

Preventing Substance Abuse Among African American Children and Youth: Race Differences in Risk Factor Exposure and Vulnerability

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The accurate identification of risk factors is central to the development of effective efforts to prevent young people from using alcohol, tobacco and other substances. To date, a key limitation of the prevention literature has been the paucity of research that examines the extent to which substance use risk factors identified in studies of white adolescents generalize to African American (and other non-white) youth. In the absence of research on race differences in risk factor exposure and vulnerability, current preventive interventions are based on the implicit assumptions that 1) the risk factors for African American and white adolescents' substance use are identical; and 2) that African American and white adolescents are equally exposed and equally vulnerable to these risk factors. The purpose of the present study was to begin to examine empirically the "equal exposure and vulnerability" assumption. Specifically, the paper used Hawkins, Catalano and Millers' widely cited 1992 article on risk and protective factors for adolescent and young adult substance use as a framework within which to review past risk factor research and as a guide to identify risk factors to examine for race differences in exposure and/or vulnerability. Based upon our review of the existing literature and our analysis of data from the University of Michigan's Monitoring the Future study, we conclude that the simple assumption that African American and white youth are equally exposed and vulnerable to the same risk factors is not correct. In fact, we found that African American and white seniors' differed significantly in their exposure to more than half of the 55 risk factors examined. Similarly, nearly one third of the 165 tests for race differences in vulnerability were highly significant (i.e., $p < .01$). While it is possible that some of the differences we identified resulted from chance,

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their consistency across variables, within the same risk factor domain, and across drug categories, makes the likelihood that our findings are primarily statistical artifacts unlikely. Based upon the results of this study it is clear that additional theoretically and empirically rigorous race-specific research is needed to better understand the etiology of substance use among African American adolescents. Further research is also needed to identify those risk factors that are most salient for African American adolescents and most amenable to change through well designed, and perhaps, culturally tailored preventive interventions.

KEY WORDS: risk factors; racial and ethnic differences; tobacco; alcohol; marijuana; substance use; family; religion; neighborhoods; peers; school; trends; attitudes.

INTRODUCTION

The use of licit and illicit substances is widespread in America. For example, 113 million Americans age 12 and older (51.7%) drink alcohol, 60.4 million smoke cigarettes (27.7%) and 13.6 million (6.2%) use illicit drugs (Substance Abuse and Mental Health Services Administration, 1998a). The widespread use of alcohol, tobacco and other drugs is associated with significant costs to American society. In fact, the annual economic and social cost of substance abuse exceeds \$428 billion and over 500,000 premature deaths (McGinnis and Foege, 1993; Rice, 1999).

Although *adults* experience a disproportionate share of the negative consequences of substance abuse, the use of alcohol, tobacco and other drugs typically begins during adolescence (Wallace and Forman, 1998). In light of this reality, many efforts to reduce the negative impact of substance abuse have been devoted to the design and implementation of programs and policies intended to prevent young people from ever initiating the use of substances. Central to the development of effective preventive interventions is the need to identify accurately those factors that increase the likelihood (i.e., risk) that young people will use drugs. One of the most thorough and widely cited reviews of the risk factors for substance abuse among young people is Hawkins, Catalano and Miller's *Psychological Bulletin* article "Risk and Protective Factors for Alcohol and Other Drug Problems in Adolescence and Early Adulthood" (1992).

Although Hawkins and his colleagues identified a relatively large body of research on risk factors for adolescent substance abuse, most of what is known has been derived from studies of white youth. Accordingly, the extent to which the findings generalize to African American (and other non-white) youth is largely unknown (Bass and Kane-Williams, 1993; Dent, Sussman, Ellickson, Brown and Richardson, 1996).

Past research reveals that African American adolescents (and adults) experience substance-related *problems* at levels that are higher than those of white adolescents and adults, even though their rates of substance *use* are comparable to, if not lower than, those of their white counterparts (Bachman, Wallace, O'Malley,

Johnston Kurth, and Neighbors, 1991; Herd, 1989; Jones-Webb, 1998; US Department of Health and Human Services, 1995; Oetting and Beauvais, 1990; Prendergast, Austin, Maton, Baker, 1989; Welte and Barnes, 1987; Wallace, 1999).

Given African American adolescents' disproportionate experience of substance related problems, and the general absence of research that demonstrates that African American and white youth are equally exposed and vulnerable to the risk factors that current interventions are designed to address, some have called for the design of race-specific interventions (see Dent, et al., 1996, for a discussion of the issue). Without knowing the extent to which the findings of past research generalize to African American young people, it is difficult to determine if new interventions are needed, if existing models should be modified or if current intervention strategies are equally effective for all youth, independent of their racial/ethnic background.

In order to determine if current interventions are adequate to prevent adolescent substance use, irrespective of their racial/ethnic background, Dent and colleagues recommend that future research "should determine the common and unique risk (and protective) factors for drug abuse among ethnic groups, whether the level of exposure to these factors differs across ethnic groups, and whether these factors have differential relevance (predictive strength) for drug use across ethnic groups" (p. 918, Dent et al., 1996). The purpose of the present study is to begin to address this recommendation and thus, to increase the scientific knowledge base on race differences, and similarities, in risk factors for adolescent substance (i.e., alcohol, tobacco, and marijuana) use. In order to accomplish this purpose, we first utilize Hawkins et al's *Psychological Bulletin* article to specify salient risk factors and to organize our review of the existing literature. Next, we use data from the University of Michigan's Monitoring the Future study (see Johnston, O'Malley and Bachman, 1999) to document the epidemiology of race differences in drug use patterns and trends. We then use additional data from Monitoring the Future to examine empirically whether African American and white youth are differentially *exposed* and/or differentially *vulnerable* to key risk factors identified by Hawkins et al. (1992). Finally, we discuss the implications of the findings for the issue of race and the design of future preventive interventions.

