Association of Family Income Supplements in Adolescence With Development of Psychiatric and Substance Use Disorders in Adulthood Among an American Indian Population

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Context In a natural experiment in which some families received income supplements, prevalence of adolescent behavioral symptoms decreased significantly. These adolescents are now young adults.

Objective To examine the effects of income supplements in adolescence and adulthood on the prevalence of adult psychiatric disorders.

Design Quasi-experimental, longitudinal.

Population and Setting A representative sample of children aged 9, 11, or 13 years in 1993 (349 [25%] of whom are American Indian) were assessed for psychiatric and substance use disorders through age 21 years (1993-2006). Of the 1420 who participated in 1993, 1185 were interviewed as adults. From 1996, when a casino opened on the Indian reservation, every American Indian but no non-Indians received an annual income supplement that increased from $500 to around $9000.

Main Outcome Measures Prevalence of adult psychiatric disorders and substance use disorders based on the *Diagnostic and Statistical Manual of Mental Disorders* in 3 age cohorts, adjusted for age, sex, length of time in the family home, and number of Indian parents.

Results As adults, significantly fewer Indians than non-Indians had a psychiatric disorder (106 Indians [weighted 30.2%] vs 337 non-Indians [weighted 36.0%]; odds ratio [OR], 0.46; 95% confidence interval [CI], 0.30-0.72; $P=.001$), particularly alcohol and cannabis abuse, dependence, or both. The youngest age-cohort of Indian youth had the longest exposure to the family income. Interactions between race/ethnicity and age cohort were significant. Planned comparisons showed that fewer of the youngest Indian age-cohort had any psychiatric disorder (31.4%) than the Indian middle cohort (41.7%; OR, 0.43; 95% CI, 0.24-0.78; $P=.005$) or oldest cohort (41.3%; OR, 0.69; 95% CI, 0.51-0.94; $P=.01$) or the youngest non-Indian cohort (37.1%; OR, 0.66; 95% CI, 0.48-0.90; $P=.008$). Study hypotheses were not upheld for nicotine or other drugs, or emotional or behavioral disorders. The income supplement received in adulthood had no impact on adult psychopathology.

Conclusion Lower prevalence of psychopathology in American Indian youth following a family income supplement, compared with the nonexposed, non-Indian population, persisted into adulthood.

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In 2003 we published the results of a natural experiment in which an income supplement given to all members of one community but to none in another predicted significantly fewer adolescent psychiatric symptoms in the income-supplement group.[1] At the time of the earlier study, the participants were adolescents living at home. They are now adults and in receipt of their own income supplement. This article assesses whether the effects of the family income supplement persist into adulthood, controlling for past and current risk and protective factors, including poverty.

METHODS

Setting and Population

The Great Smoky Mountains Study is a longitudinal study of the development of psychiatric and substance use disorders in rural and urban youth.[2,3] In 1993, a representative sample of 1420 children aged 9, 11, and 13 years at intake was recruited from some 12 000 children of these ages living in 11 counties in western North Carolina, using a household equal probability, accelerated cohort design.[4] Parents of a random sample of 3896 non-Indian youth responded to a brief telephone questionnaire about their child's behavioral problems (FIGURE).[3] All those scoring in the top 25% (1009) and 1 in 10 of those scoring in the lower 75% (337) were invited to joint the study.

