

Predicting Youth Access to Tobacco: The Role of Youth Versus Store-Clerk Behavior and Issues of Ecological Validity

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Twenty-one 15- to 17-year-olds attempted to purchase cigarettes in 232 stores in the manner that confederates typically do in access studies, as well as in the manipulative ways (e.g., lying about their ages) that youth smokers do, thereby modeling youth access to tobacco within versus outside of studies, respectively. Youth typical-research versus manipulative behavior was contrasted with clerk behavior (requests for youth ID cards) to examine the relative contributions of both to youth access to tobacco for the 1st time. Results revealed that clerk behavior was the strongest predictor of cigarette sales to youth and hence underscore the need for interventions with merchants. Sales nonetheless were higher under youth-manipulative conditions and thereby highlight the low ecological validity of access research.

Key words: youth access to tobacco, youth lies, ecological validity, primary prevention

Smoking among youth (12- to 17-year-olds) might 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 that predict children's desire to smoke (Pentz, Bonnie, & Shopland, 1996; U.S. Department of Health and Human Services [DHHS], 1994). Studies have indicated 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 youth (e.g., DHHS, 1994; Flay, 1993; Robinson, Klesges, Zbikowski, & Glaser, 1997; Swan, Creeser, & Murray, 1990). For example, in a study of more than 6,000 youth, 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. Hence, efforts to prevent youth smoking have focused primarily on reducing either youth supply (the public health approach) or youth demand (the health psychology approach), with some evidence suggesting that supply-side interventions may be more cost-effective (e.g., Cummings, Sciandra, Pechacek, Orlandi, & Lynn, 1992; DiFranza, Peck, Radecki, & Savageau, 2001; Forster, Hourigan, & McGovern, 1992; Forster & Wolfson, 1998; Klonoff, Landrine, & Alcaraz, 1997).

Moreover, each day, approximately three thousand 12- to 17-year-olds become regular smokers and thus become the next generation of adult smokers (DHHS, 1994). As a result, reducing youth access to tobacco is one strategy that might prevent a significant percentage of current youth, as well as future adult, smoking (Forster et al., 1998). Hence, reducing youth access to tobacco to $\leq 20\%$ (of youth attempts to purchase it in stores) is a nationwide health goal (DHHS, 1994; Substance Abuse and Mental Health Services Administration [SAMSHA], 1996a, 1996c). The development of effective programs to reduce youth access to tobacco hinges, however, on an understanding of the variables entailed in a store clerk's decision to sell cigarettes to a child despite the fact that doing so is illegal in every state (Landrine, Klonoff, & Fritz, 1994).

Variables Affecting Youth Access

The standard methodology for assessing youth access to tobacco (and a state's compliance with laws banning such sales) entails sending underage (< 18 years old) youth confederates into a random sample of stores to attempt to purchase cigarettes, with the requirement that youth tell the truth about their ages if asked, and to state that the cigarettes are for them if asked (e.g., Forster & Wolfson, 1998; Klonoff et al., 1997; Landrine, Klonoff, & Alcaraz, 1996, 1998; 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 15–20 years (Levinson et al., 2002). Data from such studies conducted in the United States in the 1980s and early 1990s reveal that most youth did not obtain their tobacco from friends or family but instead readily purchased it themselves in stores. Children aged 12–17 years had been 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, 1996; Cummings et al., 1992; DHHS, 1994; DiFranza & Tye, 1990; Erickson, Woodruff, Wildey, & Kenney, 1993; Forster et al., 1992, 1998; Kim, 1987; Radecki & Zdunich, 1993). Whether this high access rate has decreased in

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response to 1992 federal legislation (i.e., the *Synar Amendment*; SAMSHA, 1996a, 1996b, 1996c) that requires all states to reduce youth access to $\leq 20\%$ by 2003 remains unclear. Some studies have reported that access has decreased to 12% (e.g., Landrine, Klonoff, & Reina-Patton, 2000; Levinson et al., 2002), but others have reported 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 rates that have been obtained are contingent on several variables (U.S. General Accounting Office [GAO], 2001; SAMSHA, 1998).

