

ETHNICITY AS MANIFEST IN DRUG-SPECIFIC VOCABULARY AND SUBSEQUENT RISK OF STARTING CANNABIS USE IN EARLY ADOLESCENCE

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Working knowledge or vocabulary of drug slang, as a manifestation of learned behavior, might help predict or explain risk of starting to use cannabis in early adolescence. To study this issue, an epidemiologic sample of 1,255 11- to 12-year-olds was assessed for knowledge of cannabis slang terms in 1992, with follow-up in 1993 and 1994. The basic design is that of a prospective and longitudinal study, with recruitment of an epidemiologic sample of children as they entered primary school in a single metropolitan area, also with baseline assessments and randomization to intervention conditions, and subsequent multiple waves of follow-up assessment. Youths assessed in 1992 and who were familiar with terms such as blunts, Mary Jane, roach, and herb were more likely to start using cannabis within the subsequent two years of the follow-up interval, as compared to other youths (estimated relative risk, RR=11.0; 95% CI 3.6–33.7; $P<.001$). A youth's working vocabulary may signal important variations in health- and disease-related behavior, such as illegal drug use. (*Ethn Dis.* 2005;15:485–491)

Key Words: Cannabis, Epidemiology, Knowledge, Neighborhood, Terminology

INTRODUCTION

Several facets of human ethnicity and culture, as manifest in learned behavior, can be measured by asking questions about working vocabulary. To some extent, immersion within an ethnic subgroup can be evaluated in relation to a person's acquisition and use of words or slang terms specific to that subgroup. These premises are the starting points for the present inquiry. In specific, we wondered whether certain facets of ethnicity, as measured by questions about working vocabulary for drug slang terms, might signal excess risk of subsequent youthful drug involvement.

Cannabis (marijuana) use in the United States now represents the most common form of illegal youthful drug involvement, after alcohol and tobacco use. Based on data from national surveys, in calendar year 2002, about one fifth of 12- to 17-year-old youths in the United States had tried cannabis at least once (20.6%). With respect to health and disease-related consequences of this behavior, among those who first tried cannabis at age 14 or younger, an estimated 13% have developed a persistent and recently active drug dependence syndrome, as compared with 2.8% of those who first used cannabis at age 18 or older.^{1,2}

Our main aim in this study is to estimate the strength of a hypothesized predictive association that links vocabulary acquisition and working knowledge of specific drug slang names with a later increased risk for initiating cannabis use in early adolescence. Early entry and exposure to a drug subculture may account for vocabulary acquisition and a wider knowledge of slang or street terminology associated with drug use.^{3,4}

A drug user's knowledge of drug jargon is believed to be indicative of the depth of involvement and stage of drug use.⁵ However, little is known about links from drug slang vocabulary acquisition and later risk of illegal drug use.

According to the *Historical Dictionary of American Slang*, "Slang is lexical innovation within a particular cultural context."⁶ In order for an expression to become slang, it must be widely accepted and adopted by members of a subculture or subgroup. Slang words are created to fill a linguistic need that the current vocabulary does not fulfill and to adequately describe concepts that matter to the subculture members who create slang.⁷ The main purpose of slang has been described as providing "a vocabulary that indicates one's inclusion in a particular group or marks some shared experience, and at the same time excludes those who do not belong."⁸ Thorne also claims that some of the "most productive sources of new slang are young people, the drugs scene, and Black culture, all of which overlap, of course, to a greater or lesser extent."⁸ Over the years, young people have coined many words for cannabis and cannabis use; new slang terms continue to evolve.⁹

Slang may be more important in some ethnic minority groups, less important to others. For example, verbal communication modes have become quite prominent in African heritage subgroups of the United States. The hip-hop culture and associated styles of dress and slang have been said to be influential, promoting verbal expressiveness of young males especially.^{10–17} To some extent, these developments intersect with the drug scene and subculture.¹⁸

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As early as first grade, boys tend to be more knowledgeable about drugs than girls.^{19,20} Knowledge of drugs and their slang names may be expected to increase as a function of cognitive growth from childhood to adolescence.^{20,21} However, familial, neighborhood, and community-level exposure to information about drugs also can be influential in predicting awareness and knowledge of drug terminology.²² Drug-related jargon and drug use practices are often learned through social interactions. Family members and peers may be the most common sources of information about drugs.¹⁹ More recently, the media has become a more salient vehicle for communications about illegal drug use; these media initiatives now include massive antidrug campaigns. As part of these efforts, one might expect an increase in knowledge of common “newspaper” names, and perhaps awareness of a profile of drug-related dangers, learned as part of prevention messages.

