

Part 3

Session 9

COGNITIVE TESTING AND SELF-ADMINISTERED
QUESTIONNAIRES

Literacy Limitations and Solutions for Self-Administered Questionnaires
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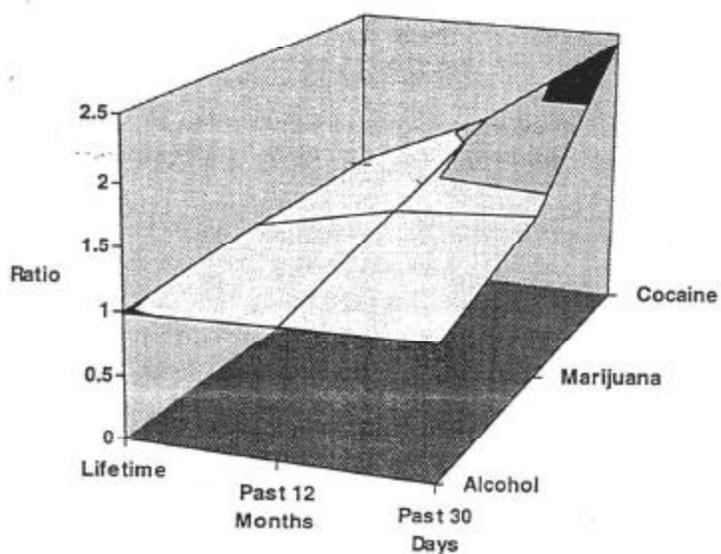
Introduction. The self-administered paper questionnaire is a standard method for asking questions on sensitive subjects. Yet as much as one-fifth of the adult population of the U.S. has levels of literacy which may make using the typical SAQ futile. This paper reviews the research on the efficacy of self-administered questioning on sensitive subjects. Then we will discuss how low literacy or other cognitive burdens can limit the effectiveness of self-administration which require reading.

New computer technology, called Audio Computer Assisted Self-Interviewing (ACASI), now makes it possible to conduct self-administered interviews in which the text on the screen is accompanied by a high quality voice recording played over headphones. The first major field test of the technology was in the 500-person 1993 National Survey of Family Growth Pretest. We describe how ACASI was implemented in the study and the impact on abortion reporting and respondents' reactions to the technology.

Methods of Interviewing on Sensitive Subjects. Research has generally shown that more private methods of interviewing yield higher reports of sensitive behaviors (Bradburn, 1983; Miller, Turner, and Moses, 1990, Ch. 6; Catania, et al., 1990, and Schwarz et al., 1991). For example, Hay (1990) found differences in reported consumption of alcoholic beverages and cigarette use in a study of some 1500 students in grades 2 through 12 who were randomly assigned to receive either a SAQ or a personal interview. The differences were 74 versus 63 percent for over use of alcohol and 38 versus 30 percent for use of cigarettes. Turner, Lessler, and Devore (1992) in a large-scale field experiment, in which 3,200 respondents were randomly assigned to either an interviewer or self-administered questionnaire found that the difference between the two modes of data collection increased as the sensitivity of the behavior increased. Exhibit A shows the ratio between the proportion of SAQ respondents reporting a given behavior to the proportion of respondents reporting that behavior when the interviewer administered the questions. The exhibit displays the results for three time periods (lifetime, last 12 months, and last 30 days) and three types of drugs (alcohol, cocaine, and marijuana).

Exhibit A. Ratio of Prevalence Estimates from SAQ and Interviewer-Administered Items

Drug Type	Lifetime	Past 12 Months	Past 30 Days
Alcohol	0.99	1.04	1.06
Marijuana	1.05	1.30	1.38
Cocaine	1.06	1.58	2.40



Examining this table, we note that as the sensitivity of the characteristic increases from alcohol to marijuana to cocaine, there is a concomitant increase in the superiority of the self-administered format relative to the interviewer-administered questions.

Cognitive Aspects of Conventional SAQs. Thus, self-administered questionnaires can have a positive impact on data quality because of the increased privacy. In addition, SAQs allow respondents to control the pace of the interview, and no additional variance is introduced by the interviewers.¹ However, conventional SAQs do have drawbacks. First and foremost, they require that the respondent can read.² In addition, the respondents must complete a number of the questionnaire administration tasks such as finding and reading instructions, implementing skip patterns, and marking answers. They are prone to the same types of errors that are seen in interviewer administered questionnaires—missing, out-of-range, and inconsistent answers. Lessler and Holt (1987) found that some respondents who could read the questions had difficulty understanding the conventions concerning recording of answers and movement through forms.

Cognitive testing of self-administered has noted problems in each of these areas:

Reading problems:

- Complete inability to read the questions
- Failure to understand specific terms or phrases

¹ The presence of high levels of interviewer variance in the decennial census was one of the motivations for adopting a mailout-mailback self administered method for the census beginning in 1960.

² The National Adult Literacy Survey (NALS) was conducted in 1992 using a nationally represented sample of 13,600 persons aged 16 and older. Literacy was measured in terms of five proficiency levels on three scales—prose, document and quantitative. The survey found that the percentage of adults in the lowest level of proficiency was 21 percent for prose literacy, 23% in document literacy, and 22% in quantitative literacy.

The lowest level of prose literacy is described as “Most of the tasks in this level require the reader to read relatively short text to locate a single piece of information which is identical or synonymous with the information given in the question or directive” (pg. 74). For document literacy the lowest level means: “Tasks in this level tend to require the reader either to locate a piece of information based on a literal match or to enter information from personal knowledge onto a document. Little, if any distracting information is present” (pg. 85). Quantitative literacy at the lowest level means: “Tasks in this level require readers to perform single, relatively simple arithmetic operations, such as addition. The numbers to be used are provided and the arithmetic operation to be performed is specified” (pg. 94).

National Center for Education Statistics, 1993. Adult Literacy in America: A First Look at the Results of the National Adult Literacy Survey. Washington, DC: U.S. Department of Education.

- Use of a time consuming two-step strategy for reading questions
First the questions are read to decode the words and then they are read a second time to get the meaning of the sentences
Complete inability to read the questions
- Not reading all of the questions or response categories in order to reduce the reading task

Questionnaire administration problems:

- Ignoring or neglecting to read instructions
- Difficulty finding the instructions
- Physical difficulties with marking answers that require filling circles for mark-sense forms or writing in small spaces
- Difficulty understanding or failure to follow skip instructions
- Missing questions
- Writing in illegible or out-of-range responses
- Failure to follow marking instructions
- Idiosyncratic response or marking conventions

The result of these difficulties is that researchers using SAQs typically simplify the questionnaires and avoid contingent questioning. Contingent questioning is avoided for two reasons. One is to reduce the chance that data is lost because of the errors that respondents make through incorrect implementation of skip patterns and the second is to increase the privacy of responses. For example, the National Household Survey on Drug Abuse uses SAQs to ask questions on use of alcohol, misuse of prescription drugs, and use of illegal drugs. In that survey, interviews are conducted in the respondent's home. Some of the questions are interviewer administered. On the more sensitive topics respondents are instructed how to complete the SAQs. Respondents are required to mark an answer for every question in these sections in order to (1) increase their privacy, (2) prevent errors in implementing skip instructions, and (3) eliminate the tendency for respondents to mark no on gate questions on use of a particular substance in order to reduce the response burden of answering detailed questions about the drug. It is believed that if respondents are allowed to skip answers, they will realize that interviewers are able to distinguish those who were and were not drug users and, as a consequence, be less truthful.

ACASI Technology. Audio computer assisted self-interviewing (ACASI) has been developed to overcome some of the difficulties associated with the response to self-administered questionnaires. When a computer-assisted self-administered interview (CASI) is used, the computer can take care of the "housekeeping" or administrative tasks for the respondent. By adding simultaneous audio renditions of each question and instruction aloud, ACASI can remove the literacy barriers to self-administration.

In CASI respondents read the questions as they appear on the screen and enter their

answers with the keyboard (or some other device). In Audio-CASI, an audio box is attached to the computer and respondents put on headphones and listen to the answers as they are displayed on the screen. Respondents have the option of turning off the screen so that people coming into the room cannot read the questions, or turning off the sound if they can read faster than the questions are spoken, or keeping both the sound and video on as they answer the questions. Respondents can interrupt the question while it is in process.

Comparisons of CASI with personal interviews have noted findings similar to those cited above for the comparison of SAQs to interviewer administered questionnaires. Waterton and Duffy (1984) compared reports of alcohol consumption under CASI and personal interviews. Overall, reports of alcohol consumption were 30 percent higher under the CASI procedure, and reports of liquor consumption were 58 percent higher. This may understate the potential gains because in this study respondents were first asked if they had consumed any alcoholic beverages in the past seven days by an interviewer. Only those respondents who indicated that they had done so received the CASI interview.³ Several recent studies comparing CASI to personal interviews in clinical settings have also noted the superiority of this method. Locke (1992) found significant differences between the reporting of HIV-risk behaviors when CASI was used to administered questions to donors at an American Red Cross donor center (4.4 percent versus 0.3 percent in the traditional interview procedure). Robinson and West (1992) compared reporting of symptoms in a genito-urinary clinic using CASI, SAQs, and physician interviews. They found that more symptoms were reported by computer than by paper, and both found more symptoms in physician interviews. Levine, Ancill, and Roberts (1992) found that patients who had been admitted to a hospital after harming themselves were more likely to report suicidal ideation in a computer interview than to a physician. The CASI version of the Diagnostic Interview Schedule (DIS) yielded diagnostic information consistent with the traditional interviewer administered DIS, and patients considered the computer contact to be less embarrassing (Erdman et al., 1992). A computer interview with sex offenders yielded large numbers of previously undetected crimes (Weinrott and Saylor, 1991), and a comparison of clinician and computer interviews directed at identifying obsessive compulsive disorders found that the two methods were equally good at distinguishing those with the disorder and that patients showed no preference of the clinician interviews (Rosenfield et al., 1992).

Formal comparisons of Audio-CASI versus other modes are just now being conducted. O'Reilly, et al. (in press) compared paper SAQs, CASI, and Audio-CASI in a small scale experiment designed to assess the potential for the technology. Subjects answered questions on drug use, sexual behaviors, and income. A greco-

³ In the literature, this study is often reported as a CAPI study. It was actually a CASI study in which computers were taken into the homes of respondents and asked to enter their responses on selected questions while the interviewer stood in a part of the room that did not permit observation of the respondent's answers.

latin square design was used to assign subjects to one of three interviewing modes for each topic producing an experiment that was fully balanced across mode and content. For eight of nine rating scales comparing these modes, respondents reported a preference for one of the two CASI methods. Sample sizes were quite small in this study (n=40); however, O'Reilly, et al. found that the CASI methods tended to produce significantly more reports of marijuana and cocaine use. Few differences in sexual behaviors were found.

Respondents were asked which method they thought was better for nine facets:

- (1) Liked best
- (2) Best for asking sensitive questions
- (3) Easiest to change answers
- (4) Most interest
- (5) Easiest to use
- (6) Best for getting honest answers
- (7) Best for privacy after interview
- (8) Best for privacy interview, and
- (9) Overall preference

For all but number 3, the two CASI methods, audio and video-only, were rated significantly better. ACASI was rated consistently higher than video-only CASI. However the difference was significant for three items: overall preference, interest, and ease of use.

National Survey of Family Growth (NSFG) Pretest. Under funding from the National Center for Health Statistics (NCHS), scientists at NCHS, Battelle and the Research Triangle Institute (RTI) collaborated in a formal field experiment that compared abortion reporting under three different interviewing conditions. Respondents were randomly assigned to receive either an in-home CAPI interview only, an in-home CAPI interview followed by a Audio-CASI interview that asked additional questions about abortions, or an interview at a neutral site away from the respondent's home. The respondents in the Audio-CASI treatment were first asked to report their abortions to the interviewer during a section of the CAPI interview that asked about the outcome of each pregnancy that they ever had. The question asked:

Now I'd like to ask some questions about your Nth pregnancy.

Please look at Card B-1. Thinking about your Nth pregnancy, in which of the ways shown on Card B-1 did the pregnancy end?

(READ LIST. CODE ALL THAT APPLY.)

Miscarriage?	(Occurs naturally, during the first 6 months of pregnancy)
Stillbirth?	(Baby born dead after 7 or more months of pregnancy)
Abortion?	(Induced during the first 6 months of pregnancy; include D&C, vacuum extraction, suction, and saline injections)
Ectopic Pregnancy?	(Occurs outside the uterus or womb)

Livebirth by Cesarean section?
Livebirth by vaginal delivery? (Includes delivery through natural or induced labor)

At the end of the interview, respondents were trained in the Audio-CASI procedures and were asked additional questions on abortion.

Prior to the field experiment, the Audio-CASI interview was tested in the cognitive laboratory. Respondents were brought into the laboratory and were first asked to completely answer a series of questions from the NSFG. Following this, the use of the Audio-CASI implementation was explained to the respondent, and she answered questions using the computer herself. Since the questions on abortion were considered to be highly sensitive, we did not ask respondents to think-aloud during laboratory testing. Instead, the interviewer stood across the room from the respondent and was asked to describe what the respondent was doing as the respondent listened and answered questions. Thus, the respondent reported things like:

- She is reading the first question⁴
- I am putting in my answer
- I made a mistake, and I am backing up
- She is reading the next question
- I interrupted her since I already read the question
- I do not know what to do now

The first round of testing revealed that some respondents needed help learning how to enter their answers. Thus, a training interview was constructed that contained questions that were not on the interview and were not sensitive. The interviewer went over these questions with the respondent who then completed the rest of the interview on her own. The field experiment included a comparison of ACASI, in-home CAPI, and out-of-home CAPI. It was hypothesized that the willingness of women to report sensitive information would be increased if they were interviewed outside of their homes because in prior rounds of the survey, respondents had indicated that one of their concerns was that family members would overhear their responses.⁵

Abortion Reporting. Prior rounds of the NSFG identified significant underreporting of abortion (Jones and Forrest, 1992). Exhibit B compares the results from the Audio-CASI question on whether or not the woman had ever had an abortion and both the pilot questions and pregnancy outcome questions in Section B. There was one refusal to the Audio-CASI question on whether the woman had ever had an abortion in her

⁴ Respondents referred to the computer as "she" because the recordings were done by a woman.

⁵ An incentive experiment was also included. The out of home respondents were paid \$40.00 and the in home respondents received either no incentive or a \$20.00 incentive.

lifetime so that there are 177 rather than 178 respondents in this second set of Audio-CASI tables. We note that six additional women reported having had an abortion at some time in their life in the Audio-CASI interview. The six additional women who reported an abortion represents a 14 percent increase in the number of women reporting ever having had an abortion.

**Exhibit B. Relationship of Abortion Reporting in the Pregnancy Outcome Section and to Abortion Reporting in the ACASI Interview
National Survey of Family Growth -- Cycle V Pretest**

	Abortion reported as a birth outcome		
	Yes	No	
ACASI: Ever had an abortion			
Yes	42	6	48
No	0	129	129
	42	135	177

Exhibit C shows detailed information on abortion reporting by site of interview, incentive, and type of interview. Two series of numbers are shown for the ACASI respondents—the number of abortions that they reported in answer to interviewer questions in Section B of the interview and the number reported in subsequent ACASI interview. Finally, in Exhibit D we show the results on the number of abortions reported in Section B and the Audio-CASI interview for those 178 respondents who completed the Audio-CASI interview. Note, in this table the following:

Women who had reported an abortion in Section B reported additional abortions in the Audio-CASI interview.

All of the differences in numbers of abortions reported are above the main diagonal indicating that the different numbers of abortions reported in the Audio-CASI are probably not due to random error.

Exhibit C: Distribution of the Number of Abortions Reported in Section By Treatment and Incentive

# of abortions	# %		In Home						A-CASI						Neutral	
			\$0		\$20		Total		\$0		\$20		Total		\$40/Total	
			#	%	#	%	#	%	#	%	#	%	#	%	#	%
0	380	77.1	83	86.5	56	77.8	139	82.7	78	79.6	58	72.5	136	76.4	105	71.4
1	79	16.0	10	10.4	12	16.7	22	13.1	16	16.3	11	13.8	27	15.2	30	20.4
2	24	4.9	1	1.0	4	5.6	5	3.0	3	3.1	9	11.3	12	6.7	7	4.8
3	9	1.8	2	2.1	0	0.0	2	1.2	1	1.0	1	1.3	2	1.1	5	3.4
4	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	1	1.3	1	0.6	0	0.0
Total	493	100	96	100	72	100	168	100	98	100	80	100	178	100	147	100
One or more abortions reported in B			13	13.5	16	22.2	29	17.3	20	20.4	22	27.5	42	23.6	42	28.6
One or more abortions reported in A-CASI									24	24.5	24	30.4*	49	27.1*		
* The proportions of A-CASI \$20 incentives is based on 79 cases and total for A-CASI is based on 177 cases.																