Specifically, the ethnicity of the confederates who make the PAs plays a significant role in youth access, with cigarette sales to minority youth (Black and Latino) 3 to 15 times higher than to their White counterparts who are matched by gender and age (e.g., Klonoff et al., 1997; Landrine, Klonoff, Campbell, & Reina-Patton, 2000; Voorhees et al., 1997). Likewise, the actual or perceived age of the youth who make the PAs plays a role, with sales to 16- to 17-year-olds 3 to 15 times higher than those to 10- to 15-year-olds (e.g., Arday et al., 1997; DiFranza, Celebucki, & Mowery, 2001; GAO, 2001; Klonoff et al., 1997; Levinson et al., 2002). Similarly, the gender of the youth who make the PAs affects access, with sales to girls usually 1.5–2.5 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 to cigarettes, with male clerks 1.5–2.5 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 and Asian clerks generally more likely to sell cigarettes to youth than their Black counterparts, irrespective of youth ethnicity (e.g., Klonoff et al., 1997; Voorhees, Yanek, Stillman, & Becker, 1998). Moreover, the location of the store affects access, with greater cigarette sales to youth 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, 1998; SAMSHA, 1998). The nature of youths' request similarly plays a role, with youth more likely to receive tobacco if they request to purchase an entire pack rather than a single cigarette (Klonoff, Fritz, Landrine, Riddle, & Tully-Payne, 1994; Landrine et al., 1998). The day of the week and the time of day of the PAs affects sales as well, with greater sales in the afternoons and on weekdays (e.g., Levinson et al., 2002). Finally, the store clerks' behavior also plays a role, that is, the extent to which clerks comply with the law (existing in some but not all states) that requires them to demand that youth produce identification (ID) proving that they are old enough to purchase tobacco and to (secondarily) ask youth their ages (e.g., Arday et al., 1997; Hinds, 1992; Landrine et al., 1996). Clerks who fail to demand youth ID make 90% to 99% of all tobacco sales to youth (Landrine et al., 1996) and are up to 1,850 times more likely to sell tobacco to youth than are those who comply with this requirement (e.g., adjusted odds ratio (OR) = 1,850; 95% CI: 103, 33,200 in Arday et al., 1997).

Hence, of the many social status and methodological variables entailed in the tobacco access of youth-confederates, clerk behavior is the strongest predictor of youth access (ORs = 50–1,850), and youth ethnicity and age are the next strongest predictors (ORs = 3–15). This suggests that effective merchant education interventions to reduce youth access must focus on increasing clerks' requests for youth ID and might include implementation of

that requirement in states that currently lack it (Landrine et al., 1996; Landrine & Klonoff, 2003; SAMSHA, 1998).

This general conclusion, however, is tentative in light of data indicating that how youth behave with the store clerk also affects their access to tobacco. Specifically, studies with youth smokers (who genuinely desire tobacco) indicate that they—unlike their confederate counterparts—engage in a variety of manipulative behaviors to increase their probability of acquiring cigarettes. These include falsely claiming that the cigarettes are for parents or bringing a fake parental note requesting the cigarettes (Barovitch, Sussman, Dent, Burton, & Flay, 1991), buying items (e.g., soda) in addition to cigarettes that act as a foot-in-the-tobacco-door (Landrine et al., 1994; Landrine & Klonoff, 2003), and lying about being too young to purchase cigarettes when clerks ask their ages (DiFranza, Savageau, et al., 2001; Landrine & Klonoff, 2003). Of these manipulative youth-smoker purchase strategies, lying about their ages appears to be the most common. For example, in a recent interview study of youth who were smoking at youth hangouts, Landrine and Klonoff (2003) found that 71.2% of the 15- to 17-year-old smokers reported lying to clerks about their ages to acquire cigarettes compared with 59.9% who reported using the foot-in-the-door-technique, 24% who reported claiming that the cigarettes are for parents, and 7% who reported bringing a fake parental note. Teen smokers are not only notorious for such lies, but in addition, those who lie about their ages are 6 times more likely to receive tobacco than those who do not (DiFranza, Savageau, et al., 2001). Hence, tobacco access rates may be significantly higher for the dishonest youth smokers outside of studies than for the honest confederates within them, such that the ecological validity of youth access studies is low (DiFranza, Savageau, et al., 2001; Landrine & Klonoff, 2003). Consequently, as of January 1, 2002, California changed its procedure for assessing youth access to permit confederates to lie to clerks about their ages, thereby increasing the ecological validity of purchase-attempt studies (California Bill No. SB 757, 2001).

