

THE IMPACT OF INTERVIEWER CHARACTERISTICS ON COCAINE USE UNDERREPORTING BY MALE JUVENILE ARRESTEES

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The general validity of survey reports of drug use behavior remains controversial. Concern with this problem has inspired research into a number of subject, process and design variables which may be associated with the underreporting, or editing (Sudman, Bradburn and Schwarz, 1996) of drug use behaviors (Aiken, 1986; Aquilino, 1994; Davies and Baker, 1987; Farabee and Fredlund, 1996; Fendrich and Vaughn, 1994; Fendrich and Xu, 1994; Hser, Anglin and Chou, 1992; Johnson, Hougland and Moore, 1991; Johnson and Parsons, 1994; Mensch and Kandel, 1988; Turner, Lessler and Gfroerer, 1992). Editing has been particularly apparent in responses to drug use surveys delivered within the criminal justice system, where alternative measurement methods have been more readily available for purposes of validation. For example, one recent study (Fendrich and Xu, 1994) showed that less than one in three juvenile arrestees who tested positive for cocaine use disclosed lifetime use of that substance during an interview occurring before the test.

This analysis extends prior research on drug use underreporting using data from the 1992 juvenile Drug Use Forecasting Program (see Fendrich and Xu, 1994). We evaluate the relative importance of subject and interviewer variables in accounting for underreports of drug involvement. Our analyses address the relevance of three alternative models of interviewer effects. Additionally, we evaluate whether adjustment for respondent clustering by interviewers influences conclusions about fixed subject and interviewer predictors of reporting.

Models of Interviewer Effects

Our selection of models for evaluating interviewer effects draws on a substantial body of research on attitude surveys (cf., Groves, 1989). Two alternative theoretical approaches have been traditionally utilized to interpret research findings in this literature (Johnson and Moore, 1991). The *direct effects*, or *social attribution model*, assumes that interviewer

characteristics alone are sufficient to influence the reporting behavior of respondents. This model assumes that respondents make inferences about interviewers based on interviewers' observable characteristics. This model posits that respondents use these inferences, in conjunction with general cultural stereotypes, to tailor (or edit) their answers to elicit interviewer approval (Groves and Fultz, 1985). In contrast, according to the *social distance model*, those respondents who perceive greater social distance between themselves and the interviewer with whom they are speaking will be more likely to edit their responses to coincide with perceived interviewer expectations (Freeman and Butler, 1976). Drawing on the work of Dohrenwend, Colombotos, and Dohrenwend (1968), we also propose the *nonlinear social distance model*. This third model suggests the presence of interviewer effects under conditions of very high and very low social distance between interviewer and respondent.

Methods

Sample: As part of the Drug Use Forecasting Program (DUF), the National Institute of Justice obtained research interviews from male and female juvenile arrestees ages 9 to 18 years old held in booking facilities in cities throughout the United States. For approximately 14 consecutive evenings every three months (each quarter), trained local staff obtained voluntary, anonymous interviews from a new sample of juvenile arrestees/detainees.² Juveniles contacted for the study were asked if they were interested in answering questions about their "lifestyle." Once they agreed to participate, youth were given a questionnaire that inquired about educational status, employment, current living arrangements, drug treatment, as well as about lifetime and current substance use. Immediately following the interview, interviewees were asked to voluntarily submit urine specimens for drug testing (see National Institute of Justice, 1990, for details about

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²Subjects were sampled from sites in 12 U.S. cities: Birmingham, Cleveland, Denver, Indianapolis, Los Angeles, Phoenix, Portland, St. Louis, San Antonio, San Diego, San Jose, and Washington, D.C. Comparisons between sites are available on request from the first author.

the laboratory procedure for conducting EMIT tests). The present study investigates correlates of lifetime cocaine use reports among the entire sample of informants (n=3978) as well as among the subgroup with positive drug test results (n=333).³ All subjects included in these analyses were male.

Social Distance Scale: Interviewer demographic variables were used to create a summative social distance scale reflecting the degree of interviewer similarity to the subject. Prior to multivariate analyses, the social distance scale was converted into two dummy variables reflecting the following contrasts: no similarity vs. one similarity, no similarity vs. two or more similarities.

Data Analysis and Interpretation: Theoretical models were tested using bivariate crosstabulations and multiple logistic regression. To evaluate the consistency of interviewer effects across respondent subgroups, all multivariate models evaluated subject-by-interviewer characteristic interaction terms. The homogeneity of our sample in terms of age and sex has implications for the interpretation of associations in multivariate models. In particular, main effects suggesting higher disclosure rates for subjects interviewed by younger interviewers would provide support for the social distance model for interviewer effects given the youthful nature of the sample. Similarly, since all of the subjects are male, main effects suggesting higher disclosure rates for subjects interviewed by male interviewers would support the social distance model. Finally, a positive association between use disclosure and a multiplicative interaction term for subject-by-interviewer race would also provide support for the social distance model.