Exhibit D: Number of Abortions Reported in Section B and in ACASI

Section B	ACASI Section						
	0	1	2	3	4	5	DK
0	129	4	1	0	0	0	1
1	0	24	2	1	0	0	0
2	0	0	11	1	0	0	0
3	0	0	0	1	0	1	0
4	0	0	0	0	1	0	0

We also fit a series of logistic regression models to determine if there were significant differences due to interviewing conditions. As independent variables, we included the type of interview (CAPI only, Audio-CASI, or neutral site), incentive for in-home interviews (none or \$20), race/ethnicity (Hispanic, black, non-Hispanic-non-black), marital status (married, not married), income (unknown, greater than \$20,000, or other), and age. We used a stepwise selection procedure in which an independent variable that was significant at the 0.15 level was added to the model. Exhibit E summarizes the results.

Exhibit E. Analysis of the Impact of Characteristics of Women and Interview Conditions on Abortion Reporting
National Survey of Family Growth -- Cycle V Pretest

	Parameter estimate	Standard error	Probability (Chi-square)	Odds Ratio
Intercept	-2.52	0.49	0.0001	1.081
Incentive - 20	0.38	0.27	0.1348	1.488
Married	-0.34	0.23	0.1428	0.714
Age	0.03	0.01	0.0264	1.033
Audio-CASI	0.54	0.27	0.0419	1.723
Neutral site	0.83	0.31	0.00672	2.294

Based on these results, we concluded that both the neutral site and the Audio-CASI increases the number of women who report that they ever had an abortions.⁶

Respondent Attitudes. We also asked respondents who received the Audio-CASI interview their attitudes toward the alternative methods of reporting abortion. Exhibit F presents the results.

⁶ We also examined the reporting of the number of abortions and found that given a woman had reported an abortion, there were not significant differences in the number of abortions reported.

**Exhibit F. Respondents' Attitudes Toward Methods of Reporting Abortion
Among Women who Received the Audio-CASI Interview
National Survey of Family Growth -- Cycle V Pretest**

Response	Percent respondents
How do you rate telling the interviewers your answers to questions on abortion?	
poor	15.2
fair	20.3
good	30.5
very good	17.5
excellent	16.4
How do you rate using the computer and earphones to answer questions on abortion?	
poor	2.8
fair	8.5
good	17.5
very good	26.0
excellent	45.2
Which method of answering questions on abortion is the most private?	
earphones and computer	62.7
no difference	32.2
telling the interviewer	4.5
Don't know	0.6
Which method do you recommend for the main study?	
Interviewer	16.9
Computer	58.2
Do not ask about abortion	2.8
Does not matter	22.0

In general, these women recommended the Audio-CASI procedure for abortion reporting.

Description and Demonstration of the Audio-CASI System. The ACASI system used has the following features:

- Implements a full range of audio functions so that audio self-interviewing can offer as many capabilities as interviewer-administered systems
- Runs on a powerful, existing CAI development platform
- Uses MS-DOS operating system

From an implementation and operational point of view, the key requirement is the second—that the audio system be built as an extension of an existing CAI

development system. It is not difficult to build PC systems which can generate sound through digital audio devices, display questions, and record answers. However, to have a system which can conduct a complex questionnaire with integrated audio is much more difficult. One especially important requirement is the ability to allow the user to backup easily, correct a previous entry, and be directed forward following a route appropriate for the latest set of responses. If the underlying CAI platform is not robust and widely used in complex applications, then the stability of the ACASI application during interviews is likely to be problematic.

The system used the Blaise CAI system as its base. The Blaise system is a product of the state statistical agency of the Netherlands—Statistics Netherlands and is widely used across Europe by government statistical agencies for computer-assisted personal interviewing, telephone interviewing, data entry and data editing. Questionnaires are programmed in the Blaise CAI language by defining the questions, their answer choices, and the logic of the questioning, including tailored text fills and consistency checks. Blaise then compiles the questionnaire code into a executable DOS application, automatically handling the question administration, screen and keyboard control, range and consistency checks, data management and navigation through the questions.

The audio capability is implemented through a background DOS process which the Blaise instrument triggers as each question is displayed on the screen. This process interprets commands specifying the recorded digital audio files to play in order to duplicate in audio just what is displayed on the screen.

The hardware for the audio system is a small, one-pound external analog-digital box that is connected to the notebook PC by two cables and headphones. The audio quality in the system is quite high. The items are a digitally recorded human voice—not synthesized. The system is both very flexible and fast. It has the capability of rendering questions with variable components. For example, in the NSFG ACASI instrument, when a woman said she had had an abortion, she was asked when it happened and how many weeks pregnant she was at the time. Then the following series of questions were asked:

Based on this, this pregnancy began around [MONTH AND YEAR OF CONCEPTION].

So we can understand how well birth control methods work, I would like for you to tell me what methods of birth control you were using—if you used any—during the three months before this pregnancy began.

Were you using any method of birth control in [MONTH AND YEAR PRECEDING CONCEPTION]?

As I read the methods, please press 1 for YES if you used that method in [MONTH AND YEAR PRECEDING CONCEPTION].

Then the woman is asked for each of the three months preceding conception, whether she used each of the birth control methods she had reported ever having used earlier in the CAPI section. In this question series, the ACASI system must be able to generate audio questions which can vary on the month and year and among 19 possible contraceptive methods. The system was able to instantly concatenate and play the appropriate audio files to duplicate the screen text properly.

DEMONSTRATION OF THE A-CASI SYSTEM WILL OCCUR HERE

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THE LANGUAGE OF SELF-ADMINISTERED QUESTIONNAIRES
AS SEEN THROUGH THE EYES OF RESPONDENTS¹

by

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The Language of Self-Administered Questionnaires
As Seen Through the Eyes of Respondents

by
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"... we must recall that language includes much more than oral and written speech. Gestures, pictures, monuments, visual images, finger movements--anything consciously employed as a sign is, logically, language."

*John Dewey in Newell, A and Simon, H.A.
Human Problem Solving, 1972, pp. 65-66*

I. INTRODUCTION

Much survey research has been directed at studying interviewer-administered questionnaires. As a result, we have learned a great deal about question wording and sequencing effects in surveys and about the effect of memory on data quality (e.g., Jobe et al, 1993; Jobe et al., 1990; Lessler, 1989; Converse and Presser, 1986; Belson, W., 1981). Although it is equally important to understand these sources of error in self-administered questionnaires, it is not sufficient. The graphical presentation of information is every bit as important because it too has something to say to the respondent.

In Tourangeau's model (1984), as well as other models of the survey interview process, the first step is specified as "comprehending the question." Depending on the model, different steps follow, but generally, "retrieval of the relevant facts, judgment, and finally, response" are mentioned.

Although "comprehending the question" is the first step in an interviewer-administered survey, the task is different in a self-administered survey. In a self-administered survey, respondents must first "perceive the information" before they can comprehend it. Once they perceive it, they must "comprehend the layout of the information" as well as "the wording of the information." Furthermore, respondents must comprehend much more than just the wording of the survey questions and response categories. In a self-administered survey, respondents are often given introductory material and instructions. Also, they must comprehend directions that are meant to guide them through the form.

In an interviewer-administered questionnaire, the interviewer plays a critical role in what information the respondent perceives. In a self-administered format, the entire onus of perception is on the respondent, and we have not developed procedures for controlling errors that might arise as a result of their not perceiving information as we intend. In fact, we have not studied this much at all.

In addition, we need to pay attention to what motivates respondents to answer surveys. Cialdini (1988) has argued that people decide whether to perform a requested task on the basis of the inherent attractiveness of that task and other social or psychological influences, including

- reciprocation (the tendency to favor requests from those who have previously given something to you),
- commitment and consistency (the tendency to behave in a similar

- way in situations that resemble one another),
- social proof (the tendency to behave in ways similar to those like us),
- liking (the tendency to comply with attractive requests),
- authority (the tendency to comply with requests given by those in positions of power), and
- scarcity (the tendency for rare opportunities to be more highly valued).

Groves and others (1992) provide examples of how each of these can be utilized to encourage survey participation. Although most of the examples refer to interviewer behavior or the implementation process, some can be applied to questionnaire design. For example, the fact that people tend to comply with attractive requests suggests that respondents will be more likely to answer an attractive questionnaire than an unattractive one.

Groves and others also argue that the helping tendencies of people can be utilized to encourage response. Three emotional states have been found to be associated with decisions to help another: anger, happiness, and sadness. One would expect that people are likely to become angry and therefore less likely to respond to a mail survey when the questions or the instructions are not easily understood.

Finally, the literature on opinion change (Petty and Capioppo, 1986) suggests that when a topic is of high personal relevance, subjects will change their opinion based on an in-depth review of a message. However, when the topic is not important to the subject, they will rely on a heuristic review, such as the credibility of the source. This literature suggests that if a questionnaire is not really important to a respondent, then we probably aren't going to persuade them to complete it by presenting them with an in-depth, highly logical, persuasive discussion of why they should complete it. Instead, we should rely on other means.

II. GRAPHICAL DESIGN PRINCIPLES

In the remainder of this paper, we present questionnaire design principles that struggle with how to best present information to (1) motivate respondents to attempt the tasks presented to them and to (2) aid respondents to accurately answer the questionnaire once they are motivated to do so. Most of the principles have not been tested carefully on controlled designs, although we try to cite those occasions in which they have been. Principle 20 (structuring and organizing a questionnaire) is an example of a principle drawn from experimental evidence with the Decennial Census questionnaires. Most of the other principles are drawn from the results of cognitive interviews with both the Schools and Staffing Survey and the Census of Construction Industries and from the redesign of the Survey of College Graduates. The response effects of the redesigned examples remain generally untested at this time. Therefore, the principles should be viewed as reasonable hypotheses for improving response, lowering item non-response, and improving accuracy. A major reason for writing this paper is to encourage experimental research on these issues.

1. Present information in a format that respondents are accustomed to reading.

We consider this the most important principle and one that is constantly and inadvertently violated. Jenkins et al. (1992a) present the results of cognitive interviews with the Schools and Staffing Survey. Example 1 shows the cover page of the School Questionnaire from the Schools and Staffing Survey. Jenkins et al. conclude that the readers, persistent as they were, usually did a pretty good job of following this page until they reached the end of the first column. These respondents read through the title information, then the first two paragraphs on the left-hand side of the page. Because these paragraphs refer to the label, they turned the questionnaire sideways to look at the label. When done, they returned to where they had left off on the left-hand column, and continued to read down the column. Instead of continuing to the top of the second column, however, generally they turned the page.

Example 2 presents a diagrammatical representation of the cover page's reading structure. It reveals the eye's necessary movement across the page. As can be seen, the current format requires respondents to make some pretty large unexpected leaps across the page, unexpected in the sense that a person anticipates reading a line of information from left to right, starting at the top of the page and moving down it.

It is not surprising, therefore, that the skimmers didn't bother to read this page at all. Generally, they glanced at it and turned the page. Because the skimmers never read the school named on the label, they often reported for the wrong school. In fact, this error was so great in 1991 that data for 10 states needed to be suppressed at first.

We present a redesigned version of the cover page using a natural reading format in conjunction with the next principle.

2. Present only the most relevant information using graphical design features and composition.

Another problem with the School Questionnaire's cover page is that it presents too much information. Skimmers quickly dismissed this information, probably because nothing was made particularly salient to them and they were not willing to look for that which was important. This suggests that the most important information needs to be made easily perceptible.

Example 3 shows a "user-friendly" cover page adapted from Jenkins and Ciochetto (1993). This cover page presents only the information the respondent needs to begin completing the questionnaire and it does so using a natural reading format and graphical design features. Jenkins and Ciochetto deliberately used a box that contains an unshaded area within a shaded one to showcase the very important instruction that was overlooked on the original questionnaire.

Example 4 exhibits the straight forward reading structure of this page. No need for the eye to do anything out of the ordinary, which we are more and more convinced is critical to designing good self-administered questionnaires.

3. **Pique respondents' interests early in the questionnaire.**

A third problem with the School Questionnaire was that respondents found themselves being asked to passively read a lot of material: the cover page, the cover letter (which was placed on the inside cover of the questionnaire booklet), and instructions (see Example 5). Skimmers skipped over this material entirely and went directly to question (a) in the middle of page 4 to begin completing the questionnaire.

Based on this, the third principle is: pique respondents' interest early in the questionnaire. Don't begin the questionnaire with a lot of prose, begin by asking a question or two. We hypothesize that respondents are more likely to read information once they have become actively engaged in answering the questionnaire.

As shown in Example 6, Jenkins and Ciochetto (1993) suggest beginning the Student Records Questionnaire by asking respondents to record the current time followed by a screener question. It is only after they ask these questions that they present a condensed version of the cover page and letter information. Even when they present this information, they deliberately used a question-and-answer format to keep the respondent actively engaged.

4. **Dominantly feature questions over additional explanatory information.**

This principle is violated in the Census of Construction Industries Questionnaire. Example 7 presents the "dollar value of business" item from that questionnaire. As can be seen, this item, like all of the items on the questionnaire, begins with a brief capitalized heading in bold that is meant to quickly convey the nature of the item. DeMaio and Jenkins (1991) conclude that respondents often neglected to read beyond the heading because the heading provided them with just enough information to formulate their own question. And, of course, they formulated the wrong question.

Example 8 presents a revised version of the item. In this version, the item heading is replaced with a bold-faced, comprehensive question. Bold-faced type was used to convey the importance of the question. Also, it serves as a road map for questions like this that have a leading phrase followed by several parts that are interrupted with other information. The other information is put in light-faced type.

5. **Include in each question all of the relevant information necessary for respondents to answer it, rather than specifying information in a subsequent instruction.**

This principle is demonstrated using another item from the Census of Construction Industries Questionnaire, the "number of employees" item (see Example 9). Respondents would read the heading here, and sometimes the question, then they would turn their attention to the answer boxes at the right (DeMaio and Jenkins, 1991). At this point, their eyes were drawn immediately to the column headings rather than the header. The header reads "Number of employees of this establishment during the pay period including the 12th of--," and because "pay period" is not mentioned in either the heading or the question, several respondents mistakenly thought this item was referring to monthly or quarterly time periods.

A revised version of this item is presented in Example 10. Besides

removing the heading, the pay period header was made the leading phrase in this version. This question now contains all of the information the respondent needs to answer it. And just to make sure respondents don't misunderstand, the pay periods are also repeated in each of the column headings.

6. Vertically align the questions and response categories.

As can be seen in the top view of Example 11, the Public School Questionnaire uses a question-on-the-left-answer-on-the-right format. Jenkins et al. (1992a) conclude that respondents often did not read instructions in this format. This is because they generally began to search for the answer once they read the question. As a result, their thoughts and consequently, their eyes were drawn away from the left-hand side of the page, where the instructions lay, to the right-hand side, where they knew the answer categories were.

The second view in Example 11 uses a vertical alignment. This places the instructions directly before the answer category, where respondents are more likely to perceive them. However, this may not solve the problem of respondents either overlooking or ignoring instructions. As already mentioned, respondents have a tendency to read only as much as they think is necessary to answer a question. Therefore, even if they perceive the instructions, they may still ignore them. If the instruction is relatively simple to begin with, a better solution is to incorporate it into the body of the question, as demonstrated in the last view.

7. If incorporating needed information into the question makes it too complicated to understand, then provide accompanying instructions at the place where they are needed.

If an instruction is long and/or complicated, incorporating it into the body of the question is likely to fail. As can be seen in Example 12, Item 2 of the Public School Questionnaire asks how many students were enrolled in the school on or about October 1 of this school year. Jenkins et al. (1992a) conclude that this item was difficult for respondents to read and understand because the flow of the question is interrupted by two parenthetical phrases and a lengthy two-sentence instruction. This leads us to conclude that one should never try to insert a stand-alone instruction between phrases of a continuous question.

Question 13a(2) in Example 8 illustrates the use of include and exclude statements that are too lengthy to incorporate into the body of the question. Here, the instructions are placed directly after the question. This places them as close to the question as possible without disrupting its flow. Still, further research is needed to determine the best method for coaxing respondents to read information that is not easily incorporated into the question.

8. Utilize single-task formats rather than multi-task formats.

Item 30 from the Public School Questionnaire (shown in Example 13) asks respondents to cross classify their employees by full- or part-time status and assignment. Jenkins et al. (1992a) conclude that quite a few respondents

seemed able to process only one aspect of this item--the categorization of employees by job description--and were unable to simultaneously deal with the additional request to report these employees by both full- and part-time status.

In Example 14, the multi-tasked format is replaced with a simpler one. This is accomplished by focusing on only one request at a time--first, respondents are asked to classify part-time employees by job description in part a. Then they are asked to classify full-time employees by job description. Because this format repeats information at the point it is needed, we hypothesize that it will make the respondent's task easier. Of course, the disadvantage is that it lengthens the questionnaire, which may decrease a respondent's motivation to complete it. This example illustrates the fact that there can be competing forces at work when we design a questionnaire and that we clearly need to learn more about these forces.

