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## Substance Use and Dependence among Native Hawaiians, Other Pacific Islanders and Asian Ethnic Groups in the United States: Contrasting Multiple- and Single-Race Prevalence Rates from a National Survey

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### Abstract

The percentage of multiracial youth appears to be increasing in the United States. However, little has been disseminated about problem behaviors among multiracial Native Hawaiian(NH), Other Pacific Islander(OPI) and Asians on a national level. Utilizing the National Survey on Drug Use and Health, we compared multiple-race NH/OPI/Asians, while disaggregating by ethnic subgroups, with single-race individuals within respective Asian ethnic subgroups and Caucasians for prevalence of alcohol/drug use and dependence. For multiple-race NH/OPI/Asians high rates of alcohol dependence were observed compared with both single-race NH/OPI/Asian subgroups and single-race Caucasians; for some multiple-race NH/OPI/Asians high rates of drug dependence were also observed.

### Keywords

multiple race; alcohol; illicit drugs; dependence; national survey

### INTRODUCTION

Multiracial Americans comprised 7 million people or 2.3% of the US population in 2008 (U.S. Census Bureau, 2008). The U.S. is experiencing a growing multiracial identity movement. For example, during and after the historic election of the 2008 U.S. Presidency, much has been discussed about President Obama's racial composition, identity and his multi-cultural roots. However, research on the behavioral patterns of multiracial individuals, including substance use and addiction has only begun emerging in the past several years (Udry, Li, & Hendrickson-Smith, 2003). Empirical data became more available thanks to changes in the Census Bureau's race/ethnicity categorizations in 2000 that now allow marking combinations of races and ethnicities. Following the changes by the U.S. Census, many large-scale national surveys began using multiple racial categorizations, thus making it possible to generate behavioral data regarding multiple race respondents. This paper focuses on differences in prevalence rates

between multiple and non-multiple races encompassing Native Hawaiians, Pacific Islanders, Asians, and Caucasians as a comparison majority.

The historical lack of empirical data on multiracial individuals may reflect the historical treatment of inter-racial marriage and biracial individuals in America. For example, well into the twentieth century, inter-racial marriages were prohibited under anti-miscegenation statutes in many parts of the United States. Although often viewed as a “model minority” today, Asians did not escape such prohibitions. In the first half of the twentieth century, 12 states created new statutes which legally prohibited marriages between Caucasians and Asians, bringing the total to 15 states. Such prohibitive statutes were present in the west (i.e. California and Oregon), the east (Maryland and Virginia), as well as the south (Karthikeyan & Chin, 2002). In 1967 such laws were struck down by the Supreme Court in *Richard Perry Loving, Mildred Jeter Loving v. Virginia*.

Societal views of inter-racial marriages have changed gradually over the last half-century. For example, Gallup polls show that in 1958 only 4% of Americans approved of marriages between African-Americans and Caucasians, but by 2007 77% of the population did (Gallup, 2007). However, the issue remains complex. In a separate poll conducted in 2003, 30% of U.S. Caucasians stated they would disapprove of their child or grandchild marrying someone who is African-American (Gallup, 2004). Greater acceptance of inter-racial marriage also appears to concentrate in younger generations (Crary, 2007).

Along with changing attitudes, the number of inter-racial marriages in the U.S. has grown from 1% in 1970 to 6% in 2000 (Bratter & King, 2008). Rates of intermarriage for Asians have been reported to be much higher than this in some studies (Lee & Yamanaka, 1990). The growth of the U.S. multiracial population is more difficult to estimate, partly because the U.S. Census only included the option of marking more than one racial category, as opposed to an “other” category, in 2000. Of the people who identified themselves as multiracial (reporting two or more races), about 31% shared Native Hawaiian/Other Pacific Islander (NH/OPI) or Asian origin. Fifty-four percent of NH/OPI reported being multiracial, and among all Asians about 14% reported multiracial heritage (Grieco & Cassidy, 2001).

