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**An Experiment to Identify Survey Mode Response Effects
By Controlling Nonresponse Errors**

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Abstract

The literature on response effects suggests that different survey modes may influence how people respond to surveys. In particular, questions about sensitive topics may be more susceptible to being influenced in telephone and face-to-face surveys, than in mail and Internet surveys. However, studies of response effects of survey mode are generally confounded by differential nonresponse errors for different survey modes. We were interested in controlling nonresponse errors in a study that examined response effects of survey mode. To do this, we designed an experiment on a sensitive topic (unethical behavior), which involved randomly assigning business students to one of four survey mode conditions: telephone, face-to-face, mail, and Internet. Students in each condition completed a brief questionnaire about their behavior and opinions of a variety of ethical situations. Students completed each questionnaire individually by the assigned survey mode. In the telephone and face-to-face mode, a member of the research staff asked the questions by telephone, or face-to-face. After completing the survey, students were asked to complete a self-administered questionnaire about how their ideal of the most ethical person in the world would complete the same questionnaire. Over 150 students have participated in this experiment. The results to date, show clear differences on the most sensitive questions by survey mode, in the expected directions. Students are significantly less likely to admit to violations of ethical behavior in the telephone and face-to-face survey modes, and more likely to admit such behavior in the mail and Internet survey modes.

Introduction

There have been many studies that have compared the effects of survey mode on survey responses. Sykes & Collins (1988) found a consistent tendency to give more socially desirable answers in a face-to-face interview than in a telephone interview, regarding crime and sexuality questions. Dillman & Tarnai (1991) reported mail and telephone differences in self-reports of drinking and driving, and riding with others who had been drinking. Tarnai & Dillman (1992) found significant differences among community respondents in mail and telephone responses to community problems. Telephone respondents were more likely to choose "not a problem" than mail respondents. Tourangeau and Smith (1996) found lower

reports of sex partners in computer assisted self-interviewing (CASI) modes than in computer assisted personal interview (CAPI) modes. More recently, Fowler, Roman, & Di (1998) found significant differences in mail and telephone responses to questions about medicare patients' self descriptions. Answers by telephone were more positive and less problematic than by mail.

Surveys conducted by different modes, however, also often differ in many other ways that could be causing response differences. There could be nonresponse differences, both in terms of response rate differences as well as in who responds and who doesn't respond to different survey modes. Individuals that respond to one mode may be less likely to respond to a different survey mode. There could be differences in the sampling frames used for different survey modes, for instance if an RDD sample is used for a telephone mode and a directory list for a mail survey mode. People with unlisted telephones would not show up in the directory listing, but would show up in the RDD sample, and so any mode differences might be attributable to differences in the sample frame. Differences among survey modes in how respondents are selected could also cause mode effects. In telephone interviews there is generally more control over which respondent is selected for an interview, as compared with a mail survey, where control over who responds is ultimately determined by the respondent.

Different survey modes are often used in different phases of a survey effort. A mail survey or a face-to-face interview may be used initially, which is then followed with a telephone survey for nonrespondents. With Internet surveys now an option for some populations, this survey mode may be used in followup surveys as well. In all of these examples, respondents who initially receive a survey in one mode may be different than those that receive the survey in a different mode. This difference in respondents could be a source of mode effects as well.

Another major source of mode effects could be a result of differences in how questions are asked in different survey modes. Dillman (2000) describes several examples of how survey questions need to be modified for different survey modes, and suggests adopting a "unimode" method of constructing questions that can be used without further changes in any survey mode.

A consistent finding in mode effects research is that "sensitive" questions get more truthful answers in the mail survey mode than in telephone or face-to-face. The explanation for this seems to be that the presence of the interviewer affects the respondent's willingness to respond truthfully, and that in the presence of another person, respondents tend to give answers that are more socially desirable. A socially desirable answer is one that is influenced by the respondent's concern over how he/she will be viewed by another person, according to societal norms. There are a variety of reasons why respondents may object to answering questions that are perceived as threatening (Schaeffer, 2000), including embarrassment, fear of retaliation or disapproval, and the believe that the answer is nobody's business. Because face-to-face and telephone interviews involve the presence of another person, these modes are expected to produce more socially desirable responses than mail or Internet questionnaires, which involve no direct social presence. In a summary of mode effects, Tourangeau, Rips, and Rasinski (2002) suggest that responses to sensitive questions improve when self-administered modes are used.