Cluster Adjustments: Two kinds of potential clustering were adjusted for in analyses using MIXOR software (Hedeker, 1993; Hedeker and Gibbons, 1994). We attempted to evaluate and adjust for the potential clustering of responses by data collection site. Since multiple subjects were often interviewed by the same person within a particular site, we also attempted to evaluate the potential clustering of responses by interviewer.

Results: Bivariate Analyses

Table 1 summarizes the bivariate comparisons.

Entire Sample

Subject Characteristics: There were significant

³The single cocaine positive subject from Portland was omitted from subset analysis. Comparisons between cocaine positive and other youth are available on request from the first author.

associations between lifetime use disclosure and subject age at arrest, race/ethnicity and top arrest charge. Higher rates of lifetime use were reported among older youth, Spanish-speaking youth and youth arrested on non-violent or non-drug related charges. Note that the race/ethnicity comparisons are particularly striking, with only 4% of Black youth disclosing that they ever used cocaine, compared with 29% of the Spanish-speaking youth and 18% of the White/other youth.

Interviewer Characteristics: Lifetime use disclosure was associated with interviewer race/ethnicity, interviewer gender and with the degree of total social distance between interviewer and subject. The interviewer race/ethnicity findings parallel the subject race/ethnicity findings; subjects interviewed by Spanish-speaking interviewers and White/other interviewers were much more likely to disclose lifetime cocaine use than subjects interviewed by Black interviewers. Only 5% of the subjects interviewed by Black interviewers disclosed lifetime use, compared with 20% of the subjects interviewed by Spanish-speaking interviewers and 16% of the subjects interviewed by White/other interviewers. Sixteen percent of the youth interviewed by men disclosed lifetime cocaine use, compared with only 12% of those interviewed by women. Those with at least one match between subject and interviewer on demographic characteristics had higher rates of use disclosure than those with no match.⁴ Over 15% of subjects with at least one match reported cocaine use, compared with 9% of the subjects with no matches.

Cocaine-Positive Subset

Subject Characteristics: Although recent (three-day) cocaine use is validated for this subsample, the majority of respondents in this subgroup (69%) did not report any lifetime use. Race/ethnicity and top arrest charge both showed an association with cocaine use disclosure. Paralleling the findings from the sample as a whole, Black respondents testing positive for cocaine were extremely reluctant to disclose use. Only 11% of the Black cocaine positive youth disclosed lifetime use, compared with 50% of Spanish-speaking youth and 70% of the White/other youth. Youth whose top arrest

⁴Lifetime use disclosure increased with an increase from 0 to two matches and decreased with an increase from two to three matches. A four point scale was not appropriate for this data, however, since there were no Spanish-speaking subjects interviewed by young male Spanish-speaking interviewers.

charge was drug-related were less likely to disclose any cocaine use than youth whose top charges were classified as "violent" or "other."

Interviewer Characteristics: Interviewer race/ethnicity and interviewer similarity were both significantly associated with lifetime cocaine use disclosure. Youth testing positive for cocaine who were interviewed by Black interviewers disclosed lower rates of lifetime use than youth interviewed by Spanish-speaking or White/other interviewers. Only 17% of the youth interviewed by Black interviewers disclosed use, compared with 42% of the youth interviewed by Spanish-speaking interviewers, and 31% of the youth interviewed by White/other interviewers. Additionally, there was less disclosure of lifetime use in cases where there was greater social distance between interviewer and respondent. Over one-third of the subjects with at least one interviewer match disclosed lifetime use, compared with 17% of those with no match.

Results: Multivariate Analyses⁵

Entire Sample

Main Effects Model: Subject age at arrest, race/ethnicity, and top arrest charge showed significant associations with lifetime cocaine use disclosure. Relative to those in the youngest age group, those in the 15 to 16 year old group and those 17 and older had significantly increased odds of disclosing lifetime use. Compared to White/other subjects, Black informants had significantly reduced odds of cocaine use disclosure and Spanish-speaking informants had significantly increased odds of cocaine use disclosure. Compared to those with drug-related arrest charges, those with violent arrest charges had significantly reduced odds of cocaine use disclosure.

Interviewer race/ethnicity and interviewer age both demonstrated a significant association with disclosure. Those interviewed by Black interviewers had significantly reduced odds of disclosure compared with those interviewed by White/other interviewers. Those interviewed by interviewers who were from 26 to 34 years old had significantly reduced odds of disclosure compared with those interviewed by younger interviewers. When a parallel main effects model was constructed to estimate the impact of interviewer social distance on disclosure, neither of the parameters estimating interviewer social distance approached statistical significance.