As in all research that is designed to understand "race" or "race differences" it is important to note here that the concept of "race" is primarily a social construct rather than one rooted in biology or genetics. Having said this, however, it is also important to note that the socially constructed notion of "race" continues to have substantive significance in contemporary American society. For example, relative to white Americans, African Americans have consistently been found to be disadvantaged on a variety of important outcomes, including living conditions, educational opportunities, income and wealth, psychological well-being and in drug-related negative consequences (Wallace, 1999). These contemporary differences are rooted, at least in part, in the historical importance of "race" in

determining the distribution of desirable social benefits. In light of the consistent, but yet to be explained race disparities in substance-related negative outcomes, additional research is clearly needed.

Race Differences in Risk Factors for Adolescent Substance Abuse

According to Hawkins and colleagues (1992), risk factors for adolescent substance abuse can be grouped into two broad classes. The first class of risk factors is contextual (e.g., societal and cultural factors) and the second is individual (e.g., personal characteristics and interpersonal relationships). Within these two broad classes, Hawkins et al. (1992) identify seventeen general risk factors (as well as several specific measures within the general risk factor categories). Below, we use Hawkins et al.'s typology as an organizing framework within which to review past risk factor research. We focus our review on studies that provide insight on the extent to which African American and white youth are differentially exposed to and/or differentially vulnerable to key substance abuse risk factors.

In the present context, "exposure" to a risk factor refers to the extent to which that risk factor is present to a greater or lesser degree among African American as compared to white youth. For example, if living in an urban area is a significant risk factor for substance abuse, African American youth will have a higher level of exposure to this risk factor than white youth because they are more likely than white youth to live in cities. "Vulnerability" to a given risk factor, as used here, is the extent to which a given risk factor differentially relates to the drug use of African American and white youth. For example, past research indicates that peer drug use is a key risk factor for adolescents' drug use (see Bauman and Ennett, 1994 for a review). If the strength of the relationship between peer drug use and adolescent's own drug use is stronger for white adolescents than for African American adolescents, it suggests that white adolescents are more vulnerable than African American adolescents to peer drug use. Although some research has given attention to race differences in exposure to risk factors for substance abuse, considerably less has examined the possibility that African American and white youth are differentially vulnerable to factors that increase their likelihood to use drugs. In the sections below we explore these issues.

Contextual Risk Factors

The contextual variables that Hawkins et al. (1992), identify as important risk factors for adolescent substance abuse include laws and norms favorable toward drug use, neighborhood disorganization, extreme economic deprivation and the availability of drugs. These more macro-level risk factors focus on the environmental contexts in which adolescents live and that facilitate, if not encourage, their involvement with drugs.

Laws and Norms

According to Hawkins and colleagues (1992), laws reflect societal and/or subgroups' beliefs and attitudes about substance use. One of the primary mechanisms by which laws and norms are hypothesized to affect substance use is through their impact on supply and demand. For example, laws concerning alcohol and tobacco products are intended to govern who can purchase what substance, where and at what cost. Related to this is the issue of the availability of drugs in adolescents' homes, schools and communities.

Ostensibly, the laws that govern the supply and demand of licit and illicit drugs are the same for both African American and white youth. In reality, however, past research suggests that the extent to which these laws are adhered to vary according to the racial composition of a given neighborhood and according to the race of a given adolescent. For example, experimental studies reveal that retailers are more likely to sell tobacco to minors in African American neighborhoods than in white neighborhoods and that they are more likely to sell these products to an African American adolescent than to a white adolescent, irrespective of the neighborhood's racial composition (see Landrine, Klonoff and Alcaraz, 1997; Wallace, 1999).

Social norms reflective of subgroups' beliefs about substances may promote or deter use. In fact, norms that attach negative stigma to substances may act as a protective mechanism against use. For example, past research suggests that despite the presence of other contextual risk factors, subcultural norms against using crack-cocaine and the stigma attached to being labeled a "crack-head" may inhibit inner-city African American youth from using this drug (Furst, Johnson, Dulap and Curtis, 1999).

Availability of Drugs

Related to the laws that govern the sale of drugs is the extent to which drugs are available in a given context. The availability of alcohol (and other drugs) can be differentiated into physical, social and economic aspects (Moskowitz, 1989; LaVeist and Wallace, 2000; Wallace, 1999). In the case of cigarettes and alcohol, one measure of physical availability is the location, number and density of outlets that sell these products as well as their form, size and and/or potency. The social availability of a drug refers to the extent to which that drug is promoted at the point of purchase, within the broader community and in the mass media. The economic availability of a drug refers to its price, relative to disposable income, and relative to the cost of other goods.

Research on race differences in the community (e.g., neighborhood) level availability of drugs suggests that licit and illicit drugs are more widely available in African American communities than in white communities (Alaniz, 1998, Dawkins, Farrell and Johnson, 1979; LaVeist and Wallace, 2000; Moore, Williams and Qualls, 1996). Further, the substances sold in African American communities

(e.g., menthol cigarettes, malt liquor, heroin, crack-cocaine) are often the cheapest, most potent, and therefore, potentially most deleterious to the physical and social health of individuals, families and communities (Alaniz, 1998; Hacker, Collins and Jacobsen, 1987; LaVeist and Wallace, 2000; Scott, Denniston and Magruder, 1992; Wallace, 1999).

Studies on the social availability of alcohol and tobacco indicate that they are more heavily advertised and marketed to African Americans than to white people, both through community venues (billboards, point of sale promotions, sponsorship of cultural events) and through various other media (Moore, Williams and Qualls, 1996; Hacker, Collins and Jacobsen, 1987; Strickland and Finn, 1984; Scott, Denniston and Magruder, 1992; Wallace, 1999). For example, a recent study on substance use in popular music and movies found that substance use was proportionally higher among African American movie characters (10 percent) than among white characters (5 percent) and that drugs and or alcohol were referred to in 75 percent of African American-oriented music (i.e., rap) versus 20 percent or less of white-oriented music (e.g. alternative, hot 100, heavy metal, country-western) (Office of National Drug Control Policy, 1999).