9. Utilize single-question formats rather than matrix-question formats.

Question 1 in Example 15 asks respondents if they currently have the students for class listed down the left-hand side of the page. If the respondents do, then they are to answer three follow-up questions. Jenkins and Ciochetto (1993) conclude that this format presents respondents with too many tasks at once. Furthermore, it presents them with a choice, but provides little guidance for making the choice. They can choose to answer a full set of questions about one student at a time. In this case, they work across the rows. Or they can answer the same question for each of the students. In this case, they work down the columns.

In Example 16, the matrix format is replaced with a single array of questions pertaining to one student at a time, with the questions running down the page rather than across it. In this version, respondents need only be concerned with answering one question about one student at a time, and they need not deviate from moving down the page in search of the next question. Although the researchers recommend further work in this area, a small number of cognitive interviews showed that this is a more manageable task from the respondent's point of view. (This example also used a new skip instruction. We discuss skip instructions later.)

Additional research supporting the single-question format comes from both focus group and experimental research on the 1990 Decennial Census Questionnaire. A focus group examination of the Census Questionnaire in which respondents were asked to answer a series of questions for each member of their household in a matrix format (questions in left-hand column to be answered for household members listed across the top of the page) identified the matrix format as a barrier to response (Dillman et al., 1991). Furthermore, a revised questionnaire, which used a single-question rather than a matrix-question format, attained an improved response rate (Dillman et al., 1992).

10. Make headings and instructions at the top of a page more prominent than those in the middle of a page.

Respondents find transitions between topics helpful. A transition need not be complicated, it simply needs to be enough to warn the respondent the topic is about to change. For instance, in Example 17, the heading "SECTION

2--STAFFING PATTERNS" in the middle of the page was enough to convey to respondents that the topic was about to change (Jenkins et al., 1992a).

In contrast, Example 18 shows a transitional heading followed by an instruction that comes at the top of a page. Contrary to expectations, respondents tended to read transitional headings and instructions that came in the middle of a page, but few read information that fell at the top of a page.

We hypothesize that respondents may be exhibiting a similar kind of behavior here as they exhibited with the introductory information. Many respondents skipped over the introductory material in an effort to get to the questions, but once they were actively engaged in answering the questionnaire, they were more likely to read information put into their path. Perhaps respondents skip over information at the top of a page in an effort to get to the next question, but once they become involved in answering the questions, they are more likely to see other information.

11. Provide directions in a natural reading format and utilize graphical design features and composition to make the directions more salient.

In order to efficiently and accurately answer a self-administered questionnaire, respondents must be able to maneuver their way through the questionnaire. One very important instruction for doing this is the skip instruction. The problem with skip instructions, however, is that respondents commonly overlook them (Jenkins and Ciochetto, 1993; Turner et al., 1992; Gower, 1989).

Jenkins and Ciochetto (1993) conclude that respondents overlook skip instructions for two reasons, one of which is derived from the other. The primary reason respondents overlook the skip instruction is because they do not perceive it, but the reason they do not perceive it is because of the convoluted reading structure presented by the skip instruction. Item 29a shown in Example 19 illustrates this. A respondent begins to answer this item by first reading the question "Were there any teaching vacancies in this school for this school year, i.e., teaching positions for which teachers were recruited and interviewed?" Then they will move to the right-hand side of the page to answer the question, see the answer boxes, and continue to the right of these to read the answer choices "yes" and "no." The next step in the process is to choose one of these, say the "no" response, and to move back to the left of this to mark the answer box. Note what is happening at this moment--the respondents are moving away from the skip instruction. If the skip instruction has not been in some way made salient to respondents before they begin their journey back to the left, chances are they are never going to see it. Once they mark the answer box they are likely to conclude they are done answering this question and are going to begin to look for the next question.

Experimental data presented by Turner et al. (1992) confirm the hypothesis that respondents only see information to the right of an answer category if it is in some way made salient. Among other questionnaire design issues, Turner et al. studied the extent to which respondents and interviewers correctly executed branching instructions embedded in alternative versions of the 1990 National Household Survey on Drug Abuse (NHSDA) questionnaire. Turner et al. conclude that respondents were more likely to overlook a visually obscured branching instruction, as shown in question 1 of Example 20, than a visually salient one, as shown in question 5. They conclude that both

the length and visual salience of questions a through e in question 5 assisted respondents in correctly following the branching instruction in question 5.

These studies suggest that directions need to be presented in a more natural reading format and graphical design features and composition should be used to make the directions more salient. Given this information, three alternative skip instruction formats are presented below, each of which appears to have advantages and disadvantages: (1) the salient skip instruction, (2) the intermediate skip instruction, and (3) the natural reading sequence skip instruction.

Salient Skip Instruction. Example 21 shows the salient skip instruction. Rather than having information placed to the right of the answer categories, directional arrows are placed to the left of both answer boxes. These arrows extend horizontally from each answer box towards the left-hand margin of the page and then turn vertically downwards. One of these arrows proceeds to the next question and the other ends with a verbal instruction within a shaded box.

This format was designed to overcome the conventional skip instruction's highly convoluted reading format (moving from left to right, right to left, back again to the right and finally, back to the left) and to replace a more-difficult-to-perceive verbal instruction with a more-easily-perceived combination visual/verbal instruction. In our judgement, the advantage of this format is that respondents may visually take in, if only briefly, the skip instruction information while moving from left to right in search of the answer categories.

The disadvantage, however, is that whereas respondents may be more likely to see this information, they also may be more likely to misunderstand it. It is possible that the wrong respondents (those who are supposed to continue to the next question) may mistakenly execute the skip instruction because of its visual salience, leading to a serious error--the omission of data. Another disadvantage with this format is that a question with a complicated skip instruction may become visually cluttered.

Intermediate Skip Instruction. Example 22 presents the intermediate skip instruction. This format relies on two features: (1) graphical instructions (an arrow) for going to the next question and (2) words to direct other respondents through a skip pattern. The two paths are further distinguished by originating the arrow from the left of the answer choice, and placing the words to the right.

In our judgment, the advantage that this format may have over the salient skip instruction is that respondents are unlikely to make the serious error of incorrectly executing the skip instruction. Another advantage is that it may not appear as visually cluttered to respondents. However, a small number of cognitive interviews suggest that it may not be as efficiently executed as the salient skip instruction. Just as with the conventional skip instruction, the word instruction to the right of the answer category may be overlooked at first. However, it is likely to be more efficiently executed than the conventional skip instruction, in which nothing but words are used off to the right of the answer choices. Therefore, this skip instruction format is a deliberate compromise between the conventional and salient skip instruction.

Natural Reading Sequence Skip Instruction. In contrast to the above skip instructions in which a respondent must move from left to right in search of the answer categories and then reverse this direction and move from right

to left to answer the question, another possibility might be to establish a skip instruction format with a more efficient, natural, and logical flow. This format is shown in Example 23. As can be seen in this example, the answer boxes are placed to the right of the answer categories and the skip instructions to the right of the answer boxes. To maintain the vertical alignment of the answer boxes, the answer categories are right-justified rather than left-justified. Also, if the answer categories need to be double or triple-lined, as is the case with the category "Dropout/Chronic Truant (See Definition Below)" in question 1 of Example 23, then the answer box should follow the last of these lines. This is to help maintain the respondent's natural reading structure, for which we have been arguing all along.

This skip instruction seems to have several advantages over the preceding skip instructions. The first and probably best advantage is that the information is presented to respondents in the sequence they need it: first the answer categories, then the answer boxes, and finally, the skip instruction. Example 24 compares the reading format of the natural reading sequence skip instruction with that of the conventional skip instruction. As can be seen, respondents need not ever reverse their direction with the natural reading sequence skip format. Another advantage is that the natural reading sequence format is not cluttered looking.

A disadvantage, however, is that respondents may overlook bracketed skip instructions using this format. Although these instructions will be closer to the answer boxes in this format than they are in the conventional skip instruction format (that is, if the answer categories come between the answer boxes and the skip instruction), they be just far enough away from the answer boxes as to be out of the respondent's view.

Another disadvantage is that from an overall perspective, the questionnaire's vertical alignment is disrupted. In the previous formats, the questions, answer boxes, and categories are all left justified and begin in the same horizontal position on the page. Although vertical alignment of the questions can be maintained using the natural reading sequence skip instruction format, the answer categories will certainly not be vertically aligned. The answer boxes can be made to maintain vertical alignment within a question; however, they may not be able to maintain alignment from question to question, further disrupting the overall look of the questionnaire.

A final disadvantage with the natural reading sequence skip instruction is related to data processing. In this format, the location of the keycodes is problematic. One possibility is to place the keycodes before the answer category, but this puts them quite a distance from the answer box from the keyer's perspective. This may slow down production and/or increase keyer error. Another possibility is to place them either directly before or after the answer box, but this may confuse the respondent.

We have described skip instructions at some length because it is an area which is exceedingly important, but now lacks ideal solutions. The alternatives presented need extensive testing in large samples.

12. Utilize graphical design techniques to establish a clear path through the questionnaire for the respondent to follow.

Many questionnaires mix questions and information, utilizing space wherever it is available and thinking that so long as the information is presented, it will get read. As can be seen in Example 25, it is unclear to

the respondent where to begin, and most important in what order the information is to be read.

Example 22 is a redesigned page from the Survey of College Graduates. Here the white answer spaces contrast with the light blue background. The message intended, and communicated by graphical layout rather than words, is to establish a visual path through the questionnaire by associating the white spaces with the "need to provide an answer."

13. Avoid using the same design feature to request different respondent actions.

The essence of this principle is to associate particular design features with what the respondent is being asked to do, and to be completely consistent with their use. For example:

13a. Use dark type for question stems and light type for response category options.

13b. Write all definitions and special instructions for a particular question in italics placed within parentheses.

13c. Use capital letters for words to be emphasized to the respondent in both questions and answers.

The important point here is not that capitals must be reserved for emphasis, and italics for instructions, or that bold type is better for questions than light type. Doing the opposite may work just as well--the issue is consistency, so that as a respondent gets into a questionnaire they begin to associate the chosen procedure with a particular piece of information or request for action.

14. Utilize variability in design features judiciously.

Closely associated with the need to be consistent is the need to limit variability. One would never consider writing a paragraph in which every word is written in different type fonts and sizes. Doing so would slow down the reader's comprehension. Instead, one should select a limited number of design elements and use them consistently.

15. Visually emphasize information the respondent needs to see and de-emphasize information the respondent does not need to see.

Coding information is a good example of this principle. In Example 26, the codes are bold and made even more prominent by encasing them in boxes. Not only that, but they are placed directly in the respondent's reading path. One result is that respondents may mentally process information irrelevant to them, thus making the task of responding more time consuming and difficult than necessary.

In Example 22 the light blue background is a 10 percent screen, and the coding information is printed in small numbers without boxes in 100 percent color. The respondent, who is already being guided "towards" the white answer spaces by black type of questions and answers and "away from" the blue background seems less likely to see or be confused by the dark blue lettering. Furthermore, the codes are placed outside the respondent's reading path. Yet, for a person who is searching for the blue code numbers, they are easily visible.

16. Utilize graphical layout of questions on the page to distinguish among different types of question structures; maintain consistency within types.

If a questionnaire begins by listing answer categories below the stem of a question vertically, like the "yes/no" answer categories in the first question in Example 27, it is undesirable to occasionally present answer choices horizontally, or even to sometimes use a second or third column of answer choices. Once a format is selected it needs to be followed consistently.

If one has a question like C9 and C10, where several items in a series are to be evaluated and the answer categories are the same for each item in the series, these answer categories should be placed to the right of the items and the respondent should be instructed to choose from among horizontally arranged categories in this case. Respondents should learn to choose from among vertical choices when the boxes are on the left and from among horizontal choices when boxes are to the right.

17. Provide descriptive captions either above, beneath, or to the right of blank answer spaces and utilize appropriate signs or symbols whenever numbers are requested.

When people are asked to report income, number of weeks worked, or other data by filling in blank spaces, inaccuracies may result from utilizing the wrong units or from not remembering exactly what was asked. Therefore, the answer spaces in Example 27 have captions to remind people what is being requested. For instance, C13 has the caption "Total 1991 earned income." In addition, the blank answer space has a dollar sign and ".00" in it to keep people from reporting cents, since they weren't wanted.

18. Utilize dominant graphical markings to provide the most important information needed by the respondent to guide them through the answering process.

This principle is violated in Example 25, where the "return to" instruction is predominant. It is also violated in Example 28 where the black marks used to optically scan the questionnaire are quite dominant. In neither case do the dominant marks effectively guide the answer process.

In Example 29, the dominant markings are the questionnaire's title, THE 1992 NATIONAL CENSUS TEST, followed by the ARROW, and the PERSON 1 and PERSON 2 headings. These dominant markings are meant to guide the respondent through the form.

19. Avoid the separation of questions through the use of lines and rectangles in favor of an open format in which the respondent's answering path is clearly shown.

Frequently designers of questionnaires utilize lines and rectangles to separate questions from one another. In general this practice makes questionnaires more, rather than less, difficult to answer. The use of rectangles, as shown in Examples 25 and 30, gives no clear indication of where to go next; the lines function in much the same way as "stop" signs, requiring

one to stop and contemplate the next steps. This is especially the case in these two examples, where it is not readily apparent which box comes next. Consequently, the boxes require additional information, that is, the prominent section numbers. Also, the use of lines is one additional use of ink on a page which must then be cognitively processed by the reader, in contrast to white (or other background color) space which one can pass over without pausing to think about what it means.

In contrast, the formats used in Examples 22, 27, and 29 are open, using lines mostly to identify the page space in which answers are to be provided. These pages are easier for respondents to follow. Also, the respondent path is easily recognized, following the cultural norm of left to right within the defined answering space, and top to bottom on the page.

20. Structure and organize the questionnaire in such a way that it, first, makes sense to respondents and, second, avoids leaving the choice of the order in which questions get answered up to the respondent.

On the surface, this principal seems obvious and easy to implement. However, this may not be so, if the Census long and short forms are any indication. The Census long form is probably one of the most complex questionnaires in existence. It has a fold-out flap which asks for a listing of household members, followed by a matrix of short-form information and finally two pages of sample population questions for each person. This form involves a complex sequence of tasks, the order of which was traditionally dictated by Census needs to provide Congress with mandated information by the end of the census year.

A split-panel experiment with the long form, known as the 1990 Alternative Questionnaire Experiment (AQE), showed that the form's structure was not properly organized from the respondent's point of view (DeMaio et al., 1992). Along with the control form, which was identical to the 1990 Census long form, five experimental questionnaires were tested in the 1990 AQE. Two of the experimental questionnaires (Panels 2 and 3) incorporated many of the principles we have discussed concerning color, the consistent use of typeface and answer spaces, etc. However, three of the experimental questionnaires (Panels 4, 5, and 6) incorporated dramatic changes to the structure and organization of the form. Panel 4 became a matrix booklet in which the flap was eliminated and all of the person items were placed together. Panels 5 and 6 became "kits" in which individual questionnaires for each person in the household were placed in a folder.

The main finding was that "small" format changes alone (as incorporated in Panels 2 and 3) did very little to improve either item or overall response rates, but it took changes to the structure and organization of the questionnaire (as incorporated in Panels 4, 5, and 6) to make improvements. This suggests that "small" format changes are not enough to overcome the difficulty of completing a questionnaire that is not properly organized from the respondent's point of view. In addition, the Simplified Questionnaire Test (Dillman et al, 1992) and the Appeals and Long Form Experiment (Bates, 1993) confirmed this finding.

III. CONCLUSION

Little information on the design of self-administered questionnaires existed until relatively recently. That which did was based primarily on common sense and individual experience. Instead, it was the verbal language of interviewer-administered questionnaires that predominately captured the attention of researchers.

The evidence presented in this paper demonstrates, however, that we need to pay serious attention to the visual language of self-administered questionnaires in addition to the verbal. Toward this end, we need to develop a set of scientifically derived and experimentally proven graphic design principles to guide us in our quest to improve both response rates and the accuracy of responses. We hope that the principles we've developed are a first step in that direction. We have little doubt that the problems we've uncovered exist. However, because many of the solutions have not been tested, we openly admit that they are subject to challenge. Some of the solutions we've offered will stand the test of time; others will not. Undoubtedly, this is an area in need of further study and creative insight.

Finally, we also hope to expand upon our work here by exploring literature that has remained outside the domain of survey methodology to date-- most notably, the eye-movement and the graphical design literature. Knowing what we do now, it certainly seems that this literature may offer further insight into the self-administered question-response process.

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POP-1 SASS-3A
11-237411

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
ACTING AS COLLECTING AGENT FOR
U.S. DEPARTMENT OF EDUCATION
NATIONAL CENTER FOR EDUCATION STATISTICS

OMB No. 1850-0588
Approval Expires 12/31/92

This report is authorized by law (20 U.S.C. 1221e). Your answers will be kept strictly confidential. Results from this survey will appear in summary or statistical form only, so that individuals cannot be identified.

PUBLIC SCHOOL QUESTIONNAIRE
SCHOOLS AND STAFFING SURVEY

1991-92 Field Test

RETURN TO

Bureau of the Census
Current Projects Branch
1201 East 10th Street
Jeffersonville, IN 47132-0001

Please complete this questionnaire with information about the SCHOOL named on the label, and return it to the Bureau of the Census in the enclosed preaddressed envelope. Please return it within 3 weeks.