Thus, purchase-attempt studies with youth confederates indicate that if clerks ask for youth ID or age, access rates decrease to nearly zero, whereas studies with youth smokers indicate that they lie and cajole in response to such questions, and this behavior increases their access. Unfortunately, no study has assessed both factors simultaneously, such that the relative contribution of youth manipulative versus clerk-questioning behavior in youth access to tobacco remains unknown. We examined both factors simultaneously for the first time, with the goal of highlighting their contributions to the variance in youth access and of assessing the ecological validity of access research.

Method

Youth

Twenty-one 15- to 17-year-olds participated (13 boys, 8 girls). Seven participants were aged 15 years, 9 were aged 16 years, and 5 were aged 17 years. Of the participants, 14 were White, 3 were Black, and 4 were Latino American.

Stores

Two hundred thirty-two small grocery and convenience stores in San Bernardino and Riverside counties in California were randomly selected.

Procedure

First, immunity from prosecution was obtained from the district attorney for all participants (i.e., youth, research assistants [RAs], the university, authors, store clerks, stores). Next, e-mail and flyers were used to inform the university community of the project. Youth selected were children of university faculty, staff, and students. Each child (and her or his parent) was interviewed prior to inclusion in the project. This entailed a description of the study, written consent forms for parent and minor, and an assessment of each minor by a licensed clinical psychologist to ascertain youth comprehension of the study and risk for tobacco or other drug use. Only youth who were able to understand the study, did not smoke or use drugs, and did not appear to be at risk for smoking or drug abuse were selected. Youth were paid for each tobacco PA irrespective of its success.

Training Youth and RAs

Prior to data collection, youth and RAs participated in training. Youth training entailed a 2-hour educational session discouraging tobacco use and instruction in the study's methods. Youth were trained to make tobacco PAs, memorized PA scripts, and repeatedly role-played the specific types of PAs to standardize their behavior. Youth also were trained (using photographs) to categorize clerks as White, Black, Latino, Asian, or Other until 100% agreement among youth was achieved. Likewise, youth were trained to recall clerk questions and comments about their age or ID and to report these immediately to the RA on completion of each PA. Quality control of these standardization procedures was assured through monthly retraining. RAs participated in this training as well as in training in driving youth to stores and assuring their safety. RAs recorded data on clerks' ethnicity, gender, questions about youth age, and requests for youth ID after each PA; supervised money; and confiscated tobacco on youth's return to the car. One RA accompanied each minor and remained inconspicuous during PAs. These procedures have been used in prior studies and effectively standardize youth PAs, assure their safety, and decrease youth risk of future smoking compared with control group youth (Alcaraz, Klonoff, & Landrine, 1997; Klonoff et al., 1997).

Tobacco PAs

PAs transpired between 3:00 and 7:00 p.m. on weekdays and between 9:00 a.m. and 4:00 p.m. on weekends. Within each protocol, PAs were scheduled so that each store was visited by no more than seven youth per week (i.e., one child per day at a different time of day to a different clerk). Youth attempted to purchase cigarettes in the same 232 stores seven times using the following purchase protocols in order: (a) standard protocol, Time 1 ($n = 232$ PAs); (b) lie-about-age protocol ($n = 232$ PAs); (c) standard protocol, Time 2 ($n = 232$ PAs); (d) the note-from-dad protocol ($n = 229$ PAs); (e) standard protocol, Time 3 ($n = 227$ PAs); (f) the foot-in-the-door protocol ($n = 225$ PAs); and (g) standard protocol, Time 4 ($n = 223$ PAs). There were 4–6 weeks between each protocol, for a total of 1,600 PAs. Decreasing PAs across protocols reflected stores that closed during the 9 months of the study. All 21 youth participated in all protocols as many times as their parents would permit but participated in only one protocol per store (e.g., Youth A participated in standard protocol, Time 1 in Store 1; lie-about-age protocol in Store 2; note-from-dad protocol in Store 3; foot-in-the door protocol in Store 4; etc.).

Purchase Protocols

The standard protocols were those commonly used in studies of youth access to tobacco. In each of these, youth entered all of the stores, walked to the counter and asked the clerk, "May I buy a pack of Marlboros, please?" If asked, youth stated that the cigarettes were for them. They made no comments about their age, and if asked their age, they were honest about their age and did not present ID. The remaining protocols represented

