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Race and Socioeconomic Status in Substance Use Progression and Treatment Entry

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Abstract

This study examines trajectories of progression from early substance use to treatment entry as a function of race, among inpatient treatment seekers (N=945). Following primary race-contingent analyses of use progression, secondary analyses were conducted to investigate the effects of socioeconomic status (SES) on the observed differences. African Americans reported significant delays in treatment entry relative to Caucasians. Racial differences in alcohol, marijuana, and cocaine use trajectories were observed. Accounting for SES rendered observations of accelerated use among African Americans non-significant. However, inclusion of SES failed to mitigate the marked racial disparity in treatment entry.

Keywords

Race; Socioeconomic Status; Substance Use; Telescoping; Milestones

Introduction

Abuse of alcohol and other drugs is a significant public health problem in the United States with the economic burden estimated at over seven hundred billion dollars, annually (NIDA, 2017). Although significant progress has been made in characterizing the neurobiological underpinnings of addiction, understanding contributing demographic and psychosocial factors remains critical. The potential roles of race/ethnicity and socioeconomic status (SES) are increasingly appreciated.

Existing literature describes substantial race differences in substance use milestone ages (e.g., Wu et al., 2010), prevalence, patterns (e.g., SAMHSA, 2014), and progression measures (e.g., Alvanzo et al., 2011). For instance, relative to Caucasian individuals, African Americans appear to initiate alcohol use at older ages and engage in less under-age drinking (Zapolski et al., 2014). In a national sample, Alvanzo and colleagues noted more rapid progression, referred to as ‘telescoping’, from initial alcohol use to both dependence onset (Alvanzo et al., 2011) and utilization of alcohol-related services (Alvanzo et al., 2014), among Caucasians relative to African Americans and Hispanics. This pattern has also been noted in heroin users (Stoltman et al., 2015). In contrast, Sartor and colleagues (Sartor,

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Kranzler & Gelernter, 2014) observed more rapid progression from initial opioid use to dependence among non-treatment seeking African Americans relative to Caucasians, but no race-contingent differences in cocaine use trajectories. Further illustrating inconsistencies, Johnson and colleagues (2005) noted alcohol-related telescoping among African Americans, where as Jackson (2010) observed more rapid progression of alcohol among Caucasians; in a recent investigation, Sartor and colleagues (2016) noted faster transitions to initial intoxication among Caucasians, but more rapid progression to regular drinking among African Americans. Although these works demonstrate the complex relationship between race and substance use trajectories, the available literature largely reflects non-clinical samples and frequently lacks attention to other relevant sociodemographic factors. The current investigation focuses on telescoping among inpatients in addiction treatment programs, with specific attention to socioeconomic factors.

Socioeconomic disparities in access, utilization and quality of mental health care services are well-noted (e.g., Steele et al., 2007), as are relationships between SES and substance use prevalence and patterns(see McGuire & Miranda, 2008 for review). Lower SES is associated with increased alcohol, cigarette, and cocaine use among teenagers (Goodman & Huang, 2002), and increased probability of use disorders in early adulthood (Reinherz et al., 2000). However, some studies indicate positive associations between SES and use (e.g., Huerta & Borgonovi, 2010; Gallup, 2015). One of few studies considering both race and SES (Humensky, 2010) reported higher SES was associated with increases in adolescent use of alcohol, marijuana and cocaine, but only among Caucasians. Similarly, Patrick and colleagues (2012) observed that the prevalence of alcohol and marijuana use was greater among adolescents with the highest familial SES. These investigations were conducted using community samples; the relative contributions of race and SES to trajectories among individuals who develop use disorders remain largely uncharacterized.

Race appears to substantially contribute to patterns of substance use initiation and progression, however understanding of these complex relationships remains incomplete. The current study was conducted to characterize race-contingent effects in a sample of inpatient treatment-seekers. Initial analyses interrogated racial differences in use prevalence of various substances. Guided by these findings, we examined milestone ages and transition periods for alcohol, marijuana, and cocaine use. We utilized a 2-step analysis which first examined race differences alone, then re-assessed differences while covarying for socioeconomic status (based on preliminary analyses presented below). This approach allowed for more meaningful comparison with other work.

