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The Impact of T-ACASI on Measurement of Sensitive Attitudes

Thomas J. Harmon

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Dr. Charles F. Turner, Advisor

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This present research will examine the impact of the T-ACASI method on the reporting of a number of attitudinal questions included on the National STD and Behavior Measurement Experiment (NSBME). The NSBME surveyed probability samples of U.S. and Baltimore adults aged 18 to 45 and randomly assigned respondents to answer sensitive questions on licit and illicit drug use, sexual behavior, and attitudes administered by either a human telephone interviewer (the T-IAQ mode [Telephone Interview-assisted Questionnaire]) or T-ACASI (Telephone Audio Computer-assisted, Self-interview).

Introduction and Overview

Recent studies examining the impact of mode of data collection on respondent reporting in surveys have mainly focused on the reporting in surveys of sensitive behaviors such as licit and illicit drug use (Aquilino, 1994; Gfroerer and Hughes, 1992; Gribble et al. 2000; Tourangeau and Smith, 1996; Turner, Lesser, and Devore, 1992) and sexual behaviors (Blumberg et al. 2003; Gribble et al. 2000; Jobe et al. 1992; Villarroel et al. 2004). How the mode of data collection affects responses in attitudinal surveys of sensitive topics has not been investigated extensively. Previously it has been suggested that the use of self-administered methods of interviewing in social surveys of attitudes provide “a better measure of the true feelings of respondents” than interviews conducted by a live interviewer (Sudman et al., 1965). That is, that the choice of a self-administered format of data collection (such as paper-and-pencil forms or computer-based self-administered formats) may provide more accurate reporting than would be possible through a live in-person (or via telephone) interview. This stems from the idea that respondents feel less inhibited and open to express true attitudes and opinions on a self-administered

questionnaire than they would when responding to a live interviewer. This would seem to make sense in attitude surveys of controversial topics, where (in the context of a live interview) the respondent may feel a greater measure of social pressure to give a response that he or she believes is in line with what the interviewer wants to hear. A respondent's true opinion, if thought to be "out of touch" or "deviant" from the social norm may not be divulged for fear of becoming socially isolated, as Noelle-Neumann (1974) has previously theorized.

The hypothesis that response to attitudinal questions administered by an in-person interviewer will tend toward the socially desirable answer if one is available, was presented by Sudman and Bradburn (1974). Sudman and Bradburn's (1974) early work, a review of response effects in surveys, seemed to support their hypothesis. They cite, for example, the work of Knudson, Pope and Irish (1967) which compared interviewer-administered and self-administered modes of data collection in a survey on sexual standards. The study included questions on pre-marital sexual relations, a controversial topic at the time of the study. Among the study's findings were that 20% of women interviewed by a live interviewer reported that premarital sexual relations were all right as compared to 31% of women responding by way of a self-administered form. Similarly, an early study by Sudman et al. (1965) examining the effects of interview mode on response to questions about religious attitudes among Catholics and Protestants yielded few significant differences in response by mode, but suggested that the presence of a live interviewer effected the responses on a handful of items. For instance, among Catholics responding to a live interviewer 72% said that "God does not really care how He is worshipped as long as He is worshipped," while only 62% of Catholic respondents

answering by way of a self-administered questionnaire agreed with this statement. This would suggest that respondents may attempt to present a more tolerant or socially acceptable opinion to a live interviewer and may report more truthful—but socially unacceptable opinions more often in the context of a self-administered interview. A recent study on mode effects conducted by Paxson and Tarnai (2004), however, failed to find a significant mode effect on attitudinal items. Their study involved an experiment where business students were randomly assigned to one of four survey modes (face-to-face, telephone, internet, or self-administered questionnaire) and asked a series of behavioral and attitudinal items on unethical behavior. While more socially desirable reporting was observed in the interviewer-present modes for a number of the behavioral items, no significant differences in reporting were observed for the attitudinal items—save for 1 out of a total of 18.

While the focus of this study is on the effect of mode of data collection on the reporting of attitudinal items, a brief overview of literature on mode effects and the reporting of sensitive behaviors and socially desirable behaviors will be presented.

Self-administered Methods and Sensitive Behaviors. While there has not been a great deal of focus on the effects of mode of data collection in surveys of attitudes, there is a considerable literature on mode effects in surveys of sensitive behaviors. Previous research has indicated that in surveys of sensitive topics and behaviors, utilizing self-administered interview modes, such as paper-and-pencil self-administered questionnaires, instead of interviewer-administered methods typically improves reporting of these behaviors (Aquilino, 1994; Gfroerer and Hughes, 1992; Jones and Forrest, 1992; London and Williams, 1990; Turner, Lesser, and Devore, 1992). In a national field study which

included the examination of illicit drug use, for example, Turner, Lesser and Devore (1992) found that respondents recording answers on a self-administered questionnaire (SAQ) were 2.4 times more likely to report cocaine use and 1.6 times more likely to report the use of marijuana during the previous 30 days as compared to those respondents in the study reporting to a live interviewer. Similarly, Aquilino (1994) in a survey of households in the nation's 37 largest metropolitan areas, found that the use of SAQs yielded higher levels in the reporting of illicit drug use than interview modes utilizing a live interviewer (either in-person or over the telephone). Self-administered questionnaires have also been shown to increase the reporting of abortions among women (Jones and Forrest, 1992; London and Williams, 1990) and the number of sexual partners reported by women (Jobe et al. 1992).

