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Remission from Substance Dependence in U.S. Whites, African-Americans, and Latinos

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Abstract

We investigated remission from any type of substance dependence in Latinos, African Americans, and whites using the 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions, a national sample of community adults. Analyses focused on the 4,520 participants who indicated prior-to-last-year dependence on either alcohol or drugs. Outcome was categorized as current substance dependence or abuse, current use, or abstinence. Whites reported greater likelihood of substance dependence and African Americans and Latinos are just as likely to remit as Whites, once social support and age are controlled. The outcome variable “time to remission” produced a similar pattern of results.

Keywords

Recovery; Remission; Race; Ethnicity

Introduction

There is longstanding national concern for racial disparities in the prevalence of substance abuse, service delivery and treatment outcomes. Research in this arena demonstrates that although minorities often report lower levels of lifetime prevalence of substance abuse or dependence (Breslau et al., 2005a; Grant, 1996, 1997; National Institute on Drug Abuse, 2003; Schmidt, Ye, Greenfield, & Bond, 2007), those who experience substance use difficulties are less likely to seek treatment, and if they undergo treatment they experience greater obstacles (Walton, Blow, Bingham, & Chermack, 2003). Less clear is the course of remission of substance dependence for African Americans and Latinos compared to whites. Understanding remission is important because the burden of substance abuse and dependence has long reaching effects such as poor medical health, incarceration, lost wages, and depression (Gilder, Lau, Corey, & Ehlers, 2007; Hesselbrock, Hesselbrock, Segal, Schuckit, & Bucholz, 2003; Moos, Moos, & Finney, 2001). A better appreciation of factors

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associated with remission might aid in the development of more effective or racial/ethnic specific treatments and prevention strategies.

Ethnic/race differences in use and alcohol and drug dependence recovery have been found in the prior literature. Whites typically drink more alcoholic beverages than minorities, thus, they might remit less than minorities (Arndt, Schultz, Turvey, & Petersen, 2002). However, a second study reports the opposite finding that African Americans and Latinos compared to whites are more likely to live in poor urban contexts with greater drug and alcohol availability and fewer treatment options, making it difficult to remit (Castellani, Wedgeworth, Wootton, & Rugle, 1997; Vélez, Campos, & Arndt, (in press); Walton et al., 2003). Finally, the median age of Latinos in the U.S. (25.8 years) is over 12 years younger than the median age of Whites (38.6 years). (U.S. Census Bureau, 2002) Because there is a natural maturation out of dependence (Dawson, Grant, Stinson, & Chou, 2006), we might expect that Whites, being older, are further along the recovery process than Latinos.

Thus, the prior literature on ethnic/race differences leave considerable open questions. In perhaps the most directly relevant study to date, Dawson and colleagues (Dawson et al., 2005) examined remission from *alcohol* dependence and found that Blacks tended to fall in the more extreme groups; 22.7% were abstinent over the last year and 35.4 were still dependent. In contrast, Whites tended to fall into the categories of partial remission, i.e., not fulfilling diagnostic criteria but still exhibiting some symptoms, (28.2%) followed by 22.8% who were still dependent. Latinos were predominantly in the still dependent and partial remission groups. The effects of race disappear after adjusting for demographics and potential indicators of social support.

The purpose of this study is to extend the analysis of Dawson and colleagues (reference) and investigate the extent to which African Americans and Latinos differ from Whites in their remittance levels and time to remittance from *any* substance dependence. To ensure comparability of results, the same dataset utilized by Dawson will be analyzed in the current study: 2001–02 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) (Cohen, Feinn, Arias, & Kranzler, 2007; Grant, Moore, Shepard, & Kaplan, 2003).