American Indian children were oversampled. Potential participants were

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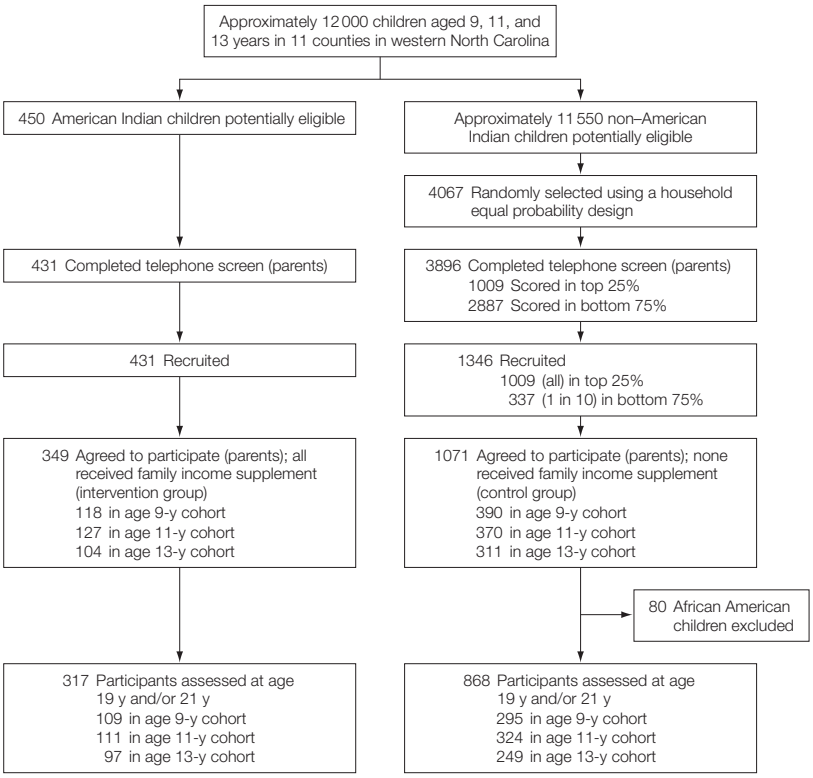
children of parents enrolled as members of the Eastern Band of Cherokee Indians, who have a federal reservation in the study area. All age-appropriate Indian children were recruited. The final sample (Figure) consisted of 349 Indian children, 81.0% of those invited, and 1071 non-Indian children, 79.6% of those invited; 991 (92.5%) of the latter were white and 80 (7.5%) were African American. The latter group was not included in these analyses. Individuals' contributions were weighted proportionately to their probability of selection into the study so that the results are representative of the underlying population. In the text, actual numbers and percentages are weighted.

By age 21 years, participants had undergone a mean of 7 assessments, with an average response rate of 83%. Attrition and nonresponse did not differ across age-cohorts and were not associated with psychiatric status.

The natural experiment consisted of an income supplement given to every member of the Eastern Band of Cherokees when a casino was opened on their reservation in 1996. Every tribal member receives a percentage of the casino's profits, paid every 6 months. Children's earnings are paid into a bank account held for them until age 18 years. By 2006, the annual payment was approximately $9000. The opening of the casino also increased the number of jobs available in the casino, for which Indians receive hiring preference, and in surrounding motels and restaurants, where they do not. Non-Indian youth in the surrounding counties received no comparable income supplement.

Figure. Participant Flowchart



Response rates did not differ by age, race, cohort, poverty, or psychiatric status.

Procedures

Participants were interviewed, usually at home, once a year from 1993 through 1996, then at ages 13, 14, 15, 16, 19, and 21 years. The participant and a parent (usually the mother) were interviewed until the participant was 16 years, after which only participants were interviewed. Assessments took place on a date as close a possible to the participant's birthday. All interviewers were residents of the study area; some were American Indian. They received a month of training and constant quality control by supervisors and study faculty. Participants up to age 16 years signed assent forms, and parents (until participants reached 16 years) and older participants signed informed consent forms. The study and consent forms were approved by the institutional review boards of Duke University and the Tribal Council of the Eastern Band of Cherokee Indians.

Measures

Outcome Variables. The outcomes were any *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition)[5] (*DSM-IV*) psychiatric disorder, any behavioral disorder (conduct, oppositional, or antisocial personality disorder), any emotional disorder (depressive or anxiety disorders) and any substance use disorder in early adulthood; ie, at either or both age 19- and 21-year assessments (1999-2006). Substance use disorders included abuse of or dependence on alcohol, cannabis, nicotine (dependence only), and other drugs: cocaine, amphetamines, inhalants, opioids, hallucinogens, and sedatives. Psychiatric and drug status were assessed using the Child and Adolescent Psychiatric Assessment (CAPA) at ages 9 through 16 years and the Young Adult Psychiatric Assessment (YAPA) in adulthood.[6-8] These are structured interviews that enable interviewers to determine whether symptoms, defined in an extensive glossary, are clinically significant, and to code their frequency, duration, severity, and onset. The CAPA and YAPA scoring algorithms generate either symptom scales or diagnoses made using the *DSM-IV*,[5] The CAPA and YAPA questions refer to the 3-month period immediately before each interview.

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Classification Variables. Enrollment in the Eastern Band of Cherokee provided access to the income supplement. In addition to age at assessment, sex, race/ethnicity of interviewer, current household income, family history of poverty, and adolescent psychiatric symptoms, other variables included in the analyses were length of exposure to family income supplement, number of adults receiving income supplements, banked childhood income, living independently.