Interactions Model: Two sets of significant

interactions were observed, including subject race by interviewer race and subject age by interviewer race. The impact of interviewer race/ethnicity varied according to subject race/ethnicity. Among Black subjects, Black interviewers had significantly reduced odds of obtaining drug use reports compared to White/other interviewers. Among White/other subjects, the odds of obtaining drug use reports did not vary according to interviewer race. For the oldest group of subjects (those 17 and older), Black interviewers had significantly reduced odds of obtaining drug use reports compared to White/other interviewers. For the youngest group of subjects (those 8 to 14), the odds of obtaining drug use reports did not vary according to interviewer race.

Cluster Adjusted Model: A model estimating potential clustering of observation by site suggested no significant random effect for this variable. On the other hand, we did find a significant cluster effect when a random intercept term for interviewer was estimated. The cluster effect is significant ($p < .001$), accounting for 4% of the variance in drug use disclosure responses. Of particular importance is the impact of random effect inclusion on the estimation of fixed effect terms. The previously significant subject race-by-interviewer race term becomes non-significant. Addition of the random effect increases the variance for the interaction terms, thus reducing their importance as predictors of disclosure.

Cocaine-Positive Subset

Main Effects Model: Only two variables showed any association with lifetime use disclosure: subject age and subject race/ethnicity. The pattern of associations for the two age dummy variables suggests a non-linear trend for this variable. Subjects between the ages of 15 and 16 show significantly increased odds of disclosure compared with subjects in the youngest age group. On the other hand, the oldest group of respondents does not show elevated odds of disclosure when compared to the youngest group. Both Black and Spanish-speaking informants show significantly reduced odds of disclosure compared to White/other informants. Once again the contrast between Black and White/other informants is particularly striking. Even the most conservative estimate of the relative odds of disclosure (the upper bound of the 95% confidence interval) suggests that Black informants have one-twelfth the odds of disclosure that White/other informants have. None of the main effects for interviewer characteristics were statistically significant. A parallel model estimating the impact of interviewer social distance revealed no significant association between this measure of interviewer effects and use disclosure.

⁵Copies of tables summarizing the multivariate results are available on request from the first author.

Interactions Model: We found significant interactions between subject age and interviewer race/ethnicity and between subject race/ethnicity and interviewer age. The subject race/ethnicity interaction indicates differences between Spanish-speaking and White/other subjects on the effects of interviewer age. Spanish-speaking subjects (but not White/other subjects) interviewed by persons in the middle age category (26 to 34 years) and in the oldest age category (35 years and older) had significantly increased odds of use disclosure compared with those interviewed by persons in the youngest age category (less than 25 years old). The respondent age-by-interviewer race interaction suggests that for those in the 15 to 16 year old age group, those interviewed by Spanish-speaking interviewers had significantly reduced odds of use disclosure compared with those interviewed by White/other interviewers.

Cluster Adjustment: We were not able to estimate a random effect parameter for either interview site or interviewer for the cocaine positive subset. This implies that there was no clustering of responses by either of these two variables.

Discussion

Limitations: Several limitations of this study need to be considered. Although the special nature of this sample afforded us the rare opportunity to assess the reporting behavior of persons known to have used a controlled and highly sensitive substance, findings for male juvenile arrestees may not be generalizable to other samples. The fact that respondents were incarcerated at the time of their interviews, limits these findings to criminal justice settings. In addition, the analyses were limited to a single substance, cocaine.

Subject Race/Ethnicity Effects: Subject race/ethnicity was the single most important correlate of drug use disclosure in both samples. Black informants were significantly less likely to report lifetime cocaine use compared to other informants. Prior research has discussed potential reasons for strong subject race/ethnicity effects in cocaine use disclosure (Fendrich and Xu, 1994). Failure to disclose recent use of cocaine may reflect perceived negative consequences for the disclosure of illicit behavior within the context of the criminal justice system. These perceptions may be related to some other unmeasured variable which is highly associated with race/ethnicity in this data set (i.e., previous criminal justice system contact). Research showing Black-White reporting discrepancies in other contexts (the NLSY; see Fendrich and Vaughn, 1994; Mensch and Kandel, 1988) has suggested the possibility of some general race/ethnicity differences with respect to trust in the

research process.

Interviewer Cluster Effects: Interviewer cluster effects were important in the analysis of data from the entire sample, but not in subset analysis. The importance of these cluster effects is underscored by their impact on previously significant interaction terms. Failing to account for clustering by interviewer resulted in an overestimate of the significance of these effects. Our findings thus support concerns expressed by other researchers that failing to account for the clustering of respondents within interviewers may bias the standard errors of interviewer effect measures (Dijkstra, 1983; Groves and Fultz, 1985; Kane and McCaulay, 1993).