If the school's name or grade level is different from that indicated on the label or if you have any questions, please call the Bureau of the Census at 1-800-221-1204.

If the school named on the label is no longer in operation, mark (X) the box below and return this questionnaire to the Bureau of the Census in the enclosed envelope.

(Please correct any error in name, address, and ZIP Code)



ID #: 8768420512
SKU: 374
TEA: 31.4

001 School no longer in operation

THIS SURVEY HAS BEEN ENDORSED BY:

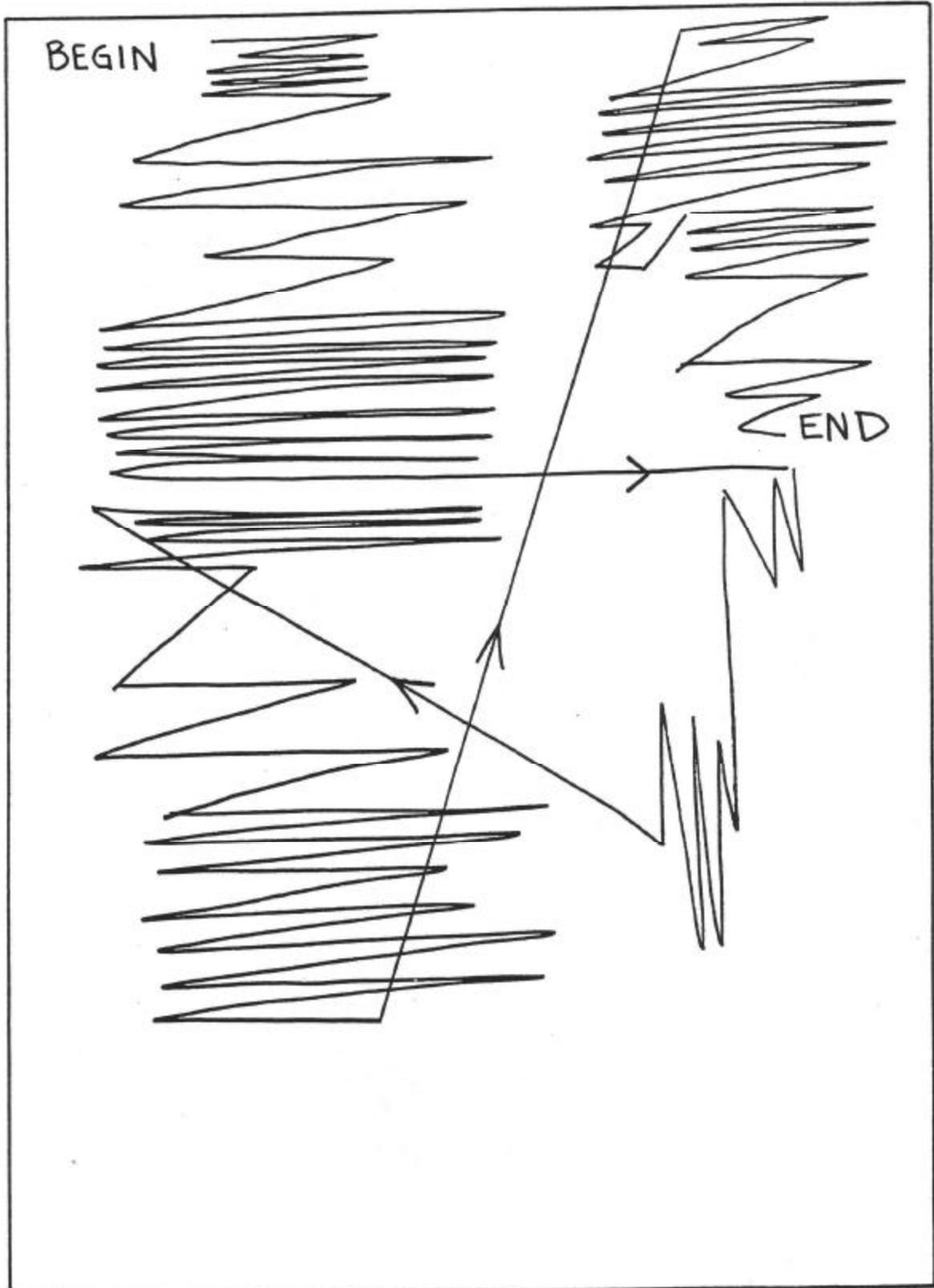
- American Association for Counseling and Development
- American Association of School Administrators
- American Federation of Teachers
- Council of Chief State School Officers
- National Association of Elementary School Principals
- National Association of Secondary School Principals
- National Education Association

0 41 1 092 501 3 1 91 11 2
 PRINCIPAL
 Martin High School
 1001 4th Street
 Nevada, IA
 50201



3A 27

Example 1. Cover Page of the Public School Questionnaire (Jenkins et al., 1992b).



Example 2. Diagrammatical Representation of the Public School Questionnaire Cover Page's Reading Structure.

U.S. Department of Education
National Center for Education Statistics

SCHOOL QUESTIONNAIRE SCHOOLS AND STAFFING SURVEY

1993 FIELD TEST

Conducted by:

U.S. Department of Commerce
Bureau of the Census

PLEASE COMPLETE THIS QUESTIONNAIRE WITH INFORMATION ABOUT:

**MARTIN HIGH SCHOOL
GRADES 9-12**

If you have any questions, call the Bureau of the Census at 1-800-221-1204.

After completing this form, mail it to the Bureau of the Census in the preaddressed envelope provided. Please return it within 2 weeks.



Example 3. Redesigned Version of the Public School Questionnaire's Cover Page
(adapted from Jenkins and Ciocchetto, 1993).

Dear Principal:

The National Center for Education Statistics (NCES) of the U.S. Department of Education requests your participation in the field test of the 1992-93 Schools and Staffing Survey. Your school is one of 900 public and private schools across the Nation selected to be in the sample.

The Schools and Staffing Survey, first conducted in school year 1987-88, and again in 1990-91, is an integrated set of surveys consisting of the Teacher Demand and Shortage Survey, the School Survey, the School Administrator Survey, and the Teacher Survey. These surveys are being conducted periodically to measure critical aspects of teacher supply and demand, the composition of the administrator and teacher work force, and the general status of teaching and schooling. The purpose of the School Survey is to obtain information about schools such as staff-pupil ratio, student characteristics, staffing patterns, and teacher turnover.

The U.S. Bureau of the Census is conducting the survey for the National Center for Education Statistics by the authority of Section 406(b) of the General Education Provisions Act, as amended (20 U.S.C. 1221e). The data will be treated as confidential and will be reported only in statistical summaries that preclude the identification of any individual participating in the surveys.

We are conducting this field test with a sample of schools. While this minimizes overall response burden, the value of each individual survey response is greatly increased because it represents many other schools. I, therefore, encourage you to participate in this voluntary survey by completing this questionnaire and returning it within 3 weeks to the **Bureau of the Census, Current Projects Branch, 1201 East 10th Street, Jeffersonville, IN 47132-0001**, in the preaddressed envelope enclosed for your convenience.

Thank you for your cooperation in this very important effort.

Sincerely,



Emerson J. Elliott
Acting Commissioner
National Center for Education Statistics

INFORMATION ABOUT YOUR PARTICIPATION

Public reporting burden for this collection of information is estimated to average one hour, including the time for reviewing instructions, gathering the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the U.S. Department of Education, Information Management and Compliance Division, Washington, DC 20202-4651; and to the Office of Management and Budget, Paperwork Reduction Project 1850-0598, Washington, DC 20503.

Example 5. Introductory Information from the Public School Questionnaire (Jenkins et al., 1992b).

INSTRUCTIONS

Most of the items on this questionnaire are arranged so that the questions are on the left side of the page and the answer categories or spaces for written answers are on the right. Please answer the questions by marking the appropriate answer category with an X, or recording your answer in the space provided. We suggest that you use a pencil or a typewriter, rather than a pen or marker.

Notice that at the end of some answer categories and answer spaces, there are instructions to skip to a later item or to continue with the next item on the questionnaire.

Unless otherwise indicated, all questions refer to the 1991-92 school year.

If you are unsure about how to answer a question, give the best answer you can and make a comment in the "Remarks" space. Please include the item number.

If you have any questions, call the Bureau of the Census at 1-800-221-1204.

Return your completed questionnaire to the Bureau of the Census in the enclosed preaddressed envelope. Please return it within 3 weeks.

**Please keep count of the time required to complete this questionnaire.
At the end of the survey, you are asked to record the amount of time spent.**

a. Please give your name, title, telephone number, and the most convenient days/times to reach you. This information will be used only if it is necessary to clarify any of your responses.

Name			
Title			
Telephone	Area code	Number	
If necessary to reach you - Specify	Days	Time	a.m. p.m.

b. Does this school serve students in ANY of grades 1 through 12 or comparable ungraded levels?

010 1 Yes - Continue with c.
 2 No - **Stop now** and return this questionnaire to the Bureau of the Census in the enclosed envelope.
 Thank you for your time.

c. Please check the identification number on address label - Is this your School State Identification Number?

011 1 Yes
 2 No - Provide the correct number below.
012

Remarks

Example 5 Continued.

- A. Please record the current time. At the end of the questionnaire you are asked to record the amount of time required to complete this questionnaire.

Current time: _____

- B. Does this school provide instruction for grade 9 or above?

009

1 Yes →

What grading system is used to compute a student's grade point average (GPA)?

010

1 0.0 to 4.0

2 0 to 100

3 -1 to 3

4 Other specify _____

2 No →

Skip to information below

WHY ARE WE CONDUCTING THIS SURVEY?

This questionnaire is the last in a series of surveys designed to obtain nationwide information on schools, staffing patterns, and student characteristics. We will treat your data as confidential and only use it to prepare statistical summaries.

WHO IS CONDUCTING THIS SURVEY?

The National Center for Education Statistics of the U.S. Department of Education requests your participation in this voluntary survey. The Bureau of the Census is conducting this survey by the authority of Section 406(b) of the General Education Provisions Act, as amended (20 USC 1221e).

INFORMATION ABOUT YOUR PARTICIPATION

Public reporting burden for this collection of information is estimated to average thirty minutes, including the time for reviewing instructions, gathering the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the U.S. Department of Education, Information Management and Compliance Division, Washington, DC 20202-4651; and to the Office of Management and Budget, Paperwork Reduction Project 1850-0598, Washington, DC 20503.

Example 6. Revised Introductory Material Beginning with Questions Rather Than Prose (Jenkins and Ciochetto, 1993).

Item 15 – DOLLAR VALUE OF BUSINESS DONE IN 1989		Mil.	Thou.
<p>a. What was the value of all construction work done by this establishment in 1989? <i>Report your best estimate using either billings, revenues, receipts, or other estimate of value of construction work done. Refer to instructions for further explanation.</i></p> <p>Reported data based on — Mark (X) in appropriate box.</p> <p>136 1 <input type="checkbox"/> Billings 3 <input type="checkbox"/> Receipts 2 <input type="checkbox"/> Revenues 4 <input type="checkbox"/> Other — Specify _____</p> <p>INCLUDE</p> <ul style="list-style-type: none"> ● New construction ● Additions, alterations, or reconstruction ● Special trades contracting work ● Maintenance and repair work ● Land development and improvement ● Installation and service of equipment ● Buildings and other structures built for sale, excluding the value of the land ● Construction work on own account <p>EXCLUDE</p> <ul style="list-style-type: none"> ● The cost of industrial and other specialized machinery which are not an integral part of a structure 		137	<input type="checkbox"/> 0
<p>b. What were your receipts from kinds of business other than those reported in line a above in 1989?</p> <p>INCLUDE</p> <ul style="list-style-type: none"> ● Architectural and engineering services ● Construction management/consulting services ● Wholesale trade ● Retail trade ● Realty services ● Rental of machinery, equipment, or buildings to others ● Manufacturing ● Transportation ● Materials sold to contractors ● Sale of land 		139	<input type="checkbox"/> 0
<p>c. TOTAL dollar value of business done in 1989 — Sum of lines a and b →</p>		140	<input type="checkbox"/> 0

Example 7. The Original Version of the Dollar Value of Business Item from the Census of Construction Industries Questionnaire (DeMaio and Jenkins, 1991).

	Key	Dollars in thousands (\$)	Mark (X) if "0"
13a. For this establishment in 1989, —			
(1) what were the receipts or billings for all contract construction work done for others? Exclude the dollar value of items purchased by this establishment that were installed in a building but were not part of its structure, such as production machinery, furniture, etc.	141		<input type="checkbox"/> 0
(2) what was the estimated dollar value of speculative construction work done on residential and other building projects which you sold or intended to sell? Include the estimated dollar value of — <ul style="list-style-type: none"> • work actually done in 1989, whether buildings were sold or not. • work in progress, that was actually done in 1989. • all improvements to land associated with these building projects done by or for you in 1989. Exclude the estimated dollar value of — <ul style="list-style-type: none"> • work done before January 1989 and after December 1989. • land. Even though land would generally be included in the value of your building projects, the value of the land is not considered construction work done. • work done in 1989, for rent or lease. 	142	<input type="checkbox"/> 0	
(3) what was the estimated dollar value of construction work done for this establishment's own use, i.e., not intended for sale, rent, or done under contract for others?	143		<input type="checkbox"/> 0
(4) what was the dollar value of construction work done? Sum lines (1) through (3).	137		<input type="checkbox"/> 0
b. What was the dollar value of receipts or billings for all other business activities done by this establishment in 1989? Include — <ul style="list-style-type: none"> • architectural services • building on your own land for rent or lease • construction management services • engineering services • manufacturing • mining • real estate agents and managers • rental of construction machinery or equipment to others • retail trade • subdividing and preparing your own land into lots, for sale, rent, or lease • transportation • wholesale trade • other business activities 	139		<input type="checkbox"/> 0
c. What was the total dollar value of all business done by this establishment in 1989? Sum lines 13a(4) and 13b.	140		<input type="checkbox"/> 0

Example 8. The Revised Version of the Dollar Value of Business Item from the Census of Construction Industries Questionnaire (DeMaio and Jenkins, 1991).

Item 5 — NUMBER OF EMPLOYEES

How many paid employees, permanent or temporary, full-time or part-time, were on the payroll of THIS ESTABLISHMENT during the pay periods shown at the right? Include those on paid sick leave, paid holidays, and paid vacations as well as those actually working. If a corporation, include salaried officers and executives of this establishment. If unincorporated, exclude proprietors or partners. Include all employees for whom you file quarterly withholding statements. Do not include your subcontractors or their employees.

a. Construction workers — Include —

- Laborers
- Apprentices
- Journeymen
- Craftsmen
- Equipment operators and mechanics
- Truck drivers and helpers
- On-site record keepers
- Others engaged directly in construction operations, including supervisors up through the working foreman level

b. All other employees — Include —

- Executives
- Professionals
- Technicians
- Purchasing
- Accounting
- Personnel
- Office staff
- Supervisors above the working foreman level

c. TOTAL NUMBER OF EMPLOYEES — Sum of lines a and b above — →

Number of employees of this establishment during the pay period including the 12th of —			
March 1989	May 1989	August 1989	November 1989
101	102	103	104
105	106	107	108
109	110	111	112

Example 9. The Original Version of the Number of Employees Item from the Census of Construction Industries Questionnaire (DeMaio and Jenkins, 1991).

Your answers to 5 through 9 should be based on all employees for whom you filed withholding statements (Federal Tax Return Form 941). Do NOT include your subcontractors or their employees.

5. During the pay periods which include the 12th of March, May, August, and November 1989, —	Number of employees			
	Pay period including the 12th of March 1989	Pay period including the 12th of May 1989	Pay period including the 12th of August 1989	Pay period including the 12th of November 1989
a. how many construction workers were on the payroll of this establishment? Include — <ul style="list-style-type: none"> • Working foremen • Job-site record keepers • Laborers • Apprentices • Journeymen • Craftsmen • Equipment operators and mechanics • Truck drivers and helpers • Others engaged directly in construction 	101	102	103	104
b. how many other employees were on the payroll of this establishment? Include — <ul style="list-style-type: none"> • Supervisors • Job-site and home office clerical and maintenance staff • Personnel staff • Purchasing agents • Accounting staff • Technicians • Architects • Engineers • Professionals • Executives • Others engaged in non-construction activities 	105	106	107	108
c. how many total employees were on the payroll of this establishment? Sum lines a and b.	109	110	111	112

Example 10. The Revised Version of the Number of Employees Item from the Census of Construction Industries Questionnaire (DeMaio and Jenkins, 1991).

4. **What percent of K-12 students enrolled in this school are male?**

Record the percent in whole numbers, not tenths; do not enter a decimal point. Do NOT include prekindergarten or postsecondary students.

055

_____ %

4. **What percent of the students enrolled in this school are male?**

Record the percent in whole numbers, not tenths; do not enter a decimal point. Do NOT include prekindergarten or postsecondary students.

