

## ***Ethnic Disparities in Youth Access to Tobacco: California Statewide Results, 1999-2003***

Hope Landrine, PhD  
Irma Corral, MS, MPH  
Elizabeth A. Klonoff, PhD  
Jennifer Jensen, MPH  
Kennon Kashima, PhD  
Norval Hickman, MS, MPH  
Jonathan Martinez, MS

*The authors examined the role of youth ethnicity in youth access to tobacco with large, random samples of stores and large samples of ethnically diverse youths for the first time. From 1999 through 2003, White, Black, Latino, and Asian youths made 3,361 cigarette purchase attempts (approximately 700 per year) statewide. Analyses revealed that Black youths had significantly higher access than other youths and that access rates for Black and Asian (but not Latino or White) youths exceeded the Synar-mandated  $\leq 20\%$ . Clerks who failed to demand youth proof of age identification (ID) sold 95% of the tobacco that youths received and sold significantly more often to minorities and to girls, whereas clerks who demanded youth ID sold equally infrequently to all youths. These findings highlight significant ethnic disparities in youth access to tobacco and imply that those might be eliminated by policies and interventions that increase clerk demands for youth ID.*

**Keywords:** *youth access to tobacco; ethnic disparities; smoking; primary prevention*

**S** moking among youths (12- to 17-year-olds) can be understood as a function of supply and demand, where supply refers to youth access to (ability to acquire) cigarettes and demand refers to the psychosocial

variables entailed in children's desire to smoke (Pentz, Bonnie, & Shopland, 1996; U.S. Department of Health and Human Services [DHHS], 1994). Studies indicate that supply (i.e., actual or perceived high access to tobacco) may be as strong a predictor of youth smoking as demand and may be the strongest predictor of initial smoking among youths (e.g., DHHS, 1994; Klonoff & Landrine, 2004; Landrine & Klonoff, 2003; Robinson, Klesges, Zbikowski, & Glaser, 1997). For example, in a study of more than 6,000 youths, Robinson et al. (1997) found that perceived easy access to cigarettes was the best predictor of youth experimentation with smoking and indeed was a better predictor than well-known demand variables such as peer and parental smoking. Efforts to prevent youth smoking thereby focus on reducing youth supply and/or demand, with data suggesting that supply-side interventions may be more cost-effective (e.g., DiFranza, 2005; DiFranza & Dussault, 2005; DiFranza, Peck, Radecki, & Savageau, 2001; Forster et al., 1998). Moreover, each day, 3000-4000 youths become regular smokers and hence become the next generation of adult smokers (DHHS, 1994). Reducing youth access to tobacco is one strategy that might prevent some percentage of current youth and so of future adult smoking (Forster & Wolfson,

**Authors' Note:** *This study was supported by funds provided by National Cancer Institute Grants No. 1-U56-CA92079-01A1, 5F31-CA110213-01, and 5F31-CA103135-03; by Tobacco-Related Disease Research Program Grant No. 9RT-0043 and 15 AT-1300; and by California Department of Health Services Tobacco Control Section Grants 94-20962 and 96-26617. Please address correspondence to Hope Landrine, PhD, American Cancer Society, 250 Williams Street, Atlanta, GA 30303; phone: (404) 329-4425; e-mail: Hope.Landrine@cancer.org.*

**Health Promotion Practice**  
Month XXXX Vol. XX, No. XX, xx-xx  
DOI: 10.1177/1524839908317230  
© 2008 Society for Public Health Education

### **The Authors**

**Hope Landrine, PhD**, is the director of Multicultural Health Behavior Research at the American Cancer Society, National Home Office in Atlanta, Georgia.

**Irma Corral, MS, MPH**, is the senior research associate and project coordinator of the Segregation & Multicultural Health Behavior Research Project of the Behavioral Health Institute at San Diego State University in San Diego, California.

**Elizabeth A. Klonoff, PhD**, is the executive director of the Behavioral Health Institute at San Diego State University and the lead investigator of the STAKE Act Project in San Diego, California.

**Jennifer Jensen, MPH**, is a research associate in the Behavioral Health Institute at San Diego State University and the project coordinator of the STAKE Act Project in San Diego, California.

**Kennon Kashima, PhD**, is the administrative director of the Behavioral Health Institute at San Diego State University and a lead investigator of the STAKE Act Project in San Diego, California.

**Norval Hickman, MS, MPH**, is a research associate in the Behavioral Health Institute at San Diego State University in San Diego, California.

**Jonathan Martinez, MS**, is a research associate in the Behavioral Health Institute at San Diego State University in San Diego, California.