Methods

Sample

These data were based on the 2001-2002 NESARC public dataset, by the National Institute on Alcohol Abuse and Alcoholism. University of Iowa IRB approved this study. A full description of the community sample and sampling procedure is provided in Grant et al. (Grant et al., 2003). The total sample included 43,093 interviews. Latinos, Blacks, and young adults (aged 18 – 24 years) were oversampled. The overall response rate was 81%. All analyses in the present paper excluded the 2,033 interviews in which individuals indicated that they were not White, Black, or Hispanic or Latino. The resulting sample included 41,060 (95.28%) records in which respondents indicated that they were White (not Hispanic or Latino), Black (not Hispanic or Latino), or Latino (regardless of race).

Respondents were classified as having a prior to last year substance dependence if they met the DSM IV (American Psychiatric Association, 1994) diagnostic criteria for dependence on: alcohol, amphetamine, opioids, sedatives, tranquilizers, cocaine, solvents/inhalants, hallucinogens, cannabis, heroin, or other drugs. Per DSM IV, the criteria for diagnoses had to cluster in time. Eleven percent (N=4,520) of respondents reported prior to last year dependence on at least one of these substance.

Because we are interested in remission subgroups, respondents who were dependent prior to the last year were further classified into three groups based on their use during the past year. A respondent was classified as: 1) Still Problematic, if they reported meeting dependence or abuse criteria for any substance within the last year; 2) Still Using, if they did not meet criteria for dependence or abuse during the last year but reported using drugs or alcohol during the past year at least once; and 3) Abstinant, if the subject no longer met criteria for dependence or abuse and reported no substance use during the last year. Both the Still Using and Abstinant groups are in, at least, partial remission since they have not met criteria for dependence for the past year.

Age of first use was taken as the earliest age of use for any illegal drug or the age the respondent began drinking more than a few sips, whichever occurred first. Age of onset of dependence was the earliest age for any dependence. Age of remission was the latest age of remission for any substance. For individuals dependent on only one substance, duration was the remission age minus onset age. For respondents with multiple substances, duration was the latest age of remission for any substance minus the earliest onset of dependence. Duration, used in the survival analysis, was censored if the previously dependent respondent was still dependent at the time of the survey administration.

Statistical Analysis

The sampling procedure for the NESARC required specialized statistical treatment to obtain the correct error terms and probability values.(Levy & Lemeshow, 1999) All analyses used the primary sampling unit, strata, and weighting information provided in the NESARC dataset. STATA version 10 was used with options set to the default methods in SUDAAN, which were used for previous analyses of this dataset.(Dawson et al., 2005)

Logistic, linear and Cox regression, as well as, one-way ANOVA were used with the survey adjusted errors. Protected tests were performed to reduce the overall type I error rate, i.e., contrasts between groups were only pursued if the overall F-test was significant. The threshold for significance was set at 0.01, also to help control the Type I error rate, but mainly to highlight more clinically meaningful effect sizes given the very large sample size and potential for trivial but “statistically significant” results that might be found using 0.05.

Results

Racial Breakdown of Dependence

Table 1 shows the numbers and percentages of the full sample of Whites, Latinos, and Blacks meeting criteria for substance dependence *prior to the past year*.

Whites were over 1.58 (95% CI: 1.33, 1.88) times more often dependent on substances than Latinos. Whites were also more apt to report prior to last year dependence than Blacks (OR = 1.72, 95% CI: 1.53, 1.93). The remaining analyses focus on the 4,520 respondents who reported a dependence prior to last year.

Remittance Subtypes—Table 2 provides information on respondents who reported substance dependence prior to last year. Of those with prior dependence, those who were Still Problematic (current year dependence or abuse) were younger and less often married than the other groups. The Abstinant group was the oldest, nearly 14 years older than those who were Still Problematic and 8 years older than the Still Using group. The Still Using group had the highest frequency of females (i.e., lowest percent of males). The Still Problematic and Still Using groups had similar and higher proportion of high school

completion than those in the Abstinent group. Mean family incomes were highest in the Still Using group.