Research on adolescents' perception of the availability of drugs in their community (e.g., neighborhood) also reveals significant race differences. For example, relative to white youth, African American youth are more likely to perceive that marijuana, cocaine or heroin would be easy to obtain. Similarly, they are more likely than white youth to have seen someone selling drugs in their community and to have seen someone who was drunk or high (United States Department of Health and Human Services, 1995). Although community (e.g., neighborhood, census tract) level availability has been found to relate significantly to adult alcohol and illicit drug use (Alaniz, 1998; Lillie-Blanton et al., 1993), the extent to which this holds true for adolescents, to our knowledge, has yet to be documented.

Wallace (1999) argues that African American youths' greater exposure to community availability of drugs, and its resulting problems, may actually have a preventive impact on their drug use, as they witness first hand, the negative consequences associated with substance abuse. This argument is consistent with the explanation for the decline in heroin use among young people in Harlem in the late 1960s (Boyle and Brunswick, 1980), and the more recent eschewing of crack cocaine use among inner city youth noted previously (Furst, Johnson, Dunlap and Curtis, 1999).

Perhaps even more important than young people's perception of drugs being widely available in their community, is the extent to which drugs are widely available in their more proximate environments. The key proximate environments in which many young people have access to drugs include their schools, their families and their peer networks. Research on race differences in the availability of drugs in these more proximate contexts is generally consistent with research

on race differences in use; African American youth have been found to have less access than white youth to alcohol, to marijuana, and to other illicit drugs in their proximate environmental contexts (Harford, 1985, Maddahian, Newcomb and Bentler, 1988; Gillmore, Catalano, Morrison, Wells, Iritani and Hawkins, 1990).

Extreme Economic Deprivation and Neighborhood Disorganization

Extreme economic deprivation and neighborhood disorganization, two inter-related contextual risk factors, have been hypothesized to relate to elevated adolescent substance abuse (Hawkins et al., 1992). Although widely believed, empirical tests of these relationships are relatively few. In fact, the research that has examined the relationship between socioeconomic status and adolescent drug use actually finds a slight positive relationship between being more advantaged and alcohol and marijuana use (Hawkins et al., 1992). Cigarette use however, has been found to be higher among young people of lower economic status (Johnston, O'Malley and Bachman, 1999). Relative to white adolescents, African American adolescents are more likely to be poor and to reside in poor, high-risk neighborhoods. Despite these facts however, African American youth are generally less likely than white youth to use tobacco, alcohol or other illicit drugs. In fact, regression estimates that control for race differences in sociodemographic factors suggest that African American youths' drug use would be even lower than that of white youth if African American youth were as socioeconomically advantaged as their white counterparts (Wallace and Bachman, 1991).

In sum, researchers have examined a number of contextual risk factors that relate to substance use among young people. Laws that regulate adolescent's access to drugs have been found effective in reducing their substance use (Hawkins, et al. 1992). The extent to which these laws are applied equally to African American and white youth remains in question. Other contextual variables that researchers have hypothesized to be important risk factors include the extent to which drugs are available, extreme economic deprivation and community disorganization. In general, African American youth have higher levels of exposure to these risk factors than do white youth. However, the extent to which these contextual factors are truly risk factors for adolescent substance abuse has not been well established. In light of the fact that African American youth have higher levels of exposure to these risk factors and still have lower levels of drug use, they are not sufficient to explain away race differences in adolescent drug use.

Interpersonal and Individual Risk Factors for Adolescent Substance Abuse

Past research suggests that the interpersonal and individual variables that may be important risk factors for adolescent substance abuse include associating

with drug-using peers and early peer rejection, a variety of family factors, academic experiences and behaviors (i.e., academic failure and low commitment to school), general personality disposition (i.e., alienation and rebellion), attitudes toward and involvement in drug use and other antisocial behaviors (pro-drug use attitudes, early onset of drug use and other problem behaviors), and physiological factors (Hawkins et al., 1992). Below, we selectively review past research on race differences in adolescents' exposure and vulnerability to these risk factors and discuss the extent to which statistically controlling them may help to explain race differences in drug use.

Associating With Drug-Using Peers

Associating with drug-using peers is one of most widely researched and recognized risk factors for adolescent substance abuse (Bauman and Ennett, 1994). Not surprisingly, peer use has been found to be a significant risk factor for African American and white youths' substance use (Maddahian, Newcomb, and Bentler, 1988; Newcomb, Maddahian, and Bentler, 1987; Wallace, 1991). However, research on race differences in peer relationships reveals that African American youth are less peer-oriented (and more parent-oriented) than white youth (Cernkovich and Giordano, 1992; Giordano and Cernkovich, 1986; Giordano, Cernkovich and Demaris, 1993). Past research has also found that African American youth have, on average, fewer peers who use drugs than do white youth (Barnes, Farrell, & Banerjee, 1994; Newcomb and Bentler, 1986). Because African American youth are less peer-oriented than white youth, previous studies have found a statistical interaction between peer use and race. The interaction indicates that the relationship between peer drug use and adolescents' own drug use is stronger, on average, for white youth than for African American youth (Barnes and Farrell, 1994; Newcomb and Bentler, 1986; Wallace, 1991). In the language of risk factor research, white youth are more vulnerable to their peers' drug use than are African American youth.

Peer Rejection in Early Elementary Grades

Peer rejection during the early elementary grades is another peer-related risk factor that Hawkins et al. suggest might increase adolescents' likelihood to abuse substances (Hawkins et al., 1992). To date, the mechanisms through which peer rejection might impact drug use are not clear (Hawkins et al., 1992). Based upon a search of number of social science databases we were unable to identify any research that examined race differences in peer rejection as an explanation for race differences in substance use, and thus its role in accounting for race differences in drug use remains unknown.