Computerized formats for self-administered questionnaires have been widely used in survey research and have also been utilized for the collection of sensitive data (Tourangeau et al, 2002). Among these formats include the ACASI (Audio Computer-Assisted, Self-Interview) and T-ACASI (Telephone Audio Computer-Assisted, Self-Interview) systems. The ACASI mode is one in which respondents enter answers to pre-recorded questions by pressing keys on a computer keyboard (typically a laptop). The pre-recorded questions are heard by the respondent over headphones. The similar T-ACASI system allows respondents to respond to an automated survey over the phone by pressing the keys on the telephone keypad to record answers. The interview is initiated by a live interviewer who calls the prospective respondent and screens the respondent for eligibility. If the person reached is eligible and agrees to the survey, the interviewer

transfers the respondent to the automated system to complete the computer-controlled, pre-recorded survey via the telephone's touch-tone keypad.

One of the major advantages of this computer-based self-administration format is that it eliminates the need for the respondent to be able to read. This enables the implementation of audio-CASI formatted surveys among a much broader segment of the population than regular self-administered forms would allow (Couper and Rowe, 1996). The ability to implement lengthy surveys with complex skipping schemes easily and cleanly is another major advantage of computer-based formats (Cooley et al, 2000; O'Reilly et al, 1992; Weeks, 1992). O'Reilly et al's (1992) preliminary study comparing CASI methods and traditional paper and pencil SAQs suggested that respondents preferred ACASI methods over paper and pencil SAQs and liked its ease of use.

Like paper-and-pencil SAQs, computer-based self-administered methods of data collection have also been demonstrated to yield higher levels of reporting than interviewer-administered questionnaires in surveys of sensitive topics (Gribble et al. 2000; Miller et al. 1999; O'Reilly et al. 1992; Tourangeau and Smith, 1996; Turner et al. 1996; Villarroel et al. 2004; Wright, Aquilino, and Supple, 1998). For example, Miller et al. (1999) examined the effect of the ACASI mode on the reporting of abortion history among sexually active women. It was found that the women in the study responding through the ACASI system were 1.3 times more likely to report having had an abortion than those women in the study questioned by a live interviewer. Tourangeau and Smith (1996) also found the ACASI system to increase the proportion of respondents admitting to the use of illicit drugs. In particular, 66.3% of ACASI respondents compared with

44.8% of respondents interviewed by a live interviewer reported ever having used marijuana in their lifetime ($p = <.01$).

Likewise, the impact of the T-ACASI method on the collection of sensitive data was explored by Gribble et al. (2000) in the Urban Men's Health Study (UMHS). The UMHS surveyed 2,881 men from 4 U.S. cities who reported having sex with men. Embedded in the UMHS was an experiment that randomly assigned respondents to either be interviewed via the T-ACASI system or by a live interviewer. It was found that T-ACASI respondents reported a higher prevalence of illicit drug use and drug related behaviors than those responding to a live interviewer. This was especially seen in the reported use of crack. 2.5% of those responding to a live interviewer reported using crack whereas 4.6% of T-ACASI respondents reported the use of the drug, for a relative difference of 84% in estimated prevalence. T-ACASI respondents in the study were also more likely to report concern for a present drug problem compared to respondents reporting to a live interviewer (50.5% vs. 32.8%; adjusted OR= 2.13, $p = .001$).

One downside to the T-ACASI method suggested by previous studies is that it increases the possibility of respondent break-off (Blumberg, 2003; Corkrey and Parkinson, 2002; Tourangeau et al, 2002). Respondent break-off occurs when interviews are terminated by a respondent before the interview has been completed.

Socially Desirable Behavior. The use of self-administered modes of interview has also been suggested to reduce the overstatement of socially desirable acts such as voting and giving to charity (Locander et al, 1976; Sudman, 1980), and weekly church attendance (Presser and Stinson, 1998). The presence of a live interviewer may influence a

respondent to overstate his or her involvement in socially desirable behavior whereas the context of a self-administered questionnaire gives the respondent the privacy and anonymity to report more truthfully. “In a personal situation,” writes Sudman (1980), “respondents will feel the need to impress the interviewer by reporting behavior such as voting, giving to charity, and attending cultural events. Respondents do not feel the same need to impress anonymous researchers.”