The research question that we were interested in was could we find mode effects for sensitive questions if we got rid of nonresponse factors and other differences in survey modes by conducting an experiment in which respondents are randomly assigned to different survey modes. In other words, would we find even greater mode effects if there were no nonresponse error, and no differences, other than random error, in respondents to each of the survey modes.

Methodology

We had an opportunity to conduct this research in conjunction with ongoing research into the ethical behaviors and attitudes of students enrolled in business classes. In the Fall semester of 2003 we designed a short questionnaire about students attitudes toward a variety of ethical situations that students

might be confronted with, and questions about how students had behaved in the last year with regard to several ethical situations. The questionnaire consisted of 26 ethics items, and 5 demographic items. Of the ethics items, 18 were strongly, somewhat agree vs strongly, somewhat disagree items (for example: "I would rather get bad grades than cheat on an exam"; "lying to get ahead is sometimes unavoidable and necessary"). Another 8 items asked about the frequency of behaviors, i.e., "how often have you taken something from a store without paying for it in the last 12 months items" (never, once or twice, 3 or 4 times, 5 or 6 times, more than 6 times).

Students made appointments to participate in the study, and when they arrived, were assigned to one of four survey modes: face-to-face, telephone, internet, or self-administered paper-and-pencil questionnaire (SAQ). Students were told that this was a study of people's ethical attitudes and behaviors, and were then asked to complete either an interview (FTF and telephone) or a questionnaire (internet and SAQ). After completing the survey, students were then asked to complete the same instrument again, but this time to consider how the ideal person with the highest possible ethical standards might answer each question. Students were instructed to indicate how the ideal person with the highest possible ethical standards would answer each question.

The study was conducted during fall semester 2003 and again during spring semester 2004. To date over 150 students have participated in the study. Students received a modest amount of course credit for participating in the study. The same procedures were followed in both semesters with one exception. During Fall semester, all students completed the ideal ethical person questionnaire in the same survey mode, as a self-administered questionnaire (SAQ). However, during Spring semester, students completed the ideal ethical person questionnaire in the same mode that they had completed the ethical situation questionnaire.

We hypothesized that for the ethical situation questionnaire that face-to-face interviews and telephone interviews would be more likely than internet and mail questionnaires to produce answers in a socially desirable direction. Respondents of internet and mail questionnaires should be more willing to reveal socially undesirable behavior than respondents in face-to-face and telephone interviews. We hypothesized that we would find no or fewer mode effects for the ideal ethical person questionnaire, since there is less of an evaluation component in answering questions about how an ideal ethical person would answer these questions. We did not include the Fall semester students in this analysis since Fall semester students all completed the ideal ethical person questionnaire in the SAQ mode.

Results

The tables below present the questionnaire items separately for the 8 behavior items and the 18 attitude items. For the behavior items we collapsed the response categories into two groups: (1) never, versus (2) one or more times in the past 12 months. For the attitude items we also collapsed the response categories into two groups: (1) strongly agree and somewhat agree, versus (2) somewhat disagree and strongly disagree.

Table 1 below displays the percent of respondents in each of the four survey modes that answered "never" to each of the eight behavior items in the survey. Our hypothesis was that respondents in the face-to-face and the telephone modes would be more likely to respond with "never" and would be less likely to say that they had done any of these things in the past 12 months, than respondents in the web and SAQ modes, because of the social desirability effect. This is in fact what happened with six of the eight behavior items. The only two items for which no differences were observed (Q6 and Q7) are ones that could be considered as not being particularly sensitive or evaluative of a person. Question 6 asked about downloading music from the Internet without paying for it, which many students apparently do not consider an unethical behavior. Question 7 asked about borrowing something from a friend or family member without asking for it, which might also be considered a relatively mild form of unethical behavior. The

other six behavior items are all more serious ethical violations, and they show a clear mode effect in the expected direction.