1998; Wisotzky, Albuquerque, Pechacek, & Park, 2004). Accordingly, reducing youth access to tobacco to  $\leq 20\%$  (of their attempts to purchase it in stores) is a nationwide prevention goal mandated by the 1992 federal Synar Amendment and enforced by the Substance Abuse and Mental Health Services Administration (SAMSHA; DHHS, 1994; DiFranza & Dussault, 2005; SAMSHA, 1996a, 1996b, 1996c, 1998). States that fail to reduce (or fail to implement state laws and programs to reduce) youth access to  $\leq 20\%$  can lose their federal substance abuse block-grant funding—and a few have (DiFranza, 2005; DiFranza & Dussault, 2005; U.S. General Accounting Office [GAO], 2001). Developing interventions to reduce youth access may hinge, however, on understanding the factors that influence store clerks' decision to sell cigarettes to youths despite that doing so is illegal in all states (Landrine, Klonoff, & Fritz, 1994).

### **► ASSESSING YOUTH ACCESS**

The standard method for assessing youth access to tobacco (and a state's compliance with Synar) entails

sending underage ( $\leq 18$  years old) youth confederates (i.e., youths who work for researchers) into stores to attempt to purchase cigarettes (e.g., Arday et al., 1997; DiFranza, Celecbucki, & Mowrey, 2001; Forster, Hourigan, & McGovern, 1992; Landrine & Klonoff, 2003; Levinson, Hendershott, & Byers, 2002). These purchase-attempt (or merchant compliance) studies have been conducted in the United States and several other countries for the past 15 to 20 years (Levinson et al., 2002). Data from such studies conducted in the United States in the 1980s–1990s revealed that most youths did not obtain their tobacco from friends or family but instead readily purchased it themselves in stores. Children ages 12 to 17 years were successful at buying cigarettes in 60% to 90% of their purchase attempts (PAs) and purchased 1 billion packs of cigarettes each year despite the law (Centers for Disease Control and Prevention [CDC], 1996; Erickson, Woodruff, Wildey, & Kenney, 1993; Radecki & Zdunich, 1993). Whether this high access rate has decreased post-Synar remains unclear. Some studies report that access has decreased to 12% (e.g., Landrine, Klonoff, & Reina-Patton, 2000), but others report sustained high access rates of 85.5% (e.g., Voorhees et al., 1997) and 61.2% (e.g., Arday et al., 1997). It is clear, however, that access is contingent on many factors (GAO, 2001).

### **Variables Affecting Access**

The ethnicity of the youth confederates who make the purchase attempts (PAs) plays a significant role, with cigarette sales to minority (Black and Latino) youths 3 to 10 times higher than to their White counterparts who are matched by gender and age (e.g., Klonoff, Landrine, & Alcaraz, 1997; Landrine, Klonoff, Campbell, & Reina-Patton, 2000; Voorhees et al., 1997). Likewise, the actual or perceived age of the youths who make the PAs plays a role, with sales to 16- and 17-year-olds 3 to 15 times higher than those to 10- to 15-year-olds (e.g., Arday et al., 1997; DiFranza et al., 2001; GAO, 2001; Klonoff et al., 1997; Levinson et al., 2002). Similarly, youth gender affects access, with sales to girls usually 1.5 to 2.5 times higher than those to boys, even when matched by age and ethnicity (e.g., DiFranza, Savageau, & Aisquith, 1996; Klonoff et al., 1997). The gender of the store clerk likewise affects access, with male clerks 1.5 to 2.5 times more likely than female clerks to sell cigarettes to children (e.g., Klonoff et al., 1997). The ethnicity of the store clerk also plays a role, with White clerks more likely to sell cigarettes to youths (irrespective of youth ethnicity) than their minority counterparts (e.g., Klonoff et al., 1997; Voorhees, Yanek, Stillman, & Becker, 1998). Moreover, the community location of the store affects

access, with greater cigarette sales to youths in urban, low-income, and minority neighborhoods as well as in specific U.S. states (e.g., Arday et al., 1997; GAO, 2001; Voorhees et al., 1997; Voorhees et al., 1998; SAMSHA, 1998). The nature of youths' request similarly plays a role, with youths more likely to receive tobacco if they request an entire pack rather than a single cigarette (Klonoff, Fritz, Landrine, Riddle, & Tully-Payne, 1994; Landrine, Klonoff, & Alcaraz, 1998). The day of the week and time of day also play a role, with greater sales on weekdays and in the afternoon (Levinson et al., 2002).

Finally, store clerks' behavior also plays a role, that is, the extent to which clerks comply with laws (existing in some but not all states) requiring them to demand that youths produce identification (ID) proving that they are old enough to purchase tobacco and to (secondarily) ask youths their ages (e.g., Arday et al., 1997; Klonoff & Landrine, 2004; Landrine & Klonoff, 2003; Landrine, Klonoff, & Alcaraz, 1996; Landrine, Klonoff, Lang, & Alcaraz, 2001). Clerks who fail to demand youth ID make 90% to 99% of tobacco sales to youths and are up to 1,850 times more likely to sell than are those who comply with this requirement (e.g., odds ratio [OR] = 1,850; 95% CI: 103, 33200 in Arday et al., 1997).