Mode Effects by Race. Previous research has suggested a greater sensitivity to mode of administration demonstrated by black respondents than for white respondents in surveys of sensitive behaviors (Aquilino and Lo Sciuto, 1990; Aquilino, 1994; Mensch and Kandel, 1988; Miller et al, 1999). For instance, Aquilino (1994) observed black respondents to be more likely than whites to report illicit drug and alcohol use on a self-administered questionnaire than to a live interviewer. Likewise in the Miller et al (1999) study examining the extent of mode effects on the reporting of abortions among sexually active women in the National Study of Family Growth (NSFG), it was found that black women were affected more by mode of administration than white women. For example, 10.3% of black respondents versus 5.0% of white respondents in the study who initially reported one abortion in the interviewer-administered mode reported two or more abortions when re-interviewed via the audio-CASI mode.

Reasons for differences by race in the impact of mode of administration have been presented. Mensch and Kandel (1988), who reported that blacks and Hispanics were twice as likely compared to white respondents to underreport illicit drug use in the National Longitudinal Study of Youth (NLSY), put forth that blacks or minorities may be more threatened or made uneasy as compared to whites in the action of self-reporting due

to an overall mistrust of the research process in general. Suspicion on the part of minority respondents to surveys of illicit or sensitive behaviors may be impacted by a low level of confidence in guarantees of confidentiality promised by researchers at the outset of a study (Aquilino and Lo Sciuto, 1990).

Methodology

The purpose of this present study is to examine the effects of mode of data collection on the reporting of socially sensitive attitudes for 7 questions included on the National STD and Behavior Measurement Experiment (1999-2000). The NSBME surveyed probability samples of 1543 U.S. and 744 Baltimore adults aged 18 to 45 and randomly assigned respondents to answer sensitive questions on licit and illicit drug use, sexual behavior, and attitudes administered by either a human telephone interviewer (the T-IAQ mode [Telephone Interview-assisted Questionnaire]) or T-ACASI (Telephone Audio Computer-assisted, Self-interview). Eligible respondents in the T-IAQ mode were interviewed by a live interviewer after agreeing to participate in the study. Those respondents in the T-ACASI mode were initially contacted by a live telephone interviewer and screened for eligibility. If deemed eligible, respondents were then asked to participate in the study. Upon agreeing to participate, respondents were then turned over to the automated computer system, listening to pre-recorded questions and recording answers by pressing the appropriate keys on the telephone's keypad. The first few questions on demographic items were monitored by a live interviewer to make sure that the automated system was functioning properly. After assessing that the system was successfully working, the live interviewer ceased from monitoring the interview and the respondent was left to complete the automated survey in total privacy.

Measurements. 7 attitudinal questions included on the survey, along with a number of socio-demographic control variables (respondent gender, race, educational attainment, marital status and age) will serve as the study's measurements. The attitudinal questions deal with topics that are arguably sensitive or controversial in nature. These attitudinal items asked respondents to respond to given statements. Respondents were asked to choose among the following response categories:

1. Strongly Agree
2. Agree Somewhat
3. Disagree Somewhat
4. Disagree Strongly

in responding to the following statements:

- I. It is sometimes necessary to discipline a child with a good, hard spanking.
- II. There is no real risk associated with the occasional use of marijuana.
- III. A pre-school child is likely to suffer if his or her mother works.
- IV. It is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family.

The three additional attitudinal items included:

- V. *We would like to know your opinion about sexual relations between two adults of the same sex—do you think it is...*

Response categories included:

1. Always wrong
2. Almost Always Wrong

3. Wrong Only Sometimes
4. Not Wrong At All

VI. *Compared to the average person, how good looking do you think you are?*

Response categories included:

1. Much Better Looking
2. Somewhat Better Looking
3. Average
4. Somewhat Worse Looking
5. Much Worse Looking.

VII. *If you could find the housing that you would want and like, would you rather live in a neighborhood that is....*

Response categories included:

1. All the same race
2. Mostly the same race
3. Half and half
4. All or mostly other race

The following socio-demographic variables will be included in the statistical analysis to examine the impact of mode of administration on responses across these defined subpopulations:

1. Respondent gender (male or female).

2. Respondent race (analysis will be limited to black and white respondents due to low cell counts for other racial/ethnic groups).
3. Respondent age (recoded into 3 age groups: 18 to 25yr. olds, 26 to 35yr. olds, and 36 to 45yr. olds).
4. Respondent educational attainment recoded into 3 categories:
 - a. 8th grade level or less to High School graduate
 - b. Vocational, Trade, or Business school/ Some college experience
 - c. College graduate and beyond
5. Respondent marital status recoded into 2 categories:
 - a. Married or living with a partner
 - b. Never married/Divorced/Separated/Widowed

Research Questions and Hypotheses

The study's focus will be on 2 primary research questions:

1. Will there be found a significant difference in the responses to the attitudinal items by mode of data collection (T-IAQ and T-ACASI)?
2. Will the mode of administration have particular impact on responses to the attitudinal items for the subpopulations defined by gender, age, race, educational level, and marital status?

Research Hypotheses

1. Based on previous findings which suggest that respondents will report socially desirable attitudes more often in the context of a live interview (Knudson, Pope and Irish, 1967; Sudman, 1965; Sudman and Bradburn, 1974) it is expected that respondents in the present study will report socially desirable attitudes more often to a live interviewer and less tolerant attitudes in the context of the T-ACASI mode. The privacy of the T-ACASI mode will allow respondents to report freely apart from any social pressure the presence of a live interviewer may generate to answer in a socially desirable way.