Family Risk Factors

Hawkins et al. (1992) identified a number of important family risk factors for adolescent substance abuse. These risk factors include family alcohol and drug behavior and attitudes, poor and inconsistent family management practices, high levels of family conflict and low bonding to family (see Ellickson, Collins and Bell, 1999). Family drug behavior include parent, sibling and household members' drug use and attitudes favorable toward drug use. Relatively few studies have examined the extent to which race differences in drug use are the result of race differences in family risk factors. One of the few studies to address this issue found that adolescents whose parents drink are less likely to abstain from alcohol use, irrespective of race. However, non-African American adolescents whose parents drink, use alcohol more frequently as compared to African American adolescents whose parents drink (Harford, 1985). Another recent study that examined this issue found that relative to white parents, African American parents drink less frequently, hold stronger norms against alcohol use, perceive alcohol use as more harmful, and involve their children less in family alcohol use (Peterson, Hawkins, Abbot, Catalano, 1994). Given the relatively low rates of substance use among African American women and the relatively high percentage of African American female-headed households, more African American youth, as compared to white youth, may be exposed to abstinence models and norms. Thus, African American youth may be less likely to use substances (especially alcohol) themselves (Peterson et al, 1994/5; Johnson & Johnson, 1999).

Research on the relationship between having a deviant sibling (i.e., one who has used marijuana, been suspended from school, or arrested) and race differences in early adolescent drug use finds that African American youth are more likely than white youth to have a deviant sibling, but having a deviant sibling does not significantly predict African American youths' substance initiation (Catalano, Morrison, Wells, Gillmore, Iritani, and Hawkins, 1992). Alternatively, for white youth the *absence* of a deviant sibling is associated with less variety of drugs initiated (Catalano, Morrison, Wells, Gillmore, Iritani, Hawkins, 1992).

Studies on race differences in family management style and adolescent drug use suggest that relative to white parents, African American parents have more proactive parenting styles, monitor their children's whereabouts more closely, exert more control over their children's peer selection, and tend to be more authoritarian in making decisions about where their children go (Gillmore, Catalano, Morrison, Wells, Iritani, and Hawkins, 1990; Giordano, Cernkovich, and Demaris, 1993; Peterson, Hawkins, Abbot, Catalano 1994). Each of these factors suggests that the family environment of early adolescent African American youth is significantly more protective than that of white youth, with respect to the use of alcohol and other drugs. These findings are consistent with black youth's generally lower drug use prevalence rates (Biafora & Zimmerman, 1998).

Poor family bonding is a significant risk factor for adolescent substance abuse (Hawkins, et al., 1992). Some research suggests that African American youth are more closely attached to their parents (e.g., Giordano et al., 1993) than are white youth, while other studies suggest no differences in attachment (Catalano et al., 1992). The reason for this inconsistency is not clear. However, it is clear that having poor relationships with parents is a significant risk factor for substance abuse for all youth, irrespective of race (Maddahian, Newcomb and Bentler, 1988). The extent to which race differences in family factors explain race differences in drug use is an area ripe for further exploration.

Academic Experiences and Behaviors

High academic performance has been found to relate to lower levels of adolescent drug use. Relative to African American youth, white youth generally perform better academically. Since African American youth use drugs less than white youth, despite performing less well academically, academic achievement has not been found to be particularly useful in explaining race differences in drug use (Maddahian, Newcomb, Bentler, 1988).

Having low commitment to school (e.g. dropping out, being frequently truant, not planning to attend college) has been found to relate to elevated levels of drug use (Hawkins et al., 1992). Although African American youth are more likely to drop out than are white youth, controlling for socioeconomic status differences eliminates this difference (Rumberger, 1983). Research on race differences in truancy found that African American students were less likely than white students to report skipping or cutting one or more school days in the previous thirty days and that there were no race differences in skipping one or more classes in the previous four weeks (Benson & Donahue, 1989). Empirical examination of African American-white differences in variables related to school commitment suggests that it is not a primary explanation for African American-white differences in drug use (Wallace and Bachman 1991).

Alienation and Rebellion

Youth who are not bonded to the dominant values of society have been found to be at risk for substance abuse (Hawkins, et al., 1992). According to Hawkins et al. (1992), low religiosity can be considered an indicator of alienation and rebellion. Past research finds that low religiosity is positively related to drug use and that white youth are less religious than African American youth (Wallace and Williams, 1998). Given the possibility that race differences in religion may help to explain race differences in drug use, this topic, as well as other aspects of alienation and rebellion should be explored more fully.

Attitudes Favorable Toward Drug Use, Early Involvement in Drug Use and Other Antisocial Behaviors

Young people who have pro-drug use attitudes and who begin using drugs and engaging in other problem behaviors while they are young, are at an increased risk for substance abuse (Hawkins, et al., 1992). In general, African American youth have been found to have more negative attitudes toward drug use than white youth and to initiate drug use later than white youth (Barnes & Welte, 1986; Gillmore et al., 1990; Harford, 1985; Newcomb, Maddahian, Skager and Bentler, 1987; Wallace and Bachman, 1991; Wallace and Bachman, 1993). In one of the few investigations to examine race differences in vulnerability to drug use attitudes, Gillmore et al., (1990) found that the relationship between reported intentions to use drugs as an adult more strongly related to white children's drug use than to African American children's use. Although the authors do not offer an explanation for this finding, race differences in future drug-related expectations certainly merits further investigation.

In examining how involvement in other problem behavior relates to substance use, past research has shown that African American and white youth who are involved in delinquency are at elevated risk for substance abuse (Harford, 1985; Wells, et al., 1992). Alternatively, school-related conduct problems appear to predict white youths' drug use but may have less impact on African American youths' drug use (Barnes & Welte, 1986; Wells et al., 1992). The reasons for school-related problems (e.g., social class difference between teacher and students) may be more varied for African American youth as compared to white youth and should be considered as possible explanations for the race disparity in the strength of the relationship between drug use and school problems.

Physiological Factors

Physiological factors are the final individual level precursors to substance abuse identified by Hawkins and his associates (1992). In particular, Hawkins et al., (1992) noted that sensation seeking, a substance abuse risk factor, might be linked to biochemical factors and that a predisposition to substance abuse might be genetically transmitted. Although we were unable to locate studies regarding race differences in genetic predisposition for substance abuse, past research reveals that African American young people and adults score lower than their white counterparts on measures of sensation seeking (Maddahian, Newcomb, & Bentler, 1988; Kaestner, Roesn and Appel, 1977).

