



A multi-level analysis of the effect of interviewer characteristics on survey respondents' reports of sensitive topics



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ABSTRACT

Self-report survey research has become the bedrock of theory construction and testing in the social sciences. Given the sensitive nature of topics examined in psychology, criminology, and elsewhere empirical understanding of factors that affect the validity and reliability of the data are crucial. As a result, a wide swath of research has evaluated the extent to which various methods of self-report techniques affect data quality. Left relatively under examined in this literature is the extent to which interviewer characteristics influence variation in self-reported data regarding sensitive behaviors. The current study addresses this gap by assessing the influence of a variety of interviewer characteristics on reports of antisocial behavior, victimization, and sexual behavior. Employing data from a nationally representative sample of American adults, multi-level analyses indicated that interviewer characteristics had virtually no effect on the variation in these behaviors. Discussion focuses on the validation of the data for analyses using these measures and study limitations.

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1. Introduction

Self-report surveys are common in many domains of social science research. The use of self-report and interview survey methods in criminology, for example, rose dramatically during the 1960s and 1970s and became a common aspect of social science research (Cops, De Boeck, & Pleyzier, 2016). Perhaps the principal reason for reliance on the self-report survey method is the increased likelihood that respondents will report highly personal behaviors, such as criminal behavior or sexual conduct (Junger-Tas & Marshall, 1999).

Systematic study of the survey method in the social sciences has shown that the specific mode of data collection in a survey design can influence the quality of the data. For example, researchers have shown modes that increase the perceived anonymity of the respondent are more likely to elicit a response to sensitive questions (Dillman, 2007; Turner et al., 1998). Furthermore, a wide collection of literature illustrates that certain characteristics of both respondents and interviewers can also influence the quality and type of data produced in the research (e.g., Blohm, Hox, & Koch, 2006; Hox, 1994; Nedelec & Beaver, 2011; Pickery, Loosveldt, & Carton, 2001). However, much of the extant research on interviewer and respondent effects has employed linear regression techniques of analysis. Given the assumption of independence of the error terms in a regression model this common technique may be problematic when assessing the impact of interviewer or respondent characteristics. For example, to the extent that individual interviewer characteristics (e.g., sex, race, education level, or experience

of the interviewer) systematically influence the data collection process there will also be statistical error that affects analyses based on the data (Hox, 1994). Therefore, the use of linear regression techniques in these cases may produce underestimated standard errors and *p*-values that are likely too low thereby increasing the probability of committing a Type-I inferential error (Johnson, 2010; Luke, 2004).

As a potential safeguard against the systematic influence of interviewer characteristics, many large-scale data collection efforts employ techniques such as computer-assisted interviewing methods (aka, CASI). Although such techniques are meant to increase candidness and minimize contextual effects, some researchers have found that the setting in which the interview takes place, even when CASI is employed, can have an influence on the reporting of factors such as sensitive behaviors (e.g., Brener et al., 2006; Pickery et al., 2001). As noted by Brener et al. (2006), even national surveys on the same topics can vary considerably. Studies addressing such variance often assess the influence of differential survey methodologies (e.g., CASI versus face-to-face) but left relatively absent from the extant literature is an assessment of how individual characteristics of interviewers can potentially affect the reporting of sensitive behaviors (even when CASI techniques are employed).

Against this backdrop, the current study examines the potential influence of interviewer characteristics on respondent reports of antisocial behaviors, criminal victimization, and sexual behavior. The current study builds on the extant literature in two key ways. First, the study employs a multi-level (mixed model) analytic technique in order to account for any non-random association between interviewers and respondents (i.e., to avoid the potential problems associated with the use of linear regression techniques outlined above). Second, by

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including three different outcome measures the current study provides an analysis of the impact of interviewer characteristics on outcomes germane to a wide swath of social science research. Additionally, these three outcomes are in line with past research assessing the differential effects of various survey methodologies and contexts (e.g., Brener et al., 2006; Turner et al., 1998). In order to meet these two goals, the study employs data from a national representative sample of American young adults.

2. Methods

2.1. Sample

Data for this study were drawn from Wave 3 of the National Longitudinal Study of Adolescent to Adult Health (Add Health). Information regarding the sampling procedure and the data has been detailed elsewhere (e.g., Harris et al., 2003). In brief, the Add Health study is a longitudinal and nationally representative sample of American students enrolled in grades 7 through 12 during the 1994–1995 school year who were followed for approximately 14 years (Harris et al., 2003). The third wave of data, conducted in 2001 and 2002, were gathered from 15,197 respondents who were in the original Wave 1 sample. Relevant to the current analysis, the entire questionnaire was completed on laptop computers and respondents entered their own answers to sensitive questions (i.e., CASI), including those regarding antisocial behavior, criminal victimization, and sexual behaviors (Harris et al., 2003). Importantly, however, interviewers were still physically present during the CASI portion of the interview.