manipulations that youth smokers report using to increase sales of tobacco to them. In the lie-about-age protocol, the same youth entered the same 232 stores, walked to the counter and said, "May I buy a pack of Marlboros, please? I'm 18." If the clerk made comments about their ages or requested ID, youth repeatedly insisted that they were old enough to purchase tobacco but did not have ID with them to prove it. In the note-from-dad protocol, youth entered the same stores, walked to the counter and said, "May I buy a pack of Marlboros please? They're not for me, they're for my Dad, here's a note from him." Youth then handed the clerk a note they had written that read, "I'm [youth's first name]'s father and can't come to the store. Please give [him or her] a pack of Marlboros for me," followed by the fictitious father's signature. In the foot-in-the-door protocol, youth entered the same stores, selected 2–3 items (e.g., soda, candy), placed these on the counter to purchase, waited until the clerk began to ring-up the sale, and then parenthetically added, "Oh, and a pack of Marlboros too please." Youth answers to questions (their age, who are the cigarettes for) in this protocol were the same as in standard protocols. Standard protocols were conducted before and after each manipulative protocol so that any increase in sales during a manipulative protocol could not be attributed to increases in sales over time.

Results

Youth made a total of 1,600 PAs, as follows: 1,033 with male clerks and 565 with female clerks (2 cases of missing data); 266 PAs with White clerks, 41 with Black clerks, 329 with Latino clerks, 483 with Asian clerks, and 481 with clerks of other ethnic groups; 460 PAs were made by 15-year-olds, 747 by 16-year-olds, and 393 by 17-year-olds; 981 PAs were by boys and 619 by girls; 1,117 PAs were by White, 120 by Black, and 363 by Latino youth.

A stepwise logistic regression predicted sales of cigarettes to youth from youth behavior (purchase protocol), clerk questioning in compliance with California law (clerk demanded youth ID [yes or no], clerk asked youth age [yes or no]), clerk gender, clerk ethnicity, youth age (15, 16, or 17 years), youth ethnicity, and youth gender. As shown in Table 1, Clerk questioning for youth ID was selected as the strongest predictor of cigarette sales: Clerks who failed to request ID were 173 times more likely to sell cigarettes to children. Youth behavior (purchase protocol) was selected as the second best predictor of cigarette sales: Lying about their ages resulted in a four-fold increase in sales, whereas the fictitious note from dad led to a decrease in sales and buying nontobacco items (foot-in-the-door protocol) had no effect. Youth age affected sales as well, with 16-year-olds 3.7 times more likely and 17-year-olds 2 times more likely than 15-year-olds to be sold cigarettes. Clerk questioning for youth age also played a role, with clerks who failed to ask youth their ages nine times more likely to sell. Neither youth gender and ethnicity, nor clerk gender and ethnicity, affected access.

Table 2 displays the percentage of cigarette sales to youth (i.e., access rates) as a function of clerk and youth behavior. Chi-squares across rows reveal the effects of clerk behavior and indicate that clerks who demanded youth ID were significantly less likely to sell than those who failed to do so under all conditions. Access rates with clerks who demanded youth ID ranged from 0% to 3%, whereas with clerks who failed to demand ID, access rates ranged from 17.5% to 80%. Chi-squares in columns reveal the effects of youth behavior. As shown in the Column No (chi-square), clerks who failed to demand youth ID were influenced by youth manipulations: When youth lied about their ages, their access with these clerks increased to 80%, whereas fake parental notes decreased

Table 1
Stepwise Logistic Regression Predicting Cigarette Sales to Youth From Clerk Behavior, Youth Behavior, and Clerk and Youth Status Characteristics

Step number and variable selected	β	SE	β/SE	OR	95% CI	<i>p</i>
Reference group: Yes						
1. Clerk demanded ID						
No	5.152	0.323	15.95	172.84	91.75, 325.59	.0005
Reference group: Standard protocol, Time 1						
2. Purchase protocol						
Standard protocol, Time 2	0.882	0.476	1.85	2.415	0.95, 6.14	<i>ns</i>
Lie-about-age	1.440	0.468	3.07	4.220	1.69, 10.57	.002
Standard protocol, Time 3	0.207	0.478	0.43	1.230	0.48, 3.14	<i>ns</i>
Note-from-dad	-2.012	0.445	-4.52	0.134	0.06, 0.32	.0005
Foot-in-the-door	-0.131	0.473	-0.28	0.877	0.35, 2.22	<i>ns</i>
Standard protocol, Time 4	-0.133	0.483	-0.27	0.875	0.034, 2.25	<i>ns</i>
Reference group: Yes						
3. Clerk asked youth age						
No	2.225	0.309	7.201	9.255	5.05, 16.95	.0005
Reference group: 15-year-olds						
4. Youth age (in years)						
16	1.147	0.307	3.736	3.148	1.73, 5.74	.0005
17	0.719	0.349	2.060	2.053	1.03, 4.07	.04