Of the youth-related variables entailed in minors' access to tobacco, youth ethnicity appears to be the strongest yet has received the least attention. Only a few studies have examined differential cigarette sales to minority (Black or Latino) versus White youths (e.g., Klonoff et al., 1997; Voorhees et al., 1997; Voorhees et al., 1998). The samples in these studies have been small, with few PAs by minority youths. Moreover, the stores have not been random but instead have been convenience samples of stores located in highly urban, mostly low-income neighborhoods in southern California and Baltimore, Maryland. Likewise, no Asian youths participated in any prior study, and hence their access remains unknown. Consequently, the extent to which youth ethnicity affects access is unclear, and so the need to address this factor in interventions likewise remains unclear. Thus, the purpose of this study was to include a large, random, statewide sample of diverse youths and stores; that is, those entailed in the California STAKE Act (Stop Tobacco Access to Kids Enforcement Act, *California Business and Professions Code*, 1994)—to examine the role of youth ethnicity in their access to tobacco for the first time. As noted, Synar requires all states enact a state law and a program to reduce youth access to  $\leq 20\%$  (DiFanza, 2005; DiFranza & Dussault, 2005). To determine compliance with Synar, each state also conducts mandatory, annual, statewide assessments of youths' ability to buy cigarettes in stores and reports these to

SAMSHA. The STAKE Act is California's implementation of Synar. The Behavioral Health Institute (BHI) has conducted the requisite assessments for California since 1996 under the direction of the California Department of Health Services, Tobacco Control Section (TCS).

## ► METHOD

### **Store Selection**

The STAKE methodology was designed in collaboration with SAMSHA and its methodological requirements (SAMSHA, 1996a, 1996b, 1996c, 1998). Briefly, each year, TCS randomly selects approximately 2,500 stores from the California Board of Equalization (BOE) list of all retail tobacco outlets (statewide) in California and sends that list to BHI. Because the BOE list often is out-of-date, BHI telephones the outlets to verify their location, that they are open, and that they sell tobacco until 722 such outlets (the minimum number required of California by SAMSHA since 2001) and 100 replacement outlets have been gathered. Outlets then are mapped and categorized into geographic regions. A new, random, statewide sample of 722 or more outlets is compiled in this manner each year, such that different stores are used each year.

### **Youth Selection and Training**

TCS funds two agencies to identify and recruit (annually, from the Boy Scouts, Camp Fire Girls, schools, etc.) the statewide sample of 15- and 16-year-olds who conduct the PAs. These agencies explain the purpose of the PAs to youths and their parents, acquire written informed consent from both, provide antitobacco education, and train youths to make PAs in a standardized manner. A database of these confederates is maintained at BHI; youths are randomly selected from this list to make PAs in stores in communities near their residence.

### **PAs**

BHI staff members drive or fly to the city where youths are located. Staff members pick up youths and accompany them (1 to 2 youths at a time) during all PAs. They drive youths to the outlet; enter the store; and note the location of cigarettes, tobacco signs, etc. as required by the STAKE Act. Approximately 10 to 30 seconds later, the youth enters the store, goes to the counter, and asks the clerk for a pack of Marlboro while BHI staff members inconspicuously observe and record the status characteristics of the clerk. Youths carry no

**TABLE 1**  
**Stepwise Logistic Regression Predicting Youth Access to Tobacco From Youth and Clerk Status Characteristics (sold versus not sold)**

<i>Variable Selected &amp; Step</i>	$\beta$	SE	<i>Wald</i> <sub>(df)</sub>	p	OR	95% CI
Youth age			Reference Group: 15-year-olds			
16-year-olds	0.554	0.117	22.617	0.0005	1.740	1.385, 2.187
Youth gender			Reference Group: Boys			
Girls	0.475	0.109	18.913	0.0005	1.609	1.298, 1.993
Clerk ethnicity <sup>a</sup>			Reference Group: Other Clerks (10.7%)			
(14.5%) White	0.299	0.155	3.701	0.054	1.347	0.994, 1.826
(12.5%) Black	0.150	0.361	0.173	0.677	1.162	0.573, 2.359
(16.2%) Latino	0.436	0.162	7.237	0.007	1.547	1.126, 2.126
(17.4%) Asian	0.509	0.163	9.779	0.002	1.664	1.209, 2.290
Youth ethnicity <sup>b</sup>			Reference Group: White Youths			
Blacks	0.272	0.137	3.938	0.047	1.313	1.003, 1.717
Latinos	-0.124	0.137	0.822	0.364	0.883	0.676, 1.155
Asians	0.185	0.222	0.698	0.403	1.203	0.779, 1.858
Others	-0.414	0.331	1.559	0.212	0.661	0.345, 1.266

Note: OR = odd ratio; CI = confidence interval.

a. Numbers in parentheses are percentages of each ethnic group of clerks who sold cigarettes to youths.

b. The Youth Age  $\times$  Youth Ethnicity and Youth Gender  $\times$  Youth Ethnicity interactions (not shown here) are described in the text.