Multiracial youth face unique questions about their racial identity. Historically, some statutes required multiracial individuals to be identified by their racial minority status (the so-called “one-drop” rule). Multiracial Asian-Caucasian individuals could not be considered Caucasian. This is exemplified by the case of Knight, who was half Caucasian and half Asian and was denied citizenship in 1909 (Tashiro, 2002). More recently prominent minority leaders have fought multiracial categorizations, fearing they may diffuse minority group political influence (Shih & Sanchez, 2005). Several public figures have recently embraced a multiracial identity, challenging historical racial categorization schemes (Navarro, 2008).

With this changing backdrop of accepted notions and assumptions about race, researchers have considered the developmental effects on multiracial children and how those developmental effects might carry forward into adulthood. One consistent concern has been with racial identity formation which for these youth may present unique challenges not experienced by single race children. During racial identity development such youth may experience tension, confusion, guilt, and feelings of rejection from both parental racial groups and society in general, or alternatively, may accomplish integration of both parental cultures and develop pride in and identification with the positive qualities from all races of origin (Collins, 2000). Racial identity development is likely influenced not only by internal factors but also external ones, such parental availability, attitudes and marital stability (Bratter & King, 2008), availability of siblings, multiracial peers or role models, community norms, and community reaction to the youth and their chosen racial identification (Shih & Sanchez, 2005).

Many models of identity development for multiracial children have been proposed (Collins, 2000; Poston, 1990; Gillem, Cohn, & Throne, 2001). Most models posit greater risk for psychopathology among multiracial youth. Indeed recent studies show the evidence of elevated risk among them for a range of problem behaviors including substance use, depression and sexual behaviors (Udry et al., 2003). However, some suggest these developmental experiences may lead to greater resilience (Cauce et al., 1992; Johnson & Nagoshi, 1986) perhaps into adult life. A small body of literature attempts to understand both normative and pathological behaviors of multiracial individuals from the viewpoint of genetic admixture. According to this viewpoint, values of most quantitative traits of multiple races are considered to fall in the mean of the values of the parents' races without a strong environmental effect. Thus if the value of a trait among multiple-race individuals does not fall in between the aggregate means of their parental single races, one would assume that the excess from the mean is largely due to environmental effects. Following this viewpoint, if one drop of blood makes a person black, it is a "dominance effect" of a social but not a biological factor (Rowe, 2002).

Although the empirical literature on substance use and abuse among Asian Americans and Pacific Islanders has increased dramatically in the last several years (e.g., see Kim, Ziedonis & Chen, 2007 review on tobacco alone), data separating multiracial groups are still rarely found. Available studies of multiracial individuals have often recruited subjects from clinical settings, which may bias study findings (Shih & Sanchez, 2005). In addition, many studies lump all multiracial participants into a single multiple-race category, ignoring potential within-group differences. Because prevalence of problem behaviors is often lower in Asian populations compared to Caucasians, the potential for increased risk among multiracial Asians could be easily overlooked. A strong body of empirical work to test those potentially conflicting hypotheses is still lacking for small minority populations such as NH/OPI/Asians.

In this study, we examined several indicators of substance use and dependence, extending from our and others' previous work showing elevated risk for substance use among multiracial Asians and Asian Americans in the U.S. Combining four years (1999–2002) of the National Survey on Drug Use and Health (NSDUH) allowed substantial numbers of multiple-race individuals within each major Asian ethnic subgroup. To our knowledge, this is the first report that examines risk for both alcohol and illicit drug use and DSM-defined dependence among individuals reporting NH/OPI/Asian multiple-race from a representative national survey. Another strength of the study is that by combining multiple survey years and creating a very large overall sample of respondents, we were able to disaggregate by NH/OPI/Asian ethnic subgroups. We attempt to answer two questions in this paper:

1. Do multiple-race Hawaiians, Other Pacific Islanders and Asian Americans report higher rates of alcohol use and illicit drug use than their single-race counterparts?
2. Do such trends hold for prevalence of alcohol dependence and separately, illicit drug dependence?