Mixed findings in the current telescoping literature and paucity of analyses in treatment-seeking samples precluded strong hypotheses regarding race-contingent telescoping. Thus, whether use transitions in the current sample would evince differences by race remained an empirical question. However, the current literature does support specific hypotheses for several measures. We hypothesized Caucasians would report earlier ages at initial substance use. Consistent with reports of racial disparities in unmet need for addiction treatment (Wells et al., 2001), we predicted earlier entry into treatment among Caucasians. We hypothesized SES would correlate negatively with early milestone ages (i.e., initial use, regular use),but positively with later progression durations (transition from regular to problem use), such that

high SES would be a risk factor for early use, but a protective factor when transitioning to heavier use. Given the aforementioned relationship between SES and mental health service utilization (e.g., Steele et al., 2007), we hypothesized more rapid entry into treatment would be associated with higher SES. The degree to which race differences might be accounted for by SES or other demographic variables remained empirical questions, as did the substance-specificity of these relationships.

Materials and Methods

All procedures were approved by the Medical Institutional Review Board at the University of Florida. Participants provided written informed consent, and were compensated for their time. Participants were adults in residential substance use treatment programs across North Florida from 2006–2015. Data were collected in the context of screening to determine eligibility for further research participation. With regards to the current report, no selection criteria were utilized beyond ensuring that participants were adults (age 18+) and had completed detoxification (if medically required).

Participants completed inventories of state anxiety (AI; Spielberger et al., 1983) and depressive symptoms (BDI-II; Beck et al., 1996). The BDI-II has been validated in African American samples, demonstrates no racial bias, and results in equivalent scores when compared to the Center for Epidemiologic Studies Depression Scale, which was standardized on African Americans (Sashidharan et al., 2012). The STAI demonstrates high validity and reliability across numerous racial/ethnic groups and nationalities and has been used extensively in investigations of anxiety focusing of racial differences (e.g., Spielberger et al., 1990). Participants also completed a detailed four-generation family tree (adapted from Mann et al., 1985), providing information pertaining to parental and spousal problem substance use. Personal histories of substance use were gathered across eleven different drug categories. For each substance, participants indicated whether they had ever used, used regularly, or had experienced problem use, including their age when first experiencing these events. ‘Regular’ and ‘problem’ use was self-reported, and consistent with previous investigations (e.g., Haas & Peters, 2000; Hernandez-Avila et al., 2004), not explicitly defined. These measures provide meaningful information regarding self-perceptions of use and need to seek help or enter treatment. Treatment age was defined as participants’ age at first entry into substance use treatment; this measure was added after the initiation of data collection and was thus unavailable for a subset of participants.

The Hollingshead Index utilizes education attainment and occupational prestige to provide a composite measure of SES (Hollingshead, 1975). This index displays no differences in estimation error between Caucasians and African Americans (Edwards-Hewitt & Gray, 1995). Comparison between Hollingshead and other published SES indices produce inter measure correlations between .73 and .86 (Cirino et al., 2002; Gottfried, 1985). Comparisons include the Revised Duncan Socioeconomic Index (Stevens & Featherman, 1981), the Siegel Prestige Scale (Siegel, 1971), the Socioeconomic Index of Occupations (Nakao & Treas, 1992), and the Socioeconomic Index of Occupations in Canada (Blishen et al., 1987). Standard Hollingshead scoring methods were applied, computing composite scores by summing the products of weighted occupation and education scales

([occupation $\times$ 5]+[education $\times$ 3]). Hollingshead educational attainment scores range from 1 (less than seventh grade) to 7 (graduate or professional training); occupational prestige scores range from 1 (farm laborers/mental service workers) to 9 (higher executives and major professionals). Composite scores range from 8 to 67.