History: There were no significant differences among the remittance subgroups in the age they started their heaviest drinking. However, those in the Still Using group were the oldest when they started drinking and oldest when they started using drugs. The Still Using group also had the lowest mean number of dependent substances. The Abstinent group had been dependent on the largest number of substances. The Abstinent group also had, by far, the highest percent of respondents seeking help for their dependence.

Remission: Of those in remission from dependence, both the Still Using and the Abstinent groups had substantial remission time. According to their remission age, the Abstinent group achieved remission nearly 6 years after the still using group and had the most time in remission, nearly 13 years. They had also been abstinent from any drug or alcohol for an average of over 9 years. Interestingly, the average age of remission in the Abstinence group (35.15 years old, 95% CI: 34.08, 36.22) was greater than the current average age of those in the Still Problematic group (34.06 years old, 95% CI: 33.32, 34.81).

Substances Used: The groups also differed slightly in the types of substances used. Those who were Still Problematic tended to have been dependent on alcohol (96.19%) more often than the Still Using (93.19%) and Abstinent (94.95%) group, $F = 7.94$, $df = 2,60$, $p < 0.002$. The Still Problematic group and the Abstinent group had higher prevalences of opioids, cocaine, and cannabis dependence than the Still Using group, although the largest difference was less than 5%.

Remittance by Racial/Ethnic Groups—Table 3 compares basic demographics and history variables across Whites, Blacks and Latinos. Several variables that distinguished the use groups also distinguished the race/ethnic groups. Latinos were nearly 5 years younger than Blacks or Whites. Blacks were less likely to be married compared to either Whites or Latinos. Blacks and Latinos had lower percentages of high school completions and had lower mean family incomes.

Considering history, Blacks with prior to last year dependence started their heaviest drinking about a year and a half later than Whites or Latinos. Blacks also had a later age of remission than Whites or Latinos, by nearly 4 years. The average time in remission for the White group was longer than either the Black group or the Latino group. This likely was a function of Whites remitting earlier than Blacks and because the average age in the White group was considerably older than the average age in the Latino group.

Substances Used: Few differences in the race/ethnic groups' use of particular substances were found. Prior to last year alcohol dependence was more frequent in the White group (95.34%) compared to the Black (89.6%) group. Prior to last year stimulant dependence was also seen more among the White (5.00%) than the Black group (1.66%). However, cocaine dependence was more prevalent among Black respondents (14.08%) compared to Whites (6.92%). Although statistically significant, the Black group had a less than 1 percent increased prevalence of prior to last year's heroin dependence than the White group. In further analyses, there was no significant effect among the race/ethnic groups in alcohol only versus drugs or a combination of alcohol and drugs.

Logistic Regression Predicting Abstinence—Table 4 provides information about remission status for White, Black, and Latino respondents. African Americans and Latinos more frequently receive a dependence or abuse diagnoses (Still Problematic Group) than Whites by approximately 10 percentage points. Whites are more often in the Still Using

group. However, Blacks had a higher proportion of people in the Abstinent group than Whites (Wald $t = 2.99$, $df = 64$, $p = 0.004$) and Latinos (Wald $t = 2.79$, $df = 64$, $p = 0.007$).

In the logistic regression analysis, the focus is membership in the Abstinent group. All 4,520 cases with prior to last year dependence were included. Initially, race/ethnic groups showed an overall significant effect in the probability of being in the Abstinent group, $F(2,64) = 5.57$, $p = 0.0059$. The odds ratio for Latinos compared to Whites was not significant, $OR = 0.82$ (CI: 0.58, 1.16; $t = -1.14$, $df = 64$, $p = 0.258$). However, Blacks were more likely to be abstinent in the last year than Whites, $OR = 1.41$ (CI: 1.12, 1.78; $t = 2.99$, $df = 64$, $p = 0.004$). The racial/ethnic difference here was fragile. Adding age as a covariate made the racial/ethnic effect become nonsignificant, $F(2,64) = 2.99$, $p = 0.0572$. Including age, marital status, ever having sought help with substance abuse, sex, age at first drinking, and number of dependent substances further reduced the significance of the race/ethnicity grouping ($F(2, 59) = 1.78$, $p = 0.177$). Thus, the basic demographic and history variables explain the initial racial differences predicting Abstinence.