Unique to the first three waves of data collection, Wave 3 included information on interviewer characteristics. At the end of each interview, interviewers were asked to provide information regarding their sex, year of birth, race, highest education level, and level of interview experience.¹

Overall, due to variance in missing cases across the different items included in the current study, the analytical sample varies between $N = 12,755$ and $N = 15,197$ respondents nested within $N = 447$ interviewers.²

2.2. Level 1 predictors³

2.2.1. Respondent age, race, & sex

Given that the substantive focus is on the potential effect of interviewer characteristics, we include only three level 1 predictors as control variables. Age was calculated by subtracting the year of birth from the year of the interview at Wave 3. Race (0 = nonwhite, 1 = white) and sex (0 = female, 1 = male) were also included.

Researchers employing multi-level modeling recommend that level 1 predictors be mean centered prior to inclusion in a model (e.g., Enders & Tofghi, 2007; Johnson, 2010). Given the current study's focus on level 2 effects, the three level 1 predictors were grand-mean centered.

2.3. Level 2 predictors

2.3.1. Interviewer age, race, & sex

Interviewer age was determined by subtracting the interviewer's birth year from the year of the interview. Interviewer race (0 = nonwhite, 1 = white) and sex (0 = female, 1 = male) were both coded dichotomously.

¹ Notably, all fieldwork was contracted to an independent nonprofit research institute who employed the interviewers.

² The average number of interviews per interviewer was $\bar{X} = 34$ (SD = 29.15; range: 1 to 206). See Appendices B and C for more information.

³ Given the current study's use of a mixed methods model, respondents are considered nested within interviewers (see Johnson, 2010). Thus, the level 1 predictors are the respondent characteristics and the level 2 predictors are the interviewer characteristics.

2.3.2. Interviewer education and experience

A measure of the highest level of education completed by the interviewer was coded such that 1 = high school, 2 = some college, 3 = college graduate, and 4 = post graduate.⁴ Interviewing experience was coded such that 0 = less than one year of experience, 1 = one to two years of experience, 2 = two to five years of experience, 5 = five to ten years of experience, 10 = ten years of experience, and 11 = more than ten years of experience.

2.4. Outcome measures

2.4.1. Antisocial behavior

The antisocial behavior index is comprised of 15 items tapping both property and violent offending. The items used to create the index (as well as the other outcome measures) and their coding schemes appear in Appendix A. The antisocial behavior index ($\alpha = 0.62$) was constructed by first summing the items and then dividing by the number of items included in the index for each respondent.⁵

2.4.2. Criminal victimization

Respondents were asked to report on eight different types of criminal victimization (see Appendix A). The items were summed together and divided by the number of items included in the index to form the criminal victimization index ($\alpha = 0.70$).

2.4.3. Number of sex partners

The final outcome measure is comprised of a single item asking respondents to report the total number of people with whom they had ever had a sexual relationship that included the insertion of a penis into a vagina.⁶

2.5. Analytical strategy⁷

Following the recommendations of past researchers who have examined interviewer effects in a multi-level context (e.g., Hox, 1994) and experts in using multi-level modeling (Johnson, 2010; Raudenbush & Bryk, 2002), the analyses in the current study followed a four-step process. First, we calculated summary statistics and zero-order relationships. Second, for each outcome measure a baseline (unconditional) model was completed (Model 1). The unconditional model does not include any predictors and provides an estimation of the predicted value for the average score on the outcome measure across all levels of analysis (Johnson, 2010; Luke, 2004). In addition to decomposing the variance in the outcome between a level 1 error term (within-group variance) and a level 2 error term (between-group variance), the model also provides the intraclass correlation coefficient (ICC; Johnson, 2010). The ICC is a measure of the amount of variance in the outcome that can be attributed to between-group (i.e., level 2) differences (Johnson, 2010; Raudenbush & Bryk, 2002). When the ICC is close to zero most of the variation in the outcome measure can be explained by level 1 attributes and when the ICC is close to one, most of the variation in the outcome measure can be explained by level 2 attributes (Johnson, 2010).

⁴ A fifth category, *Other*, was coded as missing as it was not possible to determine the level of completed education represented. Additionally, the ordinal coding schemes for education and experience were inherent to the Add Health data.

⁵ Using the `alpha` command in Stata, a minimum of 50% of the items had to be non-missing in order for an index to be created for a single respondent (for all outcome measures). These indexes were constructed by the author.

⁶ Respondents coded as *legitimate skips* on this measure (i.e., never had sexual intercourse) were recoded as "0" on the number of sex partners item.

⁷ In order to first establish if variance in the outcome measures existed across interviewers three figures were constructed which plotted the estimated average scores on the outcomes across interviews. The figures are displayed in Appendix C indicate that average scores on the outcome measures did indeed vary across the Add Health interviewers.

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