Analysis

Demographic variables were examined for group differences using t-tests. Race differences in prevalence of regular and problem use were examined using odds ratios. Telescoping analyses were conducted using each milestone age (i.e., age at initial use, regular use, problem use) and progression measure (i.e., time lapsed from initial to regular use, regular to problem use, problem use to treatment), for alcohol, marijuana, and cocaine (selected based on prevalence results presented below). These substance-specific analyses were only conducted among individuals endorsing “problem use” of the respective substance.

Telescoping analyses were conducted in two steps, to satisfy two aims. Aims included analysis of race differences in milestone/progression measures absent of potential mediating factors, and subsequent analysis of the effects relevant covariates had on these measures, including the degree to which their inclusion modified initial observations. Initial analyses were conducted using ANOVA, then repeated with covariates included (ANCOVA), allowing for contrast between results at each step (presented in Tables 4a & 4b). Interactions between race and SES would violate ANCOVA assumptions and impede meaningful interpretation of results. Therefore, preliminary ANCOVA analyses were conducted including a race $\times$ SES interaction term. Significant interactions were noted in only two models, and are described in the results below.

Sex differences in telescoping are well-recognized; our group has previously reported sex differences in treatment seekers with regard to alcohol (Lewis & Nixon, 2014) and substance (Lewis et al., 2014) use progression. Preliminary analyses of the current dataset replicated sex effects which have been previously reported, but detected few race by sex interactions. Therefore, to avoid repetition of previously published work, sex was excluded from the current work.

In consideration of the relevance of preserving small-to-moderate effects to better appreciate the overall patterns of results, we elected to provide effect size estimates for all results, but not reduce the accepted alpha value (.05).

Results

Demographic Analyses

The initial sample included 1043 individuals, however analyses were limited to Caucasians ($n = 650$; 357 women) and African Americans ($n = 295$; 129 women) because low sample sizes for other racial/ethnic groups precluded their meaningful analysis.

Caucasians reported greater affective symptoms, including depression [$t(936)=3.03$, $p<.01$; $d=.215$] and anxiety [$t(935)=4.05$, $p<.01$; $d=.292$]. No differences were noted in self-report of parental substance use problems [$t(923)=.51$, $p=.61$; $d=.036$], however Caucasians

reported higher rates of spousal substance use problems [$t(303)=2.77$, $p<.01$; $d=.352$]. Caucasians reported higher levels of education [$t(925)=5.94$, $p<.01$; $d=.444$] and occupational scores [$t(752)=4.79$, $p<.01$; $d=.387$]. Data are presented in Table 1.

Substance Use Patterns

Past regular and problem use of substances in each category were analyzed for race differences. Proportions of use, odds ratios and 95% CIs are reported for each substance in Table 2. Higher proportions of Caucasians (67.38%) reported problem alcohol use relative to African Americans (58.64%; $OR=0.69$, 95% CI [0.52–0.91]). No differences were observed in proportions of African Americans and Caucasians endorsing marijuana problems (39.49% vs. 38.94%; $OR=1.02$, 95% CI [0.77–1.37]). However, African Americans endorsed both regular (90.94%) and problem use (82.97%) of cocaine at higher rates than Caucasians (67.05%; $OR=4.93$, 95% CI [3.16–7.70] and 68.89%; $OR=2.20$, 95% CI [1.54–3.15], respectively). In contrast, higher proportions of Caucasians reported both regular and problem use of all other substance categories, including amphetamines, narcotics, benzodiazepines/muscle relaxants, hallucinogens, and pain medications. Individuals reporting use of PCP, barbiturates, or inhalants were too few to warrant analysis.

Among individuals endorsing problem use of specific substances, only alcohol, cocaine, and marijuana subgroups were sufficiently large to afford further investigation. Thus, subsequent analyses focused on these subgroups.

Analysis of Potential Covariates

Preliminary analyses revealed race differences most consistently for alcohol use measures. The largest substance-specific subsample ($n=611$) was the alcohol group. Therefore, to maximize power while reducing Type 1 error, alcohol use measures were utilized to identify potential covariates of interest. Correlations were conducted between alcohol use transitions and demographic variables reported above (and presented in Table 1).