A youth’s working vocabulary of drug slang names also may result from living in certain areas or placing oneself in settings conducive to affiliations or contact with drug users. Youths exposed to drug users may be expected to be more knowledgeable about drug jargon. In addition, hanging out or living near drug dealers or in neighborhood environments with visible street-level drug trafficking may create a greater awareness of street terms for drugs. Each month, noteworthy proportions of US residents, including youths, experience

the chance to buy drugs from an illegal drug dealer.^{23–25} Males, residents of urban areas, and those living in areas with greater neighborhood disadvantage seem to be more likely to have a drug purchase opportunity.^{24–27} Children living in cities appear to be more familiar with illegal drugs at early ages.²⁰ Rural elementary school students have been found to first become aware of drug slang words as they approach fourth grade.²⁸

In prior studies, we have looked into the first chance to try cannabis in early adolescence through young adulthood.^{26,27,29,30–32} Here, the term cannabis encompasses marijuana and hashish only, which are the major forms of cannabis used within the United States. (Elsewhere, cannabis use may entail smoking hash oil, drinking “bhang,” or other forms of consumption.) In this research, we look more specifically at knowledge of cannabis-specific jargon within an urban community of the United States, with the idea that greater working knowledge of cannabis-specific street vocabulary may signal later increased risk of starting to use cannabis. In this research we consider an idea that the observed excess risk might be attributable to local area environment and we use epidemiologic and biostatistical methods to hold constant these local area characteristics.

The earliest stages of drug involvement might begin even before the first chance to try a drug or the first actual use of the drug. Familiarity with textbook or ‘newspaper’ names might indicate a level of general knowledge only. In contrast, awareness of more exotic street or slang terms may signal higher levels of availability, access, and exposure to peers or others serving as models for social learning, with subsequent increased risk for actual drug use.^{5,33,34}

Two clarifications may be helpful. First, our use of the terms ethnicity and culture in this work is in relation to micro-level facets of these constructs that might be observed in the daily lives of

our young people or adults. These micro-facets of these constructs can be distinguished from the more macro-facets (eg, when investigators study ethnicity in terms of self-designated or other-designated group membership status). This study is not particularly informative about the macro-facets of ethnicity because our sample is very homogeneous in this respect.

Second, precocious acquisition of slang terms for cannabis or other illegal drugs may serve as signals of breakdown in the nonspecific shielding functions of parental or other societal monitoring and supervision (ie, as a manifestation of failed shielding processes). To the extent that our research approach discloses a predictive association between precocious acquisition of slang terms and subsequent risk of cannabis initiation, the resulting evidence will tend to support the idea that early acquisition of slang is a signal of processes leading toward precocious drug use, perhaps with subsequent increased risk of experiencing one’s first chance to try cannabis. As such, we do not make a claim of a causal linkage. To make statistical adjustments for parent or peer influences would be inappropriate, since these influences might actually be part of the mechanisms accounting for a predictive signal that links early slang use to later risk of cannabis initiation. We return to this topic in our discussion section.

METHODS

Study Design, Population, and Sample Under Study

This study builds from a program of epidemiology and prevention research initiated by Professors Sheppard Kellam, James C. Anthony, and their colleagues within the Prevention Research Center of Johns Hopkins University School of Hygiene and Public Health, with a research design and methods as described by Kellam and colleagues,³⁵ Kellam and Anthony,³⁶ and later collaborators who

joined the research team.³⁷⁻³⁹ For the purposes of the present investigation, the basic design may be described as a prospective and longitudinal study, with multiple waves of follow-up assessment after initial recruitment of an epidemiologic sample of children as they entered primary school in a single metropolitan area located within the mid-Atlantic region of the United States. The study originated with all first graders enrolled in 19 city public schools who remained in the same public school system between the mid-1980s and 1990s, as described elsewhere.^{35,36}

A total of 1255 youths from these first grade samples completed private and confidential interviews in 1992-1994. At the time of the interview during Spring of 1992, a cannabis history was taken, which included questions about cannabis slang terms. By 1992, a total of 42 youths reported that they already had started to use cannabis. These youths were excluded from this study's analysis sample because we could not determine which came first, the onset of cannabis use or the acquisition of drug slang terms for cannabis.