In sum, past research has identified a number of interpersonal and individual risk factors for adolescent substance abuse. The extent to which African American and white youth are exposed to and, in some cases, vulnerable to these risk factors vary. For example, on average, African American youth report having

fewer drug-using peers than do white youth and they appear to be less vulnerable than white youth to peer drug use. With regard to family risk factors like parental use, monitoring and so forth, African American youth again have been found to be at lower risk than their white counterparts. Additional risk factors to which African American youth have been found to have less exposure, as compared to white youth, include alienation and rebellion, pro-drug attitudes, early drug use initiation, and sensation seeking (Hawkins et al., 1992).

THE PRESENT STUDY

The findings on race differences in risk factors for adolescent substance abuse, described above, are drawn from a variety of different studies. These studies use different measures, age groups, and sample sizes and vary in representativeness and quality. In order to control for some of these differences and address important limitations of past research, we use nationally representative samples of American youth drawn from the University of Michigan's Monitoring the Future (MTF) project. We use MTF data to accomplish the following specific goals: 1) to document the magnitude of the race differences in drug use among American adolescents; 2) to examine recent trends in these differences; and 3) to investigate empirically the extent to which African American and white youth are differentially *exposed* and/or *vulnerable* to a number of the variables that Hawkins, Catalano and Miller (1992) have identified as key risk factors for adolescent substance abuse.

METHODS

The design and methods of the Monitoring the Future study are summarized briefly below; a detailed description is available elsewhere (see Johnston, O'Malley and Bachman, 2000). The study employs a multi-stage sampling design to obtain nationally representative samples of secondary students (i.e., 8th, 10th, and 12th graders) from the 48 coterminous states. Data have been collected annually from high school seniors since 1975. In 1991, annual data collections began for 8th and 10th graders. The sampling procedure involves three stages: first, particular geographic regions are selected; next, schools are selected—approximately 420 schools participate each year; finally, approximately 49,000 students (18,000 8th graders, 15,000 10th graders, 16,000 12th graders) are selected from within each school. Students complete the self-administered, machine-readable questionnaires during a normal class period. Questionnaire response rates average about 84 percent for 12th graders, 86 percent for 10th graders and 90 percent for 8th graders. Absence on the day of data collection is the primary reason that students are missed; it is estimated that less than one percent of students refuse to complete the questionnaire.

The epidemiological (i.e., pattern and trend) analyses, presented below, include data from 8th, 10th, and 12th graders. Although items concerning substance use and sociodemographics are asked of students in all three grades, many of the risk factor measures identified by Hawkins et al. (1992) are asked only of seniors. Accordingly, the analyses examining whether African American and white youth are differentially exposed and/or vulnerable to the risk factors are based on data from high school seniors exclusively (i.e., 12th graders).

Among seniors, six different questionnaire forms are used each year, each administered to a random one sixth of the sample ($N = 2600$) (prior to 1989, MTF used only five forms). Many of the risk factor measures examined below are included on only one questionnaire form. To ensure an adequate number of respondents, we combined data from two or more years (approximate minimum $N = 5200$). Given the relatively large sample sizes used in the analyses there is the increased likelihood of findings that achieve statistical significance in the absence of being substantively significant. To reduce this likelihood, we generally highlight only those findings that exceed conventional standards for statistical significance (i.e., $p. \leq .01$).

Race Differences in the Epidemiology of Substance Use

Patterns

Table I presents data on the percentage of African American and white 8th, 10th and 12th grade students who report that they smoke cigarettes daily, who engage in binge drinking (i.e., have had five or more drinks in a row, at a single sitting, in the past two weeks), and who have used marijuana in the last year.

Consistent with past research, the data in Table I reveal that the prevalence of cigarette, alcohol and marijuana use is generally higher among white youth than among African American youth and that this difference exists across the three grade levels. For example, although 10 percent to nearly 30 percent of white secondary students are daily smokers, fewer than 8 percent of African American secondary students smoke this frequently. Similarly, while up to a third of white young people are binge drinkers by their senior year in high school, less than 15 percent of African American seniors drink at this level. Although marijuana

Table I. Race Differences in Substance Use by Grade Level, 1998–1999 Data Combined

	8th Grade		10th Grade		12th Grade	
	White	Black	White	Black	White	Black
Daily cigarette	9.7	3.8	19.1	5.3	26.9	7.7
Binge drinking	14.3	9.9	27.2	12.7	35.7	12.3
Annual marijuana	15.4	16.3	32.5	26.3	39.1	30.4

use prevalence rates are similar among African American and white students, (particularly at 8th grade where there is no statistically significant difference, i.e., 16% of African American students and 15% of white students) older white youth are, on average, more likely than African American youth to be users.

In sum, although the magnitude of the differences vary across drugs, and in the case of marijuana use among 8th graders, there is no race difference in use, the general finding is that alcohol, tobacco and marijuana use are less prevalent among African American youth than among white youth. This general finding has also been found to hold for other illicit drugs not presented here (e.g., LSD, heroin, crack cocaine) (see Johnston, O'Malley and Bachman, 2000, for a wider range of drugs).

Trends

Over the last several decades there have been significant changes in drug use among American young people (Bachman et al., 1991; Johnston, O'Malley and Bachman, 2000). By the late 1970s and early 1980s nearly two thirds of high school seniors had used marijuana, 45 percent reported binge drinking and nearly a quarter were daily smokers. During the remainder of the 1980s and the early 1990s, marijuana and alcohol use began to decline while cigarette use remained fairly stable. Despite this decline, from the early 1990s to the present, there actually have been slight increases in adolescent cigarette, alcohol and marijuana use in recent years (Johnston, O'Malley and Bachman, 2000).