Significant correlations were revealed only for education and occupation scores. These scores were positively correlated with progression from initial to regular drinking ($r=.10$, $p=.02$; $r=.14$, $p<.01$, respectively) and regular to problem drinking ($r=.09$, $p=.04$; $r=.16$, $p<.01$, respectively), such that higher education and occupational status were associated with longer transitions between use milestones. Due to their statistically and conceptually interrelated nature, a single measure of SES (Hollingshead Index) was utilized in covariate analyses.

Analyses of Variance/Covariance

Analyses first evaluated differences in milestone/progression measures with race as a grouping factor (ANOVA), then re-evaluated differences, covarying for SES (ANCOVA). Mean milestone ages and transition periods for each drug are presented by race in Table 3. ANOVA and ANCOVA results are presented in Tables 4a & 4b, respectively.

Alcohol

Initial Use—Caucasians initiated alcohol use earlier [$F(1,593)=7.05, p<.01; \eta_p^2=0.012$] than African Americans. When SES was included in the model, this difference remained [$F(1,469)=3.80, p=.05; \eta_p^2=.008$]; SES was not a significant factor in alcohol initiation.

Initial to Regular—African Americans progressed from initial to regular drinking more rapidly [$F(1,561)=6.62, p=.01; \eta_p^2=0.012$]. However, when SES was included, no significant race difference was detected. Lower SES was associated with more rapid progression from initiation to regular consumption [$F(1,442)=10.49, p<.01; \eta_p^2=.023$].

Regular Use—Initial analyses detected no race-contingent differences. Subsequent analysis of covariance revealed an association between lower SES and earlier ages at regular alcohol use [$F(1,449)=7.29, p<.01; \eta_p^2=.016$].

Regular to Problem—African Americans transitioned from regular to problem drinking more rapidly [$F(1,571)=3.73, p=.05; \eta_p^2=.007$] in the initial analyses. After SES was included as a covariate, race differences failed to reach significance, but more rapid progression was characterized by lower levels of SES [$F(1,449)=10.72, p<.01; \eta_p^2=.023$].

Problem Use—African Americans reported problem drinking at earlier ages [$F(1,609)=3.83, p=.05; \eta_p^2=.006$] in the preliminary analysis; this difference did not reach significance when controlling for SES. Lower SES was associated with younger ages at problem use [$F(1,479)=18.45, p<.01; \eta_p^2=.037$].

Problem to Treatment—Caucasians reported more rapid transition from problem drinking to treatment entry [$F(1,373)=24.26, p<.01; \eta_p^2=.061$]. This difference remained [$F(1,297)=12.43, p<.01; \eta_p^2=.040$] after including SES as a covariate, which failed to account for significant variance in transition time. Interestingly, preliminary analyses indicated SES was differentially associated with progression from problem use to treatment, as a function of race. Among African Americans this relationship was negative ($r=-.19$); among Caucasians it was positive ($r=.05$).

Treatment Age—Caucasians reported earlier ages at entry into treatment [$F(1,374)=7.90, p<.01; \eta_p^2=.021$]. This difference remained significant [$F(1,297)=6.96, p<.01; \eta_p^2=.023$] after accounting for SES, which failed to account for significant variance in treatment age.

Marijuana

Initial Use—Caucasians initiated marijuana use at earlier ages [$F(1,350)=15.23, p<.01; \eta_p^2=.042$]. This difference remained significant [$F(1,281)=17.67, p<.01; \eta_p^2=.059$] with SES as a

covariate in the model. Lower SES was associated with earlier initial use [$F(1,281)=9.15$, $p<.01$; $\eta_p^2=.032$].

Initial to Regular—No effects of race or SES were noted for progression to regular marijuana use.