Table 2 below displays the percent of respondents (Spring semester only) in each of the four survey modes that answered “never” to each of the same eight behavior items on the ideal ethical person questionnaire. Our hypothesis was that there would be no or only a small mode effect for these items, since there should be less of a social desirability effect, because the respondent is answering for an “ideal ethical person.” This is what we found; only three items (Q5A, Q7A, Q8A) showed a small mode effect.

Table 1: Ethical Situation Questionnaire: Percent of Respondents Answering “Never”

Behavior Items	FTF	Tel	Web	SAQ	n
Q5. Took something from a store without paying for it	86%	86%	68%	70%	114
Q6. Downloaded music from the internet without paying for it	27%	17%	19%	27%	33
Q7. Borrowed something from a friend or family member without asking	27%	25%	13%	35%	37
Q8. Did something that I usually consider as unethical in other people	38%	31%	19%	22%	40
Q18. Told a lie to protect someone’s feelings	8%	8%	0%	3%	7
Q19. Told a lie to get something that you wanted	22%	36%	19%	16%	34
Q20. Told a lie, even a small one, to an instructor or professor	57%	53%	31%	30%	62
Q21. Lied to a parent or family member	38%	19%	17%	13%	32
Total number of respondents	37	36	37	37	147

Table 2: Ideal Ethical Person Questionnaire: Percent of Respondents Answering “Never”

Behavior Items	FTF	Tel	Web	SAQ	n
Q5A. Took something from a store without paying for it	100%	100	94%	80%	69
Q6A. Downloaded music from the internet without paying for it	79%	50%	59%	53%	44
Q7A. Borrowed something from a friend or family member without asking	74%	61%	44%	53%	43
Q8A. Did something that I usually consider as unethical in other people	100%	83%	67%	58%	57
Q18A. Told a lie to protect someone’s feelings	63%	28%	33%	58%	34
Q19A. Told a lie to get something that you wanted	84%	67%	78%	79%	57
Q20A. Told a lie, even a small one, to an instructor or professor	90%	83%	83%	84%	63
Q21A. Lied to a parent or family member	95%	56%	67%	68%	53
Total number of respondents	19	18	18	19	74

Because of the small number of participants, only one of the mode differences of the 8 behavioral items is statistically significant when tested using a Chi Square analysis. However, the pattern of results clearly supports an interpretation of mode effects due to social desirability responding. With a larger number of students participating there seems no doubt that the differences would reach statistical significance. Furthermore, that the differences are observed for the ethical situation questionnaire, but not for the ideal ethical person questionnaire, strongly suggests that the reasons for the mode effects are primarily the respondent’s desire to be seen in a socially desirable way.

We also compared the responses to the 18 attitude items by survey mode. Table 3 below displays the percent of respondents in each of the four survey modes that answered “strongly or somewhat agree” to

each of the 18 attitude items in the survey. Our hypothesis was that respondents in the face-to-face and the telephone modes would be more likely to answer with “strongly or somewhat agree” for all items except Q16, Q25, and Q26 for which they would be more likely to answer with “strongly or somewhat disagree), than respondents in the web and SAQ modes, because of the social desirability effect. It is clear from examining the results in the table, that there is a mode effect in the expected direction for only a single item, Q26. There is no discernable pattern of responding to the remaining attitude items, with all modes showing similar results, and no substantial differences..