ID and are truthful about their ages when asked. When the PA has been completed (whether successful or not), staff members debrief youths in the car and collect data (on clerk characteristics and demands for ID) and tobacco from them. Staff members then drive to the next outlet for subsequent PAs. Some youths make multiple PAs, whereas some make only one contingent upon parental consent. *Only one PA is made in each outlet.*

### Study Sample

All PAs conducted for annual, statewide assessments 1999–2003 were *combined* and analyzed. Hence, the data (i.e., sample) consisted of  $N = 3,361$  youth PAs (455 in 1999; 740 in 2000; and 722 in 2001, in 2002, and in 2003). PAs by youth ethnic group were as follows: White youths,  $n = 1,330$  PAs; Black youths,  $n = 683$  PAs; Latino youths,  $n = 1,011$  PAs; Asian youths,  $n = 220$  PAs; and other youths,  $n = 117$  PAs. PAs by youth age and gender were  $n = 1,362$  PAs by 15-year-olds and  $n = 1,999$  PAs by 16-year-olds;  $n = 1,715$  PAs by boys and  $n = 1,646$  PAs by girls. The 3,361 store clerks (one involved in each PA) included 1,975 (58.8%) men and 1,378 women; 853 Whites, 80 Blacks, 629 Latinos, 587 Asians, and 750 clerks of other ethnic groups.

## RESULTS

### Youth Status Effects

A stepwise, logistic regression was conducted with youth ethnicity, age and gender, and clerk ethnicity and gender as predictors of cigarettes sales (sold vs. not sold). Significant main effects emerged for youth age, youth gender, youth ethnicity, and clerk ethnicity, along with significant Youth Age  $\times$  Ethnicity and Youth Gender  $\times$  Ethnicity interaction effects. As shown by the main effects in Table 1, 16-year-olds were 1.7 times more likely than 15-year-olds to receive cigarettes; girls were 1.6 times more likely than boys to receive cigarettes; Blacks were 1.3 times more likely than Whites to be sold cigarettes; and White, Latino, and Asian clerks were significantly more likely than clerks of other ethnic groups (Other Clerks) to sell cigarettes to youths. The Youth Age  $\times$  Ethnicity interaction revealed that Blacks received more cigarettes than youths of all other ethnic groups at age 15 but not at age 16: Black 15-year-olds (sold to in 22.2% of their PAs) and Asian 16-year-olds (22.6%) were significantly more likely than White 15-year-olds (reference group, sold to in 8.9% of their PAs) to receive cigarettes (Wald = 29.130,  $df = 4$ ,  $p = .0005$ ). The Youth Gender  $\times$  Ethnicity interaction revealed that Black girls (23.2% access rate) were significantly more

**TABLE 2**

**Overall Youth Access Rates (percentage of cigarettes sold): California Statewide Data, 1999-2003 Combined<sup>a</sup>**

	15-Year-Olds	16-Year-Olds	Rows Overall
Youth ethnicity			
White	8.9	18.7	14.8
Black	22.2	17.3	19.2
Latino	5.6	17.0	12.2
Asian	8.8	22.6	15.5
Other	11.8	8.4	9.4
Youth gender			
Girls	13.6	18.9	16.9
Boys	7.8	16.3	12.7
Columns overall	10.5	17.7	14.76

a. Ethnic × Gender interaction: White girls = 16.7, White boys, = 13.1; Black girls = 23.2, Black boys = 14.3; Latino girls = 12.0, Latino boys = 12.3; Asian girls = 18.9, Asian boys = 10.2; Other girls = 10.6, Other boys = 8.6.

likely than White boys (reference group, sold to in 13.1% of their PAs) to receive cigarettes (Wald = 9.539,  $df = 4$ ,  $p = .049$ ).

California youth access rates (all years combined) by youth gender, age, ethnicity, and Age × Ethnicity are shown in Table 2. As shown, the overall access rate for California youths 1999–2003 was 14.76%. Youth access rates exceeded the ≤ 20% mandate, however, for Black girls (23.2%), Black 15-year-olds (22.2%), and Asian 16-year-olds (22.6%).