055

_____ %

4. **Excluding prekindergarten or postsecondary students, what percent (in whole numbers) of the students enrolled in this school are male?**

055

_____ %

Example 11. Horizontally Aligned Question Format (Top View), Vertically Aligned Question Format with Stand Alone Instructions (Middle View), and Vertically Aligned Question Format with Incorporated Instruction (Bottom View).

<p>2. How many students (in head counts) were enrolled in THIS SCHOOL (the school named on the questionnaire label) in grades K-12 or comparable ungraded levels -</p> <p><i>Include only students enrolled in the school named on the questionnaire label. Do NOT include prekindergarten or postsecondary students.</i></p>	<p>048</p>	<p>_____ Students</p>
<p>a. On or about October 1 of THIS SCHOOL YEAR?</p>		<p>049</p>
<p>b. On or about October 1 of LAST SCHOOL YEAR?</p>	<p><input type="checkbox"/> School not operating in Fall 1990</p>	

Example 12. The Student Enrollment Item from the Public School Questionnaire (Jenkins et al., 1992b).

SECTION 2 — STAFFING PATTERNS — Continued

30. How many employees hold full- or part-time positions in this school in each of the following categories?

If an employee holds a position in more than one of the categories, count that person as part-time in each category that applies.

INSTRUCTIONAL STAFF

a. Instructional staff – Instructional aides (paraprofessionals who assist classroom teachers)

FULL-TIME	PART-TIME
255 _____ <input type="checkbox"/> None	256 _____ <input type="checkbox"/> None

INSTRUCTIONAL SUPPORT STAFF

b. Instructional coordinators and supervisors (including curriculum specialists)

257 _____ <input type="checkbox"/> None	258 _____ <input type="checkbox"/> None
--	--

c. Librarians/Media specialists

259 _____ <input type="checkbox"/> None	260 _____ <input type="checkbox"/> None
--	--

d. Library/Media center aides

261 _____ <input type="checkbox"/> None	262 _____ <input type="checkbox"/> None
--	--

e. Guidance counselors

263 _____ <input type="checkbox"/> None	264 _____ <input type="checkbox"/> None
--	--

f. Vocational-technical counselors

265 _____ <input type="checkbox"/> None	266 _____ <input type="checkbox"/> None
--	--

SUPPORT SERVICES STAFF

g. Administrators:

(1) Principal(s)

267 _____ <input type="checkbox"/> None	268 _____ <input type="checkbox"/> None
--	--

(2) Vice Principal(s)

269 _____ <input type="checkbox"/> None	270 _____ <input type="checkbox"/> None
--	--

(3) Other managers – e.g., business

271 _____ <input type="checkbox"/> None	272 _____ <input type="checkbox"/> None
--	--

h. Administrative support staff – Clerical and nonmanagerial support staff

273 _____ <input type="checkbox"/> None	274 _____ <input type="checkbox"/> None
--	--

i. Student support services staff – Professionals and supervisory staff providing noninstructional services to students, including health, psychology, social work, or attendance

275 _____ <input type="checkbox"/> None	276 _____ <input type="checkbox"/> None
--	--

j. All other support staff (not reported in other categories, such as health aides, maintenance, bus drivers, security, and cafeteria workers)

277 _____ <input type="checkbox"/> None	278 _____ <input type="checkbox"/> None
--	--

Example 13. The Classification of Employees Item from the Public School Questionnaire (Jenkins et al., 1992b).

PART-TIME EMPLOYEES

26a. How many employees hold part-time positions in this school in each of the following categories? Please read through all of the categories listed below before starting to answer.

INCLUDE AS PART TIME

- o Employees who work part-time at this school only.
- o Employees you share with other schools within or outside of the school district.
- o Employees who perform more than one function at this school, e.g., a teaching principal would be counted once as a part-time teacher and again as a part-time principal.

	PART-TIME	
1. Administrators:		
(a) Principals	<input type="checkbox"/>	None or _____
(b) Vice Principal(s)	<input type="checkbox"/>	None or _____
(c) Other managers, such as business	<input type="checkbox"/>	None or _____
2. Instructional coordinators and supervisors, such as curriculum specialists	<input type="checkbox"/>	None or _____
3. Guidance counselors-- needs a definition	<input type="checkbox"/>	None or _____
4. Vocational-technical counselors-- needs a definition	<input type="checkbox"/>	None or _____
5. Librarians/Media specialists	<input type="checkbox"/>	None or _____
6. Teachers		
Do not include as teachers-- Other employees listed in this item, unless they also teach.		
Teachers who teach only prekindergarten students	<input type="checkbox"/>	None or _____
7. Student support services staff, such as school psychologists, social workers, occupational therapists, speech therapists, nurses, and truant officers	<input type="checkbox"/>	None or _____
8. Library/media center aides	<input type="checkbox"/>	None or _____
9. Teacher aides	<input type="checkbox"/>	None or _____
10. Student teachers	<input type="checkbox"/>	None or _____
11. Clerical and nonmanagerial support staff	<input type="checkbox"/>	None or _____

Example 14a. Redesigned Version of the Classification of Employees Item from the Public School Questionnaire, Part A, Part-Time Status (Jenkins et al., 1992b).

FULL-TIME EMPLOYEES

26b. How many employees hold full-time positions in this school in each of the following categories? Please read through all of the categories listed below before starting to answer.

	FULL-TIME
1. Administrators:	
(a) Principals	<input type="checkbox"/> None or _____
(b) Vice Principal(s)	<input type="checkbox"/> None or _____
(c) Other managers, such as business	<input type="checkbox"/> None or _____
2. Instructional coordinators and supervisors, such as curriculum specialists	<input type="checkbox"/> None or _____
3. Guidance counselors-- needs a definition	<input type="checkbox"/> None or _____
4. Vocational-technical counselors-- needs a definition	<input type="checkbox"/> None or _____
5. Librarians/Media specialists	<input type="checkbox"/> None or _____
6. Teachers	
Do not include as teachers--	
Other employees listed in this item.	
Teachers who teach only prekindergarten students	<input type="checkbox"/> None or _____
7. Student support services staff, such as school psychologists, social workers, occupational therapists, speech therapists, nurses, and and truant officers	<input type="checkbox"/> None or _____
8. Library/media center aides	<input type="checkbox"/> None or _____
9. Teacher aides	<input type="checkbox"/> None or _____
10. Student teachers	<input type="checkbox"/> None or _____
11. Clerical and nonmanagerial support staff	<input type="checkbox"/> None or _____
12. Cafeteria workers	<input type="checkbox"/> None or _____

Example 14b. Redesigned Version of the Classification of Employees Item from the Public School Questionnaire, Part B, Full-time Status (Jenkins et al., 1992b).

STUDENT CLASS SCHEDULES WITH SELECTED TEACHERS

JOHN JONES

	1. Excluding study halls and free periods, does John Jones currently have this student for class?	2. Excluding study halls and free periods, please list the classes in which John Jones currently has this student.	3. How many times per week does this class meet?	4. How many total students are enrolled in this class?
KAYE STEWART	[] yes	1.		
	[] no	2.		
	[] no	3.		
MARIE LEARY	[] yes	1.		
	[] no	2.		
	[] no	3.		
SUZANNE FLANIGAN	[] yes	1.		
	[] no	2.		
	[] no	3.		

Example 15. Questions Developed for the Student Records Questionnaire Using a Matrix Format (Jenkins and Ciochetto, 1993).

STUDENT 1's NAME

1a. Excluding homeroom, study halls, and free periods, do you currently teach this student?

010 1 Yes

2 No

b. Do you teach multiple subjects to this student all or most of the day?

011 1 Yes

2 No

Skip to Item 2a

Skip to Item 2a

c. Excluding homeroom, study halls, and free periods, please list the classes that you teach this student and the number of times per week that each class meets.

Class name	Meetings per week

STUDENT 2's NAME

2a. Excluding homeroom, study halls, and free periods, do you currently teach this student?

012 1 Yes

2 No

b. Do you teach multiple subjects to this student all or most of the day?

013 1 Yes

2 No

Skip to Item 3a

Skip to Item 3a

c. Excluding homeroom, study halls, and free periods, please list the classes that you teach this student and the number of times per week that each class meets.

Example 16. Redesigned Version of the Questions Developed for the Student Records Questionnaire Using a Single Question Format (Jenkins and Ciochetto, 1993).

SECTION 1 — SCHOOL CHARACTERISTICS — Continued

<p>23a. Does this school offer a general program for students who do not plan to attend college?</p>	<p>214 1 <input type="checkbox"/> Yes — Continue with b 2 <input type="checkbox"/> No — Skip to item 24a</p>
<p>b. How many students in grades 10–12 are enrolled in this program?</p>	<p>215 _____ Students 0 <input type="checkbox"/> None</p>
<p>24a. LAST SCHOOL YEAR, how many students were enrolled in 12th grade?</p>	<p>216 _____ Students — Continue with b 0 <input type="checkbox"/> No 12th graders in 1990–91 — Skip to the note above item 26a</p>
<p>b. How many students were graduated from the 12th grade last year? Include 1991 summer graduates.</p>	<p>217 _____ Students — Continue with c 0 <input type="checkbox"/> None — Skip to the note above item 26a</p>
<p>c. How many of last year's graduates applied to two- or four-year colleges?</p>	<p>218 _____ Graduates 0 <input type="checkbox"/> None</p>
<p>25a. Does this school offer job placement services for graduating seniors?</p>	<p>219 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p>
<p>b. Does this school have a "Tech-Prep" program, i.e., vocational-technical instruction in the last two years of high school designed to prepare students for two years of vocational instruction at the postsecondary level?</p>	<p>220 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p>

SECTION 2 — STAFFING PATTERNS

NOTE: For items 26–28, INCLUDE itinerant teachers and long-term substitutes. DO NOT INCLUDE student teachers, teacher aides, short-term substitutes, teachers who teach ONLY prekindergarten or postsecondary students, and other non-teaching staff (administrators, other professionals such as counselors and librarians, and support staff) unless they also teach part-time. Report in head counts, not FTEs.

<p>26a. How many K–12 teachers have FULL-TIME teaching positions at THIS school?</p>	<p>221 _____ Full-time teachers 0 <input type="checkbox"/> None</p>
<p>b. How many K–12 teachers have PART-TIME teaching positions at THIS school?</p>	<p>222 _____ Part-time teachers 0 <input type="checkbox"/> None</p>
<p>What is the total number of K–12 teachers at this</p>	

Example 17. Transitional Heading "Section 2 -- Staffing Patterns" Falling in the Middle of a Page on the Public School Questionnaire (Jenkins et al., 1992b).

SECTION 1 — SCHOOL CHARACTERISTICS — Continued

NOTE — Items 2-7 refer to grades K through 12. Do not include prekindergarten or postsecondary students or grades in answering these questions.

<p>2. How many students (in head counts) were enrolled in THIS SCHOOL (the school named on the questionnaire label) in grades K-12 or comparable ungraded levels —</p> <p><i>Include only students enrolled in the school named on the questionnaire label. Do NOT include prekindergarten or postsecondary students.</i></p> <p>a. On or about October 1 of THIS SCHOOL YEAR?</p>	<p>048 _____ Students</p>
<p>b. On or about October 1 of LAST SCHOOL YEAR?</p>	<p>049 _____ Students</p> <p><input type="checkbox"/> School not operating in Fall 1990</p>
<p>3. How many K-12 students in this school are —</p> <p><i>Do NOT include prekindergarten or postsecondary students.</i></p>	
<p>a. American Indian, Alaskan Native (Aleut, Alaskan Indian, Yupik, Inupiat)?</p>	<p>050 _____ Students</p> <p><input type="checkbox"/> None</p>
<p>b. Asian or Pacific Islander (Japanese, Chinese, Filipino, Korean, Asian Indian, Vietnamese, Hawaiian, Guamanian, Samoan, other Asian)?</p>	<p>051 _____ Students</p> <p><input type="checkbox"/> None</p>
<p>c. Hispanic, regardless of race (Mexican, Puerto Rican, Cuban, Central or South American, or other Hispanic culture or origin)?</p>	<p>052 _____ Students</p> <p><input type="checkbox"/> None</p>
<p>d. Black (not of Hispanic origin)?</p>	<p>053 _____ Students</p> <p><input type="checkbox"/> None</p>
<p>e. White (not of Hispanic origin)?</p>	<p>054 _____ Students</p> <p><input type="checkbox"/> None</p>
<p>4. What percent of K-12 students enrolled in this school are male?</p> <p><i>Record the percent in whole numbers, not tenths; do not enter a decimal point. Do NOT include prekindergarten or postsecondary students.</i></p>	<p>055 _____ <input type="text" value="0"/> %</p>
<p>5. How many K-12 students were absent the most recent school day?</p> <p><i>Include both excused and unexcused absences. Do NOT include prekindergarten or postsecondary students.</i></p>	<p>056 _____ Students</p> <p><input type="checkbox"/> None</p>
<p>6. How many days are in the school year for students in this school?</p>	

Example 18. Transitional Heading and Advanced Instruction Coming at the Top of a Page on the Public School Questionnaire (Jenkins et al., 1992b).

<p>29a. Were there teaching vacancies in this school for this school year, i.e., teaching positions for which teachers were recruited and interviewed?</p>	<p>230 1 <input type="checkbox"/> Yes – Continue with b 2 <input type="checkbox"/> No – Skip to item 30</p>
<p>b. Did this school have any teaching vacancies this school year that could not be filled with a teacher qualified in the course or grade level to be taught?</p>	<p>231 1 <input type="checkbox"/> Yes – Continue with c 2 <input type="checkbox"/> No – Skip to item 29d</p>
<p>c. Which of these methods did this school use to cover the vacancy(ies)? <i>Mark (X) all that apply.</i></p>	<p>232 1 <input type="checkbox"/> Cancelled planned course offerings 233 2 <input type="checkbox"/> Expanded some class sizes 234 3 <input type="checkbox"/> Added sections to other teachers' normal teaching loads 235 4 <input type="checkbox"/> Assigned a teacher of another subject or grade level to teach those classes 236 5 <input type="checkbox"/> Used long-term and/or short-term substitutes 237 6 <input type="checkbox"/> Used part-time or itinerant teachers 238 7 <input type="checkbox"/> Hired a less qualified teacher 239 8 <input type="checkbox"/> Other – Specify <i>Z</i> _____ _____ _____</p>

Example 19. Conventional Skip Instruction from the Public School Questionnaire (Jenkins et al., 1992b).

1. Have you ever drunk a beer, a glass of wine or a wine cooler, a shot of liquor, or a mixed drink with liquor in it? If you have only had sips from another person's drink, answer "no."
 MARK ONE BOX.

- 1 Yes → a. Think about the very first time you drank a beer, glass of wine or wine cooler, a shot of liquor, or a mixed drink. Not counting sips you might have had from someone else's drink, how old were you the first time you drank an alcoholic beverage?

- 2 No _____ years old

GO TO QUESTION 2.

CONTINUE WITH QUESTION 2.

YOUR 12-MONTH REFERENCE DATE IS: _____

5. The next questions are about the past 12 months—the period from the date written above up to and including today.

Did you smoke a cigarette during the past 12 months?
 MARK ONE BOX.

- 1 Yes → a. During the past 12 months, have you smoked cigarettes every day or almost every day for two or more weeks in a row?
 MARK ONE BOX.

- 2 No 1 Yes 2 No

GO TO QUESTION 6 ON PAGE 6.

- b. During the past 12 months, have you felt that you needed or were dependent on cigarettes?
 MARK ONE BOX.

- 1 Yes 2 No

- c. During the past 12 months, have you needed larger numbers of cigarettes to get the same effect?
 MARK ONE BOX.

- 1 Yes 2 No

- d. During the past 12 months, have you tried to cut down on your use of cigarettes?
 MARK ONE BOX.

- 1 Yes 2 No

- e. During the past 12 months, have you felt sick or had withdrawal symptoms because you stopped or cut down on cigarettes?
 MARK ONE BOX.

- 1 Yes 2 No

CONTINUE WITH QUESTION 6 ON PAGE 6.

Example 20. Branching Instructions in Questions 1 and 5 of the 1990 National Household Survey and Drug Abuse Questionnaire (Turner et al., 1992).

SECTION 1 – SCHOOL CHARACTERISTICS – CONTINUED

11. Please indicate whether each of the following programs or services is currently available at this school **to the students included in item 6**, either during or outside of regular school hours and regardless of funding source.

a. English as a Second Language – Students with limited English proficiency are provided with intensive instruction in English.

- 051
- 1 Yes
2 No

SKIP to b.

How many students participate in this program?

- 052
- 0 None or _____ Students

b. Bilingual education – Native language is used to varying degrees in instructing students with limited English proficiency. For example, transitional bilingual education and structured immersion. Do not include foreign language classes or foreign language immersion programs.

- 053
- 1 Yes
2 No

SKIP to c.

How many students participate in this program?

- 054
- 0 None or _____ Students

Example 21. "Salient" Skip Instruction (adapted from Jenkins and Ciochetto, 1993).