2. Previous findings indicate that black respondents are more sensitive to the effects of interview mode than are white respondents in the reporting of sensitive behaviors (Aquilino and Lo Sciuto, 1990; Aquilino, 1994; Mensch and Kandel, 1988; Miller et al, 1999). This may be due to a mistrust of the research process in general among black respondents (Aquilino and Lo Sciuto, 1990; Mensch and Kandel, 1988). It may also be expected that black respondents will display sensitivity to mode effects in responses to sensitive attitudinal questions to a greater extent than white respondents in the present study.

3. Level of respondent educational attainment may be a mediating factor on the impact of mode of data collection on response to the attitudinal items. Those with lower levels of education may generally be unacquainted with the research process more so than respondents with more education. Less-educated respondents, then, may be more intimidated in the context of a live interview and more prone to give socially desirable responses than respondents with a higher degree of educational attainment.

4. Mode effects are also expected to vary by age of respondent. Previous findings have suggested that younger respondents may be more sensitive to mode effects than older respondents in the reporting of sensitive behaviors such as drug use (Turner, Lesser, and Devore, 1992; Wright, Aquilino, and Supple, 1998). Younger respondents may be more prone to socially desirable reporting in the context of a live interview due to a greater sensitivity to social pressures due to age and less experience.

5. Previous use of marijuana by respondents may have an impact on response by mode of data collection to the statement “There is no real risk associated with the occasional use of marijuana.” That is, those respondents who have used the drug before may be more apt to agree strongly with the statement to a greater extent than those with no experience with the drug. These respondents therefore will report this controversial attitude more in the T-ACASI mode rather than in the T-IAQ mode.

Statistical Analysis

To answer the study’s first research question, as to whether there are significant main effects present between interview modes, an analysis will be carried out to compare responses to the 7 attitudinal questions by mode of interview (T-ACASI v. T-IAQ). Cross-tabulations will be generated by mode of interview for responses to each of the 7 questions. The chi-square test of significance will be used to determine if responses significantly vary by mode of interview.

In addressing the second research question, log-linear modeling will be employed to test the effects of interview mode on the responses to the seven attitudinal questions to see if they are equivalent across defined subpopulations. These subpopulations include: gender, race, age, educational attainment, and marital status. Log-linear models will be fit to 3-way tables for each of the 7 attitudinal questions (*A*) by survey mode (*M*: T-ACASI or T-IAQ) by each of the 5 socio-demographic variables (*S*: gender, race, age, educational attainment, and marital status). The log-linear models will be constrained to fit all 2-way marginals [(*AM*) (*MS*) (*AS*)] in the 3-way tables. Likelihood ratio chi-square statistics will be used to calculate the fit of the log-linear models to the observed data. Statistically significant 3-way interactions will be indicated by a failure to obtain a statistically adequate fit for these models. This testing will determine whether or not the T-ACASI method has a particular impact in these defined subpopulations. Only those cases where log-linear modeling indicates the presence of a statistically significant 3-way interaction will be presented (shown in Table 2).

Statistical analysis will be carried out using SPSS (Statistical Package for the Social Sciences) version 11.0 for Windows.

Results

Table 1. Table 1 represents responses to attitude questions by interview mode (T-IAQ vs. T-ACASI). The differences in responses to all of the attitude questions by interview mode were found to be statistically significant (p's from <.001 to .03 according to Pearson chi-square tests). On the four questions which asked respondents to Strongly Agree, Agree Somewhat, Disagree Somewhat, or Strongly Disagree, it is observed that

respondents seemed to be more likely to give “socially acceptable” responses when questioned by a live interviewer as compared to those respondents interviewed in the T-ACASI mode. That is, T-IAQ respondents may have had their responses impacted by interviewer bias. When responding to the statement “It is sometimes necessary to discipline a child with a good hard spanking” (panel 1), 11.9% of T-ACASI respondents “Strongly Agreed,” while 8.2% of T-IAQ respondents did so. When looking at the opposite extreme response, it is observed that 17.8% of T-ACASI respondents compared to 20.2% of T-IAQ respondents “Disagreed Strongly” to the statement. Similarly, when responding to the statement, “There is no real risk associated with the occasional use of marijuana” (panel 2), 10.5% of T-ACASI respondents versus 6.9% of T-IAQ respondents “Strongly Agreed.” The numbers then are reversed for respondents who “Disagreed Strongly,” 30.8% of T-ACASI respondents versus 34.8% of T-IAQ respondents. Consistent results are observed when examining responses to the statements “A pre-school child is likely to suffer if his or mother works” (panel 4) and “It is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family” (panel 5).