**Clerk Behavior Effects**

The above findings are for all clerks irrespective of their compliance with California laws requiring them to demand youth ID. As noted earlier, this clerk behavior is the strongest predictor of minors’ access to tobacco; it might interact with youth ethnicity to result in greater ethnic differences in access, and such a finding would be relevant to interventions. To assess this possibility, additional chi-square analyses were conducted. As shown in Table 3, clerks who failed to request youth ID (No column) were significantly more likely than their counterparts (Yes column) to sell cigarettes to youths of all ethnic groups: Youth overall access with noncompliant clerks was 57% versus 1.0% with clerks who demanded ID. Access rates with noncompliant clerks ranged from 45% for other-ethnicity

**TABLE 3**

**The Role of Clerk Behavior and Youth Ethnicity and Gender in Percentage of Cigarettes Sales to Minors (access rates)**

	Clerk Demanded Youth ID		Row $\chi^2$ <sup>a</sup>
	No n = 826 PAs (24.6%)	Yes n = 2,535 PAs (75.4%)	
Youth ethnicity	Youth access rates		
White	57.9	1.3	613.842
Black	65.8	0.4	385.679
Latino	49.0	0.6	400.935
Asian	60.8	1.8	104.406
Others	45.0	2.1	35.890
Overall (combined)	57.0	1.0	1555.064 <sup>d</sup>
Ethnic column $\chi^2$	14.138 <sup>b</sup>	5.696 <sup>c</sup>	
Youth gender			
Girls	61.9	1.3	823.085
Boys	51.9	0.7	727.682
Gender column $\chi^2$	8.552 <sup>e</sup>	2.510 <sup>f</sup>	

Note: PA = purchase attempt.

a. All row chi-squares are 2 (sold vs. not) × 2 (clerk yes vs. no) with  $df = 1$ ,  $p = .0005$  for each.

b. 2 (sold vs. not sold) × 5 (youth ethnicity)  $\chi^2$  for Clerk No condition,  $df = 4$ ,  $p = .007$ .

c. 2 (sold vs. not sold) × 5 (youth ethnicity)  $\chi^2$  for Clerk Yes condition,  $df = 4$ ,  $p = .223$ .

d. Ethnic pairwise 2 × 2 (sold vs. not) comparisons ( $df = 1$  for each): White versus Black  $\chi^2 = 3.222$ ,  $p = .073$ ; White versus Latino  $\chi^2 = 4.371$ ,  $p = .037$ ; White versus Asian  $\chi^2 = 0.154$ ,  $p = .694$ ; White versus Other  $\chi^2 = 1.271$ ,  $p = .260$ ; Black versus Latino  $\chi^2 = 12.494$ ,  $p = .0005$ ; Black versus Asian  $\chi^2 = 0.449$ ,  $p = .503$ ; Black versus Other  $\chi^2 = 3.409$ ,  $p = .065$ ; Latino versus Asian  $\chi^2 = 2.354$ ,  $p = .125$ ; Latino versus Other  $\chi^2 = 0.116$ ,  $p = .733$ ; Asian versus Other  $\chi^2 = 1.455$ ,  $p = .228$ . Summary: White = Black > Latino = Asian = Other.

e. 2 (sold vs. not sold) × 2 (youth gender)  $\chi^2$  for Clerk No condition,  $df = 1$ ,  $p = .003$ .

f. 2 (sold vs. not sold) × 2 (youth gender)  $\chi^2$  for Clerk Yes condition,  $df = 1$ ,  $p = .113$ .

youths to 65.8% for Black youths. Moreover, clerks who failed to demand youth ID sold significantly more cigarettes to Black and White youths than to youths of other ethnic groups, whereas sales by clerks who demanded youth ID did not differ by youth ethnicity. Likewise, clerks who failed to demand youth ID sold significantly more cigarettes to girls than to boys, whereas sales by clerks who demanded youth ID did not differ by youth gender (Table 3, bottom). Clerks who failed to demand youth ID sold 95% of the cigarettes that youths received.

## ► DISCUSSION

Studies of the role of youth ethnicity in minors' access to tobacco have entailed small convenience samples of stores that are located primarily in highly urban, mostly low-income neighborhoods in southern California and Baltimore, Maryland. Those studies have found that access rates for Black and Latino youths significantly exceed (by 3 to 10 times) those of their gender- and age-matched White cohorts. Such strong effects for youth ethnicity were not replicated with the random sample of stores entailed here. The bias toward selling cigarettes to Black youths was found, whereas the similar bias for Latino youths was not. Only Black youths (as a whole) were more likely to be sold cigarettes than White youths (as a whole), with that effect (OR = 1.3) smaller than in prior studies. This difference in findings is not an artifact of the time period examined (1999–2003 inclusive) because prior studies in California—with convenience samples of stores—entailed similar years of data (e.g., Landrine & Klonoff, 2003; Landrine, Klonoff, Campbell, & Raina-Patton, 2000). Hence, the lack of an effect for Latino youths and the significant but smaller effect for Black youths might reflect the random nature of this sample of stores and thereby might reflect the actual role of youth ethnicity in access to tobacco in California (and perhaps similar) U.S. states post-Synar.