Note. OR = odds ratio; CI = confidence interval.

their access with these clerks to 17.5% and buying other items made no difference (32.7%) relative to overall access in the standard conditions (47.6%). Alternatively, as shown in the Column

Yes (chi-square), clerks who demanded youth ID were not influenced by youth manipulative behavior: Neither lying (3%), bringing a fake note from dad (1.4%), nor buying other items (3%)

Table 2
Role of Clerk Versus Youth Behavior in Percentage of Cigarettes Sales to Youth (Access Rates)

Youth behavior	Youth access rate (%)		Row χ^{2a}
	Clerk: No	Clerk: Yes	
Normal research: Standard protocol			
Time 1	36.1	1.0	61.927*
Time 2	61.8	2.5	102.333*
Time 3	49.0	0.0	96.952*
Time 4	44.2	0.0	87.836*
Times 1-4 combined	47.6	0.9	347.753*
Manipulative			
Foot-in-the-door	32.7 ^b	3.0	39.648*
Note-from-dad	17.5 ^{*c}	1.4	11.230*
Lie-about-age	80.0 ^{*d}	3.0	140.716*
Column χ^{2e}	62.327*	6.776	

Note. Clerk: No = clerk did not demand youth identification; Clerk: Yes = clerk demanded youth identification.
^aFor standard protocol, Time 1; lie-about-age protocol; and standard protocol, Time 2; *N* = 232. For note-from-dad protocol, *N* = 229; for standard protocol, Time 3, *N* = 227; for the foot-in-the-door protocol, *N* = 225; and for standard protocol, Time 4, *N* = 223. For all chi-squares, *df* = 3. ^bStandard protocol, Times 1-4 combined versus foot-in-the-door for Clerk: No column, $\chi^2(1, N = 219) = 3.681, p = .055$. ^cStandard protocol, Times 1-4 combined versus note-from-dad for Clerk: No column, $\chi^2(1, N = 324) = 33.247, p = .0005$. ^dStandard protocol, Times 1-4 combined versus lie-about-age for Clerk: No column, $\chi^2(1, N = 199) = 12.193, p = .0005$. ^eStandard protocol, Times 1-4 combined versus the three manipulative protocols combined for Clerk: No column, $\chi^2(3, N = 414) = 62.327, p = .0005$; standard protocol, Times 1-4 combined versus the three manipulative protocols combined for Clerk: Yes column, $\chi^2(3, N = 1,186) = 6.776, ns$.
 * *p* = .0005.

significantly changed youth access with these clerks relative to overall access in the standard conditions (0.9%). A chi-square analysis comparing access rates under all standard conditions combined (9.3%) versus all manipulative conditions combined (12.6%) revealed that access rates were significantly higher under the manipulative conditions: likelihood ratio $\chi^2(1, N = 1,600) = 4.408, p < .04$.

Finally, the majority of clerks (74.1% overall) demanded to see youth ID as required by California law: 84.5% in standard protocol, Time 1; 85.3% in standard protocol, Time 2; 84.9% in lie-about-age; 77.5% in standard protocol, Time 3; 30.1% in note-from-dad; 75.3% foot-in-the-door; and 80.9% in standard protocol, Time 4. Significantly fewer demands to see ID were made by clerks under the youth-manipulative-behavior conditions (63.5% of the time) compared with the standard protocol conditions (82.1% of the time); likelihood ratio $\chi^2(1, N = 1,600) = 70.982, p < .0005$. This was accounted for by the note-from-dad condition in which clerks typically laughed at the note, refused to sell, and asked youth to leave the store without requesting their ID.

Discussion

The standard methodology for assessing youth access to tobacco entails sending nonsmoker underage youth confederates into stores to attempt to purchase cigarettes. These confederates tell the truth about their ages when asked, state that the cigarettes are for them as required by the research protocol, and do not lie or otherwise attempt to manipulate clerks into selling. Such studies have found that youth-confederate and clerk status characteristics play a role in access, but that by and large, access is accounted for by store clerks' behavior and specifically by whether clerks demand to see youth ID cards or at least ask youth their ages. Such data have been interpreted to reflect the access of youth smokers outside of PA studies because of the tacit assumption that such youth behave in a manner similar to that of confederates.