Panel 3 of table 1 shows responses concerning opinion toward same-sex sexual relations between two adults by mode of interview. T-ACASI respondents were more likely to report that same-gender sex was “Always Wrong” (49.1%) as compared with T-IAQ respondents (46.0%). T-IAQ respondents were then more likely to report that same-gender sex was “Not wrong at All,” as compared to T-ACASI respondents (37.8% vs. 30.7%). Panel 6 presents the responses to the question, “Compared to the average person, how good looking do you think you are?” 16.8% of T-ACASI respondents as compared

with 10.2% of T-IAQ respondents reported that they were “much better looking” than the average person. T-ACASI respondents were also more likely to report that they were “Somewhat better looking” than average as compared with their T-IAQ counterparts (38.3% vs. 31.8%). Among those reporting that they were just “Average” looking, it was T-IAQ respondents who were more likely than T-ACASI respondents to give this median response (55.6% vs. 41.9%).

Respondents were also asked about their neighborhood preferences (panel 7). T-ACASI respondents were more likely than T-IAQ respondents to report that they would prefer to live in a neighborhood that is “All the same race” (14.8% vs. 10.3%) or “Mostly the same race” (46.6% vs. 37.2%). T-IAQ respondents, on the other hand, were more likely to report a preference for a neighborhood that is racially mixed (“Half and half”) as compared to T-ACASI respondents (49.1% vs. 36.3%).

Table 2. Table 2 represents responses to attitudinal questions by mode of interview, controlling for interacting variables. Presented here are the statistically significant 3-way interactions indicated by way of log-linear analysis. It is observed in panel 1 that in response to the statement, “It is sometimes necessary to discipline a child with a good hard spanking,” black respondents were more impacted by the mode of interview than were their white counterparts. This is most evident in the use of response category “Disagree Strongly,” where 13.5% of black T-IAQ respondents versus 5.6% of black T-ACASI respondents reported this response. Black and white respondents were both more likely to use response category “Strongly Agree” in the T-ACASI mode than the T-IAQ mode (17.6% vs. 12.1% for blacks; 10.6% vs. 7.0% for whites). White responses were

borderline significant ($p = .06$), while black responses were much more significant ($p = .001$) according to Pearson chi-square tests.

Panels 2-4 show responses by mode of interview to the statement, “There is no real risk associated with the occasional use of marijuana” controlling for respondent use of marijuana (at least once), race (black or white) and age (3 groups). T-ACASI respondents who reported using marijuana at least once were more likely to use the response category “Strongly Agree” (16.1%) as compared with T-IAQ respondents who reported using marijuana at least once (10.4%). Among respondents who reported never using marijuana, interview mode seemed to have the largest impact on the use of the median response categories. T-IAQ respondents in this group were more likely to “Agree Somewhat” than T-ACASI respondents (15.1% vs. 8.8%). It was then T-ACASI respondents who were more likely to “Disagree Somewhat” than T-IAQ respondents (41.9% vs. 33.9%) among those reporting no marijuana use. Black respondents again appear to be more affected by mode of interview compared to their white counterparts (panel 3). This is particularly seen in the use of response category “Disagree Strongly,” where 45.1% of black T-IAQ respondents versus 29.5% of black T-ACASI respondents used this response. Both blacks and whites were more likely to use the “Strongly Agree” response in the T-ACASI mode as opposed to reporting this to a live interviewer (10.3% vs. 6.9% for whites; 10.6% vs. 7.1% for blacks). White responses were again borderline significant ($p = .057$) while responses for blacks were much more significant ($p = .002$) according to Pearson chi-square test of significance.

Among 18-25 year old respondents (panel 4), T-ACASI respondents were more likely than those reporting to a live interviewer to “Strongly Agree” with the statement “There

is no real risk associated with the occasional use of marijuana” (15.8% vs. 7.0%). The impact of interview mode is also seen among 26-35 year old respondents in the use of response category “Disagree Strongly,” where 38.5% T-IAQ respondents versus 28.0% of T-ACASI respondents chose this response. No significant mode effect was observed for 36-45 year olds ($p=.714$).

Panels 5 and 6 represent responses by mode of interview to the statement, “A pre-school child is likely to suffer if his or her mother works” controlling for age and marital status. The impact of the T-ACASI mode is seen among 18-25 year old respondents but is not observed in the responses given by the older age groups. Among 18-25 year olds, T-ACASI respondents were more likely than T-IAQ respondents to “Strongly Agree” (13.1% vs. 6.3%), while 18-25 year olds reporting to a live interviewer were more likely to “Disagree Strongly” compared to their T-ACASI counterparts (20.1% vs. 9.2%).

Among married or cohabiting respondents (panel 6), responses were non-significant ($p=.072$), but suggest the impact of the T-ACASI mode, as 14.6% of T-ACASI respondents versus 10.9% of T-IAQ respondents chose response category “Strongly Agree.” For non-married/non-co-habiting respondents (never married, divorced, separated or widowed) responses are statistically significant ($p=.002$), with the impact of interview mode particularly seen in the use of response category “Disagree Strongly.” While only 8.5% of T-ACASI respondents “Disagreed Strongly,” 16.4% of T-IAQ respondents did so among non-married or cohabiting respondents.