Table 3: Ethical Situation Questionnaire: Percent of Respondents Answering “Strongly or Somewhat Agree”

Attitude Items	FTF	Tel	Web	SAQ	n
Q1. When it comes to doing what’s right, I am more ethical than most people I know	97%	100%	97%	100%	145
Q2. My family taught me to do the ethically right thing, no matter what the cost	100%	94%	100%	92%	141
Q3. I would rather get bad grades than cheat on an exam	84%	86%	81%	73%	119
Q4. It’s important to me that people see me as a trustworthy person	100%	100%	100%	100%	147
Q9. I am basically a very ethical person	100%	100%	100%	95%	145
Q10. Unethical people who are successful are usually rewarded by society	76%	58%	62%	84%	103
Q11. I would be willing to report unethical behavior in a company that employed me, even if it meant risking my job	70%	81%	76%	65%	107
Q12. Making money in business sometimes requires being unethical	62%	58%	76%	62%	95
Q13. Most of my business classes encourage me to be ethical in my behavior	97%	89%	100%	97%	140
Q14. I wish that my business classes would teach more about ethics in business	65%	72%	65%	86%	106
Q15. Most of my business professors seem to be very ethical people	100%	92%	97%	92%	138
Q16. Unethical people who are successful are usually punished by society	24%	31%	22%	38%	42
Q17. Most of my friends encourage me to be ethical in my behavior	68%	75%	81%	70%	107
Q22. It’s not worth it to lie or cheat, because it hurts your character	81%	83%	83%	92%	124
Q23. Sometimes a person has to lie or cheat in order to succeed	60%	47%	61%	60%	83
Q24. Most of the other students I know will cheat on exams if possible	73%	44%	64%	78%	95
Q25. If other students are cheating on exams then it’s only fair for me to cheat as well	8%	8%	8%	16%	15
Q26. Lying to get ahead is sometimes unavoidable and necessary	35%	31%	58%	54%	65
Total number of respondents	37	36	37	37	147

Table 4: Ideal Ethical Person Questionnaire: Percent of Respondents Answering “Strongly or Somewhat Agree”

Attitude Items	FTF	Tel	Web	SAQ	n
Q1A. When it comes to doing what’s right, I am more ethical than most people I know	100%	94%	100%	95%	72
Q2A. My family taught me to do the ethically right thing, no matter what the cost	100%	100%	100%	95%	73
Q3A. I would rather get bad grades than cheat on an exam	100%	100%	94%	90%	71
Q4A. It’s important to me that people see me as a trustworthy person	100%	100%	94%	95%	72
Q9A. I am basically a very ethical person	100%	100%	100%	100%	74
Q10A. Unethical people who are successful are usually rewarded by society	53%	39%	39%	53%	34
Q11A. I would be willing to report unethical behavior in a company that employed me, even if it meant risking my job	95%	95%	89%	89%	68
Q12A. Making money in business sometimes requires being unethical	5%	22%	11%	16%	10
Q13A. Most of my business classes encourage me to be ethical in my behavior	95%	94%	94%	90%	69
Q14A. I wish that my business classes would teach more about ethics in business	100%	94%	89%	95%	70
Q15A. Most of my business professors seem to be very ethical people	95%	100%	100%	84%	70
Q16A. Unethical people who are successful are usually punished by society	53%	61%	44%	53%	39
Q17A. Most of my friends encourage me to be ethical in my behavior	84%	94%	89%	84%	65
Q22A. It’s not worth it to lie or cheat, because it hurts your character	95%	100%	100%	95%	72
Q23A. Sometimes a person has to lie or cheat in order to succeed	0%	22%	11%	21%	10
Q24A. Most of the other students I know will cheat on exams if possible	68%	61%	44%	58%	43
Q25A. If other students are cheating on exams then it’s only fair for me to cheat as well	0%	11%	0%	5%	3
Q26A. Lying to get ahead is sometimes unavoidable and necessary	5%	17%	0%	21%	8
Total number of respondents	19	18	18	19	74

Table 4 above displays the percent of respondents (Spring semester only) in each of the four survey modes that answered “strongly or somewhat agree” to each of the same 18 attitude items on the ideal ethical person questionnaire. Our hypothesis was that there would be no or only a small mode effect for these items, since there should be less of a social desirability effect, because the respondent is answering for an “ideal ethical person.” It is clear from examining the results in the table, that there is no evidence of any mode effects at all. There is no discernable pattern of responding to any of the attitude items, with all modes showing comparable results.