Although the bias toward selling cigarettes to Black youths was smaller than in prior studies, it nonetheless is of concern. This is because access rates for Black 15-year-olds (22.2 %) and Black girls (23.2%) not only far exceeded those of White boys (13.1%) but also exceeded the  $\leq 20\%$  federally mandated access rate. These *ethnic disparities in youth access to tobacco* (defined here as minority-youth access rates that exceed the federal standard when White-youth access rates do not) might play a role in ethnic differences in youth smoking insofar as every 10% increase in youth access predicts a significant increase in 30-day and daily youth smoking rates (Dent & Biglan, 2004). Similar disparities were found for Asian youths: Access rates for Asian 16-year-olds (22.6%) were as high as those for Blacks and likewise exceeded the  $\leq 20\%$  standard. Because prior studies of youth access never have included Asian youths, their access to tobacco and its relation to their smoking remain largely unknown. The disparities found here underscore the need to include Asian youths in studies and highlight the need for interventions that reduce ethnic disparities in youth access to tobacco.

## *Practice Implications*

One direction that such interventions might take is suggested by the secondary findings on clerk requests for youth ID. A small percentage of clerks (25%) failed to demand youth ID as required by California law; youth access with these clerks ranged from 45% to 66%. These clerks not only sold 95% of all of the cigarettes that youths received but also sold differentially to youths of different ethnic groups and sold more often to girls than to boys. Alternatively, the majority (75%) of clerks demanded youth ID; youth access with those clerks was 1% to 2% and, importantly, did not differ by youth ethnicity or even by youth gender. The latter finding might mean that clerks perceive Blacks and girls (who mature somewhat earlier than Whites and boys, respectively [see Klonoff et al., 1997]) as older than they are (Black girls in particular), that this misperception is corrected by youth ID cards, and hence ethnic and gender differences in access disappear. In any event, the finding that ethnic (and gender) differences in youth access disappear when clerks demand youth ID is consistent with that of two prior (but small) studies (Klonoff & Landrine, 2004; Landrine & Klonoff, 2003) and suggests that requiring clerks to demand youth ID and to refuse to sell tobacco to anyone who is not old enough to purchase it can eliminate ethnic (as well as long-standing gender) disparities in youth access. Hence, enforcing youth-ID laws where these exist and enacting ID and merchant-education programs in the many states that currently lack them remain efficacious interventions (see DiFranza, 2005; DiFranza & Dussault, 2005; GAO, 2001; SAMSHA, 1998). This suggestion, however, must be considered in the context of the limitations of this study.

## *Study Limitations*

One limitation of this study is that STAKE Act youths are required to tell clerks the truth when asked their ages, whereas ordinary youths (outside of studies) are not; underage youths outside of studies who genuinely desire tobacco typically lie and claim to be older than they are (Klonoff & Landrine, 2004). The honesty requirement of the STAKE (i.e., SAMSHA) methodology reduces the ecological (external) validity of youth access studies and thereby limits them; moreover, access rates for the honest youths within studies significantly underestimate rates for the dishonest teens outside of them. A related concern is that STAKE Act youths carried no ID and so could not produce ID cards when clerks demanded them. In a

recent study, half of the youth confederates carried genuine ID cards proving themselves too young to purchase cigarettes, whereas half carried no ID (Levinson et al., 2002). When clerks demanded youth ID, sales of cigarettes were 6 times higher to youths who presented ID cards than to those who did not. Clearly, the clerks in question did not examine the ID cards but rather simply assumed that they proved youths old enough to make the tobacco purchase. An additional study in which youths said to clerks, "I'd like a pack of Marlboros please—I'm 18, here's my ID," obtained similar results: Youth who flashed genuine underage ID cards were 4 times more likely to be sold tobacco than those who did not (Klonoff & Landrine, 2004; Landrine et al., 2001). Such findings suggest that the role of clerk behavior is complex: If clerks demand youth ID, access rates decrease to 0% to 2% if youths have no ID (irrespective of youth ethnicity) but increase to 12% to 25% if underage youths present ID. Hence, it is possible that access rates in this study would have been higher with compliant clerks had these youth flashed ID. This suggests that interventions must include clerks' need to actually inspect youth ID cards to be effective.