PART A - Employment Status During the Week of April 12-18, 1992

A1. Were you working for pay or profit during the week of April 12-18, 1992? This includes being self-employed or temporarily absent from a job (e.g., illness, vacation or parental leave), even if unpaid.

PGM2

- 001 1 Yes - Skip to A6
 2 No

A2. Did you look for work at any time during the 5 weeks between March 8 and April 12, 1992?

- 002 1 Yes
 2 No

A3. What was your MAIN reason for not working during the week of April 12-18?

Mark (X) One

- 003 1 Retired - Skip to A5
 2 On layoff from a job
 3 My work is seasonal
 4 Student
 5 Family responsibilities
 6 Chronic illness or permanent disability
 7 Could not find work or believed no suitable jobs available in my field
 8 Waiting for new job to begin within 30 days
 9 Waiting for school to begin
 10 Did not need or want to work
 11 Other Specify

A4. Had you previously RETIRED from any position (e.g., mandatory retirement or early retirement)?

- 004 1 Yes
 2 No - Skip to Part B on Page 4

A5. When did you retire?

005 Month Year
 --- 19 ---

A6. During the week of April 12-18, 1992 were you working full time or part time?

- 009 1 Full time (usually worked a total of 35 or more hours per week) - Skip to A9
 2 Part time (usually worked less than 35 hours per week)

A7. Were you seeking full-time work during the week of April 12-18, 1992?

- 010 1 Yes
 2 No

A8. What was your MOST important reason for holding a part-time position during the week of April 12-18, 1992?

Mark (X) One

- 011 1 Full-time position not available
 2 Worked part time to accommodate spouse's/partner's job or career
 3 Worked part time for other family-related reasons
 4 Preferred part-time position for other reason
 Specify

A9. Although you were working during the week of April 12-18, 1992, had you previously RETIRED from any position (e.g., mandatory retirement, early retirement)?

- 012 1 Yes
 2 No - Skip to A11

A10. When did you retire?

013 Month Year
 --- 19 ---

A11. For whom did you work during the week of April 12-18, 1992? (IF YOU HAD MORE THAN ONE JOB THAT WEEK: Please answer for the job you considered your principal employment.)

Employer Name

014 Street

City/Town

State/Foreign Country

015 x MARK (X) HERE IF YOU WERE SELF-EMPLOYED

NOW SKIP TO PART B ON PAGE 4

Fill in the first student's name from the cover page on the line below.

STUDENT 1'S NAME

1. What is this student's current status at this school?

- Enrolled }
Suspended } Skip to 2
Expelled }
Transferred }
Dropout/Chronic Truant } Skip to NEXT
(See definition below) } STUDENT ON PAGE ...
Deceased }
Other Specify

Skip to 2

2. Is this student male or female?

- Male
Female

3. What is this student's race/ethnicity?

- American Indian or Alaskan Native
Asian or Pacific Islander
Hispanic, regardless of race
Black (not of Hispanic origin)
White (not of Hispanic origin)

4a. Excluding homeroom, study halls, and free periods, is this student currently taught by [Teacher 1]?

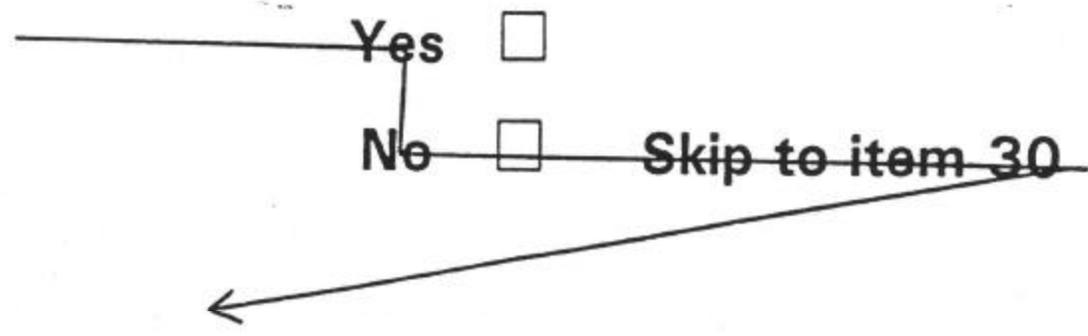
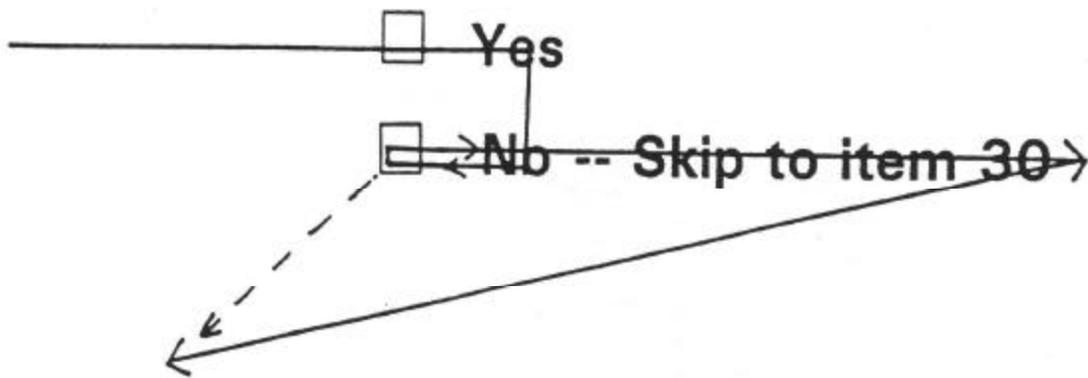
- Yes Skip to 4b
No Skip to 5a

4b. Does [Teacher 1] teach this student all or most of the day?

- Yes Skip to 5a
No Skip to 4c

4c. ...

Example 23. "Natural Reading Sequence" Skip Instruction (Jenkins and Ciochetto, 1993).



Example 24. Diagrammatical Representation of the Conventional (Top View) and "Natural Reading Sequence" (Bottom View) Skip Instruction Reading Structures.

**INTEGRATED POSTSECONDARY
EDUCATION DATA SYSTEM
INSTITUTIONAL
CHARACTERISTICS SURVEY
1991-92**

NOTE - This form is authorized by law (20 U.S.C. 1221e-1). While you are not required to respond, your cooperation is needed to make the results of this survey comprehensive, accurate, and timely.

Public reporting burden for this collection of information is estimated to average 1.0 hours per response but may range from 30 minutes to 2.0 hours depending on whether the information is readily accessible to machine readable files. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the U.S. Department of Education, Information Management and Compliance Division, Washington, DC 20202-4851, and to the Office of Management and Budget, Paperwork Reduction Project 1850-0582, Washington, DC 20503.

*Please read the accompanying instructions before completing this survey form. Respond to each item on this report in the space provided. Certain responses are preprinted. These responses were provided by your institution on the previous IPEDS Institutional Characteristics Survey form. If a response is preprinted, verify that it is correct. If a preprinted response is incorrect, cross out the existing, incorrect response with a single line and clearly indicate the correct response. **MAKE YOUR CHANGES IN RED** so they are easily identified. Be sure to update the enrollment and tuition questions. Certain terms in the various questions are defined in the Glossary which begins on page 5 of the instructions.*

RETURN TO

If there are any questions about this form, contact
Elaine Kroe, NCES, at (202) 219-1361
or the Bureau of the Census IPEDS
representative at (301) 763-4947.

Date due: September 1, 1991

INSTITUTIONAL IDENTIFICATION 1991-92

Please correct errors in the name, address, and ZIP Code listed below.

1. Name of institution covered by this report 001			2. UNITID 002	
3. Address (Number and street name) 003			4. Name of county or independent city 004	
City 005	State 006	ZIP Code 007	5. Congressional district 008	
6. Name of chief administrator 009			Title 010	
7. Name of respondent 011			Telephone number 012	
8. Telephone numbers	General information 013	Financial aid office 014	Admissions office 015	

Part A -- TYPES OF EDUCATIONAL OFFERINGS

1. Which of the following types of instruction/programs does your institution offer?
Mark (X) all that apply.

Example 25. Cover Page of the 1991-92 Integrated Postsecondary Education Data System Questionnaire.

Part II – EDUCATION AND TRAINING – Continued

<p>11. If you are a student attending a college or university, mark your status.</p>	<p>132 1 <input type="checkbox"/> Student, full-time 2 <input type="checkbox"/> Student, part-time 3 <input type="checkbox"/> Not currently a student</p>																											
<p>12a. Which of these kinds of training did you participate in during 1980 or 1981? Mark (X) the appropriate year for each type of training you received.</p>	<table border="1"> <thead> <tr> <th>1980</th> <th>1981</th> <th>KIND OF TRAINING</th> </tr> </thead> <tbody> <tr> <td>133 1 <input type="checkbox"/></td> <td>134 1 <input type="checkbox"/></td> <td>Military training applicable to present civilian occupation</td> </tr> <tr> <td>2 <input type="checkbox"/></td> <td>2 <input type="checkbox"/></td> <td>Extension or correspondence courses applicable to present civilian occupation</td> </tr> <tr> <td>3 <input type="checkbox"/></td> <td>3 <input type="checkbox"/></td> <td>Courses at employer's training facility</td> </tr> <tr> <td>4 <input type="checkbox"/></td> <td>4 <input type="checkbox"/></td> <td>Courses at adult education center</td> </tr> <tr> <td>5 <input type="checkbox"/></td> <td>5 <input type="checkbox"/></td> <td>Courses presented in conjunction with professional meetings</td> </tr> <tr> <td>6 <input type="checkbox"/></td> <td>6 <input type="checkbox"/></td> <td>Courses presented by professional training organizations (commercial or non-profit)</td> </tr> <tr> <td>7 <input type="checkbox"/></td> <td>7 <input type="checkbox"/></td> <td>Other training</td> </tr> <tr> <td>0 <input type="checkbox"/></td> <td>0 <input type="checkbox"/></td> <td>None</td> </tr> </tbody> </table>	1980	1981	KIND OF TRAINING	133 1 <input type="checkbox"/>	134 1 <input type="checkbox"/>	Military training applicable to present civilian occupation	2 <input type="checkbox"/>	2 <input type="checkbox"/>	Extension or correspondence courses applicable to present civilian occupation	3 <input type="checkbox"/>	3 <input type="checkbox"/>	Courses at employer's training facility	4 <input type="checkbox"/>	4 <input type="checkbox"/>	Courses at adult education center	5 <input type="checkbox"/>	5 <input type="checkbox"/>	Courses presented in conjunction with professional meetings	6 <input type="checkbox"/>	6 <input type="checkbox"/>	Courses presented by professional training organizations (commercial or non-profit)	7 <input type="checkbox"/>	7 <input type="checkbox"/>	Other training	0 <input type="checkbox"/>	0 <input type="checkbox"/>	None
1980	1981	KIND OF TRAINING																										
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6 <input type="checkbox"/>	6 <input type="checkbox"/>	Courses presented by professional training organizations (commercial or non-profit)																										
7 <input type="checkbox"/>	7 <input type="checkbox"/>	Other training																										
0 <input type="checkbox"/>	0 <input type="checkbox"/>	None																										
<p>b. Were continuing education units (CEU's) or other forms of recognized credit units earned as a result of the above training (in item 12a)?</p>	<table border="1"> <thead> <tr> <th>1980</th> <th>1981</th> </tr> </thead> <tbody> <tr> <td>135 1 <input type="checkbox"/> Yes</td> <td>136 1 <input type="checkbox"/> Yes</td> </tr> <tr> <td>2 <input type="checkbox"/> No</td> <td>2 <input type="checkbox"/> No</td> </tr> </tbody> </table>	1980	1981	135 1 <input type="checkbox"/> Yes	136 1 <input type="checkbox"/> Yes	2 <input type="checkbox"/> No	2 <input type="checkbox"/> No																					
1980	1981																											
135 1 <input type="checkbox"/> Yes	136 1 <input type="checkbox"/> Yes																											
2 <input type="checkbox"/> No	2 <input type="checkbox"/> No																											

Part III – EMPLOYMENT STATUS

<p>13. During the week of May 9, 1982, were you –</p>	<p>137 1 <input type="checkbox"/> Working full time (35 hours or more per week in at least one position) – <i>SKIP to 17a</i> 2 <input type="checkbox"/> Working part time – <i>GO to 14</i> 3 <input type="checkbox"/> Not working, but seeking work – <i>SKIP to Part IV</i> 4 <input type="checkbox"/> Not working and not seeking work – <i>SKIP to 15</i></p>
<p>14. Were you seeking full-time work?</p>	<p>138 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No } <i>SKIP to 17a</i></p>
<p>15. Did you look for work at any time during the 3 weeks PRIOR to the week of May 9, 1982?</p>	<p>139 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p>
<p>16. What was the MAIN reason you were not working or not seeking work during the week of May 9, 1982? Mark (X) only one box.</p>	<p>140 1 <input type="checkbox"/> On layoff from a job 2 <input type="checkbox"/> On vacation or otherwise temporarily absent from a job for health or personal reasons } <i>GO to 17a</i> 3 <input type="checkbox"/> Retired 4 <input type="checkbox"/> Student 5 <input type="checkbox"/> Family responsibilities 6 <input type="checkbox"/> Chronic illness or permanent disability 7 <input type="checkbox"/> Could not find work or believed no jobs available in my particular field } <i>SKIP to Part IV</i> 8 <input type="checkbox"/> Did not want to work 9 <input type="checkbox"/> New job to begin within 30 days 10 <input type="checkbox"/> Waiting for school to begin 11 <input type="checkbox"/> Other – <i>Specify</i> _____</p>
<p>17a. During the week of May 9, 1982, were you working at (or on layoff from) a position related to the natural sciences, social sciences, or engineering?</p>	<p>141 1 <input type="checkbox"/> Yes – <i>SKIP to Part IV</i> 2 <input type="checkbox"/> No – <i>GO to b</i></p>

Example 26. A Page from a Conventionally Designed Questionnaire.

C7. Do you currently belong to any national professional societies or associations?

- 119 1 Yes
2 No

C8. In the 2 years between April 1990 and April 1992, did you attend any work-related workshops, seminars, or other work-related training activities?

- Do not include college courses – these will be discussed in Part D.
- Do not include professional meetings unless you attended a special training session conducted at the meeting/conference.

- 120 1 Yes
2 No – Skip to C12

C9. In which of the following areas did you attend work-related workshops, seminars, or other work-related training activities?

Mark (X) Yes or No for each

- | | | Yes
↓ | No
↓ |
|-----|---|----------------------------|----------------------------|
| 121 | a. Management or supervisor training. | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> |
| 122 | b. Technical training in my occupational field | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> |
| 123 | c. General professional training (e.g., public speaking, business writing). | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> |
| 124 | d. Other work-related training Specify <u>z</u> | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> |

C10. For which of the following reasons did you attend training activities between April 1990 and April 1992?

Mark (X) Yes or No for each

- | | | Yes
↓ | No
↓ |
|-----|--|----------------------------|----------------------------|
| 125 | a. To acquire further skills or knowledge in my current occupational field. | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> |
| 126 | b. To acquire skills or knowledge in a different field | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> |
| 127 | c. For licensure/certification | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> |
| 128 | d. To increase opportunities for promotion/advancement/higher salary | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> |
| 129 | e. To learn skills or knowledge needed for a recently acquired position (e.g., orientation). | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> |

C11. What were your TWO most important reasons for attending training activities?

132 Most IMPORTANT REASON
--- from Question C10 – (Enter LETTER)

132 SECOND most IMPORTANT REASON
--- from Question C10 – (Enter LETTER)

C12. During the 52 weeks of the 1991 calendar year, how many weeks were you –

NUMBER OF WEEKS

134 Working, including weeks of paid vacation, paid sick leave, and military service?

135 On an unpaid leave of absence from a job?

136 Not working but seeking work?

137 Not working and not seeking work?

5 | 2 TOTAL

C13. What was your TOTAL EARNED income, BEFORE deductions for 1991?

Include all wages, salaries, bonuses, overtime, commissions, consulting fees, net income from businesses, summertime teaching or research, post-doctoral appointment, or other work associated with scholarships.

138 \$ _____ .00
Total 1991 earned income

Example 27. A Page from a Redesigned Questionnaire.