Perhaps not surprisingly, however, other data indicate that youth smokers do not behave in a manner similar to that of confederates. Instead, teen smokers engage in a variety of behaviors to manipulate clerks into selling cigarettes to them, and these apparently are successful. Taken together, such findings suggest the disturbing possibility that youth access outside of studies significantly exceeds access within, such that access research lacks external validity. Worse, such findings suggest the equally disturbing possibility that interventions with store clerks are useless because teen smokers can manipulate even those clerks who demand to see their ID into selling them cigarettes nonetheless. Here we tested both possibilities and tested the latter for the first time. In the present study, youth attempted to purchase cigarettes in the manner that confederates typically do in access studies (standard protocols) as well as in the manner that youth smokers do (manipulative protocols), thereby modeling access within versus outside of studies, respectively. This youth behavior was contrasted with merchant behavior to examine the relative contributions of both to youth access within and outside of compliance studies for the first time. Three important results emerged.

First, analyses indicated that the strongest predictor of youth access to tobacco was Clerk Behavior. Clerks who failed to request youth ID were 173 times more likely to sell tobacco and sold 89% of all of the tobacco that the youth received. The most powerful of

the Youth-Behavior variables (i.e., Lying) increased youth access by a factor (OR) of 4; although significant and a source of concern, it pales in the light of the 173-fold increase associated with Clerk Behavior. Thus, this novel finding implies that youth access to tobacco is far more a function of clerk than of youth behavior. Because this finding is consistent with that of prior studies entailing nonmanipulative confederates (e.g., Arday et al., 1997; Landrine et al., 1996), it suggests that clerk behavior indeed may be the best predictor of youth access to tobacco. Thus, increasing clerk demands for youth ID might reduce youth access to the nationwide goal of $\leq 20\%$ of youth PAs. The finding that 74% of California clerks demanded youth ID, coupled with the finding that youth consequently received a mere 171 (total) packs of cigarettes in their 1,600 PAs (access rate of 10.7%), highlights the potential effectiveness of this policy-level, supply-side intervention.

The second important finding is the significant effect for youth behavior (purchase protocol). Access rates under youth-manipulative-behavior conditions were significantly higher than under the research protocol conditions, and this effect was accounted for by youth lies. Because the manipulative-behavior conditions model the access of youth smokers outside of studies, whereas the research protocol conditions mirror the access of confederates within them, this finding suggests that the access of the former significantly exceeds that of the latter. Hence, youth access studies indeed may suffer from low ecological validity as many have suspected (see Forster & Wolfson, 1998) and some have demonstrated (e.g., DiFranza, Savageau, et al., 2001; Klonoff, Landrine, Lang, Alcaraz, & Figueroa-Moseley, 2001; Landrine & Klonoff, 2003; Landrine, Klonoff, Lang, & Alcaraz, 2001). The ecological validity of youth access studies can be increased, however, by having confederates behave more similarly to youth smokers—and by having them lie about their ages in particular, as California now does. This increase in the external validity of access research is essential to acquiring accurate access rates that not only assess progress toward the nationwide goal of $\leq 20\%$, but also reveal the need for supply-side interventions. The extent to which studies have underestimated youth access outside of them is the extent to which the need for supply-side interventions has been underestimated.

The third important finding is that youth manipulative behavior was effective only with clerks who were noncompliant with California law (those who failed to request ID) and had no effect on clerks who demanded youth ID. Youth access with noncompliant clerks was high (47.6%) and far above the goal of 20%, even when youth behaved normally, and then increased to 80% when youth lied about their ages. In contrast, with compliant merchants (who demanded youth ID), youth access was extremely low (0.9%) when youth behaved normally and increased (nonsignificantly) to only 3% when youth lied. This suggests that clerks who demand youth ID may be largely immune to youth lies and similar manipulations and that youth manipulative behavior therefore might not derail merchant-education interventions. Thus, we tentatively conclude that youth access to tobacco can be decreased significantly by requiring clerks in all states to demand youth ID. This optimistic conclusion must be tempered, however, by the limitations of this study.