Survival Analysis Predicting Time to Remission—Focusing on the racial/ethnic make up of the Still Problematic group revealed a more complex situation. Blacks started drinking heavily later and have a later remission age but were not significantly older than Whites. To address the increased proportions of the minority groups in the Still Problematic group and the timing of dependence, we analyzed the duration of dependence.

Preliminary analysis included only the simple race/ethnicity variable predicting duration of dependence. The overall effect was significant, $F(1,59) = 6.78$. The hazards ratio (HR) for Latinos was nonsignificant (HR = 0.95, CI: 0.79 – 1.13, $t = -0.60$, $df = 59$, $p > 0.54$). The HR for Blacks accounted for the significant overall effect with an HR of 0.77 (CI: 0.67 – 0.89, $t = -3.68$, $df = 59$, $p < 0.001$) suggesting a significant delay in Blacks' remission time. This suggests that African Americans do not start their trajectory of remission until later in their dependence.

The analysis was repeated with sex, age, number of dependent substances, age at first use, and ever having sought help as covariates. This had very little effect on the pattern of the race/ethnicity differences. The overall test for a race/ethnic effect remained significant ($F(2,59) = 5.9$, $p < 0.005$), with a HR for Blacks compared to Whites of 0.80 (CI: 0.71 – 0.92, $t = -3.26$, $df = 59$, $p < 0.002$). However, when marital status and having completed high school (or GED) were included the overall race/ethnic effect became nonsignificant ($F(2,59) = 2.86$, $p > 0.065$) as did the HR for Blacks (HR = 0.85, $t = -2.41$, $p > 0.019$) using our 0.01 threshold for significance. The survival curves (i.e., hazard) for remission for each of the race/ethnic groups is shown in Figure 1. Once controls for socio-economic status and a measure of social support (i.e., marital status) are considered there are no differences in time to remittance between Whites and African Americans.

Discussion

The findings of the present study clearly show that race/ethnicity disparities in remission and time to remission are largely due to demographic, socioeconomic and social support factors. Age of the respondent is important. While, the Black group showed a higher proportion of individuals who were abstinent and Latinos had the lowest proportion, those who were abstinent were considerably older than those who were still using or still dependent. The effect of age is expected. For many people with dependence there is a natural maturation out of the substance use disorder.(Burman, 1997; Dawson et al., 2006) Thus, older groups of previously dependent individuals should have more people in remission than younger groups.

The finding that African Americans experience substance abuse dependence longer than whites was more resilient. Nonetheless, once we adjusted for the factors correlated with the availability of economic and social resources the discrepancy between Blacks and Whites became nonsignificant. At least some of these variables, e.g., marital status and high school completion, make the interpretation potentially ambiguous since these factors may be related to the substance use itself. However, Blacks started drinking later than Whites in adolescence. Thus, the effect of substance use in the high school years should be, if anything, less relevant for this racial group. However, current marital status is more problematic. Active dependence or abuse substantially lessens the chance of being married. On the other hand, being in a significant relationship with a spouse and family may increase the individual's resources and support during recovery.