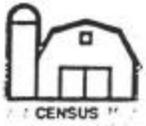
PLEASE ALSO ANSWER HOUSING QUESTIONS ON PA

	PERSON 1		PERSON 2		Last name
	Last name	First name Middle initial	Last name	First name Middle initial	
<p>Please fill one column → for each person listed in Question 1a on page 1.</p>					
<p>2. How is this person related to PERSON 1?</p> <p>Fill ONE circle for each person.</p> <p>If Other relative of person in column 1, fill circle and print exact relationship, such as mother-in-law, grandparent, son-in-law, niece, cousin, and so on.</p>	<p>START in this column with the household member (or one of the members) in whose name the home is owned, being bought, or rented.</p> <p>If there is no such person, start in this column with any adult household member.</p> <p style="text-align: center;">■</p>	<p>If a RELATIVE of Person 1:</p> <p><input type="radio"/> Husband/wife <input type="radio"/> Brother/sister</p> <p><input type="radio"/> Natural-born or adopted son/daughter <input type="radio"/> Father/mother</p> <p><input type="radio"/> Stepson/stepdaughter <input type="radio"/> Grandchild</p> <p><input type="radio"/> Other relative →</p> <p>If NOT RELATED to Person 1:</p> <p><input type="radio"/> Roomer, boarder, or foster child <input type="radio"/> Unmarried partner</p> <p><input type="radio"/> Housemate, roommate <input checked="" type="radio"/> Other nonrelative</p>	<p>If a REL</p> <p>If NOT I</p>		
<p>3. Sex</p> <p>Fill ONE circle for each person.</p>	<p><input type="radio"/> Male <input type="radio"/> Female</p>	<p><input type="radio"/> Male <input type="radio"/> Female</p>			
<p>4. Race</p> <p>Fill ONE circle for the race that the person considers himself/herself to be.</p> <p>If Indian (Amer.), print the name of the enrolled or principal tribe. →</p> <p>If Other Asian or Pacific Islander (API), print one group, for example: Hmong, Fijian, Laotian, Thai, Tongan, Pakistani, Cambodian, and so on. →</p> <p>If Other race, print race. →</p>	<p><input type="radio"/> White</p> <p><input type="radio"/> Black or Negro</p> <p><input type="radio"/> Indian (Amer.) (Print the name of the enrolled or principal tribe.) →</p> <p><input type="radio"/> Eskimo</p> <p><input type="radio"/> Aleut</p> <p style="text-align: center;">Asian or Pacific Islander (API)</p> <p><input type="radio"/> Chinese <input type="radio"/> Japanese</p> <p><input type="radio"/> Filipino <input checked="" type="radio"/> Asian Indian</p> <p><input type="radio"/> Hawaiian <input type="radio"/> Samoan</p> <p><input type="radio"/> Korean <input type="radio"/> Guamanian</p> <p><input type="radio"/> Vietnamese <input type="radio"/> Other API →</p> <p><input type="radio"/> Other race (Print race) →</p>	<p><input type="radio"/> White</p> <p><input type="radio"/> Black or Negro</p> <p><input type="radio"/> Indian (Amer.) (Print the name of the enrolled or principal tribe.) →</p> <p><input type="radio"/> Eskimo</p> <p><input type="radio"/> Aleut</p> <p style="text-align: center;">Asian or Pacific Islander (API)</p> <p><input type="radio"/> Chinese <input type="radio"/> Japanese</p> <p><input type="radio"/> Filipino <input checked="" type="radio"/> Asian Indian</p> <p><input type="radio"/> Hawaiian <input type="radio"/> Samoan</p> <p><input type="radio"/> Korean <input type="radio"/> Guamanian</p> <p><input type="radio"/> Vietnamese <input type="radio"/> Other API →</p> <p><input type="radio"/> Other race (Print race) →</p>			
<p>5. Age and year of birth</p> <p>a. Print each person's age at last birthday. Fill in the matching circle below each box.</p> <p>b. Print each person's year of birth and fill the matching circle below each box.</p>	<p>a. Age</p> <p>0 ○ 0 ○ 0 ○ 0 ○</p> <p>1 ○ 1 ○ 1 ○</p> <p>2 ○ 2 ○</p> <p>3 ○ 3 ○</p> <p>4 ○ 4 ○</p> <p>5 ○ 5 ○</p> <p>6 ○ 6 ○</p> <p>7 ○ 7 ○</p> <p>8 ○ 8 ○</p> <p>9 ○ 9 ○</p> <p>b. Year of birth</p> <p>1 ● 8 ○ 0 ○ 0 ○</p> <p>9 ○ 1 ○ 1 ○</p> <p>2 ○ 2 ○</p> <p>3 ○ 3 ○</p> <p>4 ○ 4 ○</p> <p>5 ○ 5 ○</p> <p>6 ○ 6 ○</p> <p>7 ○ 7 ○</p> <p>8 ○ 8 ○</p> <p>9 ○ 9 ○</p>	<p>a. Age</p> <p>0 ○ 0 ○ 0 ○ 0 ○</p> <p>1 ○ 1 ○ 1 ○</p> <p>2 ○ 2 ○</p> <p>3 ○ 3 ○</p> <p>4 ○ 4 ○</p> <p>5 ○ 5 ○</p> <p>6 ○ 6 ○</p> <p>7 ○ 7 ○</p> <p>8 ○ 8 ○</p> <p>9 ○ 9 ○</p> <p>b. Year of birth</p> <p>1 ● 8 ○ 0 ○ 0 ○</p> <p>9 ○ 1 ○ 1 ○</p> <p>2 ○ 2 ○</p> <p>3 ○ 3 ○</p> <p>4 ○ 4 ○</p> <p>5 ○ 5 ○</p> <p>6 ○ 6 ○</p> <p>7 ○ 7 ○</p> <p>8 ○ 8 ○</p> <p>9 ○ 9 ○</p>	<p>a. Age</p> <p>0 ○</p> <p>1 ○</p>		
<p>6. Marital status</p> <p>Fill ONE circle for each person.</p>	<p><input type="radio"/> Now married <input type="radio"/> Separated</p> <p><input type="radio"/> Widowed <input type="radio"/> Never married</p> <p><input type="radio"/> Divorced</p>	<p><input type="radio"/> Now married <input type="radio"/> Separated</p> <p><input type="radio"/> Widowed <input type="radio"/> Never married</p> <p><input type="radio"/> Divorced</p>			

Example 28. Original Census Questionnaire Using a Matrix Format.

Form **90-A17**
(10-10-90)

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS



**UNITED STATES
CENSUS
OF AGRICULTURE**

NOTICE - Response to this inquiry is required by law (Title 13, U.S. Code). By the same law YOUR REPORT TO THE CENSUS BUREAU IS CONFIDENTIAL. It may be seen only by sworn Census employees and may be used only for statistical purposes. Your report CANNOT be used for purposes of taxation, investigation, or regulation. The law also provides that copies retained in your files are immune from legal process.

In correspondence pertaining to this report, please refer to your Census File Number (CFN)

Please complete this form and RETURN TO

BUREAU OF THE CENSUS
1201 East Tenth Street
Jeffersonville, IN 47133

Note - If your records are not available, reasonable estimates may be used. If you cannot file by January 1, a time extension request may be sent to the above address. Include your 12-character Census File Number (CFN) as shown in your address label in all correspondence to us.

If you received more than one report form, enter each Census File Number(s) here and return extra copies with your completed report.

A									
A									

CENSUS USE ONLY	035	036	037	038
	039	040	041	042



CFN 08603545545 EI 86-0354554
6 24 04 10 00 B02100 F 8002
NAVAJD 08603545545 4H 00100

L. David Sinclair
4916 Livingstone St.
Bremer, WA 90001

Please correct errors in name, address, and ZIP Code. ENTER street and number if not shown.

SECTION 1

1. At any time during 1990, did you do any of the following:
 • operate a farm or ranch (including greenhouse and nursery)?
 • sell your farm or ranch?
 • retire from farming or ranching?
 Yes No

2. At any time during 1990, did you grow or raise any:
 • crops (including hay, tobacco, fruits, vegetables, nuts, berries, etc.) for sale?
 • livestock or poultry (including horses, cattle, hogs, sheep, goats, fish, etc.) for sale?
 • crops, livestock, or poultry for home use or as a hobby?
 Yes No

If you answered YES to EITHER of these questions, go to SECTION 2.
 If you answered NO to BOTH of these questions, go to SECTION 10.

SECTION 2 ACREAGE IN 1990 Report land owned, rented, or used by you, your spouse, or by the partnership, corporation, or organization for which you are reporting. Include ALL LAND, REGARDLESS OF LOCATION OR USE - cropland, pastureland, rangeland, woodland, idle land, house lots, etc.

1. All land owned None 043 Number of acres

2. All land rented or leased FROM OTHERS, including land worked by you on shares, used rent free, in exchange for services, payment of taxes, etc. Include leased Federal, State, and railroad land. (DO NOT include land used on a per-head basis under a grazing permit.) None 044

3. All land rented or leased TO OTHERS, including land worked on shares by others and land subleased. Also complete item 5 below. None 045

4. Acres in "THIS PLACE" - ADD acres owned (item 1) and acres rented (item 2), then SUBTRACT acres rented TO OTHERS (item 3), and enter the result in this space. None 048

If the entry is zero, please refer to the Information Sheet, section 2.

5. Of the land you rented or leased to others, how many acres did you own? None 053 Acres

6. In what county was the largest value of your agricultural products raised or produced? County name _____ State _____

SECTION 3 LAND USE and IRRIGATION

PART A - How were the ACRES in this place used in 1990?

1. Cropland harvested - Include all land from which crops were harvested or hay was cut, and all land in orchards, citrus groves, vineyards, and nursery and greenhouse crops.	<input type="checkbox"/>	None	Number of acres	049
2. Cropland on which all crops failed - (Exception: Do not report here land in orchards and vineyards on which the crop failed.)	<input type="checkbox"/>			050
3. Cropland idle, cropland used for cover crops, or cropland in cultivated summer fallow	<input type="checkbox"/>			051
4. Cropland used only for pasture, woodland pastured, and other pastureland and rangeland	<input type="checkbox"/>			052
5. All other woodland, wasteland, houselots, etc. not reported in items 1 through 4 above.	<input type="checkbox"/>			053

SECTION 4 PART A - CROPS HARVESTED from "THIS PLACE" in 1990
(Do not include crops grown on land rented to others.)

Crop	None	Acres harvested	Quantity harvested	Gross value of crops sold	
				Dollars	Cents
1. Hay crops -					
a. Alfalfa and alfalfa mixtures	<input type="checkbox"/>	103	104 Tons dry	123	00
b. Small grain hay	<input type="checkbox"/>	106	107 Tons dry	124	00
c. Wild hay	<input type="checkbox"/>	112	113 Tons dry	125	00
d. Other hay - Specify kind	<input type="checkbox"/>	105	110 Tons dry	122	00
2. Corn for grain or seed	<input type="checkbox"/>	067	068 Bu.	111	00
3. Soybeans for beans	<input type="checkbox"/>	068	069 Bu.	112	00
4. Wheat for grain	<input type="checkbox"/>	073	074 Bu.	113	00
5. Tobacco - all types	<input type="checkbox"/>	066	066 Lbs	111	00
6. Potatoes, Irish - (Do not include those grown for home use.)	<input type="checkbox"/>	067	068 Cwt	111	00

7. All vegetables for sale (Do not include those grown for home use.)

None	Total acres	Dollars	Cents
<input type="checkbox"/>	115	110	00
Specify kind(s)	110		
	110		

8. All fruit and nut orchards, vineyards, and berries

None	Total acres	Quantity harvested	Dollars	Cents
<input type="checkbox"/>	111	110 Lbs	111	00
Specify kind(s)	110			
	110			

9. Other crops - For additional crops, enter the crop name and code from the list below. Report quantity harvested in the unit specified with crop name.

Crop name	Code	Acres harvested	Quantity harvested	Gross value of crops sold	
				Dollars	Cents

If more space is needed use a separate sheet of paper.

Crop name	Code	Crop name	Code
Berley for grain (bushels)	078	Oats for grain (bushels)	076
Corn for silage or green chop (tons, green)	070	Sorghum for grain-milo (bushels)	082
Cotton (bales)	091	Other crops (pounds) - Specify	782

PART B - NURSERY and GREENHOUSE CROPS GROWN FOR SALE on "THIS PLACE" in 1990

From the list below, enter the crop name and code for each crop grown.

Crop name	Code	Square feet under glass or other protection	Acres in the open in 1990	Sales in 1990	
				Dollars	Cents

Example 30. Cover Page of the 1990 Census of Agriculture Questionnaire (Photo-reduced to 74 Percent of Original Size).

DISCUSSION

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These excellent papers approach the topic of self-administered questionnaires from different perspectives: Lessler and O'Reilly discuss the use of audio computer-assisted self-administered questionnaires for sensitive questions; Jenkins and Dillman describe the use of graphic design principles, as well as cognitive and motivational factors in the design of paper and pencil self-administered questionnaires. It's a privilege to have the opportunity to discuss their results, relate their findings to the literature, and offer some suggestions for future work.

Presentation by Lessler and O'Reilly

Lessler and O'Reilly describe the evidence that self-administered questionnaires result in more reports of sensitive behaviors. They describe the disadvantages of self-administered questionnaires; some of these problems were discovered by cognitive testing. They describe computer-assisted self-administered interviews (CASI), and audio CASI data collection, as well as some of audio CASI's advantages. Finally, they presented the results of an experiment conducted during the National Survey of Family Growth (NSFG) Cycle 5 Pretest.

The first issue that I'll address is respondents' ratings of their preferences of method of administration. Lessler and O'Reilly describe a small-scale study by O'Reilly, Hubbard, Lessler, Biemer, and Turner (forthcoming) showing that respondents preferred the audio CASI method. A greco-latin square design was used. Thus, all respondents' ratings were unbiased for the three self-administration methods tested. In the present study by Lessler and O'Reilly, respondents also recommended audio CASI for reporting abortions. However, such a finding should be interpreted with caution. Respondents could only compare audio CASI to the computer-assisted interview. Contrast that result with those from a collaborative study between the National Center for Health Statistics (NCHS) and the National Opinion Research Center (NORC) (Jobe, Pratt, Tourangeau, Baldwin, and Rasinski, forthcoming). In the NCHS-NORC study, focus group respondents recommended focus groups for collecting sensitive information, and respondents in a CASI pretest recommended CASI. Both the Lessler and O'Reilly study and the NCHS-NORC study lack appropriate comparison groups.

All these studies impose large demand characteristics on respondents (see e.g., Orne, 1969). Therefore, my conclusion is that respondents will usually prefer the administration method that they have just experienced. Thus, the audio CASI may not be as strongly preferred as Lessler and O'Reilly's results would suggest.

A second issue is whether method of administration effects occur when collecting data about sensitive topics. This is a

timely question. The O'Reilly et al. study, described by Lessler and O'Reilly, found that the two CASI methods, audio and video, produced more reports of marijuana and cocaine use than the paper and pencil self-administered questionnaire. Few differences in sexual behaviors were noted. In Lessler and O'Reilly's study, the 178 respondents reported 48 abortions when using audio CASI, compared to 42 abortions during the regular interview.

This result can be contrasted with results of the NCHS-NORC study mentioned above (Jobe et al., forthcoming). We crossed computer-assisted and paper and pencil interview modes with interviewer and self administration. Computerization had no effects on a variety of reports of sensitive questions. Self administration, however, resulted in more reports of some sensitive behaviors: As shown in the top panel of Table 1, more sex partners were reported for the last year, last five years, and lifetime with self administration. As shown in the middle panel of Table 1, more condom use was reported in the last 30 days and past year (marginally significant) with self administration. As shown in the bottom panel of Table 1, more respondents reported a sexually transmitted disease with self administration. Neither computerization nor self administration had any main effects on reports of abortions or drug use.

Table 1

Mean sexual partners and rates of sexually transmitted diseases by method of administration			
	Method of Administration		Ratio
	Self-Administered	Administered by Interviewer	
Number of Sexual Partners			
Past Year	1.71	1.44	1.19
Past Five Years	3.87	2.82	1.37
Lifetime	6.51	5.43	1.20
Condom Use			
Past 30 Days	46.7%	35.3%	1.32
Past Year	23.8%	17.9%	1.33
Sexually Transmitted Diseases	22.0%	17.0%	1.29

Source: National Center for Health Statistics

Recently, Boekeloo, Schiavo, Rabin, Conlon, Jordan, and Mundt (1994) reported that patients at a sexually transmitted disease clinic reported more high-risk sex behaviors to 2 of 16 questions for audio CASI compared to a written self-administered questionnaire. Both were superior to a face-to-face interview. They also found fewer missing responses with the audio CASI.

Thus, the studies I have discussed and several others, indicate that self-administered questionnaires may result in more reports of sensitive behaviors than interviewer-administered questionnaires. However, not all sensitive behaviors are reported more frequently in every study showing self-administration effects. Moreover, there is some evidence that computer or audio CASI is slightly superior to other forms of self-administered questionnaires. We clearly need more studies comparing different methods of administration, especially comparing written, video, and audio self administration. My hypotheses are that, across studies, the effects will be small and equivocal among those three, but that effects will be larger and more consistent for self administration over interviewer administration.

A third issue raised by Lessler and O'Reilly's presentation is the use of incentives in sensitive surveys. They manipulated incentives as a variable, in addition to audio CASI. Table 2 shows additional data from their study, reported by Mosher and Duffer (1994). Self administration and incentives worked in an additive fashion: The highest percentages of respondents reported an abortion with a \$20 incentive and audio CASI (30%), and with a \$40 incentive and no audio CASI (29%). Intermediate levels of abortion reporting were found with audio CASI and no incentive (25%), and with a \$20 incentive and no audio CASI (22%). The lowest level of reporting was found with no audio CASI and no incentive (14%).

