

NEIGHBORHOOD EFFECTS ON DRUG REPORTING
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Introduction

Concerns about the accuracy of self-reported drug use have been raised by recent studies (Harrison and Hughes, 1997). Biological assays used by these studies to validate surveys of self-reported drug use indicate that some individuals report much less than they actually use. In a study of patients in methadone treatment, for example, Magura and colleagues (1987) found that opiates were underreported by 65 percent, benzodiazepine was underreported by 3 percent, and cocaine was underreported by 15 percent. Fendrich et al. (1999) found a large discrepancy between self-reported cocaine use and hair samples collected as part of a general household survey of residents from a high-risk community. Only about 25% of the respondents in this survey who tested positive for cocaine reported that they have ever used cocaine and less than 20% who tested positive for cocaine reported recent use. Similar results were reported by Magura and Kang (1997) with a sample of criminally involved young adults. Hair analysis indicated that about 67 percent of these young adults had probably used cocaine, but only 23 percent had reported cocaine use.

Some of the factors which investigators suggest are associated with underreporting are memory failure, fear of legal consequences, and social desirability. Memory failure may occur because the events the respondent is asked to recall are distant in time (Hser, 1997) or the respondent is a heavy user (Harrell, 1997). Fear of legal consequences may be heightened, especially among minorities or other groups who have a history with the law enforcement community. Social desirability may occur in the underreporting of more stigmatized drugs such as heroin or crack cocaine (Harrell, 1997; Magura and Kang, 1997), and is likely to happen when the event is more recent in time (Hser, 1997).

Studies of the correlates of underreporting have found that underreporting tends to occur more often for cocaine than other drugs (Fendrich et al., 1999). It is associated with question structure (Klungel et al., 2000), mode of interview (Aquilino,

1994), and characteristics of the interviewer and respondent (Johnson, Fendrich, and Shaligram, 2000). Minorities and criminal justice populations tend to underreport (Fendrich and Xu, 1994). There is also indirect evidence that underreporting occurs more often in interviews performed at home rather than school (Fendrich and Johnson, 2001).

While these studies have identified several factors related to underreporting, little attention has been given to the association between underreporting and cultural mistrust, or how this association is affected by broader environmental contexts such as the neighborhood in which a respondent lives. For example, African Americans who live in segregated neighborhoods may be more likely to underreport drug use because segregation intensifies suspicion and mistrust (Allport, 1954), and because there is a long history of mistrust in the African American community toward medical research and medical researchers. Evidence of this mistrust has been well documented in the literature on the participation of African Americans in clinical and public health research (Corbie-Smith et al., 1999; Freimuth et al., 2001; Shavers et al., 2000).

The purpose of this study is to examine the relationship between underreported drug use and neighborhood racial/ethnic characteristics. In addition, we will examine whether neighborhood characteristics mediate and/or moderate the association between race/ethnicity and underreported use. Our hypothesis is that there is a main effect between neighborhood diversity and underreported use such that residents of segregated neighborhoods are more likely to underreport their drug use than residents from diverse communities. We also hypothesize that the effects of race/ethnicity on underreporting are moderated by neighborhood diversity so that within group differences exist with African Americans more affected by this context than whites.

Methods

Sample and data collection The data used in this study were collected as part of a survey of community residents in the city of Chicago that was conducted in 1997. Neighborhoods chosen for this study were restricted to those where admissions to

state sponsored drug and alcohol treatment facilities were above average. Once the neighborhoods were chosen, blocks were randomly selected from within each neighborhood and households were selected from each block. A variation of the Trolldahl-Carter-Byrant procedure (Trolldahl & Carter, 1964; Byrant, 1975) was used to select eligible respondents (aged 18-35 years old) residing in each household.

Each block was then randomly assigned to either a control or an experimental interview condition. The control interview condition involved a paper and pencil questionnaire regarding drug use that was based on the 1995 National Household Survey on Drug Abuse (Office of Applied Studies, 1996). The experimental interview condition allowed respondents to choose between being read the questions by an interviewer from a laptop computer (Computer Assisted Personal Interview), or being read the questions by the computer over headphones (Audio Computer-Assisted Self-Interview).

After the questions about drug use were complete, hair samples were collected from the respondents by the interviewers. Respondents were not asked to participate in drug testing until after the drug survey was complete. Slightly more than half of the respondents provided a hair sample (n=322) and these samples were tested for the presence of drugs (for details see Fendrich et al., 1999). The main drug detected was cocaine and our analyses are limited to that drug.

Variables. Neighborhood diversity was measured using Simpson's Index (Simpson, 1949), which measures the probability that two randomly selected individuals in a community are of the same racial/ethnic group.¹ Population estimates used to calculate these scores for our study came from the 2000 census. Simpson's index scores range from 0 to 1 and a score of 1 or close to 1 indicates that a neighborhood has very little diversity. After these scores were calculated for each neighborhood, we created a categorical variable by ranking the neighborhoods based on their score and grouped them so that 1/3 represent diverse neighborhoods, 1/3 represent partially diverse neighborhoods, and 1/3 represent the least diverse neighborhoods.