The resulting sample consisted of an almost equal proportion of males and females and reflected local area characteristics of youths attending public school. As such, approximately 80% of these youths were African American, <1% were Hispanic, and the remainder were non-Hispanic White, Asian, or Native American, as designated by parental caregivers at the time of school enrollment. The study protocol was reviewed and approved by the cognizant institutional review board for protection of human subjects in research at Johns Hopkins Bloomberg School of Public Health. In addition, a school system ethics review and many principal-teacher-parent meetings reviewed the details of the protocol prior to its implementation.

Assessments

Data were collected by standardized, face-to-face, 40- to 90-minute inter-

views. Interviewers were aged 20-35 years and had completed a 2-week training period. In order to promote and capture honest reporting, the interview was held in a private location within the school (eg, empty office or vacant classroom), and the first part of the session was devoted to developing trust and rapport to encourage disclosure of personal and sensitive information. The interviewer provided assurances that the information would be recorded and handled in a confidential manner. The assurance included an explanation of protections granted in a Certificate of Confidentiality from the federal government.

Each youth's knowledge of neighborhood slang terms for cannabis was assessed by the following standardized interview item, as administered in 1992: "The next set of questions is about smoking grass or reefer. Sometimes it's called marijuana, pot, weed, a joint, or a jay. What is it called in your neighborhood?" To increase comprehension of the question, youths were shown a sketch drawn by a local artist; the sketch depicted youths smoking cannabis.

Replying to this question in the Spring of 1992, the youths generated 64 different terms for cannabis, the most popular being marijuana (23%), reefer (14%), weed (13%), pot (13%), joint (11%), and jay (7%), all of which were mentioned in the interview question. Prior to analyses described below, we used the reported cannabis slang to sort the youths into four groups: 1) a group of youths who said they didn't know any local neighborhood term or who reported a nonsense or idiosyncratic term; 2) youths who reported the generic term marijuana; 3) youths who reported other common terms mentioned in the original standardized interview question: pot, weed, joint, jay, reefer, or grass; and 4) youths who named terms we identified as "specialized" or more exotic street slang, none of which had been mentioned in our survey questions: blunt, roach, herb, Mary Jane.

Group classification was guided by internet listings of street terms for cannabis in the United States (eg, www.whitehousedrugpolicy.gov/street-terms), with augmentation by inquiries to several knowledgeable local college students and drug researchers who independently grouped terms by meaning.

After assessing which term the youths used to describe cannabis, the next question in the assessment inquired about use: "Have you ever smoked (insert term used for cannabis), even just to taste it?" and as mentioned above, 42 youths had tried cannabis and on this basis were excluded from the follow-up study base due to uncertain temporal sequencing. Follow-up assessment of actual use of cannabis occurred in Spring of 1993 and 1994, with a repetition of the assessment of cannabis use. Data on each youth's age, sex, and race-ethnicity were abstracted from school administrative records.

Statistical Analysis

Multiple logistic regression analyses were used to estimate the associations that link earlier knowledge of terms used for cannabis with onset of cannabis use. This slang term knowledge assessed in 1992 was linked with later cannabis onsets, among the youths with no prior history of cannabis use. Then the regression models were elaborated to make statistical adjustments for covariates (eg, age, sex, parent-designated race-ethnicity subgroup membership). The analyses were conducted in STATA 7.0 (STATA Corp, College Station, Tex).⁴⁰

RESULTS

When these 1255 youths were assessed for their knowledge of cannabis slang in Spring 1992, and after excluding 42 youths who had started cannabis use before that assessment, a total of 179 could not name the slang term for cannabis in their neighborhoods or