If a particular multiple-race group shows a higher use rate, such information provides a basis for targeted prevention strategy. Information on DSM-IV dependence is critical because it raises concern for the possible need for treatment approaches that address issues relevant to multiracial individuals. Such information would be obscured if multiple-race individuals were lumped together with single-race individuals or several ethnic subgroups were lumped together under the category of Asians.

## METHODS

### Sample

The procedures for combining multi-year NSDUH data are described in more detail in our earlier publication (Sakai, Ho, Shore, Risk, & Price, 2005). Briefly, the NSDUH data files combining four years (1999–2002) included 275,525 individuals who were ages 12 and older with relatively large numbers of individuals from NH/OPI/Asian ethnic subgroups (See Figure 1 bottom section for sample sizes). Between 1999 and 2002 name and methodological changes were implemented in the NSDUH which may bias trend measurement (<http://www.oas.samhsa.gov/nhsda/2k2nsduh/Results/appC.htm>) However, assuming that these changes did not differentially affect participation or reporting by race/ethnicity to a significant extent, then by combining years, minor fluctuations based on specific methodological implementation may have been smoothed.

### Measures and Analyses

In the 1999 survey, respondents were asked “Which of these groups describes you? Just give me the number or numbers from the card.” Identifiers included Native Hawaiian, Other Pacific Islander, Chinese, Filipino, Japanese, Asian Indian, Korean, Vietnamese and Other Asian. In the 2000–2002 surveys, respondents were asked the same question; identifiers included “Native Hawaiian”, “Other Pacific Islander” and “Asian (For example: Asian Indian, Chinese, Filipino, Japanese, Korean, and Vietnamese)”. Those self identifying as Asian or part-Asian were asked “Which of these Asian groups best describes you? Just give me the number or numbers from the card” and identifiers included “Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese and Other” (also see <http://www.oas.samhsa.gov/NHSDA/methods/RaceEthnicity.pdf>).

Respondents were asked about use of alcohol and a variety of illicit drugs including cannabis, cocaine/crack, heroin, hallucinogens, inhalants, pain relievers, tranquilizers/sedatives, and stimulants. The surveys also asked DSM-IV-defined (APA, 1994) substance dependence symptoms by drug category. DSM-IV diagnostic criteria were available in the public-domain data files. For this study, we chose lifetime use (ever) and DSM-IV dependence in the past year for alcohol and combined illicit drugs to cover a range of substance use behaviors: licit and illicit; and varying levels of use severity. Prevalence and variances were estimated using SUDAAN (RTI, 2001) to adjust weighting structure and variance inflation due to multi-stage cluster sampling used in NSDUH surveys. We used a two-tailed t-test statistic to obtain significance levels when comparing the prevalence estimates between two racial/ethnic groups or multiple-race and single-race individuals within the same ethnic subgroup (Cohen, Cohen, West, & Aiken, 2003; Sakai, Risk, Tanaka, & Price, 2008). Tables specific to Asian ethnic subgroups and multiple-race groups were produced by SAMHSA because some racial/ethnic variables were not available in the public domain files due to confidentiality concerns regarding inadvertent identification of participants from small ethnic populations.

## RESULTS

Figure 1 summarizes prevalence of lifetime alcohol use (1.a), past-year alcohol dependence (1.b), lifetime illicit drug use (1.c) and past-year illicit drug dependence (1.d) for multiple- and single-race individuals within Asian/NH/OPI ethnic subgroups and Caucasians. Figure 1.a shows that although multiple-race Caucasians had lower prevalence of lifetime alcohol use compared with single-race Caucasians, that pattern was generally reversed for multiple-race NH/OPI/Asians. Multiple-race NH/OPI/Asians when compared with single-race NH/OPI/Asians from their respective ethnic subgroups, had higher prevalence of lifetime use, except Japanese; the results were significant for Asian Indian ( $p=0.04$ ) and Filipino ( $p<0.01$ ).