Only the participants that agreed to be drug tested are included in our sample. When all of the variables considered in the present analysis are accounted for, the sample size is 315 participants. Since the main drug detected was cocaine, a dichotomous indicator of underreported cocaine use was constructed. For this variable, all individuals who reported no lifetime cocaine use but who tested positive received a code of "1". Zero represents respondents who did not report lifetime cocaine use

but tested negative for cocaine, respondents who reported lifetime cocaine use and tested positive for cocaine, and respondents who reported lifetime cocaine use and tested negative for cocaine.

For our analysis of underreporting, we examined the mediating effects of neighborhood diversity on the relation between underreporting and race/ethnicity for the entire sample. The moderating effects of neighborhood diversity on underreporting were restricted to the subsample of African American participants because the number of whites and Hispanics who tested positive were insufficient for regression estimation. The respondent characteristics included in the analyses were gender, age, education, mode of interview, and race/ethnicity.

Statistical Analyses. Cross-tabulations were used to examine the extent which underreporting was associated with race/ethnicity and neighborhood diversity. To examine whether neighborhood diversity accounts for the relation between underreporting and race/ethnicity, logistic regressions were used. The dependent variable was lifetime cocaine use and the control variables were gender, age, education, mode of interview, and race/ethnicity. Age consisted of two dichotomously coded variables, 26 to 30 and 31 to 40 years old. The reference category was 18 to 25 year olds. Education consisted of a high school/GED variable and a college variable. The reference category for education was those who did not graduate from high school or have a GED. Mode of interview consisted of one variable, the experimental interview condition and a contrast between those assigned to the control interview condition. African American and Hispanic were entered as dummy variables with White as the reference group. Following the first equation, a second equation was estimated using all of the variables from the first equation and the neighborhood diversity variable. Two categories of this variable (diverse and partially diverse neighborhoods) were compared to a reference category (least diverse neighborhoods).

¹ The Simpson index score was calculated in the following way for each neighborhood:

$$(a/e)^2 + (b/e)^2 + (c/e)^2 + (d/e)^2 = \text{index score.}$$

a = the number of African Americans in the neighborhood

b = the number of Hispanics in the neighborhood

c = the number of whites in the neighborhood

d = the number of other racial/ethnic groups in the neighborhood

e = total neighborhood population

Results

Of those included in the present analysis, fifty-two percent were African American, twenty-one percent were Hispanic, and twenty-seven percent were White. The average age of the respondents in the study was 27 years old ($M = 27.3$, $S. D. = 5.2$). The range in age was 18 to 40 years old. Seventy-five percent (75%) of the sample have at least a high school diploma or a GED. At the time of the interview, about forty percent lived in racially diverse neighborhoods. The racial/ethnic composition of the neighborhoods was that over 50% of African Americans lived in the least diverse neighborhoods, over 80% of the Hispanics lived in partially diverse neighborhoods, and over 80% of whites lived in the most diverse neighborhoods.

Bivariate comparisons of the extent which underreported lifetime cocaine use was associated with race/ethnicity and neighborhood diversity are presented in Table 1. We found that respondents who reported no lifetime cocaine use but tested positive for cocaine tended to be respondents in our sample who live in more segregated neighborhoods. Over forty-one percent (41.6) of the respondents in this type of neighborhood reported that they had never used cocaine but their hair sample tested positive for cocaine. In contrast, twenty-five percent (25.3) of the respondents in partially diverse neighborhoods and thirteen percent (12.6) in diverse neighborhoods did.

Underreporting also occurred more often among African Americans and it was higher among African American respondents from more segregated and partially diverse neighborhoods than African American respondents from diverse neighborhoods. A similar trend occurred among Hispanic respondents. Underreporting was highest among Hispanic respondents from more segregated neighborhoods and lowest among Hispanic respondents from diverse neighborhoods.

Logistic regressions were used to examine the mediating effects of neighborhood diversity on the association between race/ethnicity and underreported lifetime cocaine use. The results are presented in Table 2. We found that African Americans and Hispanics were significantly more likely to underreport lifetime cocaine use than whites (Equation 1). We also found a mediating effect for neighborhood diversity (Equation 2). After it was entered into the equation, the race/ethnicity effects diminish. The effect of the African American indicator was reduced even though the odds of underreporting were still very high for this group. The effect for Hispanic participants was reduced,

with the coefficient becoming nonsignificant. The effect for the diversity indicator was significant.

In the analysis limited to African Americans, the moderating effects of segregation were tested (Table 3). We found that African American respondents from more diverse neighborhoods were significantly less likely to underreport lifetime cocaine use than African American respondents from the least diverse neighborhoods.

