 dental offices randomly selected in the Aetna Dental network with >200 patients over age 18 in 29 states.

## Results

### Study 1: Survey of usage and familiarity with computer technology

From the 108 survey-checks distributed, 78 (72%) were returned (i.e. cashed). Seventy-two (93%) respondents were female, 28 (26%) had a high school diploma or GED and there was an average of 2.32 (SD = .94) children living with the respondent. Since the sample was only families enrolled in Head Start, we did not probe as to income since all had previously met income-eligibility requirements for enrollment of their child in the program. Parents completed responses in 100% of checks cashed and provided legible name and phone number for contact information in 65 (83%) of checks cashed. Checks were cashed over a 110-day period with 60% in the first 7 days and 80% in the first 30 days. No relationship was found between survey distribution method

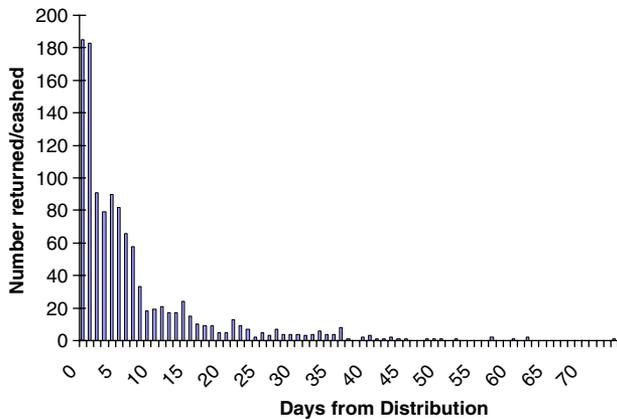
and return rates. Figure 3 shows the number of checks cashed per day from distribution date.

### Study 2: Child behavior screening for study recruitment

From the 1,610 survey-checks distributed, 1,267 were returned (79%) via the US banking system with a 99% completion rate on the surveys returned. The average latency from survey-check distribution to being returned by the bank was 7.11 days (SD = 9.69) with a range from 0 days (cashed same day as distributed) to 74 days. Figure 4 shows the number of checks cashed per day from distribution date.

### Study 3: Follow-up data collection for a school prevention study

From the 166 survey-checks distributed, 151 (91%) were returned. Of the respondents who indicated their gender, education and income, 135 (91%) were female, 29 (21%) had a high school diploma or GED with 51 (36%) reporting completing some college. The average annual household income was between \$45,000 and \$49,069. Since this was a follow-up and parents had prior relationship with the



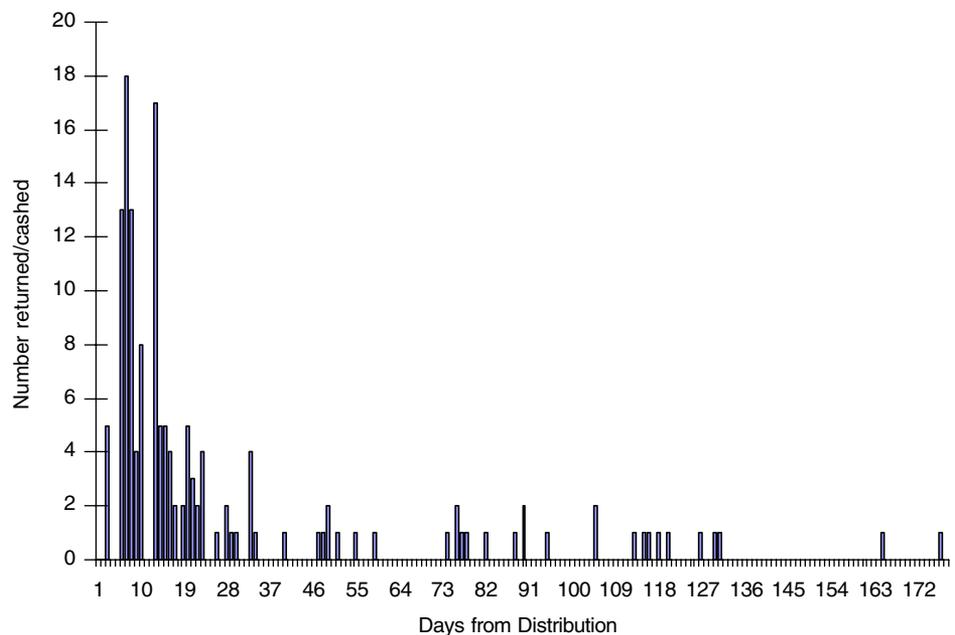
**Fig. 4** Number of checks cashed per day from distribution date from study of child behavior screening for study recruitment

research project, almost all surveys were completed. Checks were cashed within 177 days with 20% in the first 7 days and 77% within 30 days. Figure 5 shows the number of checks cashed per day from distribution date.