Panels 7 and 8 show respondent’s “Neighborhood Preferences” by mode of interview, controlling for educational level and race (blacks and whites). Those respondents with the

least amount of education (8th grade or less to HS diploma) responding through audio-CASI were more likely to report a preference for a neighborhood that was “mostly the same race” (44.0%) as compared with those T-IAQ respondents with the same level of educational attainment (26.1%). Similarly, among those with some college, vocational, trade, or business school training, 44.6% of T-ACASI respondents versus 35.4% of T-IAQ respondents preferred a neighborhood that was “mostly the same race.” For all educational levels, T-IAQ respondents were more likely to report a preference for an equally mixed neighborhood than T-ACASI respondents. This is particularly pronounced in the two lower educational level respondents (42.7% of T-ACASI respondents vs. 56.2% of T-IAQ respondents in the 8th grade or less-HS graduate group; 34.4% of T-ACASI respondents vs. 51.6% of T-IAQ respondents in the Some College etc. group). T-ACASI respondents in the two higher educational levels were more likely to report a preference to live in a neighborhood that is “all the same race” than their T-IAQ counterparts (17.2% vs. 10.5% for Some College, Trade, or Business school level; 13.9% vs. 7.9% for the Finished College/Graduate Degree level).

Both blacks and whites (panel 8) were more likely to report a preference for a neighborhood that is “All the same race” in the T-ACASI mode than they were to a live interviewer (17.8% vs. 13.6% for whites; 7.0% vs. 2.9% for blacks). Black and white T-ACASI respondents were also more likely to prefer a neighborhood that is “mostly the same race” as compared to their T-IAQ counterparts (57.3% vs. 49.1% for whites; 18.7% vs. 10.2% for blacks). Both black and white respondents questioned by a live interviewer were more likely to report a preference for an equally mixed neighborhood as compared

to those reporting through audio-CASI (36.4% vs. 24.3% for whites; 78.5% vs. 67.8% for blacks).

Discussion

Overall main effects are in support of Hypothesis 1, that respondents will report more socially desirable answers to a live interviewer and less tolerant responses in the more private T-ACASI mode. This is seen on all seven items. These results seem to support the idea that respondents are affected by the presence of a live interviewer when reporting on sensitive attitudinal questions. In the context of a live interview, respondent answers tended to be more moderate and tolerant. This is particularly seen in responses to the item asking respondents to report how good looking they think they are compared to the average person (Table 1, panel 6) and the opinion question on same-gender sexual relations (Table 1, panel 3). These findings are interpreted to support the idea earlier presented, that respondents will be more open and honest in their reporting of opinion and attitudes when questioned through a self-administered mode (Sudman et al., 1965; Sudman and Bradburn, 1974).

The second hypothesis, that black respondents may be more sensitive to socially desirable reporting when questioned by a live interviewer than white respondents, was supported in the responses to 2 of the seven attitudinal items (“spanking”, Table 2, panel 1; and “pot risk”, Table 2, panel 3). This would suggest a possible sensitivity to socially desirable reporting among black respondents. However, more research on the impact of mode effects on black respondents and minority respondents in general needs to be undertaken, as significance on 2 of 7 attitudinal items remains suggestive at best.

Concerning Hypothesis 3, which stated that less-educated respondents would be more prone to socially desirable reporting than those respondents with a higher level of formal education, reporting on only 1 of the 7 attitudinal items seemed to support this (Table 2, panel 7).

Younger respondents were more likely to have their responses affected by mode of interview in responses to 2 items (“Pot Risk”, Table 2, panel 4; and “Working Mother”, Table 2, panel 5). 18 to 25 yr. olds were more likely to strongly agree with “Pot no Risk” in the T-ACASI mode. 26 to 35 yr. olds were more likely to give a more “socially desirable” response (disagree strongly) to the statement. No mode effect was observed for the 36 to 45 yr. old age cohort. 18 to 25 yr. olds were more likely to give socially desirable responses in the T-ACASI mode and arguably less tolerant responses (“strongly agree”) in the T-ACASI mode to the statement “A pre-school child is likely to suffer if his or her mother works.” No significant differences were observed in attitude reporting by mode of interview for the older age groups. That the younger respondents (18 to 25 yr. olds) were more sensitive to mode effects on these 2 items may have more to do with the nature of the questions than it does with a suggestion that younger respondents are more susceptible to the impact of mode of administration than are older respondents (Hypothesis 4). Issues such as the risks of drug use and the working status of mothers with young children may be ones in which young adult respondents are less comfortable revealing their true opinions.

As expected (hypothesis 5), previous pot use did have an impact on response to the item asking respondents to give their opinion on the risk of frequent pot use (Table 2, panel 2). Respondents who reported ever having experience with pot use were more

likely to “Strongly agree” in the T-ACASI mode. This was not observed for those respondents who reported having never used pot.