Other researchers have postulated a longer duration of problems for Blacks. Breslau and colleagues found that while the risk is lower for developing any mood, anxiety, or substance use disorders, once blacks are diagnosed the effect persists compared to Whites.(Breslau, Kendler, Su, Gaxiola-Aguilar, & Kessler, 2005b) In this previous study, the racial/ethnic difference in persistence did not hold for substance abuse once it was separated from the other disorders. Using data from a large inpatient sample, another study found that while Blacks started using substances later than Whites, negative consequences related to dependence more quickly.(Hesselbrock et al., 2003) Earlier work found that more Blacks than Whites experienced deteriorating conditions during substance abuse treatment.(Moos et al., 2001) Another study suggests that the race differences in remission after treatment were mediated by the individual's resource needs.(Walton et al., 2003) Resource needs were influenced by marital status, income, sex, and problem severity. Of course, members of minority groups will often have less financial resources than those of the majority. Our paper, along with others show that while Blacks may experience longer times to remission, it is due to their relative lack of socio-economic and other resources compared to whites (Jacobson, Robinson, & Bluthenthal, 2007; Vélez et al., (in press)).

There are several limitations to the present study related to the fact that these data were based on a community sample. First, continued dependence and abuse of drugs and alcohol causes increased mortality, which can, in turn, accentuate the effects of natural maturation out of dependence. Second, continuously dependent individuals may also leave the community population through incarceration. Approximately 45% of the jail inmates in the U.S. are substance dependent, although the increased dependence in Whites is also evident in this population.(Karberg & James, 2005; NCJ 209588) Similar percents are found in state and federal prisons.(Mumola & Karberg, 2006; NCJ 213530) There is a very large race/ethnic disparity in incarceration rates with nearly 5% of all Black men, nearly 2% of Latino men and less than 1% of White men in custody midyear 2006.(Sabol, Minton, & Harrison, 2007; NCJ 217675) To the extent that the racial and ethnic differences in the proportions of dependent individuals within the institutionalize population mirrors that in the community, the current findings regarding remission rates should be unaffected by the race/ethnic disparities in incarceration.

Our findings suggest that recovery programs and research should recognize that minority versus White, on average, live in different structural contexts that may exacerbate challenges to recovery. For instance, on average, African Americans and Latinos who suffer from substance dependence live in communities that are poorer, segregated, and with weaker community institutions and thus, may provide less social and interpersonal support for recovery than Whites (Massey & Denton, 1993). Latinos in the US are also, on average, much younger than Whites and are earlier in their trajectory from dependence to recovery. Given that the overall initial dependence is lower among minorities, research should investigate the protective factors that contribute to the relevant protective factors.

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Figure 1.
Cumulative hazard for each race/ethnic group's recovery.

Table 1
Percent of Respondents (and sample sizes) with Prior to Last Year Dependence in Whites, Latinos, and Blacks (N = 41,060)

Dependent Prior to last year	White	Latino	Black	Total
No Dependence	86.41% (21,297)	90.95% (7,633)	91.62% (7,610)	87.59% (36,540)
Dependence	13.59% (3,210)	9.05% ¹ (675)	8.38% ² (635)	12.41% (4,520)
Total	75.81% (24,507)	12.36% (8,308)	11.83% (8,245)	100% (41,060)

Logistic Regression $F(2, 64) = 48.32, p < 0.0001$

¹Wald $t = 5.24, df = 64, p < 0.0001$, compared to Whites

²Wald $t = 9.61, df = 64, p < 0.0001$, compared to Whites

Table 2
Means, Percents, and (Standard Errors) Comparing Substance Use Groups with Prior to Last Year Dependence. (N = 4,520)