Regular Use—Caucasians reported regular marijuana use at earlier ages [$F(1,340)=12.05$, $p<.01$; $\eta_p^2=.034$]. After controlling for SES, this race difference persisted [$F(1,272)=13.88$, $p<.01$; $\eta_p^2=.049$]. Lower SES was associated with earlier initiation of regular use [$F(1,272)=4.30$, $p=.04$; $\eta_p^2=.016$].

Regular to Problem—No effects of race or SES were noted for progression to problem marijuana use.

Problem Use—Caucasians reported experiencing problem marijuana use at earlier ages [$F(1,353)=19.59$, $p<.01$; $\eta_p^2=.053$]. This race difference persisted in the ANCOVA model [$F(1,284)=20.78$, $p<.01$; $\eta_p^2=.068$]. Lower SES was associated with earlier problem use [$F(1,284)=3.97$, $p=.05$; $\eta_p^2=.014$]. Importantly, preliminary analyses indicated differential relationships between SES and age of problem use among African Americans ($r=-.04$) and Caucasians ($r=.26$).

Problem to Treatment—Caucasians progressed from problem marijuana use to treatment more rapidly than African Americans [$F(1,205)=6.30$, $p=.01$; $\eta_p^2=.030$]. This difference remained in the ANCOVA model [$F(1,166)=4.41$, $p=.04$; $\eta_p^2=.026$]. SES was not associated with progression to treatment.

Treatment Age—Caucasians entered treatment at younger ages [$F(1,205)=17.29$, $p<.01$; $\eta_p^2=.078$]. This difference remained in the covariance model [$F(1,166)=13.84$, $p<.01$; $\eta_p^2=.077$]. SES was not associated with age at treatment entry.

Cocaine

Initial Use—Caucasians initiated cocaine use earlier than African Americans [$F(1,559)=15.31$, $p<.01$; $\eta_p^2=.027$]. These effects persisted [$F(1,448)=15.57$, $p<.01$; $\eta_p^2=.034$] in covariance analyses, although SES did not account for significant variance in the model.

Initial to Regular—No effects of race or SES were noted for progression to regular cocaine use.

Regular Use—Caucasians reported using cocaine regularly at younger ages than African Americans [$F(1, 528)=9.70, p<.01; \eta_p^2=.018$]. SES neither accounted for significant variance in this model, nor significantly altered this race difference [$F(1,423)=11.77, p<.01; \eta_p^2=.027$].

Regular to Problem—No effects of race or SES were noted for progression to problem cocaine use.

Problem Use—ANOVA detected no race difference in age at problem cocaine use. Inclusion of SES in the model revealed earlier problem use among Caucasians [$F(1,456)=4.73, p=.03; \eta_p^2=.010$]. Lower SES was associated with earlier problems [$F(1,456)=8.09, p<.01; \eta_p^2=.017$].

Problem to Treatment—Consistent with alcohol and marijuana analyses, Caucasians had more rapid transitions from problem use to treatment [$F(1,297)=26.12, p<.01; \eta_p^2=.081$]. Further, these effects persisted [$F(1,241)=14.26, p<.01; \eta_p^2=.056$] when SES was incorporated in the analysis, although SES again failed to account for variance in progression to treatment.

Treatment Age—Caucasians entered treatment at earlier ages [$F(1,311)=25.55, p<.01; \eta_p^2=.076$] even after the inclusion of SES in the model [$F(1,251)=21.05, p<.01; \eta_p^2=.077$].

Discussion

Results underscore the importance of race and SES in patterns and progression of use across a variety of substances. Initial analyses revealed earlier milestones and more rapid progression among Caucasians for both marijuana and cocaine use. In contrast, African Americans displayed a pattern of accelerated alcohol use. Including SES in subsequent analyses markedly impacted these results. After covarying for SES, race no longer accounted for significant variance in alcohol use measures. In contrast, when SES was included in models of marijuana use, the significant earlier and more rapid use patterns among Caucasians not only persisted, they were strengthened. These divergent patterns highlight the importance of incorporating SES in race-based investigations. Further, findings may provide partial explanation of equivocal findings in the literature, the majority of which lacks incorporation of SES analysis.