The overall main effects of this study support the idea that respondents are impacted by the mode of data collection in the reporting of opinion and attitudes on sensitive topics. Respondents appeared to give more “tolerant” or “socially desirable” responses in the context of the live telephone interview and less tolerant or socially desirable responses in the more private T-ACASI mode. That consistent mode effects were observed for all 7 items suggests that more private modes of data collection such as T-ACASI may be better suited for the collection of sensitive attitudinal data than face-to-face or live-telephone interviews.

That mode effects were observed for the 7 attitudinal items also suggests that the nature and subject matter of the items (the risk of drug use, same gender sexual relations, women and work, racial issues, etc.) remain sensitive to respondents. Mode effects, then, may function as a gauge of the current social sensitivity of a given survey topic or subject. As stated by Turner et al (1998): “What is called a ‘mode effect’ in survey measurements is likely to become a useful instrument for judging the social sensitivity of survey questions and topics and variation in that sensitivity over time.”

This study was limited to 7 attitudinal questions on various topics of a sensitive nature. More studies devoted to the impact of mode of administration on the reporting of sensitive attitudes are needed to help further develop the understanding of the nature of mode effects. Of particular interest would be further exploration of factors such as

respondent race, age, and educational status as mediating the impact of mode effects in surveys of sensitive attitudes.

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TABLE 1. Response to attitude questions by interview mode: T-IAQ vs. T-ACASI. (Results from 1999-2000 NSBM Experiment; unweighted analysis pooling data from national and Baltimore sample strata).

	T-ACASI	T-IAQ	
ATTITUDE MEASUREMENT	%	%	P
Q92: It is sometimes necessary to discipline a child with a good, hard spanking.			
Strongly Agree	11.9	8.2	0.002
Agree Somewhat	34.1	39.4	
Disagree Somewhat	36.2	32.2	
Disagree Strongly	17.8	20.2	
<i>Base N</i>	<i>900</i>	<i>1151</i>	
Q92a: There is no real risk associated with the occasional use of marijuana.			
Strongly Agree	10.5	6.9	0.006
Agree Somewhat	20.2	22.7	
Disagree Somewhat	38.5	35.6	
Disagree Strongly	30.8	34.8	
<i>Base N</i>	<i>877</i>	<i>1139</i>	
Q. 89: We would like to know your opinion about sexual relations between two adults of the same sex -- do you think it is . . .			
Always wrong	49.1	46.0	0.004
Almost always wrong	7.5	5.3	
Wrong only sometimes	12.7	11.0	
Not wrong at all	30.7	37.8	
<i>Base N</i>	<i>872</i>	<i>1120</i>	

Q. 90: A pre-school child is likely to suffer if his or her mother works. Do you. . .			
Strongly Agree	13.2	9.9	0.01
Agree Somewhat	27.5	30.7	
Disagree Somewhat	48.3	45.4	
Disagree Strongly	10.9	13.9	
<i>Base N</i>	<i>906</i>	<i>1149</i>	
Q. 91: It is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family. Do you. . .			
Strongly Agree	11.0	8.0	0.03
Agree Somewhat	20.6	22.0	
Disagree Somewhat	44.7	42.4	
Disagree Strongly	23.7	27.6	
<i>Base N</i>	<i>907</i>	<i>1152</i>	
Q. 75: Compared to the average person, how good looking do you think you are?			
Much better looking	16.8	10.2	<.001
Somewhat better looking	38.3	31.8	
Average	41.9	55.6	
Somewhat worse looking	2.6	2.3	
Much worse looking	0.3	0.1	
<i>Base N</i>	<i>906</i>	<i>1152</i>	
Q. 87: If you could find the housing that you would want and like, would you rather live in a neighborhood that is. . .			
All the same race	14.8	10.3	<.001
Mostly the same race	46.6	37.2	
Half and Half	36.3	49.1	
All or mostly other race	2.4	3.3	
<i>Base N</i>	<i>786</i>	<i>940</i>	

TABLE 2. Response to attitude questions by demographic variable by interview mode: T-IAQ vs. T-ACASI. (Results from 1999-2000 NSBM Experiment; unweighted analysis pooling data from national and Baltimore sample strata).

		T-ACASI	T-IAQ	
Subpopulation & Attitude		%	%	P
Q92: It is sometimes necessary to discipline a child with a good, hard spanking.				
<i>White</i>				
	Strongly Agree	10.6	7	0.066
	Agree Somewhat	32.9	36.9	
	Disagree Somewhat	35.2	32.8	
	Disagree Strongly	21.4	23.3	
	<i>Base N</i>	<i>566</i>	<i>699</i>	
<i>Black</i>				
	Strongly Agree	17.6	12.1	0.001
	Agree Somewhat	38	46.8	
	Disagree Somewhat	38.9	27.6	
	Disagree Strongly	5.6	13.5	
	<i>Base N</i>	<i>216</i>	<i>297</i>	
Q92a: There is no real risk associated with the occasional use of marijuana.				
<i>Used MJ</i>				
	Strongly Agree	16.1	10.4	0.043
	Agree Somewhat	29.4	30.2	
	Disagree Somewhat	35.6	37.1	
	Disagree Strongly	18.9	22.3	
	<i>Base N</i>	<i>477</i>	<i>566</i>	