Table 1. Sample description and estimated risk of cannabis use

	Assessed in 1992 (N=1367)		Assessed in 1993 or 1994 (N=1246)		Cannabis Use (N=119)		Cumulative Incidence of Cannabis Use	RR†	95% CI	P-value
	n	%	n	%	n	%				
Sex										
Female	704	51	646	52	41	34	0.06	1.0		
Male	663	49	600	48	78	66	0.13	2.0	(1.4–3.1)	.001
Age in 1992										
11	411	30	381	30	43	36	0.12	1.0		
12	634	46	579	46	56	47	0.10	1.9	(1.2–3.0)	.003
13	294	22	266	21	16	13	0.06	2.5	(1.3–4.9)	.004
14	28	2	20	2	4	3	0.20	7.8	(1.9–32.0)	.004
Race										
Minority	1,089	80	1,007	81	92	77	0.09	1.0		
Nonminority	278	20	239	19	27	23	0.12	1.3	(0.8–2.1)	.280
Marijuana terms										
None, don't know, nonsense	174	13	177	14	12	10	0.07	1.0		
Marijuana	262	19	265	21	18	15	0.06	1.0	(0.4–2.1)	.923
Pot, joint, grass, weed, reefer, jay	756	55	755	61	80	67	0.11	2.0	(1.0–3.7)	.042
Specialized street slang*	14	1	14	1	5	4	0.29	11.0	(3.6–33.7)	<.001
Missing data on marijuana term	119	8	35	3	4	3	0.20	3.2	(0.8–12.9)	.106

* Specialized street slang: Mary Jane, blunt, roach, herb.

† Relative risk estimates are not adjusted for covariates (sex, age, and race), but are based on models that include a term for year of followup. Adjusted estimates are presented in the text. Estimation of relative risk is via GLM/GEE modeling.

‡ Cumulative incidence estimates are shown, based upon followup assessments.

named an idiosyncratic term; 281 reported that marijuana was the term; 716 named one of the more common terms for cannabis that had been mentioned in the slang stimulus-question; 17 named one of the more rare terms for cannabis that might signify a greater familiarity with subcultures of cannabis use (eg, “blunts”); 20 youths were missing data on the cannabis term. Based upon follow-up assessments in 1993 and 1994, a total of 119 youths initiated cannabis use after the Spring 1992 assessment of knowledge of cannabis slang terms—roughly 10% of the follow-up sample.

Males were more likely to become cannabis initiates, as were older youths (Table 1). In contrast with youths who did not name neighborhood terms for cannabis, youths who used terms such as blunts, Mary Jane, roach, and herb were an estimated 11 times more likely to start using cannabis by the time of the follow-up assessment. The relative risk estimate did not change appreciably

with statistical adjustment for age, race-ethnicity subgroup, and sex (relative risk [RR]=12.4; 95% confidence interval [CI]=3.6–42.8; $P<.001$). The confidence intervals for specialized drug slang terms are broad because the numbers in our slang subgroups tend to be small.

In light of recent reports on neighborhood and school-level determinants of drug involvement,^{41,42} some readers may wish to know about results based on local area matching, which constrains socially shared characteristics of the neighborhood environment that might yield upwardly biased estimates of this type of association, as well as results when parent and peer influences are taken into account. For example, street-level availability of cannabis is a macro-level influence on risk of cannabis use but is difficult to measure; however, cannabis availability and other socially shared area characteristics can be held constant if we match on the local school attended by the youths. When we matched on the school attended in 1992 and used

the conditional form of logistic regression to re-estimate this association, we found a relative risk estimate of 9.9 in the contrast involving specialized drug slang (95% CI=2.7–35.9; $P=.001$). In a more elaborate model that also adjusted for parent’s legal and illegal drug use, free or subsidized lunch status, first grade level of aggression, parental monitoring, and deviant and drug using peers, the estimate was modestly attenuated (RR=8.6; 95% CI=2.1–34.6; $P=.002$); the corresponding estimate from unconditional logistic regression was 12.2 ($P<.001$). The relative risk estimate for the more common slang terms was 1.7 (95% CI=0.9–3.3; $P=.120$); the corresponding estimate from unconditional logistic regression was 2.1 ($P=.025$). Exclusion of Hispanics, Asians, and American Indian youths did not change the estimates to any noteworthy extent, nor did grouping of these youths with non-Hispanic White youths.

The main finding of this study . . . is that knowledge of specialized or exotic street slang terms for cannabis signaled a markedly increased risk for subsequent initiation of cannabis use . . .