First, although these confederates engaged in the manipulative behaviors of youth smokers, they nonetheless were nonsmokers. Studies with teen smokers indicate that they not only lie about their

ages to manipulate clerks into selling cigarettes to them, but also engage in other highly successful manipulations as well. These include arguing with, threatening, and swearing at clerks who demand ID (e.g., Voorhees et al., 1998) and behaving in an ingratiating manner (e.g., Landrine & Klonoff, 2003). Hence, the manipulative behavior of these confederates approximated, but by no means was identical to, that of teen smokers who genuinely desire tobacco and do far more than lie to obtain it. It then remains quite possible that the clerks here who demanded ID and subsequently refused to sell might have sold had these confederates screamed and swore at them in the manner that youth smokers do. This reasonable possibility, however, cannot be tested empirically. Institutional review boards are unlikely to permit youth confederates to engage in such youth-smoker behaviors because of the serious risks entailed (e.g., retaliation by clerks). Thus, the ecological validity of access studies perhaps always will remain limited—justifiably so—by human subject concerns. Ironically then, the major limitation of this study is its limited ecological validity. The effort to model youth behavior outside of research to increase external validity approached, but by no means reached, that goal insofar as the lying, manipulative behavior of these confederates was at best a paltry shadow of how real youth smokers behave. Increasing the ecological validity of access research remains a methodological and ethical quagmire.

A related limitation of this study is that these youth carried no ID, thereby could not produce ID cards when clerks demanded them, and hence clerks refused to sell. In a recent study, however, half of the youth confederates carried genuine ID cards proving themselves too young to purchase cigarettes, and half carried no ID (Levinson et al., 2002). When clerks demanded youth ID, sales of cigarettes were 6 times higher to youth 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 youth old enough to make the tobacco purchase. An additional study in which youth 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 (Landrine et al., 2001). Taken together, such findings suggest that the role of clerk and youth behavior in youth access to tobacco is a complex interaction: If clerks demand youth ID, access rates decrease to 0%–3% if youth present no ID, but increase to 12%–25% if underage youth do so. Hence, it is possible that the access of these confederates may have been higher with the compliant clerks had these youth flashed ID cards at them while simultaneously lying about their ages. That, however, might be interpreted optimistically to mean that clerk behavior remains the major variable in youth access, wherein the two critical clerk behaviors entailed are demanding to see youth ID cards, irrespective of youth behavior, and then actually inspecting those cards.

An additional concern is recent studies have indicated that many youth no longer acquire their tobacco from stores. These studies have found that older youth (16- and 17-year-olds) tend to acquire tobacco from commercial sources (i.e., they are the youth who buy it), whereas younger ones (12- to 15-year-olds) acquire their tobacco from social sources, that is, from older youth or adults who give tobacco to or buy it for them (Harrison, Fulkerson, & Park, 2000; Klonoff et al., 2001; Robinson, Klesges, & Zbikowski, 1998; Wolfson, Forster, Claxton, & Murray, 1997). Although such social

sources are becoming 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 youth remains troublesome insofar as clerks who sell to older youth supply a significant percentage of the cigarettes that those youth subsequently provide socially to their younger counterparts. Hence, efforts to reduce youth access to commercial sources of tobacco remain important (Harrison et al., 2000).

Finally, youth ethnicity and gender, as well as clerk ethnicity and gender, played no role in youth access in this study despite earlier literature indicating that they do. However, one study found that as clerk requests for youth ID increase over time in California, effects for youth and clerk status characteristics simultaneously decrease (Landrine et al., 2000). This can be interpreted to mean that clerk compliance with the California law that demands that they inspect the ID of all youth overshadows clerk sociocultural biases and hence inevitably may equalize the access of Whites versus minorities, as well as of girls versus boys.

In summary, this study found that clerks' demands for youth ID account for more of the variance in youth access to tobacco than does youth manipulative behavior and that youth manipulative behavior increases youth access only with clerks who fail to request ID. Such findings suggest that increasing merchant compliance eventually may achieve the goal of $\leq 20\%$ access. Unfortunately, clerks in many states (e.g., Louisiana) do not demand youth ID (GAO, 2001), and the requirement that they do so also does not exist in many states (GAO, 2001; SAMSHA, 1998). Thus, in several states, clerks sell tobacco 73% of the time to nonmanipulative 14-year-old confederates without questioning them (GAO, 2001). Youth access to tobacco nationwide might be decreased to the federal goal via three policy-level interventions: (a) by all states adding a provision to their youth access law that requires clerks to demand youth ID demonstrating age eligibility, and (b) by establishing tougher penalties for merchants who fail to do so, as well as for those who fail to inspect the ID cards. Both of these interventions might be facilitated by a new, nationwide policy that (c) licenses tobacco retailers (much like alcohol retailers) and suspends those licenses for violations of sales laws.