Length of Exposure to Family Income Supplement. As shown in TABLE 1, the 3 age cohorts in the study were likely to spend different amounts of time living in the family household after the income supplement began and before the participants became independent. At the time of the last adolescent data collection point, at age 16 years, when all participants were living at home, the youngest had already had 4 years of family income supplement, the middle cohort 2 years, and the oldest cohort less than a year. Therefore, age cohort was used in the analyses as a measure of length of exposure to the income supplement in the family setting.

Number of Adults Receiving Income Supplements. The amount of money per household from the supplement varied with the number of adult recipients in the home. For these analyses, we made the assumption that the additional resources that would have the most effect on the participant would come from resident parents while the participants lived in the family home and from themselves and their spouses thereafter. Thus, there could be 0, 1, or 2 supplements counted per study participant while living at home, and 1 or 2 when living independently after age 18 years.

Banked Childhood Income. At age 18 years, American Indian participants received their own income supplement, together with the accumulated sum that had been held in trust for them (Table 1).

Living Independently. Indian youth who continued to live at home may have been exposed to more of the effects of the family income supplement. Whether the participant was living at home or independently was included as a covariate.

Potential Mediators. Data were collected on 126 risk factors (see http://devepi.duhs.duke.edu/library/pdf/RiskfactorsCodebook.pdf). A mediational model[9] requires that the significant effect of the intervention on later psychopathology should become nonsignificant once the putative mediator is entered into the model. To qualify as potential mediators, risk factors must follow the onset of the intervention and show a significant bivariate association with the outcome variable.[9] We also required them to occur in more than 5% of the participants.

Analyses

We applied a marginal model approach (generalized estimating equations, GEE), to the analysis of these longitudinal data. GEE is a method developed for dealing with complex longitudinal, repeated, or clustered data, for which the observations within each cluster are correlated.[10] SAS PROC GENMOD[11] was used to generate odds

Table 1. Characteristics of Participants in the Great Smoky Mountains Study Age Cohorts Through Age 21 Years

	Youngest Cohort (Age 12 Years in 1996) (n = 508)		Middle Cohort (Age 14 Years in 1996) (n = 497)		Oldest cohort (Age 16 Years in 1996) (n = 415)	
	Indian	Non-Indian	Indian	Non-Indian	Indian	Non-Indian
No. of participants	118	390	127	370	104	311
No. of observations	873	2357	868	2283	529	1398
Female sex, %	47	46	45	41	48	46
Age at beginning of study, y (1993)	9.4 (0.2)	9.2 (0.2)	11.4 (0.2)	11.2 (0.2)	13.4 (0.2)	13 (0.2)
Age at opening of casino (1996), y	12.5 (0.1)	12.5 (0.1)	14.5 (0.1)	14.5 (0.1)	16.5 (0.1)	16 (0.1)
No. years of family income supplement at age 16 assessment	4.3 (0.1)		2.1 (0.2)		0.2 (0.2)	
Amount received at age 18 y, $	35 000	0	19 000	0	6000	0
Not currently living in family home by age 21, No. (%)	88 (80.7)	167 (55.6)	91 (82.0)	149 (48.4)	78 (80.0)	123 (52.4)
Any adult condition, No. (%)[a]						
Psychiatric disorder	37 (31.4)	122 (37.1)	53 (41.7)	148 (42.5)	43 (41.3)	94 (30.6)
Substance abuse or dependence	27 (22.9)	121 (36.0)	43 (33.9)	130 (37.5)	36 (34.6)	89 (28.9)
Alcohol abuse or dependence	17 (14.4)	72 (24.3)	28 (22.1)	86 (24.5)	29 (27.9)	62 (20.4)
Cannabis abuse or dependence	12 (10.2)	61 (16.4)	31 (24.4)	55 (17.4)	25 (24.0)	35 (14.8)
"Hard" drug abuse or dependence	1 (0.8)	15 (3.9)	8 (4.0)	9 (0.9)	4 (3.9)	13 (4.2)
Nicotine dependence	20 (17.0)	51 (14.1)	28 (22.0)	59 (16.2)	14 (13.5)	45 (13.3)
Behavioral disorder	1 (0.5)	5 (1.4)	4 (2.0)	12 (7.8)	9 (5.2)	5 (0.9)
Emotional disorder	11 (5.3)	71 (13.1)	12 (5.9)	38 (6.3)	11 (6.4)	33 (9.6)

[a] Numbers represent live participants and (percentages are weighted to represent the population.