	Still Problem	Still Using	Abstinent	F/(p) ^I
N	1681	2038	801	
Mean Age	34.06 ^{***} (0.37)	40.17 ^{***} (0.33)	48.15 (0.60)	232.04 (0.0001)
Male %	71.92 (1.29)	61.11 ^{***} (1.33)	68.15 (2.03)	17.18 (0.0001)
Married %	42.81 ^{***} (1.42)	65.21 (1.22)	64.75 (2.08)	80.04 (0.0001)
Completed High School %	87.06 ^{**} (1.16)	90.96 ^{***} (0.79)	80.79 (1.76)	19.62 (0.0001)
Ever Seek Help % ⁶	26.60 ^{***} (1.37)	15.61 ^{***} (0.88)	48.35 (2.45)	98.10 (0.0001)
Age Started Heaviest Drinking	24.07 (0.26)	23.55 (0.20)	24.38 (0.41)	2.44 (0.096)
Age Started Drinking	16.49 (0.10)	17.13 ^{**} (0.09)	16.60 (0.17)	12.32 (0.0001)
Age started Drugs	16.81 (0.15)	18.07 (0.17)	17.51 (0.31)	14.87 (0.0001)
Number of dependent substances	1.25 ^{**} (0.02)	1.17 ^{***} (0.02)	1.37 (0.04)	10.99 (0.0001)
Mean Family Income (\$1000)	47.32 (1.65)	59.71 ^{***} (2.11)	44.97 (1.76)	20.82 (0.0001)
Remission Age	NA	29.23 ^{***} (0.27)	35.15 (0.53)	95.84 (0.0001)
Remission Time (years)	NA	11.16 ^{***} (0.26)	12.95 (0.36)	15.05 (0.0001)
Clean Time (years)	NA	0.08 ^{***} (0.01)	9.47 (0.36)	702.45 (0.0001)

^{**}
^p < 0.01;

^{***}
^p < 0.001, compared to the Abstinent group

^I Note: F-tests are from logistic regression for binary variables and one-way ANOVA for means. The df are 2, 60 for all tests except for remission age, remission time, and clean time where the df are 1, 58.

Table 3

Means, Percents, and (Standard Errors) Comparing Race Groups with Prior to Last Year Dependence.

	White	Black	Latino	F/(p)^I
N	3210	635	675	
Mean Age	39.55 (0.30)	41.02 (0.67)	34.87*** (0.64)	28.13 (0.0001)
Male %	65.98% (1.01)	67.71 (2.29)	67.72 (2.18)	0.47 (0.6295)
Married %	58.81 (1.01)	41.10*** (2.41)	52.85* (2.45)	21.39 (0.0001)
Completed High School %	90.08 (0.73)	78.75*** (2.09)	75.09*** (2.53)	40.98 (0.0001)
Ever Seek Help %	25.06 (0.89)	28.51 (2.34)	22.33 (1.77)	2.62 (0.0810)
Age Started Heaviest Drinking	23.81 (0.19)	25.30** (0.44)	23.30 (0.45)	6.09 (0.0028)
Age Started Drinking	16.79 (0.08)	17.18 (0.16)	16.64 (0.19)	2.84 (0.0659)
Age started Drugs	17.57 (0.12)	17.19 (0.28)	16.83 (0.42)	1.81 (0.1715)
Number of dependent substances	1.24 (0.02)	1.21 (0.03)	1.19 (0.02)	1.56 (0.2180)
Mean Family Income (\$1000)	55.69 (1.66)	34.57*** (1.68)	41.03*** (1.95)	51.68 (0.0001)
Remission Age	30.71 (0.28)	34.51*** (0.61)	29.86 (0.84)	16.60 (0.0001)
Remission Time (Years)	12.01 (0.23)	9.96*** (0.46)	9.24*** (0.50)	16.60 (0.0001)
Clean Time (years)	2.55 (0.14)	3.38* (0.33)	1.93* (0.26)	6.31 (0.0031)

*
p < 0.05;**
p < 0.01;***
p < 0.001 in individual contrasts with Whites^I
Note: df for F-tests are 2, 64

Table 4
**Percent (and Standard Errors) of Respondents in Each Past Year Use Group by Race/
 Ethnic Group**

	Still Prob	Still Using	Abstinent
N	1681	2038	801
White	35.34 (1.04)	48.22 (1.06)	16.44 (0.77)
Black	45.14 (2.48)	33.12 (2.31)	21.74 (1.80)
Latino	44.35 (2.99)	41.73 (2.93)	13.92 (1.96)

Pearson Association: $F = 9.186$, $df = 3.68$, 220.58 , $p < 0.0001$