Figure 1, below, displays the mode effect for one of the behavior questions in the ethical situation questionnaire. Participants were asked how often in the past 12 months they had told a lie, even a small one, to a professor. The chart shows that larger percentages of face-to-face and telephone respondents said that they had “never” done this, compared with web and SAQ respondents. And, larger percentages of web and SAQ respondents, than face-to-face and telephone respondents, said that they had told a lie to a professor one or more times during the last 12 months.

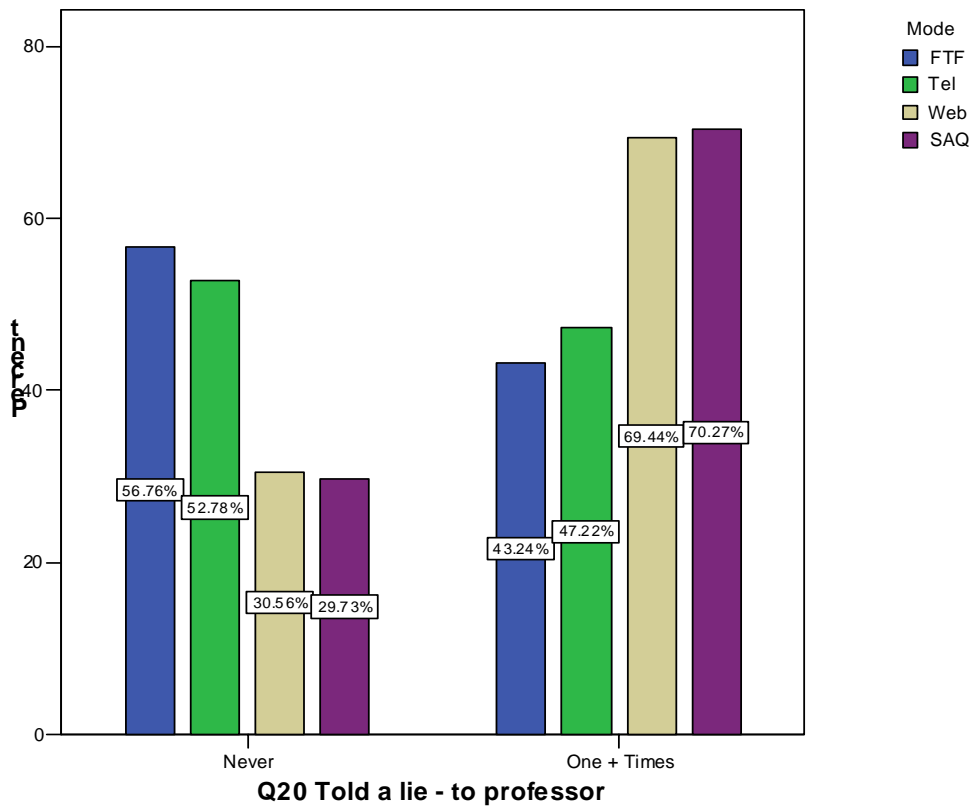


Figure 1: Results for Q20 from the Ethical Situation Questionnaire by Survey Mode

In comparison, figure 2, below, displays no mode effect for this same behavior question when it is asked about the ideal ethical person. Participants were asked how the most ideal ethical person in the world, would answer the question of how often in the past 12 months they had told a lie, even a small one, to a professor. The chart shows no substantial differences between face-to-face, telephone, web, and SAQ respondents. Approximately equal percentages said that the ideal ethical person would “never” have done this. Interestingly, up to 20% of students also said that an ideal ethical person would have told a lie to a professor one or more times during the past 12 months. Some students apparently see nothing wrong with telling a lie to a professor. Regardless, the point is to show that the mode effect observed when this question is asked about their own behavior, is reduced or eliminated when the focus of the question is removed from the respondent.