DISCUSSION

The main finding of this study of urban youths in early adolescence is that knowledge of specialized or exotic street slang terms for cannabis signaled a markedly increased risk for subsequent initiation of cannabis use, more so than knowledge and recognition of more common slang terms. Lest some readers think that knowledge of slang terms can serve as a screening test for risk of starting to use cannabis, we note that the positive predictive value of specialized slang term knowledge was only 9%; most youths who knew these terms in spring 1992 did not initiate cannabis use by 1993 or 1994.

In our analyses, we re-approached the estimation of the predictive association between use of slang terms for cannabis and the risk of initiating cannabis use, with epidemiologic and biostatistical maneuvers that hold constant neighborhood influences and with covariate adjustments for parent and peer influences. In these analyses, the original study estimates were modestly attenuated. Nevertheless, a statistically significant signal remained ($P < .05$) that use of the more exotic cannabis slang terms helped to predict risk of cannabis smoking in later years. In a discussion of this analysis, we must stress that this approach to analysis most likely is based on a mis-specified model, in that we suspect that working slang vocabulary is heavily influenced by neighborhood,

parent, and peer influences. That is, the youths must learn the slang from some source, and that source might be in the neighborhood (eg, street-level dealers), within the peer groups (eg, friends who use cannabis), or even within the family (eg, parents or siblings who use cannabis). In this context, when the task is to predict occurrence of cannabis smoking on the basis of prior knowledge of exotic slang terms for cannabis, we suspect that the model is mis-specified if we include covariate or other adjustments for neighborhood, parent, or peer influences. Nonetheless, some readers may be interested to know that the observed relationships are robust even when we have held constant these other domains of influence.

Before we discuss this evidence in relation to its implications, a few limitations deserve mention. First, this study sample was from an urban area within the mid-Atlantic region of the United States, and is limited to pupils who remained in the public school system; generalizability of reports beyond this sample requires replication elsewhere. The direct comparability of this study with other research on this topic is restricted by our focus on early initiation of cannabis use in a sample of youths during the early 1990s. Additionally, street drug terms can change over time.⁴³

The data are based on self-report. Self-report data are subject to recall bias, reporting errors, and biases associated with socially desirable responding. Our open-ended question may have favored children with high verbal ability or those with cannabis-influencing personality characteristics (eg, openness to experience). In large epidemiologic studies with longitudinal assessments each year, methods other than self-report do not seem feasible. At ages as young as 12 or 13 years, when cannabis use is relatively infrequent, bioassay methods to verify use are not practical. The number of falsely positive results might exceed the number of true positives.⁴⁴

One possibility is that in spring 1992 some cannabis-using youths were willing to name slang but were unwilling to admit concurrent cannabis use until they were older. As time passed, they might have become more willing to report cannabis use as well. Bioassays will be needed to rule out this possible explanation for the observed findings, which would imply that knowledge of drug slang is a correlate or concomitant of cannabis use, without being an overtime predictor of risk to start cannabis use.

Notwithstanding limitations such as these, this study has strengths that merit attention. The prospective nature of this study and its population base allowed us to specify temporal sequencing of slang term knowledge prior to onset of cannabis use as best we could measure it. Prospectively gathered data over a relatively short span of follow-up time help to place limits on recall bias and misclassification errors. The epidemiologic sampling is important; self-selected or "snowball" samples might induce social sharing of slang terms as well as drug-seeking practices.

In conclusion, our study evidence may stimulate new research and insights into the processes by which a specific micro-facet of ethnicity, the acquisition of drug slang vocabulary, might signal increased risk of initiating cannabis use in early adolescence. Knowledge of these terms is gained in the process of socialization and cultural experiences; they are learned through social interactions. To the extent that vocabulary and word use are manifestations of ethnicity and culture, the words used by youth when they talk about illegal drugs may help us predict and understand future drug using behavior.

As mentioned in our introduction, the observed predictive association between knowledge of exotic cannabis slang names and risk of initiating cannabis use in adolescence may signal a breakdown in the nonspecific shielding processes that ordinarily might function

to delay early exposure to the first chance to try cannabis and to delay actual onset of cannabis use. We will need more research to assess whether the observed association is a sign of a breakdown in the nonspecific shielding processes, a breakdown in the nonspecific resistance-strengthening process, or something else. In this future research, estimating the combined interdependent or statistically independent influences that lead to early acquisition of exotic cannabis slang terms might be possible; this acquisition may be due to a complex cascade of events, such as the breakdown of parental supervision, followed by an increase in level of affiliation with deviant peers, as outlined recently.⁴⁵ Clarification of these pathways will require multi-wave longitudinal studies with informative samples and more deliberate measurement of slang vocabulary acquisition processes.