Importantly, the directionality of SES effects was consistent across substances, with higher SES predicting delayed use milestones and slower transitions between milestones. These results are particularly interesting, given their contrast with findings from community samples which suggest higher SES may be a risk factor for earlier, more frequent use (e.g., Patrick et al., 2012). Taken together with the current findings, these data suggest that higher SES may be a risk factor for early use at the community level, but serve as a protective factor among subgroups at greatest risk for pathological use. Given equivocation in the

literature with regard to race differences in telescoping, it is unsurprising that the consistency between our data and previous reports are mixed. With regard to alcohol use, our observations of more rapid progression among African Americans are consistent with Johnson and colleagues (2005), but in contrast to other works (e.g., Alvonzo et al., 2011; Jackson, 2010). Our observations of accelerated marijuana use among Caucasians are generally consistent with observations of higher prevalence and use escalation in this group (e.g., Kaplan et al., 1986), however to our knowledge trajectories of marijuana use progression have not been examined by race. The lack of race-contingent differences in cocaine progression rates is consistent with other negative results (e.g., Sartor et al., 2014). Although early substance use is considered a risk factor for development of subsequent pathological use (e.g., King & Chassin, 2007), a paradox has emerged from literatures examining early use patterns with regard to race, dubbed the “crossover pattern” (for review see Thomas & Price, 2016). This pattern reflects earlier initial use among Caucasians, but heavier/more frequent later use in African Americans despite their delayed use onset. The current data preclude evaluation of use frequency/severity, but are consistent with observations of earlier use among Caucasians for all substances.

Theories integrating race and substance use often reflect stress and coping models (e.g., Lazarus & Folkman, 1984), conceptualizing use as a coping strategy and race-contingent differences as reflecting differential environmental stressors (e.g., Gerard et al., 2012). Minority status, experiences of racism/discrimination, and lower SES have all been identified as contributors. Although vulnerability to telescoping was noted among African Americans only in alcohol use, and no measures of discrimination were applied, our data are consistent with models hypothesizing SES as a primary mediator of race-contingent differences in substance use.

Racial disparities in health care utilization (e.g., Neslon, 2002), insurance coverage, and use of preventative services (e.g., Trivedi & Ayanian, 2006) are well known and have prompted major NIH initiatives over the last decades (e.g., USDHHS, 2002). Many of the recognized disparities apply to treatment for mental health services in general, and substance use treatment, specifically (Jacobson et al., 2007). The current data are consistent with these observations, with African Americans entering treatment at markedly delayed rates relative to Caucasians. The magnitude of difference in treatment entry delays (approximately 4–5 years) highlights the substantial impact these disparities may have on health outcomes. The current dataset limits meaningful interpretation of causal factors driving this difference; future work should include measures of health care utilization, availability, accessibility, and attitudes toward mental health and addiction treatment services, which are known to vary cross-culturally (Room, 2006).

Addiction treatment disparities have also been explored with regard to socioeconomic status, with some groups suggesting SES may be the primary factor driving racial differences (e.g., Saloner & Lê Cook, 2013). However, the hypothesis that SES would have strong effects on treatment entry was not supported by the current data. SES did not account for significant variance in either measure of treatment entry, and did not alter the observed race effects. Our results implicate the importance of SES in use and progression patterns, but suggest that race remains a critical factor in treatment disparities.