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ratios (ORs) and 95% confidence intervals (95% CIs) for main effects and planned contrasts. All *P* values refer to 2-tailed tests at $\alpha = .05$. Missing data were imputed using a logistic regression approach (the LOGISTIC option on the MONOTONE statement in SAS PROC MI). Outcome variables were predicted by age and the sampling weight that incorporates information about race, sex, cohort, and prestudy screen status. Five complete data sets were produced using a Bernoulli draw to model the uncertainty of imputed values. SAS PROC MIANALYZE was used to read parameter estimates and associated covariance matrices for each imputed data set and to derive valid statistical inferences and estimates.

To test the hypothesis that, among the Indian youth, the effects of the income supplement would be strongest for youngest children, we compared the youngest cohort with the 2 older ones. Age cohort was used rather than age because the ages were clustered. We also tested the prediction that the youngest Indian cohort would have lower rates of disorder than the age-matched non-Indian cohort, which had no income supplement.

RESULTS

Table 1 shows the prevalence of adult disorders by age 21 years, in the 3 age cohorts of Indian and non-Indians. TABLE 2 presents the results of testing whether there were significant differences in the prevalence rates of adult psychiatric and substance use disorders shown in Table 1 by race, age cohort, or their interaction, controlling for the covariates listed above.

The main effect of race was significant for any adult psychiatric disorder (non-Indian, 36.0% vs Indian, 30.2%; OR, 0.46; 95% CI, 0.30-0.72; $P = .003$). This was true of any substance use disorders (non-Indian, 30.6% vs Indian, 28.6%; OR, 0.58; 95% CI, 0.32-0.90; $P = .01$), and any alcohol abuse or dependence (non-Indian 23.8% vs Indian 20.3%; OR, 0.49; 95% CI, 0.29-0.79, $P = .004$) or cannabis abuse or dependence (non-Indian 19.5% vs Indian 16.7%; OR, 0.58; 95% CI, 0.35-0.96; $P = .04$). Main effects of age-cohort were not significant. There was a significant interaction between age cohort and race for any adult psychiatric disorder (OR, 1.30; 95% CI, 1.07-1.60; $P = .009$), substance use disorders (OR, 1.25; 95% CI, 1.03-1.53; $P = .03$), and any alcohol abuse or dependence (OR, 1.33; 95% CI, 1.06-1.67; $P = .01$) or cannabis abuse or dependence (OR, 1.32; 95% CI, 1.04-1.67; $P = .02$). The study hypotheses were not upheld for nicotine dependence, other drug abuse or dependence, or emotional or behavioral disorders. Planned comparisons among the 3 age cohorts (TABLE 3) showed that the youngest Indian age cohort was sig-

Table 2. Results of Logistic Models of Effects[a]

	Race		Age-Cohort		Race × Age-Cohort	
	Odds Ratio (95% CI)	*P* Value	Odds Ratio (95% CI)	*P* Value	Odds Ratio (95% CI)	*P* Value
Any psychiatric diagnosis	0.46 (0.30-0.72)	.001	0.77 (0.58-1.01)	.06	1.30 (1.07-1.60)	.009
Any substance use disorder	0.58 (0.32-0.90)	.01	0.80 (0.61-1.05)	.11	1.25 (1.03-1.53)	.03
Alcohol abuse/dependence	0.49 (0.29-0.79)	.004	0.86 (0.64-1.16)	.34	1.33 (1.06-1.67)	.01
Cannabis abuse/dependence	0.58 (0.35-0.96)	.04	0.89 (0.64-1.24)	.51	1.32 (1.04-1.67)	.02
Nicotine dependence	1.05 (0.65-1.71)	.83	0.92 (0.67-1.28)	.64	0.99 (0.79-1.25)	.99
Other drug abuse/dependence[b]	0.79 (0.25-2.45)	.69	0.99 (0.43-2.26)	.99	1.14 (0.68-1.92)	.60
Any emotional disorder[c]	0.52 (0.24-1.10)	.09	0.70 (0.44-1.12)	.14	1.14 (0.80-1.65)	.45
Any behavioral disorder[d]	0.56 (0.14-2.22)	.41	1.38 (0.71-2.69)	.34	1.40 (0.80-2.43)	.41

Abbreviations: CI, confidence interval; OR, odd ratio.
[a] The models of effects are of race, age cohort, and race by age cohort interaction, on rates of adult psychiatric and substance use disorders, controlling for age at assessment, sex, race/ethnicity of interviewer, current household income, family history of poverty, and adolescent psychiatric symptoms.
[b] Any abuse of or dependence on cocaine, amphetamines, inhalants, opioids, hallucinogens, or sedatives.
[c] Any *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition) (*DSM-IV*) anxiety or depression diagnosis.
[d] Any *DSM-IV* conduct, oppositional, or antisocial personality disorder.