An additional concern is recent studies indicating that not all youths continue to acquire their tobacco from stores. These studies have found that older (16- and 17-year-old) youths tend to acquire tobacco from commercial sources (i.e., they are the youths who buy it), whereas younger (12- to 15-year-old) ones acquire their tobacco from social sources; that is, from older youths or adults who give tobacco to or buy it for them (Harrison, Fulkerson, & Park, 2000; Klonoff, Landrine, Lang, Alcaraz, & Figueroa-Moseley, 2001; Robinson, Klesges, & Zbikowski, 1998; Wolfson, Forster, Claxton, & Murray, 1997). Although social sources are increasingly problematic because they undermine primary prevention efforts with merchants (Klonoff et al., 2001), this does not mean that commercial sources are now insignificant. Rather, the considerable commercial access of older youths remains troublesome insofar as clerks who sell to older youths supply much of the tobacco that those youths subsequently provide socially to their younger cohorts. Hence, efforts to reduce youth access to commercial sources of tobacco remain important (Harrison et al., 2000).

In summary, for the first time, a random, statewide sample of stores and of diverse youths was included in a study of the role of youth ethnicity in youth access to tobacco. Significant ethnic disparities were found for California Black and Asian youths, and these may exist in other states as well.

## ► CONCLUSION

There are significant ethnic (as well as gender) disparities in youth access to tobacco. "Best practices" programs that combine law enforcement and merchant education to reduce youth access (see DiFranza, 2005) may need to address these disparities. Such programs might do so unobtrusively and effectively by simply requiring store clerks to demand youth ID (Klonoff & Landrine, 2004; Landrine & Klonoff, 2003). Advocacy for youth-ID policies where these do not exist and enforcement of existing youth-ID laws remain useful strategies in youth tobacco prevention and control.

## REFERENCES

- Arday, D. R., Klevens, R. M., Nelson, D. E., Huang, P., Giovino, G. A., & Mowery, P. (1997). Predictors of tobacco sales to minors. *Preventive Medicine, 26*, 8-13.
- Centers for Disease Control. (1996). Accessibility of tobacco products to youth ages 12-17 years: United States 1989 and 1993. *Morbidity and Mortality Weekly Reports, 45*, 125-130.
- Dent, C., & Biglan, A. (2004). Relation between access to tobacco and adolescent smoking. *Tobacco Control, 13*, 334-338.
- DiFranza, J. R. (2005). Best practices for enforcing state laws prohibiting the sale of tobacco to minors. *Journal of Public Health Management Practice, 11*(6), 559-565.
- DiFranza, J. R., Celebucki, C. C., & Mowery, P.D. (2001). Measuring statewide merchant compliance with tobacco minimum age laws. *American Journal of Public Health, 91*, 1124-1125.
- DiFranza, J. R., & Dussault, G. F. (2005). The federal initiative to halt the sale of tobacco to children—The Synar Amendment, 1992-2000: Lessons learned. *Tobacco Control, 14*, 93-98.
- DiFranza, J. R., Peck, R., Radecki, T., & Savageau, J. (2001). What is the potential cost-effectiveness of enforcing the prohibition on the sale of tobacco to minors? *Preventive Medicine, 32*, 168-174.
- DiFranza, J. R., Savageau, J. A., & Aisquith, B. F. (1996). Youth access to tobacco: The effects of age, gender, vending machine locks, and "It's the Law" Programs. *American Journal of Public Health, 86*, 221-224.
- Erickson, A. D., Woodruff, S. I., Wildey, M. B., & Kenney, E. A. (1993). Baseline assessment of cigarette sales to minors in San Diego, California. *Journal of Community Health, 18*, 213-224.
- Forster, J. L., Hourigan, M., & McGovern, P. (1992). Availability of cigarettes to underage youth in three communities. *Preventive Medicine, 21*, 320-328.
- Forster, J. L., Murray, D. M., Wolfson, M., Blaine, T. M., Wagenaar, A. C., & Henrikus, D. J. (1998). The effects of community policies to reduce youth access to tobacco. *American Journal of Public Health, 88*(8), 1193-1198.
- Forster, J. L., & Wolfson, M. (1998). Youth access to tobacco: Policies and politics. *Annual Review of Public Health, 19*, 203-235.
- Harrison, P. A., Fulkerson, J. A., & Park, E. (2000). The relative importance of social v. commercial sources in youth access to tobacco, alcohol, and other drugs. *Preventive Medicine, 31*, 39-48.