Theoretical Implications: Although the multivariate model demonstrated a significant respondent race by interviewer race interaction as predicted by the social distance model, the sign of the interaction was not in the direction needed to support this model. Contrary to expectations, compared with Black interviewers, White/other interviewers are more likely to elicit admissions of lifetime cocaine use from Black respondents. This finding is nonetheless consistent with a trend reported in data presented by Johnson and Parsons (1994) indicating that Black respondents interviewed by Whites reported more substance use for 10 of 15 drug and alcohol comparisons made. Current models of interviewer effect processes may need to be reconsidered in light of this pattern of findings.

In findings from the entire sample, the bivariate analyses suggested that subjects were more willing to disclose use to male interviewers than they were to female interviewers. This suggests limited support for social distance theory since the finding did not hold in a multivariate context. In our assessment of the cocaine positive sub-sample, for example, White/other respondents were less willing to report lifetime cocaine use to older interviewers, and Spanish-speaking respondents were more willing to report lifetime use to older interviewers. The greater willingness of White/other respondents to admit cocaine use to those interviewers who are most similar to them in age (i.e., those 25 and younger) is consistent with the social distance model. Other models, though, may be required to account for the interviewer age effects observed among Spanish-speaking respondents. These findings might be attributed, for example, to Spanish-speaking cultural emphasis on respect and trust for authority. In particular, Spanish-speaking respondents may be more likely to perceive older interviewers as representing institutional authority and may therefore feel more compelled to accurately report substance use to them.

This study failed to produce evidence consistent with the nonlinear social distance model. Regarding

the social attribution hypothesis, some supporting evidence was provided by main effects developed for the entire sample. There was less reporting of drug use when interviewers were Black than when interviewers were Spanish-Speaking or White/other. Nevertheless, models incorporating interaction terms underscored the conditional nature of these effects. Further, models limited to the subset of cocaine positive youth showed no direct effects for race. Thus, contrary to other studies of drug use response editing (cf., Johnson and Parsons, 1994), our results provide only very weak support for direct interviewer effects.

Study Design Implications: Our findings, in general, suggest the need for reconsideration of current theories of interviewer effects within the context of drug use research. These theories were initially designed to account for response errors in the reporting of attitudes and opinions, rather than behavioral reports of highly sensitive and illegal behaviors. For this reason, it may be unfair to expect these models to be sufficiently general to adequately account for the empirical findings presented here.

Survey researchers routinely match respondents with interviewers who share one or more demographic characteristics in an attempt to minimize potential barriers to effective communication (Hughes, Fenton and Hine, 1995). Some researchers consider random assignment of interviewers and high quality interviewer training to be preferable to interviewer matching (Freeman and Butler, 1976). Since these practices assume that interviewer effects exist, continued research to verify and understand the process of interviewer effects in drug use and other surveys should be a priority for the research community.

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Table 1
Bivariate Associations With Cocaine Use Disclosure

	Entire Sample		Cocaine Positive Subset	
	Total N	Disclosure	Total N	Disclosure
Subject Age		N (%)		N (%)
8-14 Years	907	69 (8)	32	8 (25)
15-15 Years	1788	253 (14)	139	51 (37)
17-20 Years	1283	239 (19)	162	44 (27)
		***		N.S.
Subject Race/Ethnicity				
Black	1962	77 (4)	179	19 (11)
Span. Speak.	1058	311 (29)	121	61 (50)
White/other	958	173 (18)	33	23 (70)
		***		***
Subject Top Arrest Charge				
Violent	1149	120 (10)	66	20 (30)
Drug-Related	407	49 (12)	86	17 (20)
Other	2422	392 (16)	181	66 (36)
		***		***
Interviewer Age				
<= 25 Years	1007	137 (14)	77	21 (27)
26-34 Years	1553	219 (14)	161	49 (30)
>= 35 Years	1418	205 (14)	95	33 (35)
		N.S.		N.S.
Interviewer Race/Ethnicity				
Black	1014	53 (5)	71	12 (17)
Span. Speak	874	171 (20)	89	37 (42)
White/other	2090	337 (16)	173	54 (31)
		***		**
Interviewer Gender				
Male	2345	372 (16)	201	68 (34)
Female	1633	189 (12)	132	35 (27)
		***		N.S.
Interview-subject Similarity				
No Match	709	64 (9)	75	13 (17)
1 Match	1747	254 (15)	134	45 (34)
2 -3 Matches	1522	243 (16)	124	45 (36)
		***		*

N.S.: Not Significant; *: p <.05; **: p <.01; ***: p <.001