Table 3. Planned Contrasts Between the Youngest Indians and Middle and Oldest Indian Cohorts and Youngest Non-Indian Cohort[a]

	Youngest Cohort of Indians vs					
	Middle Cohort of Indians		Oldest Cohort of Indians		Youngest Cohort of Non-Indians	
	OR (95% CI)	*P* Value	OR (95% CI)	*P* Value	OR (95% CI)	*P* Value
Any psychiatric diagnosis	0.43 (0.24-0.78)	.005	0.69 (0.51-0.94)	.01	0.66 (0.48-0.90)	.008
Any substance use disorder	0.53 (0.31-0.90)	.02	0.77 (0.58-1.03)	.08	0.71 (0.53-0.96)	.02
Alcohol abuse/dependence	0.44 (0.22-0.89)	.02	0.60 (0.42-0.88)	.005	0.58 (0.40-0.85)	.005
Cannabis abuse/dependence	0.28 (0.12-0.60)	.001	0.62 (0.42-0.91)	.02	0.73 (0.46-1.17)	.49

Abbreviations: CI, confidence interval; OR, odd ratio.
[a] Controlled for age at assessment, gender, race/ethnicity of interviewer, current household income, family history of poverty, and adolescent psychiatric symptoms.

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nificantly less likely to have any adult psychiatric disorder than either the middle (OR, 0.43; 95% CI, 0.24-0.78; *P*=.005) or oldest (OR, 0.69; 95% CI, 0.51-0.94; *P*=.01) Indian age cohort, between whom there were no differences. The youngest Indians also had fewer disorders than the youngest non-Indians (OR, 0.66; 95% CI, 0.48-0.90; *P*=.008), although cannabis abuse or dependence was not significantly different in this comparison.

We next examined mediators of the effect of adolescent exposure to the family income supplement on adult substance use disorders. Of the risk factors assessed in the study, 28 occurred after the intervention onset and at greater than 5% prevalence, but only 4 of these were associated with adult substance use disorders in bivariate analyses (TABLE 4). Only 1 met full criteria as a mediator of the intervention: association with delinquent friends in adulthood. The youngest Indians were significantly less likely than older Indians to report delinquent friends in adulthood 9 (9.2%) of the youngest vs 41 (22.7%) of the oldest Indians; β, –1.06; SE, 0.345; *P*=.002). The effect of the intervention (β, –.874; SE, 0.311; *P*=.005) fell to a nonsignificant level (β, –0.604; SE, 0.321; *P*=.06) when the model controlled for delinquent adult friends. Similar results were seen when the youngest Indians were compared with the youngest non-Indians. Family supervision, which had mediated the effect of the income supplement in adolescence,[1] did not extend its influence into adulthood. Material hardship in adolescence was associated with adult substance use disorders but did not mediate the intervention effect.

Table 4. Variables Associated With Adult Substance Use Disorders[a]

Variable description	Bivariate Association With Adult Diagnosis, *P* Value
Low socioeconomic status	.07
Parent unemployed	.11
Single-parent household	.12
Step-parent	.30
Change in parental structure	.73
Lax parental supervision	.69
Parental neglect	.05
Poor communication between parents	.05
Arguments between resident parents	.20
Arguments between mother and nonresident father	.34
Biological mother depressed	.08
Resident mother depressed	.17
Tension between parents and subject	.05
Conflict between parents and subject	.001
Poor relations with siblings	.19
Poor relations with resident siblings	.06
Subject not living in the family home	.12
Delinquent peers in adolescence	.09
Delinquent peers in adulthood	.001
Subject bullied	<.001
Subject has no best friend	.13
Material hardship in adolescence	.001
Material hardship in adulthood	.23
Subject experienced violence	.46
Subject experienced loss	.67
Household income below federal poverty line in adolescence	.14
Household income below federal poverty line in adulthood	.13
Subject has low occupational status	.11

[a] Characteristics that meet criteria as potential mediators of the effect of the income supplement; ie, occurred after the intervention began or occurred on average at greater than 5% frequency at each assessment. (See the Codebook for detailed definitions at http://devepi.duhs.duke.edu/library/pdf/RiskfactorsCodebook.pdf.)