Discussion

Our hypothesis that participants from more segregated neighborhoods would be less likely to disclose drug use than those from diverse neighborhoods was consistent with our findings. Participants from segregated neighborhoods were more likely to underreport lifetime cocaine use than participants from diverse neighborhoods. In addition, a moderating effect was found for African Americans such that underreporting of lifetime cocaine use was more likely to occur among African American participants from more segregated neighborhoods. This finding was also consistent with our hypothesis and is suggestive of a mechanism (i.e., segregation, cultural distrust, or both) that may differentially affect disclosure of drug use among African Americans.

A key limitation of this study is that we did not have sufficient numbers of Hispanics and Whites at each level of neighborhood diversity to permit separate group analyses of moderating effects. Another limitation is that we could not determine whether income is associated with the differences that were found. There is also a possibility that passive exposure to powder cocaine caused some of the positive hair tests. This study does, however, suggest that we should seriously consider mistrust as an important factor underlying disclosure of drug use, especially among racial/ethnic groups who reside in more segregated communities. It also suggests that we need to know more about the feelings of racial/ethnic groups toward medical research and researchers, and how these attitudes and beliefs are affected by the neighborhood in which respondents live.

Very few studies have examined or discussed the association between mistrust and disclosure of drug use, but among the few that have, the focus is on the general distrust of others (e.g., Aquilino, 1994; Wright et al., 1998). However, respondents from minority groups should be asked about their beliefs and attitudes toward medical research and researchers, especially about their

mistrust of the medical establishment. Researchers also need to gauge the extent to which the mistrust associated with minority status affects reporting.

There are also a number of important policy implications of this research. Centuries of racial discrimination, prejudice and oppression have fostered an environment in which African Americans and other minority groups are very suspicious of research and researcher intentions, particularly when the research focuses on illegal and potentially stigmatizing topics such as drug use. African Americans and other groups of color also face more objective legal risks and express a stronger concern for criminal sanctions associated with substance use. These concerns may be justified. Statistical data in the United States confirms that minorities are more likely to be prosecuted for drug-related offenses and they received harsher sentences than whites convicted for the same crime (Bonczar and Beck, 1997; Roscoe and Morton, 1994; Sampson and Lauritsen, 1997; Stone, 1998). Improving the quality of drug abuse data collected from minority groups may be at least in part dependent on larger societal changes in patterns of cross-cultural communication, understanding, and trust.

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Table 1. Percent Underreported Lifetime Cocaine Use¹ by Race/Ethnicity and Neighborhood Diversity (n=315)

Underreported Cocaine Use	
<u>Race/Ethnicity</u>	
African American	40.2
White	2.3
Hispanic	18.5
Chi-Square	44.9***
<u>Neighborhood Diversity</u>	
Diverse	12.6
Part. Diverse	25.3
More Segregated	41.6
Chi-Square	24.9***
<u>Race/Ethnicity by Neighborhood Diversity</u>	
African American – Diverse	27.5
African American - Part. Diverse	45.8
African American -Segregated	46.1 ¹
White- Diverse	1.4
White -Partially diverse	11.1
White – Segregated	-
Hispanic- Diverse	14.3
Hispanic -Partially diverse	18.5
Hispanic- Segregated	25.0

¹ Z-tests between participants from segregated and diverse neighborhoods were significant only for African Americans, Z=1.99, p<.05.

* p< .05
 ** p< .01
 *** p < .001

Table 2. Predictors of Underreported Lifetime Cocaine Use (n=315)

Underreported Lifetime Cocaine Use		
	<u>Equation 1</u>	<u>Equation 2</u>
	OR 95%CI	OR 95% CI
Female	.6 (.3-1.2)	.5 (.3-1.1)
Age26-30	1.0 (.5-2.1)	1.1 (.5-2.3)
Age31-40	1.0 (.5-2.0)	1.0 (.5-2.0)
HSGED	.9 (.5-1.9)	.9 (.4-1.7)
College	.5 (.2-1.1)	.5 (.2-1.0)
Control/		
Experimental	1.4 (.8-2.6)	1.4 (.8-2.6)
Afr. Amer.	27.0 (6.1-119.5)***	20.2 (4.4-92.5)***
Hispanic	7.9 (1.6-38.7)**	4.3 (.8-23.9)
Div. vs Seg.		.5 (.2-1.0)*
Part. Div. vs Seg.		1.2 (.5-2.9)

* p< .05
 ** p< .01
 *** p< .001

Table 3. Predictors of Underreported Lifetime Cocaine Use among African Americans (n=164)

Underreported Lifetime Cocaine Use	
	OR 95% CI
Female	.4 (.2-.9)*
Age26-30	.7 (.3-1.7)
Age31-40	.8 (.4-1.8)
HSGED	.9 (.4-2.1)
College	.5 (.2-1.4)
Control/Experimental	1.2 (.6-2.6)
Diverse vs Segregated	.5 (.2-1.0)*
Part. Div. vs. Segregated	1.2 (.4-3.4)

* p< .05
 ** p< .01
 *** p< .001