The extent to which trends in drug use vary by race is shown in Fig. 1. Specifically, the figure shows trends in African American and white 8th, 10th and 12th graders daily smoking, binge drinking and annual marijuana use. Consistent with the prevalence data described above, Fig. 1 reveals that for over twenty years African American high school seniors have been less likely than white seniors to smoke daily, to binge drink or to have used marijuana. Data from 8th and 10th graders, also presented in Fig. 1, reveal similar race differences in drug use from 1991 to the present. It is important to note that among the younger students, the size of the difference between African American and white student's drug use is generally much smaller than the size of the gap for older students. As indicated above, this point is particularly true for marijuana where the gap in annual use has been quite small, to non-existent, among 8th graders.

Race Differences in Risk Factor Exposure and Vulnerability

To measure students' level of exposure to the various risk factors, we ran a series of analysis of variance models and compared African American and white seniors' mean values on the risk measures. Where the means on the risk factors differ significantly, we conclude that black and white youth are differentially

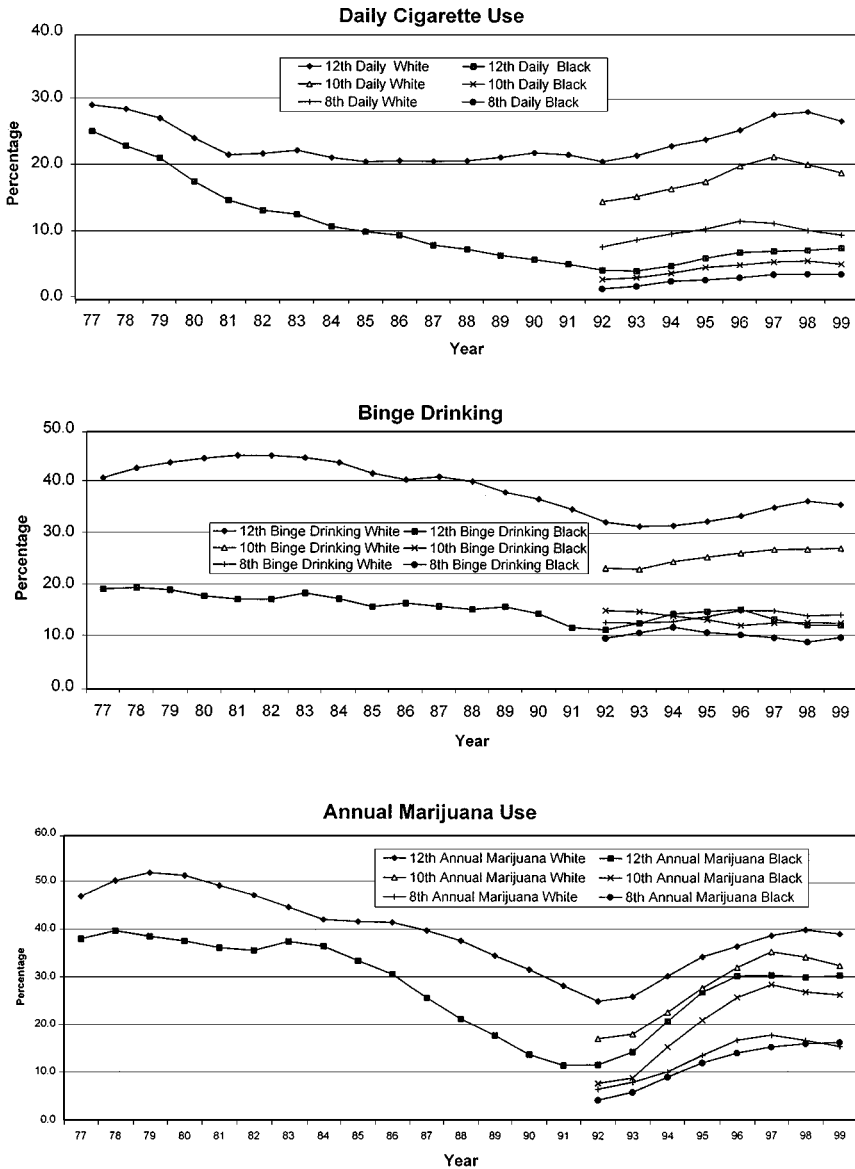


Fig. 1. Trends in adolescent substance use by race, 1977–1999.

exposed to the risk factor in question. To measure vulnerability we compare race differences in the magnitude of the correlation between the risk factors and the three substance use measures (i.e., daily cigarette use, binge drinking and annual marijuana use). The statistical significance of the race differences in the correlations (i.e., vulnerability) was ascertained by running a series of regression models in which the drug use outcome variables were regressed on race, the risk factor and a race by risk factor cross-product term. Where the magnitudes of the correlations differ significantly for African American and white youth, we conclude that African American and white youth are differentially vulnerable to the specific risk factor. The variables selected were chosen to correspond, at least roughly, with the contextual, interpersonal and individual risk factor domains identified by Hawkins et al. (1992).

The results of these analyses are presented in Table II. The first two columns of the table present the mean values on the risk factors (i.e., exposure), separately for white and African American seniors. An asterisk after these numbers indicates African American and white youth are differentially exposed to the specific risk factor in question ($p < .01$). The third through eighth columns of Table II compare the correlations between the risk factors and cigarette, alcohol and marijuana use, separately by race. The magnitudes of the correlations indicate the strength of the relationship between the risk factor and the specific drug being considered. Generally, the group for whom the correlation is largest is most vulnerable to the specific risk factor. Only those differences in vulnerability that are statistically significant (i.e., the interaction term was significant, $p < .01$) are presented in the table.

Contextual Factors

Laws and Norms

In the absence of measures of actual societal-level laws and norms, the “laws and norms” risk factor questions examined here refer to students’ schools as the social context, and the rules and norms regarding substances that are enforced within their schools. More specifically, seniors are asked how severely they think the consequences would be for a student in their school if the student got caught smoking or drinking. The questions are coded such that higher mean values indicate lower consequences. The results indicate that, on average, white seniors perceive that the consequences would be less severe for a student who smoked cigarettes at their school than do African American seniors (see Table II).