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REFERENCES

1. Substance Abuse and Mental Health Services Administration. *Results from the 2002 National Survey on Drug Use and Health: National Findings*. Rockville, Md: Office of Applied Studies; 2003. NHSDA Series H-22, DHHS Publication No. SMA 03-3836.
2. Chen CY, Anthony JC. Possible age-associated bias in reporting of clinical features of drug dependence: epidemiological evidence on adolescent-onset marijuana use. *Addiction*. 2003;98(1):71-82.
3. Lerman AP. Symbolic deviance and subcultural delinquency. *Am Sociol Rev*. 1967;32:209-224.
4. Smith AM, Vlahov D, Menon AS, Anthony JC. Terminology for drug injection practices among intravenous drug users in Baltimore. *Int J Addict*. 1992;27(4):435-453.
5. Haertzen CA, Ross FE. Effects of clean, drug relevant, and drug word stimuli upon verbal associations to stages of addiction and steps in drug taking. *Addict Behav*. 1980;5:285-298.

6. Lighter JE, ed. *Historical Dictionary of American Slang*. New York, NY: Random House, Inc; 1994.
7. Wikipedia encyclopedia. Available at: en.wikipedia.org.
8. Thorne A, ed. *Dictionary of Contemporary Slang*. 3rd ed. London: Bloomsbury; 1997.
9. Ayers R. *Berkeley High School Slang Dictionary*. Berkeley, Calif: North Atlantic Books; 2003.
10. Brookins CC. Promoting ethnic identity development in African-American youth: the role of rites of passage. *J Black Psychol*. 1996; 22(3):388-417.
11. De La Cancela V. Coolin—psychosocial communication of African and Latino men. *Urban League Rev*. 1993;16(2):33-44.
12. Gordon KA. Self-concept and motivational patterns of resilient African-American high school students. *J Black Psychol*. 1995;21(3): 239-255.
13. Harris SM. Psychosocial development and Black male masculinity: implications for counseling economically disadvantaged African-American male adolescents. *J Couns Dev*. 1995;73(3):279-287.
14. Jones RL. *Black Adolescents*. Berkeley, Calif: Cobb & Henry; 1989.
15. Majors R, Billson JM. *Cool Pose: The Dilemmas of Black Manhood in America*. New York, NY: Touchstone Books; 1992.
16. McCollum VJM. Evolution of the African-American family personality: considerations for family therapy. *J Multicult Couns Dev*. 1997;25(3):219-229.
17. White JL, Parham TA. *The Psychology of Blacks: An African-American Perspective*. Englewood Cliffs, NJ: Prentice Hall; 1990.
18. Golub A, Johnson BD, Sifaneck SJ, Chesluk B, Parker H. Is the U.S. experiencing an incipient epidemic of hallucinogen use? *Subst Use Misuse*. 2001;36:1699-1729.
19. Korn JH. The concept of a drug in first and third grade children. *J Drug Educ*. 1978;8(1): 59-67.
20. Sigelman CK, Woods TE, Lewin CB, Durazo O, Mukai T. Developmental differences in knowledge of drugs and AIDS. *J Appl Dev Psychol*. 1995;16:391-403.
21. Braxton ER, Yonker RJ. Does being urban, poor, Black, or female affect youth's knowledge and/or attitudes relating to drugs? *J Sch Health*. 1973;43:185-188.
22. Chi MTH, Ceci SJ. Content knowledge: its role, representation, and restructuring in memory development. In: Reese HW, eds. *Advances in Child Development and Behavior*. Vol 20. New York, NY: Academic Press; 1987.
23. Rosenberg MF, Anthony JC. Aggressive behavior and opportunities to purchase drugs. *Drug Alcohol Depend*. 2001;63(3):245-252.
24. James KE, Wagner FA, Anthony JC. Regional variation in drug purchase opportunity among youths in the United States, 1996-1997. *J Urban Health*. 2002;79(1):104-112.
25. Storr CL, Chen CY, Anthony JC. 'Unequal Opportunity'—Neighborhood disadvantage and the chance to buy illegal drugs. *J Epidemiol Community Health*. 2004;58(3):231-237.