Multiple-race NH/OPI/Asians, when compared with single-race Caucasians, all had lower prevalence of lifetime alcohol use. The results were significant for OPI ( $p=0.03$ ), Chinese ( $p<0.01$ ), Filipino ( $p<0.01$ ), and Japanese ( $p<0.01$ ).

When considering past-year alcohol dependence (Figure 1.b), however, multiple-race NH/OPI/Asians had higher prevalence compared with both single-race Caucasians and single-race NH/OPI/Asians from their respective ethnic subgroups. The results were significant for NH ( $p=0.05$ ) and Filipino ( $p=0.04$ ) multiple-race groups in comparison to single-race Caucasians and for Filipino ( $p<0.01$ ) within-ethnic group comparisons.

Figure 1.c describes prevalence of lifetime illicit drug use. Multiple-race NH/OPI/Asians, when compared with single-race Caucasians, again generally had higher prevalence of lifetime illicit drug use; the results were significant for NH ( $p<0.01$ ), Filipino ( $p=0.01$ ) and Koreans ( $p<0.01$ ). Multiple-race NH/OPI/Asians, when compared with single-race Asian/NH/OPI from their respective ethnic subgroups, had higher prevalence of lifetime illicit drug use. The results were significant for lifetime use among Asian Indian ( $p=0.04$ ), Chinese ( $p<0.01$ ), Filipino ( $p<0.01$ ), Japanese ( $p<0.01$ ) and Korean ( $p<0.01$ ).

Compared to single-race Caucasians, dependence rates among multiple-race NH/OPI/Asian ethnic subgroups did not show a distinctive pattern. Comparisons were all non-significant, although rates varied considerably across groups (Figure 1.d). For multiple-race NH/OPI/Asians, prevalence rates of illicit drug dependence were generally higher compared with single-race NH/OPI/Asians from their respective ethnic subgroups with significant results for Filipino ( $p=0.03$ ). NH and Asian Indian were exceptions to this trend.

## DISCUSSION

The current study extends previous work documenting substance use and dependence prevalence among NH/OPI/Asian ethnic subgroups (Udry et al., 2003; Unger, Palmer, Dent, Rohrbach, & Johnson, 2000; Price, Risk, Wong, & Klinge, 2002; Wong, Klinge, & Price, 2004). However, unlike previous studies, we were able to include DSM-IV alcohol and drug dependence diagnoses and to examine rates among multiple-race individuals while disaggregating Asian ethnic subgroups.

These results show multiple-race Asians generally lie between single-race Asians and single-race Caucasians in prevalence of lifetime alcohol use. This supports the hypothesis of behavior genetic view of “in-between” values, given that a majority of multiple-race Asians are of Caucasian and Asian heritage. However, we observed generally much higher rates of alcohol dependence among multiple-race NH/OPI/Asians compared to single-race Caucasians, suggesting the possibility that this group is vulnerable to progress from alcohol use to dependence. Utilizing theory provided by Rowe et al. (2002), this progression may be of a social nature and likely involve a number of factors associated with multiracial identity. However, the results were significant only for NH and Filipino, perhaps in part reflecting small numbers of multiple-race individuals in each ethnic group even combining four years of surveys. Unlike alcohol use, we showed higher prevalence of drug use among multiple-race individuals compared to single-race Caucasians and separately, compared to their respective single-race NH/OPI/Asian subgroup. Several of these differences were statistically significant. This may suggest stronger influence of a number of environmental factors specific to drug experimentation (not related to alcohol use). Similar inferences can be made for drug dependence. However, among multiple race samples between-ethnic group variability was more visible for drug dependence than drug use.