Data presented in the current work are provocative, however several caveats bear considering: (1) Although treatment entry results constituted large effects, most race and SES effects on use trajectories were in the small-to-medium range. From a public health perspective, these effects remain meaningful (e.g., MacKinnon & Lockwood, 2003). However, the modest proportion of variance they account for highlights the complex nature of use trajectories and related variables (e.g., sex; Lewis et al., 2014). (2) The examination of only a single racial minority constitutes a limitation of this work. While these data may guide future investigation, the continued interrogation of sociocultural factors that impact substance use and health disparities across a broad range of minority groups/ethnicities remain crucial. (3) The parallel examination of multiple substances is a particular strength of the current work, however the lack of power for meaningful analysis of other substance classes (e.g., opioids) was limiting. (4) Although the current sample is appropriate for characterization of inpatients in addiction treatment programs, and many results were consistent with findings in community samples, the observed race/SES relationships may differ in samples of non-treatment seeking addicts or heavy users. (5) Due to considerations of statistical power, covariates (occupational status/education) were selected with preliminary analyses of alcohol telescoping measures; it is possible that with larger samples of cocaine/marijuana users other relevant covariates may be detected. (6) Although the Hollingshead Index is often utilized, its categorization of occupations has been criticized (e.g., Haug & Sussman, 1971); future work specifically interrogating SES effects may benefit from utilizing multiple methods of SES estimation. (7) An additional consideration includes the lack of retrospective SES measures. Although childhood and adulthood SES are strongly correlated (e.g., Luo & Waite, 2005), inclusion of childhood SES as a covariate may strengthen future work.

These data describe nuanced relationships between race and SES, highlighting their importance in examinations of substance use patterns. SES may have an under-appreciated role in substance use trajectories, powerfully altering interpretations of racial differences. In the current work, this was exemplified in analyses of alcohol use, wherein apparent earlier and more rapid alcohol use among African Americans was accounted for by SES. In contrast, the marked delays to treatment among African Americans were not impacted by SES. Taken together, our findings reflect complex influences of both factors on the time course of use progression and treatment. Further examination of sociocultural factors underlying these relationships are crucial to providing targeted prevention efforts and eliminating racial disparities in treatment.

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Table 1

Demographic & Affective Measures

Measure	African Americans		Caucasians		<i>p</i>	<i>d</i>
	M	(SD)	<i>n</i>	(SD)	<i>n</i>	
Depression Symptomatology ^a	16.93	(10.94)	293	19.34	(11.44) 645	<.01 .215
Anxiety Symptomatology ^b	54.18	(11.74)	291	57.81	(13.12) 646	<.01 .292
Parental Problem Use ^c	.344	(.476)	288	.361	(.481) 637	.61 .036
Spousal Problem Use ^c	.245	(.432)	94	.408	(.493) 211	<.01 .352
Education (yrs.)	11.68	(1.67)	286	12.54	(2.17) 641	<.01 .444
Occupational Prestige ^d	2.63	(1.92)	227	3.41	(2.11) 527	<.01 .387

^aBeck Depression Inventory, 2nded. (Beck et al., 1996)^bAnxiety Inventory (Spielberger, 1983); age corrected^cFamily History Analysis adapted from (Mann et al., 1985)^dFour-Factor Index of Social Status (Hollingshead, 1975)

Table 2**Regular and Problem Use Endorsement by Drug Class and Race**

Substance	Regular Use				Problem Use			
	Total (N=945)	Caucasian (n=650)	A. American (n=295)	Odds Ratio 95% CIs	Total (N=945)	Caucasian (n=650)	A. American (n=295)	Odds Ratio 95% CIs
Alcohol	745 (78.84%)	522 (80.31%)	223 (75.59%)	0.75 0.55–1.05	611 (64.66%)	438 (67.38%)	173 (58.64%)	0.69 0.52–0.91
Marijuana	653 (74.46%)	454 (75.54%)	199 (72.10%)	0.84 0.61–1.15	343 (39.11%)	234 (38.94%)	109 (39.49%)	1.02 0.77–1.37
Cocaine	654 (74.57%)	403 (67.05%)	251 (90.94%)	4.93 3.16 – 7.70	643 (73.32%)	414 (68.89%)	229 (82.97%)	2.20 1.54 – 3.15
Amphetamine	198 (22.58%)	183(30.45%)	15 (5.43%)	0.13 0.08 – 0.23	178 (20.30%)	163 (27.12%)	15 (5.43%)	0.15 0.09–0.27
Narcotics	290 (33.07%)	264 (43.93%)	26 (9.42%)	0.13 0.09 – 0.21	271 (30.90%)	246 (40.93%)	25 (9.06%)	0.14 0.09 – 0.22
Benzodiazepines/Muscle Relaxants	287 (32.73%)	258 (42.92%)	29 (10.51%)	0.16 0.10 – 0.24	224 (25.54%)	205 (34.11%)	19 (6.88%)	0.14 0.09 – 0.23
Hallucinogens	171 (19.50%)	151 (25.12%)	20 (7.25%)	0.23 0.14 – 0.38	104 (11.86%)	94 (15.64%)	10 (3.62%)	0.20 0.10–0.40
Pain Medications	352 (40.14%)	321 (53.41%)	31 (11.23%)	0.11 0.07 – 0.17	318 (36.26%)	299 (49.75%)	19 (6.88%)	0.08 0.05 – 0.12