26. Crum RM, Lillie-Blanton M, Anthony JC. Neighborhood environment and opportunity to use cocaine and other drugs in late childhood and early adolescence. *Drug Alcohol Depend*. 1996;43(3):155-161.
27. Van Etten ML, Neumark YD, Anthony JC. Initial opportunity to use marijuana and the transition to first use: United States, 1979-1994. *Drug Alcohol Depend*. 1997;49(1):1-7.
28. Freeman JK, Freeman WH. When do they learn? A study of drug awareness in children in a rural elementary school. *J Drug Educ*. 1997;7(2):133-140.
29. Van Etten ML, Neumark YD, Anthony JC. Male-female differences in the earliest stages of drug involvement. *Addiction*. 1999;94(9): 1413-1419.
30. Van Etten ML, Anthony JC. Comparative epidemiology of initial drug opportunities and transitions to first use: marijuana, cocaine, hallucinogens, and heroin. *Drug Alcohol Depend*. 1999;54(2):117-125.
31. Wagner FA, Anthony JC. Into the world of illegal drug use: exposure opportunity and other mechanisms linking the use of alcohol, tobacco, marijuana, and cocaine. *Am J Epidemiol*. 2002;155(10):918-925.
32. Wilcox HC, Wagner FA, Anthony JC. Exposure opportunity as a mechanism linking youth marijuana use to hallucinogen use. *Drug Alcohol Depend*. 2002;66(2):127-135.
33. Haertzen CA, Ross FE. Knowledge of drug names determines associations to drug names more than habits for the drugs. *Drug Alcohol Depend*. 1980;6(6):391-413.
34. Johnson NP, Michels PJ, Davis CW. The importance of street drug terms as diagnostic clues. *J Health Soc Policy*. 1991;3(1):45-53.
35. Kellam SG, Wethamer-Larsson L, Dolan LJ, et al. Developmental epidemiologically-based preventive trials: baseline modeling of early target behaviors and depressive symptoms. *Am J Community Psychol*. 1991;19(4):563-584.
36. Kellam SG, Anthony JC. Targeting early antecedents to prevent tobacco smoking: findings from an epidemiologically based randomized field trial. *Am J Public Health*. 1998; 88(10):1490-1495.
37. Chilcoat HD, Dishion TJ, Anthony JC. Parent monitoring and the incidence of drug sampling in urban elementary school children. *Am J Epidemiol*. 1995;141(1):25-31.
38. Hunter A, Pearson J, Ialongo N, Kellam S. Parenting alone to multiple caregivers: child care and parenting arrangements in Black and White urban families. *Fam Relations*. 1998; 47:343-353.

39. Ialongo N, Edelsohn G, Werthamer-Larsson L, Crockett L, Kellam S. The significance of self-reported anxious symptoms in first-grade children. *J Abnorm Child Psychol.* 1994;22(4): 441-455.
40. StataCorp. *Stata Statistical Software: Release 7.0.* College Station, Tex: Stata Corporation; 2001.
41. Delva J, Bobashev G, Gonzalez G, Cedeno M, Anthony JC. Clusters of drug involvement in Panama: results from Panama's 1996 National Youth Survey. *Drug Alcohol Depend.* 2000;60(3):251-257.
42. Bobashev GV, Anthony JC. Use of alternating logistic regression in studies of drug-use clustering. *Subst Use Misuse.* 2000;35(6-8):1051-1073.
43. Haertzen CA, Ross FE. Does the frequency of definitions for a particular drug in slang dictionaries predict quantity of knowledge of the slang? *Psychol Rep.* 1979;44(3, pt 2): 1031-1039.
44. Wells VE, Halperin W, Thun M. The estimated predictive value of screening for illicit drugs in the workplace. *Am J Public Health.* 1988;78(7):817-819.
45. Lloyd JJ, Anthony JC. Hanging out with the wrong crowd: how much difference can parents make in an urban environment? *J Urban Health.* 2003;80(3):383-399.

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