- Klonoff, E. A., Fritz, J., Landrine, H., Riddle, R., & Tully-Payne, L. (1994). The problem and sociocultural context of single cigarette sales. *Journal of the American Medical Association, 27*, 618-620.
- Klonoff, E. A., & Landrine, H. (2004). Predicting youth access to tobacco: The role of youth versus store clerk behavior and issues of ecological validity. *Health Psychology, 25*(5), 517-524.
- Klonoff, E. A., Landrine, H., & Alcaraz, R. (1997). An experimental analysis of sociocultural variables in sales of cigarettes to minors. *American Journal of Public Health, 87*, 823-826.
- Klonoff, E. A., Landrine, H., Lang, D., Alcaraz, R., & Figueroa-Moseley, C. (2001). Adults buy cigarettes for underage youth. *American Journal of Public Health, 91*, 1138-1139.
- Landrine, H., & Klonoff, E. A. (2003). Validity of assessments of youth access to tobacco: The familiarity effect. *American Journal of Public Health, 93*, 1883-1886.
- Landrine, H., Klonoff, E. A., & Alcaraz, R. (1996). Asking age and ID may reduce minors' access to tobacco. *Preventive Medicine, 25*, 301-306.
- Landrine, H., Klonoff, E. A., & Alcaraz, R. (1998). Minors' access to single cigarettes in California. *Preventive Medicine, 27*, 503-505.
- Landrine, H., Klonoff, E. A., Campbell, R., & Reina-Patton, A. M. (2000). Sociocultural variables in minors' access to tobacco. *Preventive Medicine, 30*, 433-437.
- Landrine, H., Klonoff, E. A., & Fritz, J. M. (1994). Preventing cigarette sales to minors: The need for contextual, sociocultural analyses. *Preventive Medicine, 23*(3), 322-327.
- Landrine, H., Klonoff, E. A., Lang, D., & Alcaraz, R. (2001). ID cards increase cigarette sales to underage youth. *Journal of the American Medical Association, 285*, 2329.
- Landrine, H., Klonoff, E. A., & Reina-Patton, A. M. (2000). Minors' access to tobacco before and after the California STAKE Act. *Tobacco Control, 9*(Suppl. II), ii15-ii17.
- Levinson, A. H., Hendershott, S., & Byers, T. E. (2002). The ID effect on youth access to cigarettes. *Tobacco Control, 11*, 296-299.
- Pentz, M. A., Bonnie, R. J., & Shopland, D. R. (1996). Integrating supply and demand reduction strategies for drug use prevention. *American Behavioral Scientist, 39*, 897-910.
- Radecki, T. E., & Zdunich, C. D. (1993). Tobacco sales to minors in 97 US and Canadian communities. *Tobacco Control, 2*, 300-305.
- Robinson, L. A., Klesges, R. C., & Zbikowski, S. M. (1998). Gender and ethnic differences in young adolescents' sources of cigarettes. *Tobacco Control, 7*, 353-359.
- Robinson, L. A., Klesges, R. C., Zbikowski, S. M., & Glaser, R. (1997). Predictors of risk for different stages of adolescent smoking in a biracial sample. *Journal of Consulting & Clinical Psychology, 65*, 653-662.
- Stop Tobacco Access to Kids Enforcement (STAKE) Act, California Business and Professions Code, 22950-22960 (1994).
- Substance Abuse and Mental Health Services Administration. (1996a). *Implementing the Synar regulation: Tobacco outlet inspection*. Rockville, MD: Center for Substance Abuse Prevention.
- Substance Abuse and Mental Health Services Administration. (1996b). *Synar regulation: Sample design guidance*. Rockville, MD: Center for Substance Abuse Prevention.
- Substance Abuse and Mental Health Services Administration. (1996c). Tobacco regulation for substance abuse prevention and treatment block grants. *Federal Register, 16*, 1492-1500.
- Substance Abuse and Mental Health Services Administration. (1998). *Synar regulation implementation: Report to Congress on FFY 97 state compliance*. Rockville, MD: Center for Substance Abuse Prevention.
- U.S. Department of Health and Human Services. (1994). *Preventing tobacco use among young people: A report of the surgeon general*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Office on Smoking and Health.
- U.S. General Accounting Office. (2001). *Synar Amendment implementation: Quality of state data on reducing youth access to tobacco could be improved* (GAO-02-74). Washington, DC: Author, House of Representatives.
- Voorhees, C. C., Swank, R. T., Stillman, F. A., Harris, D. X., Watson, H. W., & Becker, D. M. (1997). Cigarette sales to African-American and White minors in low-income areas of Baltimore. *American Journal of Public Health, 87*, 652-654.
- Voorhees, C. C., Yanek, L. R., Stillman, F. A., & Becker, D. M. (1998). Reducing ethnic disparities in youth access to tobacco, 17 cigarette sales to minors in urban settings. *Preventive Medicine, 14*, 138-142.
- Wisotzky, M., Albuquerque, M., Pechacek, T. F., & Park, B. Z. (2004). The National Tobacco Control Program: Focusing on policy to broaden impact. *Public Health Reports, 119*, 303-210.
- Wolfson, M., Forster, J. L., Claxton, A. J., & Murray, D. M. (1997). Adolescent smokers' provision of tobacco to other adolescents. *American Journal of Public Health, 87*, 649-651.