**Study 4: Recruitment for a tobacco cessation trial in dental offices**

From the 1,508 survey-checks distributed on 5/18/02, 376 (25%) were returned via the US banking system. The investigators received a monthly bank statement via the subcontractor (DSS, Dallas, Texas). Seventy-three percent of the respondents cashing the check completed the survey. Interestingly, while the checks had a statement “void after 30 days,” we received cashed checks up to 90 days from the mailing. Forty-four dentists inadvertently mailed the com-

**Fig. 5** Number of checks cashed per day from distribution date from follow-up data collection for a school prevention study



pleted check instrument directly to either DSS or Columbia University Columbia University research team rather than cashing the check. A total of 420 (28% of distributed surveys) were returned either through the bank or mailed directly.

**Discussion**

The results demonstrated a high response rate in three of the four studies using the survey-check format. The observed rates of 75% to 91% in these studies compare favorably to other survey return rates using more conventional formats where the average survey return rate was found to be approximately 50% (Church, 1993). Compared to surveys of hard-to-reach populations (e.g. Martinez-Ebers, 1997), we found a higher response rate using the survey-check methodology than that obtained using traditional incentive methodologies. In the one study in which the survey-check methodology did not obtain a high response rate (28%), there are a number of possible reasons why the response rate was low. Unsolicited mailings to health professionals, such as those employed in study 4, often have low return rates and dentists have been reported to be a difficult group to recruit to research studies (Severson et al., 2000; Albert, Ward, Ahluwalia, & Sadowsky, 2002). The small monetary incentive of \$5 may not have been enough to garner their cooperation, and it is likely that the mail was screened by front office or support personnel before getting to the dentist. The other 3 survey studies involved direct or mail distribution to parents who were participating in programs for their children, and for those studies the response rate using the survey-check was consistently high. The amount of money may have a higher perceived value to this low-income group.

The primary advantage of the survey-check method would appear to be the direct payment to the subject for completed surveys as well as avoiding mailing costs. However there are front end costs to set up and print the checks to make sure they comply with the requirements of the bank. One other potential problem is the lack of a checking account for many people and this can create difficulty for them in getting a check cashed. We did get some reports of parents who experienced this obstacle and we had to offer alternative methods for them to cash the check or be paid for their survey. Another challenge involved the consent process. The Institutional Review Board for each study determined that by cashing the check and returning the survey, the respondents were giving their consent (see Fig. 1). We did not require a consent form to be signed by the respondent, but in our materials and on the survey we made clear the nature of the study, risks and benefits of participating which included all the of the elements of the consent form. We explicitly stated that by completing the survey and cashing the check, they were giving their consent to participate in the survey. Another limitation of the survey-check method is the limit on the number of responses and questions that can fit on the check. The size of the check creates some limits so the method is best for brief surveys. In the studies reported here the number of items ranged from 9 to 30 items per page.

In sum the survey-check methodology appears to offer a useful way to provide monetary incentives for completion of brief surveys with response rates equaling or exceeding traditional methods of survey distribution and collection. The survey-check response rate compares favorably to other financial incentive systems but eliminates additional mailings or sending a check/cash to respondents after receiving the completed survey. The method requires some front end effort to create the survey-checks and get them properly formatted for the bank and printed on appropriate paper. The majority of completed surveys come back quickly to the researchers and survey data may be entered via optical scanning for ease of data entry. The survey-check methodology appears to be a cost effective way of collecting survey information as the high return rate justifies the extra effort to create the forms. This methodology may have many applications and offers an alternative way to distribute and collect surveys from potential participants.

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