Table 3

Milestone and Progression Means by Race

Substance	Race	Initial Use [*]	→	Regular Use [*]	→	Problem Use [*]	→	Treatment Entry [*]
Alcohol	Caucasian	11.7 (4.1)	6.8 (6.0)	18.5 (5.6)	3.1 (6.0)	21.5 (7.8)	10.2 (8.5)	32.3 (9.8)
	African American	12.7 (4.6)	5.4 (4.7)	18.2 (4.9)	2.0 (5.6)	20.2 (6.8)	15.6 (11.6)	35.6 (10.8)
Marijuana	Caucasian	13.6 (2.9)	2.0 (2.9)	15.6 (3.9)	.83 (3.4)	16.6 (4.2)	10.6 (7.9)	27.4 (7.9)
	African American	15.0 (3.4)	2.4 (3.5)	17.3 (4.4)	1.0 (4.3)	18.7 (5.6)	14.2 (10.5)	32.6 (10.4)
Cocaine	Caucasian	20.4 (6.6)	2.7 (5.3)	23.0 (8.0)	1.9 (6.1)	25.1 (8.0)	5.8 (5.8)	30.1 (8.4)
	African American	22.9 (7.2)	2.5 (5.3)	25.3 (8.6)	.97 (6.1)	26.3 (8.2)	10.4 (10.0)	35.5 (10.6)

* Milestones (Initial Use, Regular Use, Problem Use, Treatment) reported as participant age [M(SD)]

→ Progression Measures reported as years elapsed between milestones [M(SD)]

Table 4a/4b

	4a. Step 1: Race			4b. Step 2: Race + SES					
	Race		η^2_p	Race		η^2_p	SES		η^2_p
	p			p			p		
Alcohol									
Initial Use	<.01	.012		.05	.008		.22		.003
Initial to Regular	.01	.012		.46	.001		<.01		.023
Regular Use	.55	.001		.32	.002		<.01		.016
Regular to Problem	.05	.007		.53	.001		<.01		.023
Problem Use	.05	.007		.96	.000		<.01		.037
Problem to Treatment	<.01	.061		<.01	.040		.12		.001
Treatment	<.01	.021		<.01	.023		.06		.012
Marijuana									
Initial Use	<.01	.042		<.01	.059		<.01		.032
Initial to Regular	.28	.004		.14	.041		.73		.018
Regular Use	<.01	.034		<.01	.049		.04		.016
Regular to Problem	.16	.006		.21	.006		.42		.002
Problem Use	<.01	.053		<.01	.068		.05		.014
Problem to Treatment	.01	.030		.04	.026		.22		.009
Treatment	<.01	.078		<.01	.077		.87		.000
Cocaine									
Initial Use	<.01	.027		<.01	.034		.06		.031
Initial to Regular	.60	.001		.89	.000		.57		.001
Regular Use	<.01	.018		<.01	.027		.11		.006
Regular to Problem	.11	.005		.32	.002		.16		.005
Problem Use	.16	.004		.03	.010		<.01		.017
Problem to Treatment	<.01	.081		<.01	.056		.65		.001
Treatment	<.01	.076		<.01	.077		.58		.001

p-values .05 are shown in bold