Our results reaching statistical significance suggest that multiple-race Filipinos may be at particularly elevated risk for illicit drug use and alcohol dependence. The reasons for these

patterns seen among multiple-race Filipinos are unclear. It is certainly possible given the number of statistical tests performed, that these results represent a false positive deviation from the general patterns seen among multiple-race individuals from other Asian ethnic subgroups. However, it is also possible multiple-race Filipino represent a high-risk subpopulation. Asian ethnic subgroups certainly differ in some cultural norms, patterns of migration and risk for psychopathology. For example, in one recent study, Filipino youth exhibited relatively high rates of delinquent behaviors (Willgerodt & Thompson, 2006; Mayeda, Hishinuma, Nishimura, Garcia-Santiago, & Mark, 2006) and differing patterns of alcohol use have been shown among different Asian ethnic subgroups (Price et al., 2002). However, if we examine the general pattern of results, ignoring statistical significance, concerning patterns emerge for multiple-race Koreans (illicit drug and alcohol dependence), Vietnamese, and OPI (illicit drug dependence). This suggests that the pattern of results seen for multiple-race Filipinos is not unique and highlights the relatively small number of multiple-race individuals for some Asian/NH/OPI ethnic subgroups, even combining multiple years of a large epidemiological study.

The current study cannot explain these higher prevalence rates for alcohol dependence (NH and Filipinos) and drug use (NH, Filipino and Korean), though work by other groups suggests that this finding is not specific to Asian subgroups (Udry et al., 2003). It may be that earlier hypotheses regarding identity conflict and stress (Campbell & Eggerling-Boeck, 2006) are correct. If this is true, we might expect rates of problem behaviors to trend towards single-race estimates (Johnson & Nagoshi, 1986) as greater numbers of multiracial individuals and changing social attitudes toward inter-racial relationships create greater access to role models and peers, and greater within-individual pride in multiracial heritage, as exemplified by the Obama Presidency. One might also expect geographical differences in rates of problem behaviors among multiracial individuals with lower rates in areas where numbers of biracial youth and rates of interracial marriages are higher. Alternatively, however, other potential factors more intrinsic to the individual may not be mitigated by societal change.

The current study is limited by self report of race including identification of multiple-race. It is possible those who self-identify are more aware of their multiple-race heritage and may bias the results. However, most studies of multiple races, except those which classify by genotyping, are all subject to the potential bias of self-identification. This study is also limited by potentially inadequate power for analyses pertaining DSM-IV alcohol and drug dependence. Although a much bigger sample size, perhaps even over a decade, would increase power, trends may change over such time period, leading to misleading conclusions. Likewise, breaking down each ethnic group by age group could potentially uncover whether the risk is higher only among youth, as in the case of general patterns of substance use over life course. However, such results would suffer further from a lack of statistical power.

In conclusion, the current study describes elevated risk of substance use and dependence indicators among multiple-race NH/OPI/Asian ethnic subgroups compared to their single-race counterparts. For the alcohol dependence indicators, it appears that multiple-race individuals from some NH/OPI/Asian ethnic subgroups are even at higher risk than single-race Caucasians. Periodic monitoring of substance use and abuse trends among multiple-race individuals might aid substance abuse prevention efforts in this unique population. Such efforts may become increasingly important as society observes accelerated inter-racial integration.

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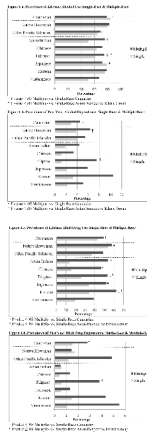
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**Figure 1.** Caucasian (single-race n=210,912; multiple-race n=4,481); Filipino (single-race n=1,734; multiple-race n=551); Vietnamese (single-race n=753; Multiple-race n=56); Korean (single-race n=902; multiple-race n=185); Japanese (single-race n=973; multiple-race n=558); Chinese (single-race n=1,455; multiple-race n=519); Asian Indian (single-race n=1,607; multiple-race n=80); Other Pacific Islander (single-race n=905; multiple-race n=252); Native Hawaiian (single-race n=411; multiple-race n=642).