The next set of rules and norms questions ask seniors about the vigorousness of the teachers and administrators at their school in attempting to prevent students from smoking, drinking or using drugs. The data indicate that there are no race

Table II. Race Differences in Exposure and Vulnerability to Risk Factors for Adolescent Drug Use

Risk factors	Exposure ¹						Vulnerability ²			
	Whites		Blacks		Daily cigarette		Binge drinking		Annual marijuana	
					Whites	Blacks	Whites	Blacks	Whites	Blacks
Laws and Norms favorable toward drug use										
No school consequences for:										
Smoking	2.39	2.08*			—	—	—	—	—	—
Drinking	1.52	1.43			—	—	—	—	—	—
How vigorous are staff at preventing:										
Smoking	2.81	2.71			—	—	—	—	—	—
Drinking	2.68	2.67			—	—	—	—	—	—
Drugs	2.34	2.44			—	—	—	—	—	—
<i>Availability of drugs</i>										
Access to marijuana	4.53	4.21*			—	—	—	—	.25	.21
Offer drugs at school	3.10	3.39*			—	—	—	—	—	—
<i>Extreme economic deprivation</i>										
Low parental education	2.75	3.20*			.13	.04	—	—	—	—
Number of individuals in household	2.51	2.19*			-.09	-.05	—	—	—	—
Family structure	2.72	2.30*			-.12	-.04	—	—	-.11	-.08
<i>Neighborhood disorganization</i>										
Population density	1.91	2.29*			—	—	—	—	—	—
Neighborhood dissatisfaction	2.62	3.39*			—	—	—	—	—	—
<i>Family alcohol and drug attitudes and behavior</i>										
Parents' disapprove of marijuana use	.61	.57			—	—	—	—	—	—
Parents' disapprove of cocaine use	2.54	2.58			—	—	—	—	—	—
<i>Poor and inconsistent family management practices</i>										
Limited parental supervision social activities	2.97	3.03			—	—	.16	-.01	—	—
Limited parental supervision and help with homework	2.37	2.41			-.11	-.01	—	—	—	—
<i>Family conflict</i>										
Argue w/parents	3.91	3.18*			—	—	—	—	—	—
<i>Low bonding to family</i>										
Family closeness not important	2.59	2.65			—	—	—	—	—	—
Parental dissatisfaction	2.71	2.95*			.12	.05	—	—	—	—

Table II. (Continued)

Risk factors	Exposure ¹				Vulnerability ²			
	Whites	Blacks	Daily cigarette		Binge drinking		Annual marijuana	
			Whites	Blacks	Whites	Blacks	Whites	Blacks
At parties:								
How often did others get high on alcohol	3.86	3.31*	—	—	.33	.23	—	—
How often did others get high on marijuana	2.84	2.96	—	—	—	—	.55	.39
Early onset of drug use								
How old were you when you first:								
Tried alcohol	4.97	4.87	—	—	.30	.14	—	—
Tried marijuana	4.57	4.34	—	—	—	—	—	—
Tried a cigarette	5.83	5.37*	.24	-.07	—	—	—	—
Got drunk	4.65	4.23*	—	—	.35	.02	—	—
Physiological factors								
Like to do risky things	3.40	2.72*	—	—	.21	.16	—	—
Get a kick of doing dangerous things	3.27	2.54*	.20	.22	—	—	—	—

¹Exposure = mean value on a given risk factor.

²Vulnerability = Correlation between drug use measure and the specific risk factor. Race differences for all entries shown are significant at $p < .01$ (two tailed tests).

* = $p < .01$ for the means.

differences in seniors' perception of their schools' staff members' efforts to prevent students from using substances.

Availability of Substances

The availability risk factor questions ask seniors how difficult they think it would be for them to get particular drugs if they wanted to and how often, if ever during the past year, someone has tried to give them, or sell them, an illegal drug at school. The data indicate that white seniors perceive that it would be easier to obtain marijuana than do African American seniors. The data further indicate that the relationship between this perception and actual use is stronger for white seniors than it is for African American seniors.

The data on race differences in the number of times students have been offered drugs at school suggests that African American seniors are exposed to more marijuana offers, at school, than are white seniors.

Economic Deprivation and Neighborhood Disorganization

The economic deprivation and neighborhood disorganization risk factors include low parental education, the number of parents in the home, the number of people in the household, the size of the city in which young people live and their level of dissatisfaction with their neighborhood. Relative to white 12th graders, African American 12th graders have higher levels of exposure to these risk factors (i.e., report lower levels of parental education, fewer parents in the household, more people living in their household, live in larger cities and are less satisfied with their neighborhoods). The data presented in Table II reveal that being economically disadvantaged is a stronger predictor of white seniors' cigarette use than African American seniors' and that not living in a two parent family more strongly predicts white seniors' annual marijuana use than African American seniors'.

Individual and Interpersonal Risk Factors

Family

The first set of individual and interpersonal risk factors that we examine are the family risk factors. These risk factors include seniors' perceptions of their parents' disapproval of drug use, their perception of the level of supervision that their parents provide over their homework, and over their social time and activities, the level of conflict between them and their parents, how important it is for students to live near their parents and relatives when they grow up and how satisfied they are with the way they get along with their parents.

The data indicate that there are relatively few race differences in exposure or vulnerability to the family risk factors. Exceptions to this general conclusion do however exist. For example, compared to African American seniors, white seniors report a higher level of conflict with their parents and less dissatisfaction with their relationships with their parents.

Academic Performance and Commitment

The next set of risk factors focus on seniors' academic performance and commitment. These measures include their grades, whether they had to repeat a grade or attend summer school, their frequency of being truant, not planning to attend college, not liking school, the amount of time that they spend doing homework, their involvement in extracurricular activities and their general attitude toward school.

The data indicate that although African American seniors' perform less well academically than white seniors (e.g., more likely to have poor grades, to have repeated a grade, to have had to attend summer school), they generally have levels of school involvement and school-related attitudes that are comparable to, or higher than, those of white seniors. Interestingly, all of the school risk factors more strongly predict white seniors' cigarette use than African American seniors' and more than half of them more strongly predict white seniors' binge drinking (see Table II). The nature and consistency of these findings suggest that overall, white seniors are more vulnerable than African American seniors to the impact of school-related risk factors.