Table 2

National Survey of Family Growth Cycle 5 Pretest

Group	% Reporting Abortion	No. in Group
In-home, No \$, No Audio CASI	14%	(n = 96)
In-home, \$20, No Audio CASI	22%	(n = 72)
In-home, No \$, Audio CASI	25%	(n = 98)
In-home, \$20, Audio CASI	30%	(n = 80)
Off Site, \$40, No Audio CASI	29%	(n = 147)

Source: National Center for Health Statistics

In the NCHS-NORC study (Jobe et al., forthcoming), incentives were used only with neutral site interviews, and respondents interviewed in their own home were not paid. We found no main effects on the incentive/site variable for any of the tested sensitive behaviors. Thus, in one study incentives had an effect, and in another study incentives had no effect. Clearly, more research is needed on the effects that incentives have on responding to sensitive questions.

Presentation by Jenkins and Dillman

Jenkins and Dillman presented 20 principles for designing self-administered questionnaires. In her conclusions, Ms. Jenkins states, "Little information on the design of self-administered questionnaires existed until relatively recently. That which did was based primarily on common sense and individual experience." What is significant and interesting about this statement is that it is so close to statements researchers made about the design of interviewer-administered questionnaires before cognitive psychology began to make an impact a decade or so ago.

I am excited by their approach. Their principles have a high degree of face validity. Potentially, attention to graphic design features as well as cognitive and motivational factors could improve self-administered questionnaires as much as cognitive interviews have improved interviewer-administered questionnaires. However, in order for this to occur, two major differences must be overcome between how cognitive psychologists approached questionnaire design and how Jenkins and Dillman have approached self-administered questionnaires.

The first difference is that, from the beginning, cognitive psychologists involved in questionnaire design have utilized the theories and results from cognitive psychology (for reviews, see Jobe and Mingay, 1991; Jobe, Tourangeau, and Smith, 1993). These scientific citations helped convince people that questionnaire design could be more of a science and less of an art. Researchers integrated basic and applied cognitive research on language comprehension, memory encoding and retrieval, frequency and magnitude estimation, heuristics, and decision processes. These are described in articles and books dating back to the beginning of the survey research-cognitive science collaboration (e.g., Hippler, Schwarz, and Sudman, 1987; Jabine, Straf, Tanur, and Tourangeau, 1984; Moss and Goldstein, 1979).

A prime example is an excellent discussion by Fred Smith (Smith, 1991). He described how cognitive laboratory research on free recall, on frequency estimation, and on magnitude estimation applied to the respondents' tasks of recalling their previous day's intake, estimating the frequencies with which they eat foods, and estimating the sizes of their portions. Awareness of the literature on cognitive theory and research has resulted in the use of these theories and application of results in questionnaire design research. Researchers who are not cognitive psychologists

have been able to this knowledge to design excellent cognitive experiments on questionnaire design.

Jenkins and Dillman state that a major reason for their papers is to encourage experimental research on the issues raised by their 20 principles. Theirs is a laudable goal, and an attainable one. A paper with these well thought out principles will encourage more research, if it is well grounded scientifically. A necessary next step for Jenkins and Dillman is to integrate significant research, some cognitive, some social, which is applicable to their principles. Relevant research has been conducted on reading comprehension (e.g., Graesser and Bower, 1990), eye movement (e.g., Carpenter and Just, 1983), respondent effort (Krosnick, 1991), politeness (e.g., Grice, 1975), and impression management (e.g., Schwarz, 1993), to name a few areas.

The second difference between this presentation and the cognitive approach is that cognitive psychologists have well described the applicable methodology so that other people can use it. The most prominent example of this is the cognitive interview (e.g., Lessler, Tourangeau, and Salter, 1989; Willis, Royston, and Bercini, 1991). Although different types of cognitive interviews are used, the one most frequently used in questionnaire design is the concurrent think aloud with probes. This methodology has been described sufficiently so that the largest federal statistical agencies, university survey laboratories, and private survey organizations now use cognitive interviews and do it well. It is not very difficult to learn, although there are individual differences in skill at conducting cognitive interviews.

Jenkins and Dillman have NOT described appropriate techniques for all their principles so that others can use them. For example, they refer to graphic design principles in their paper. But, after reading this paper and a much longer version of the same paper--I am unable to describe these graphic design features. In Principle two they state about Example 3, "This cover page uses natural reading format and graphical design features." The same problem occurs on other principles such as numbers 11 and 12. Principle 11 uses the same two terms, and yet they are never defined. For these principles to be helpful, they must not merely give examples of how the Census Bureau successfully solved questionnaire design problems for a particular survey (I am impressed with their success), but they must educate people so that they can use them on their own questionnaires.

Several of the principles ARE self explanatory and easy to implement. For example, I developed a solution to the problem of multi-task formats identified in Principle 8 and illustrated in Examples 13 and 14. In the solution described by Jenkins and Dillman, the respondent must still perform two mental calculations at a time. In contrast, another solution would be to ask respondents to report the total number of employees in each category, such as teachers, guidance counselors, and teachers aides. Then the respondent can be asked to divide the employees in

each category into full time and part time workers. Not only does this solution require the respondent to perform only one mental task at a time, but it more closely matches how the information is likely to be organized in the respondent's long-term memory. The solution I just described also illustrates my earlier point that knowledge of relevant scientific literature can make these principles more effective.

A third issue, and one that illustrates the effectiveness of the principles, is the split-ballot experiment. The one described by Jenkins and Dillman used 5 experimental questionnaires, and is a dramatic example of how these principles can be tested experimentally and shown to be effective. This study demonstrated that large structural and organization resulted in large improvements in item and response rates. Note also that smaller changes produce smaller results.

I can conclude by stating that these 20 principles have the potential to revolutionize the design of self-administered questionnaires. However, the long-term effectiveness of these principles may be determined, at least in part, by how their scientific underpinnings are explicated, and by how their everyday use is described.

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DISCUSSION

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1. Introduction

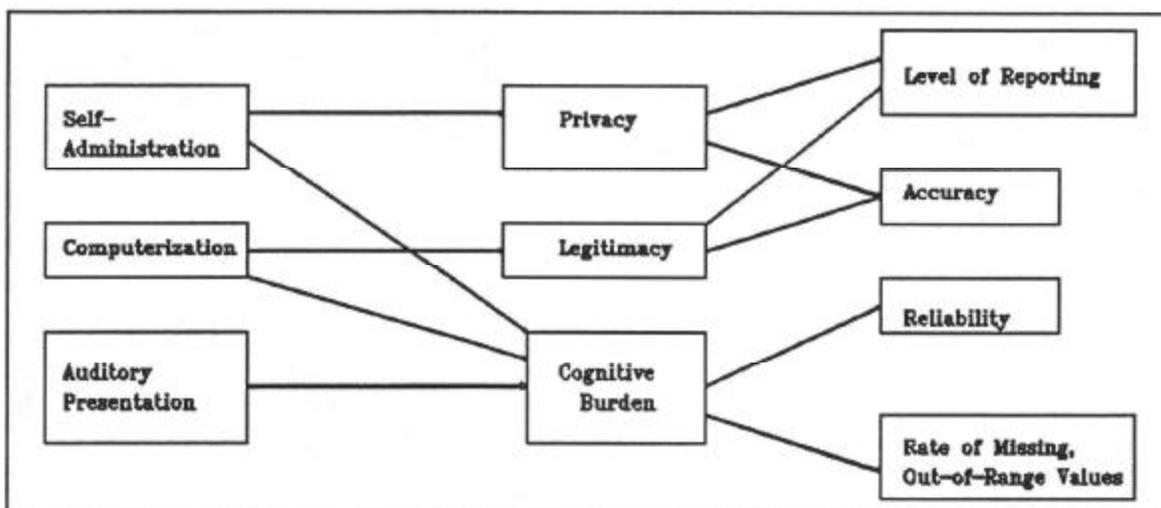
Both of the papers in this session concern the impact of the mode of data collection--in particular, the effects of self-administration--on data quality. The papers share a more specific concern with the difficulties respondents may have in reading survey questions and following skip patterns and other instructions for completing the questions. The two papers explore very different approaches to addressing these problems. The paper by Jenkins and Dillman describes some procedures for making it easier to read questionnaires; the paper by Lessler and O'Reilly discusses a method that eliminates the need for the respondent to read the questions entirely.

Although a good deal has been written about the impact of mode of interviewing on the results obtained (see, for example, Bradburn et al., 1991; deLeeuw and van der Zouwen, 1988; Groves and Kahn, 1979; Hochstim, 1967), there is no general model of the effects of the different methods of collecting survey data. The various popular methods of collecting survey data--in telephone or face-to-face interviews or in self-administered questionnaires--differ on several important dimensions; further, each of these basic procedures can be carried out on paper or using a computer. I suggest that the different modes of data collection vary on at least three key psychological dimensions:

- 1) **Cognitive demands.** Conventional paper-and-pencil questionnaires require either the respondent or the interviewer to read the questions and to follow the instructions; this requirement may sometimes exceed the reading abilities of respondents or interviewers.
- 2) **Level of privacy.** By eliminating the need for respondents to tell the interviewer their answers, self-administered questionnaires may reduce respondent concerns about the interviewer's reaction or about other family members overhearing sensitive information.
- 3) **Perceived importance of the study.** Laptop computers are still a novelty for most of the population, and the use of laptops in face-to-face data collection may enhance the perceived importance or objectivity of the study.

A general model incorporating all three dimensions is depicted in Figure 1. According to the model, features of the method of data collection (such as use of self-administered questions) affect the three psychological dimensions (e.g., level of privacy), which in turn affect data quality (willingness to report accurately about sensitive behaviors). Much of what is currently known about the different modes of data collection is captured in the model.

Figure 1. Path Model of Mode Effects



2. Paper by Lessler and O'Reilly

The paper by Lessler and O'Reilly reports results from a study that compared computer-assisted personal interviews (CAPI) with interviews in which the computer administered the questions directly to the respondent via earphones (audio computer-assisted self-interviewing, or audio-CASI). This study was done as a pretest for Cycle V of the National Survey of Family Growth (NSFG), and the pretest comparison naturally focusses on the two modes of data collection most likely to be used in that survey. Unfortunately, the pretest was not designed to separate out the effects of the several key advantages that audio-CASI offers relative to other modes of data collection (computerization, auditory presentation, self-administration). By comparing audio-CASI and CAPI, the pretest mainly examines the impact of self-administration rather than the other variables distinguished in Figure 1.

A fair number of studies have already shown that self-administration increases the level of reporting of sensitive

behaviors. For example, Turner, Lessler, and DeVore (1992) demonstrated increases in reported drug use with self-administered questions, a finding replicated by Schober and colleagues (Schober et al., 1992). London and Williams (1990) find that more abortions are reported on a self-administered questionnaire than in a face-to-face interview (see also Mott, 1985). A study recently conducted by NCHS and NORC demonstrates increased reporting of sexual behaviors in self-administered questionnaires (see Table 1). That study compared face-to-face interviews and self-administered questionnaires in both a computer-assisted and conventional paper-and-pencil formats; as is apparent in Table 1, the effects of self-administration were larger and more consistent than those of computerization.

Table 1. Mode Effects in the Women's Health Study

Experimental Group	Mean Reported Sexual Partners		
	Past Year	Past 5 Years	Lifetime
Self-Administered Questions	1.72	3.88	6.54
Conventional (SAQ)	1.56	3.37	6.88
Computer-assisted (CASI)	1.89	4.40	6.25
Interviewer-Administered Q's	1.44	2.82	5.43
Conventional (PAPI)	1.56	2.86	4.58
Computer-assisted (CAPI)	1.36	2.79	6.27

Note: Each mean based on approximately 240 interviews; total rows for self- and interviewer-administration are based on approximately 500 completed interviews.

The results of the NSFG pretest on the differences in abortion reporting by mode are not very dramatic--audio-CASI increased the proportion of the sample cases who reported an abortion to 27.1% as compared to 23.8% when those same cases were interviewed via CAPI. Moreover, the audio-CASI abortion questions were different from those in the CAPI questionnaire, and they were administered after the respondents had already completed the CAPI interview. So the results from the study are perhaps better characterized as suggestive than definitive. In any case, they are certain to be useful to those charged with making practical decisions about the NSFG design.

Despite any weaknesses in the evidence regarding the advantages of audio-CASI, I predict that this technology will quickly be widely adopted by survey organizations. Having the capability, we will embrace the objective. The advantages of the new technology are, in some sense, too clear cut to require a lot of experimental confirmation--computerization virtually eliminates skip errors, self-administration minimizes privacy concerns, and auditory presentation eliminates the need for respondents to be literate. All in all, audio-CASI is a package that should prove irresistible.

3. Paper by Jenkins and Dillman

The paper by Jenkins and Dillman proposes 20 principles for improving the readability of self-administered questionnaires. The sensible tone of these recommendations reminded me of the admonitions in Tufte's *The Visual Display of Quantitative Information* and of the advice offered to writers in Strunk and White's *Elements of Style*. I did, however, wish that the authors had followed one additional principle; here is my proposed addition to the list:

Principle 21. Follow the Lord's example; never present more than ten commandments at any one time.

I am not advocating that Jenkins and Dillman abandon any of their principles! But I do think that they might try to formulate some larger principles from which their more specific guidelines follow. As I read their paper, it seemed to me that their recommendations reflected four key underlying axioms. First, the flow of a questionnaire should follow the natural reading order of the respondents. In English, this means questions should flow from left to right and from top to bottom. Second, questionnaires should use familiar, readily-understood graphical conventions. For instance, the same design element should always cue the same respondent action. Third, the questionnaire should call attention to the key information (via boldfacing and other methods). Finally, there should be a clear path for respondents to follow. Graphical features should emphasize this path. Table 2 groups 19 of the 20 principles discussed by Jenkins and Dillman under these four general themes.

I found almost all of their recommendations quite compelling. The one major exception involved matrix items--for example, questions that are asked for each family member or for each event of a given type. Jenkins and Dillman argue against giving respondents the choice on how to proceed through the matrix, and this may be the best way to ensure that they answer every question.

Table 2. Four Underlying Axioms

- 1) Where possible, take into account the natural reading sequence (left-to-right, top-to-bottom).
 - Include key information in the question, not after it (5)
 - Align questions and answers vertically (6)
 - Make top headings more prominent than those in the middle (10)

- 2) Use easily understood graphical conventions.
 - Use familiar formats (1)
 - Use same design feature to request the same action (13)
 - Avoid variability (14)
 - Use different layouts to distinguish different types of questions (16)

- 3) Call attention to the **key information** (15).
 - Present only the most relevant information (2)
 - Feature questions rather than explanations (4)
 - Put instructions where they are needed (7)
 - Put captions, units for answers where they will be seen (17)

- 4) Establish a clear path through the questionnaire (12).
 - Avoid multi-task questions (8)
 - Avoid matrix questions (9)
 - Use graphical instructions (such as arrows) to make the path salient (11)
 - Use graphical features to emphasize the path (18)
 - Avoid separating questions with lines and boxes (19)
 - Provide structures that make sense leave the R no choice! (20)

Note: Numbers correspond to those used by Jenkins and Dillman.

The counterargument is that there are sometimes good reasons for letting respondents follow their natural chain of associations in recalling specific incidents. For some respondents, it may be easiest to recall events that involve one person before recalling those involving the next person; for others, however, an event involving one family member may trigger the recall of similar events involving a different family member. As a result, there could be advantages to letting respondents follow whatever order the flow of memories seems to impose. Only further work can determine whether the advantages of imposing an order on the questions outweigh those of letting the respondents select the order they find most congenial.

The work that Jenkins and Dillman are doing is, in my view, quite important. Mail questionnaires are likely to remain a major method for collecting survey data for the foreseeable future. As this paper demonstrates, our current practice in developing these questionnaires often falls far short of the ideal. At NORC, instructions on self-administered questionnaires are sometimes put in boxes to distinguish them from the questions. During cognitive pretests, I have found that respondents often use the box as a cue for identifying material they need not bother to read. So, I agree with Jenkins and Dillman in thinking that bad graphical design can lead serious errors.

4. A Final Point

The method developed by Lessler and O'Reilly and the principles articulated by Jenkins and Dillman share an underlying goal--that of improving data quality, primarily by reducing missing data. One of the main advantages of audio-CASI over other methods of self-administration is that the software automatically computes which item the respondent is to answer next; this eliminates data that are missing due to incorrectly skipped items. Similarly, many of Jenkins and Dillman's principles stress methods to make sure that respondents answer all the applicable questions by making it easier for the respondents to figure which questions they are supposed to answer. Although audio-CASI has other noteworthy features and the principles proposed by Jenkins and Dillman will help address other response problems (such as questions that are misunderstood rather than missed entirely), a major objective of both approaches is the reduction of missing data. Valuable though this endeavor is, I cannot help but wonder whether this is the most pressing data quality issue that we face. The development of computer-assisted data collection methods has greatly increased the capital requirements of survey organizations; I sometimes wonder whether the gains in terms of data quality have provided a return commensurate with the investment. Perhaps it would make more sense to worry about whether respondents answer the questions accurately than to worry so much about whether they answer at all.

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