<i>Never Used MJ</i>				
	Strongly Agree	3.8	3.5	0.009
	Agree Somewhat	8.8	15.1	
	Disagree Somewhat	41.9	33.9	
	Disagree Strongly	45.5	47.5	
	<i>Base N</i>	<i>396</i>	<i>564</i>	
Q92a: There is no real risk associated with the occasional use of marijuana.				
<i>White</i>				
	Strongly Agree	10.3	6.9	0.057
	Agree Somewhat	22.6	27.4	
	Disagree Somewhat	36.1	36.8	
	Disagree Strongly	31	28.9	
	<i>Base N</i>	<i>554</i>	<i>693</i>	
<i>Black</i>				
	Strongly Agree	10.6	7.1	0.002
	Agree Somewhat	15	15.9	
	Disagree Somewhat	44.9	31.9	
	Disagree Strongly	29.5	45.1	
	<i>Base N</i>	<i>207</i>	<i>295</i>	
Q92a: There is no real risk associated with the occasional use of marijuana.				
<i>18-25</i>				
	Strongly Agree	15.8	7	0.015
	Agree Somewhat	20.7	24	
	Disagree Somewhat	29.1	34.8	
	Disagree Strongly	34.5	34.1	
	<i>Base N</i>	<i>203</i>	<i>287</i>	
<i>26-35</i>				
	Strongly Agree	8.5	6.8	0.003
	Agree Somewhat	20.4	23.2	
	Disagree Somewhat	43	31.5	
	Disagree Strongly	28	38.5	
	<i>Base N</i>	<i>328</i>	<i>415</i>	

<i>36-45</i>				
	Strongly Agree	9.2	7.1	0.714
	Agree Somewhat	19.7	21.3	
	Disagree Somewhat	39.9	40.1	
	Disagree Strongly	31.2	31.4	
	<i>Base N</i>	<i>346</i>	<i>436</i>	
Q90: A pre-school child is likely to suffer if his or her mother works.				
<i>18-25</i>				
	Strongly Agree	13.1	6.3	0.001
	Agree Somewhat	26.7	27.4	
	Disagree Somewhat	51	46.2	
	Disagree Strongly	9.2	20.1	
	<i>Base N</i>	<i>206</i>	<i>288</i>	
<i>26-35</i>				
	Strongly Agree	13.5	11.2	0.426
	Agree Somewhat	29.7	30.1	
	Disagree Somewhat	46.2	44.5	
	Disagree Strongly	10.6	14.1	
	<i>Base N</i>	<i>340</i>	<i>418</i>	
<i>36-45</i>				
	Strongly Agree	13.1	10.9	0.104
	Agree Somewhat	26	33.6	
	Disagree Somewhat	48.6	45.7	
	Disagree Strongly	12.3	9.8	
	<i>Base N</i>	<i>358</i>	<i>440</i>	
Q90: A pre-school child is likely to suffer if his or her mother works.				
<i>Married/Living with partner</i>				
	Strongly Agree	14.6	10.9	0.072
	Agree Somewhat	27.1	33.5	
	Disagree Somewhat	45.2	44	
	Disagree Strongly	13.1	11.6	
	<i>Base N</i>	<i>480</i>	<i>579</i>	

<i>Never married/Divorced/Widowed/Separated</i>				
	Strongly Agree	11.8	9	0.002
	Agree Somewhat	28	27.8	
	Disagree Somewhat	51.8	46.8	
	Disagree Strongly	8.5	16.4	
	<i>Base N</i>	<i>425</i>	<i>568</i>	
Q87: Preference for Neighborhood.				
<i>8th Grade or less to HS graduate</i>				
	All same race	12.9	12.4	<.001
	Mostly same race	44	26.1	
	50-50	42.7	56.2	
	Mostly or all other race	0.4	5.2	
	<i>Base N</i>	<i>248</i>	<i>306</i>	
<i>Vocational/TradeBusiness/Some College</i>				
	All same race	17.2	10.5	<.001
	Mostly same race	44.6	35.4	
	50-50	34.4	51.6	
	Mostly or all other race	3.9	2.5	
	<i>Base N</i>	<i>285</i>	<i>314</i>	
<i>Finished College/Post Graduate Degree</i>				
	All same race	13.9	7.9	0.06
	Mostly same race	51.2	50	
	50-50	32.1	39.9	
	Mostly or all other race	2.8	2.2	
	<i>Base N</i>	<i>252</i>	<i>318</i>	

Q87: Preference for Neighborhood.

<i>White</i>				
	All same race	17.8	13.6	<.001
	Mostly same race	57.3	49.1	
	50-50	24.3	36.4	
	Mostly or all other race	0.7	0.9	
	<i>Base N</i>	<i>569</i>	<i>656</i>	
<i>Black</i>				
	All same race	7	2.9	0.005
	Mostly same race	18.7	10.2	
	50-50	67.8	78.5	
	Mostly or all other race	6.5	8.4	
	<i>Base N</i>	<i>214</i>	<i>275</i>	