Alienation and Rebellion

The alienation and rebellion risk factors examined here include having radical political beliefs, frequency of church attendance, the importance ascribed to religion, being eager to leave home, and feeling it is necessary to always obey the law to be a good citizen. African American and white seniors' means (i.e., exposures) are only significantly different for the religion measures, with African American seniors attending church more often than white seniors and ascribing more importance to religion than white seniors.

The correlations between the alienation and rebellion measures show a number of race differences, across the drug use measures. For example, having a radical political ideology and feeling that one does not always have to obey the law to be a good citizen more strongly relate to cigarette, alcohol and marijuana use for white seniors than for African American seniors. Similarly, the negative relationships between church attendance and cigarette and marijuana use are stronger for white seniors than for African American seniors.

Early and Persistent Problem Behaviors

The measures in this category include an index of deviant behavior (e.g., theft) and two measures that ask seniors' about their behavior when they were 5th and 6th graders. The data indicate that African American seniors were sent to the office more frequently than white seniors, but early deviance and misbehavior in school are more powerful risk factors for white seniors' drug use (particularly cigarette and alcohol) than African American seniors'.

Attitudes Favorable Toward Drug Use

Although African American and white seniors are roughly comparable in their attitudes toward drug use, the data presented in Table II indicate that white seniors are more likely than African American seniors to say that they like to get high at parties and that they expect that they will use marijuana in the future. There is also a significant difference in the relationship between liking to get high on marijuana at parties and frequency of marijuana use. This relationship is stronger for white seniors.

Association with Drug Using Peers

The next set of risk factors focus on drug-related interpersonal relationships; variables that past research has identified as strong risk factors for adolescent substance abuse. Comparing race differences on these measures, white seniors are clearly at higher risk for substance abuse than are African American seniors. For example, relative to African American seniors, white seniors are more likely to report that their friends smoke cigarettes, drink alcohol, and get drunk weekly. They are also more likely than African American seniors to report that they have been at parties or in other environments where substances were used. The data further suggest that white seniors are more vulnerable than African American seniors to peer cigarette, alcohol and marijuana use (see Table II).

Early Onset of Drug Use

Consistent with their generally higher levels of drug use, the data indicate that white seniors, on average, began using drugs earlier than their African American counterparts. In the case of cigarettes, and drinking alcohol to the point of drunkenness, the difference is statistically significant. The data further indicate that trying alcohol, getting drunk, and smoking at an early age all relate to current use more strongly for white seniors than for African American seniors.

Physiological Factors

Hawkins et al., suggest that sensation seeking is an important risk factor for substance abuse that may be rooted in physiology. The sensation seeking measures included here ask seniors how often they like to do risky things and how much they get a kick out of doing dangerous things. Whether physiological or social in origin, white youth report significantly higher mean levels than African American youth on the sensation seeking measures. Interestingly, however, the relationship between “getting a kick out of doing dangerous things” and cigarette use is stronger for African American seniors than it is for white seniors.

Discussion and Implications for Prevention

As noted earlier, the accurate identification of risk factors is central to the development of effective efforts to prevent young people from using alcohol, tobacco and other substances. To date, a key limitation of the prevention literature has been the paucity of research examining whether the substance use risk factors identified in studies of white middle class adolescents generalize to African American (and other non-white) youth. In the absence of research on race differences in risk factor exposure and vulnerability, current preventive interventions are based on the implicit assumptions that 1) the risk factors for African American and white adolescents’ substance use are identical; and 2) that African American and white adolescents are equally exposed and equally vulnerable to these risk factors.

The purpose of the present study was to begin to examine empirically the “equal exposure and vulnerability” assumption. Specifically, the paper used Hawkins, Catalano and Millers’ widely cited *Psychological Bulletin* article as a framework within which to review past risk factor research and as a guide to identify risk factors to examine for race differences in exposure and/or vulnerability. Based upon our review of the existing literature and the findings from our analysis of the Monitoring the Future data, many questions concerning race-differences in exposure and vulnerability to risk factors for adolescent drug use remain unanswered. What is clear, however, is that the simple assumption that African American and white youth are equally exposed and vulnerable to the same risk factors is not correct.

For example, with regard to race differences in exposure, we found that African American seniors were more exposed to important contextual risk factors (e.g., economic deprivation) and measures of academic failure (e.g., poor grades), while white seniors were more exposed to individual (e.g., sensation seeking) and interpersonal risk factors (e.g., peer use). Race differences in vulnerability to the risk factors that we examined were most evident and most consistent for the education and peer-related risk factors. In nearly every instance, the relationship

between these risk factors and substance use were stronger for white seniors than for African American seniors. In total, we found that African American and white seniors' differed significantly in their exposure to more than half of the 55 risk factors examined. Similarly, nearly one third of the 165 tests for race differences in vulnerability were highly significant (i.e., $p < .01$). While it is possible that some of the differences we identified resulted from chance, their consistency across variables, within the same risk factor domain, and across drug categories, makes the likelihood that our findings are primarily statistical artifacts unlikely.

A logical extension of the present study is the question "are race specific interventions needed to most effectively prevent substance use among African American and white youth?" If the design of effective preventive interventions is indeed based upon the accurate identification of risk factors, the findings of this study suggest that considerably more research is necessary before this question can be answered. More specifically, further research is sorely needed on the etiology of substance use among African American adolescents. Future research should also seek to identify those variables, or protective factors that prevent so many African American adolescents from using drugs despite their relatively high exposure to drug-related contextual factors (e.g., extreme economic deprivation). Research is also needed that clarifies why African American young people experience disproportionately more drug-related negative outcomes than white youth, despite having lower drug use prevalence rates. Until these and related issues become the subject of rigorous theoretical and empirical research African American children, youth and adults will continue to suffer, disproportionately, the consequences of substance abuse.

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