In addition to such policy implications, this study highlights the need for research on why some clerks comply with laws requiring ID checks while others do not. Although little is known about the variables that differentiate these groups of clerks, clerk age may be a factor, with young (≤ 30 years old) clerks possibly less likely to demand ID cards or to inspect them because they simply are more willing to provide tobacco to teens for unknown reasons (e.g., DiFranza, Savageau, et al., 2001). This possibility is supported by a recent study that found that such young adults are significantly more likely than their older cohorts to purchase tobacco for youth who walk up to them and request this (Klonoff et al., 2001). An additional possible variable is whether the clerk is a smoker, with clerks who smoke perhaps more likely to ignore ID laws and to provide tobacco to youth with whom they may identify. This possibility is supported by the finding that adult strangers who purchased tobacco for youth often did so with the proviso that youth share the cigarettes with them, indicating that they were smokers (Klonoff et al., 2001). Although confederates have estimated the age of clerks in some access studies (DiFranza, Savageau, et al., 2001; Klonoff et al., 2001), the extent to which clerks

are smokers versus nonsmokers has yet to be examined if only because of the methodological difficulties entailed in doing so unobtrusively. In any event, uncovering the variables that differentiate compliant from noncompliant clerks has the potential to decrease youth access to tobacco by narrowing the target of supply-side interventions.

References

- Alcaraz, R., Klonoff, E. A., & Landrine, H. (1997). The effects on children of participating in studies on minors' access to tobacco. *Preventive Medicine, 26*, 236–240.
- 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.
- Barovitch, M., Sussman, S., Dent, C. W., Burton, D., & Flay, B. R. (1991). Availability of tobacco products at stores located near public schools. *International Journal of the Addictions, 26*, 837–850.
- California Bill No. SB 757. (2001). An act to amend Section 22952 of, and add Section 22962 to the *Business and Professions Code*, and to amend Section 118950 of the *Health and Safety Code*, and to amend Section 308 and add Section 308.3 to the *Penal Code* relating to tobacco products, 1/1/02.
- Centers for Disease Control and Prevention. (1996, February 16). Accessibility of tobacco products to youth ages 12–17 years: United States 1989 and 1993. *Morbidity and Mortality Weekly Report, 45*, 125–130.
- Cummings, K. M., Sciandra, E., Pechacek, T. F., Orlandi, M., & Lynn, W. R. (1992). Where teenagers get their cigarettes: A survey of the purchasing habits of 13–16-year-olds in 12 U. S. communities. *Tobacco Control, 1*, 264–267.
- 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., 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.
- DiFranza, J. R., Savageau, J. A., & Bouchard, J. (2001). Is the standard compliance check protocol a valid measure of the accessibility of tobacco to underage smokers? *Tobacco Control, 10*, 227–232.
- DiFranza, J. R., & Tye, J. B. (1990). Who profits from tobacco sales to children? *Journal of the American Medical Association, 263*, 2784–2787.
- 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.
- Flay, B. R. (1993). Youth tobacco use: Risks, patterns, and control. In J. Slade & C. T. Orleans (Eds.), *Nicotine addiction: Principles and management* (pp. 365–384). New York: Oxford University Press.
- 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., & Hennrikus, D. J. (1998). The effects of community policies to reduce youth access to tobacco. *American Journal of Public Health, 88*, 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.
- Hinds, M. W. (1992). Impact of a local ordinance banning tobacco sales to minors. *Public Health Reports, 107*, 355–358.
- Kirn, T. F. (1987). Laws ban minors' tobacco purchases, but enforcement is another issue. *Journal of the American Medical Association, 257*, 3323–3324.
- 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., & 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*, 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. 2), 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.
- Substance Abuse and Mental Health Services Administration. (1996a). Tobacco regulation for substance abuse prevention and treatment block grants. *Federal Register, 16*, 1492–1500.
- 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). *Implementing the Synar regulation: Tobacco outlet inspection*. Rockville, MD: Center for Substance Abuse Prevention.
- 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.
- Swan, A. V., Creeser, R., & Murray, M. (1990). When and why children first start to smoke. *International Journal of Epidemiology, 19*, 323–330.
- 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, November). *Synar Amendment implementation: Quality of state data on reducing youth access to tobacco could be improved* (Report No. GAO-02-74). Washington, DC: Author.
- 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 cigarette sales to minors in urban settings. *American Journal of Preventive Medicine, 14*, 138-142.
- 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.

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