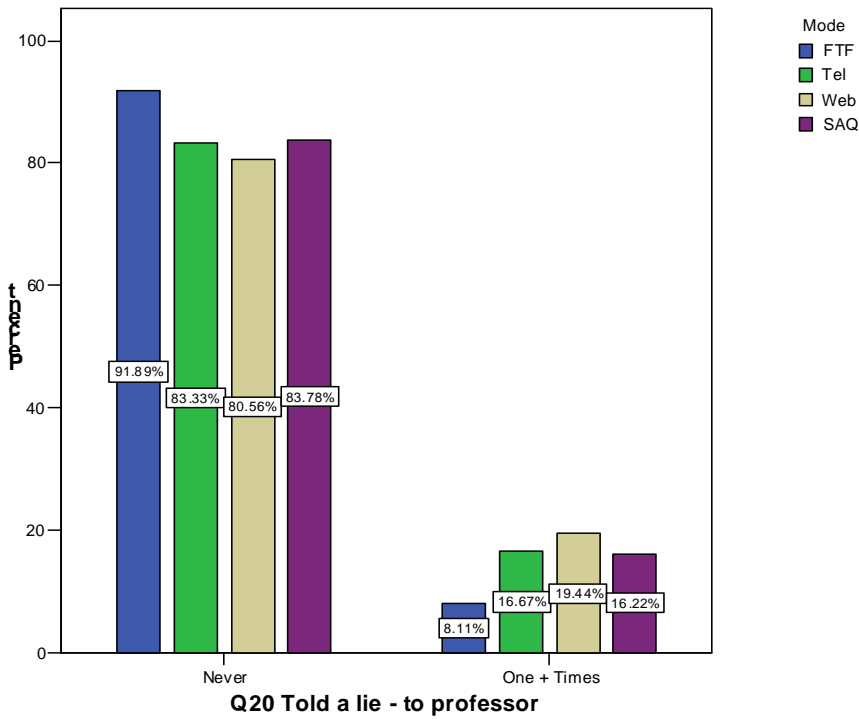


Figure 2: Results for Q20 from the Ideal Ethical Person Questionnaire by Survey Mode

Conclusion and Discussion

We conducted this research to determine whether we would find mode effects for questions about sensitive ethical issues, when people are randomly assigned to one of four survey modes: face-to-face, telephone, web, and self-administered questionnaire. Our hypothesis was that we would find mode effects for the most sensitive items, but not when those items concern an "ideal ethical person" rather than the respondent. When the focus of the question is removed from the respondent, then the mode effect should be reduced or eliminated, since one of the main reasons for the sensitivity of the question has been removed.

We did find evidence of mode effects in the predicted direction, i.e., FTF and telephone respondents are less likely than web and SAQ respondents to admit to ethically undesirable behavior. This mode effect is most pronounced for questions that ask about behavior in the last 12 months. We found virtually no mode effect for questions that ask about strength of agreement to attitudes about ethical situations.

That we did not find mode effects for the attitude items was unexpected, and we are not sure whether this is due to a poor choice of items, or whether attitudes are less susceptible to social desirability effects than behavioral items. Certainly, the behavioral items are directly evaluative of respondents and thus should be most likely to be susceptible to social pressures.

There was only one attitude item that showed any evidence of a mode effect in the predicted direction. A larger percent of web and SAQ mode students agreed with Q26 that "lying to get ahead is sometimes unavoidable and necessary" than FTF and telephone mode students. However, it is possible that this is a chance effect, in the context of 18 attitude items.

We were also surprised by some responses to the ideal ethical person questions. For example, 100% of students in all survey modes said that the ideal ethical person would agree with the statement "I am basically a very ethical person." However, 21% of students in the SAQ mode, 17% in the telephone mode, and 5% in the FTF mode, said that the ideal ethical person would agree with the statement "lying to get ahead is sometimes unavoidable and necessary." Similarly, 21% of students in the SAQ mode, 11% in the web mode, and 22% in the telephone mode, said that the ideal ethical person would agree with the statement "sometimes a person has to lie or cheat in order to succeed." Students apparently have varying criteria for what it means to behave ethically.

These attitudes seem contradictory and we don't know what to make of them. It is possible that students did not entirely understand what they were responding to. It may have been too difficult for students to keep in mind that they were supposed to be answering the second questionnaire as an ideal ethical person would.

Clearly, more research is needed to determine whether mode effects do occur for attitude items. It would also be useful to know what other kinds of behavioral questions show mode effects.

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