COMMENT

In this article, we examine the long-term effects on adult psychiatric and substance use disorders of a quasi-experimental family income intervention that began in adolescence. Exposure to increased income in an American Indian population, compared with an unexposed non-Indian population, was associated with fewer psychiatric disorders in adulthood. The effect was strongest for alcohol and cannabis abuse, dependence, or both and was specific to the youngest cohort.

Despite decades of research describing the harmful effects of family poverty on children's emotional and behavioral development, eg,[12-17] experimental or quasi-experimental manipulations of family income that could go beyond description are rare[18] and tend to examine the effect of such manipulations on physical health or academic attainment, rather than emotional or behavioral functioning.[19,20] Other analyses of the Great Smoky Mountains data set have focused on educational and criminal outcomes.[21] The few studies looking at emotional or behavioral outcomes tend to have a short time frame.[22,23] Some studies of school-based interventions have followed up with children through to adulthood,[24,25] but we have found none that have looked at the long-term effects of family income supplementation on adult psychological functioning.

In these analyses, an income supplement provided to all American Indian families since the mid-1990s was associated with fewer psychiatric diagnoses not only in adolescence, while the study participants were living at home, but also in young adulthood, when the majority had moved out of the family home, and when the participants were receiving their own income supplement. The effect was seen only in the youngest age cohort, who were 12 years old when the income supplement began and who therefore were exposed to it for several years before leaving home. The personal income supplement received from

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age 18 years onward was not associated with less psychopathology.

Substance use disorders emerged in middle adolescence and increased in frequency through the middle 20s, becoming by far the most common psychiatric problems reported by the study participants.[26,27] We have already shown that early conduct problems predicted the onset of adolescent substance use disorders in this sample,[28,29] and it is not surprising that this is the aspect of behavioral problems that showed the intervention effect in young adulthood. The youngest Indian cohort also achieved higher levels of education as adults and fewer minor criminal offenses than the rest.[21] This profile of deviance reduction is consistent with other studies,[22,23] with the addition of a longer time frame and a quasi-experimental design. Our present study, like our previous one, shows little effect of the intervention on anxiety and depression.

The most important aspect of this follow-up into adulthood is to demonstrate that an intervention occurring in adolescence can predict outcomes in adulthood. The fact that the effects were seen principally in the youngest age cohort could be explained by age at exposure or length of exposure,[30] and the design of the intervention does not enable us to decide between these possible explanations. The policy conclusion is, however, the same: the income supplement was only effective if it began early, as studies of other outcomes have shown.[19,20]

In adolescence, the income supplement reduced behavioral symptoms, and the effect was mediated by increased parental supervision. In adulthood, fewer delinquent friends mediated the relationship between the family supplement and adult substance use disorders. Possibly, the increased supervision in adolescence, while no longer exerting a direct influence on adult psychopathology, helped keep young adults away from delinquent friends and thence exposure to drugs as adults.

The income supplement available to the Indian families was quite considerable: about $9000 a year by 2006. Income support for poor families at this level would be an enormous investment of public resources. However, the costs of social control of delinquent behaviors, including drug problems, are also very high.[31-34] This quasi-experimental study is, perhaps, more important in linking a developmentally specific environmental intervention with an adult outcome showing strong genetic liability.[35,36]

The Great Smoky Mountains study has several advantages for examining the long-term effect of an income intervention on psychiatric disorder. First, the intervention was applied equally, and in equal amounts, to everyone in the income supplement group, and to no one in the other group. Thus, the key variable, the family income supplement, was not bestowed because of family characteristics that could influence psychiatric outcomes (as is the case with most forms of income supplementation).[19,20,37-39] Second, because the groups were originally selected randomly from the population (non-Indians) or consisted of the whole population of the same age (American Indians), selection biases were minimized. Third, the study used a within-subjects, prospective design, with everyone assessed on several occasions before and after the casino opened, and again as young adults. Fourth, the 3 age cohorts enabled us to examine the effect of length of exposure to the intervention on outcomes. Fifth, a wide range of data was available to test for mediators.

The study also has important limitations. The samples were not large and included only 2 race/ethnic groups large enough for statistical comparisons: Cherokee Indians and non-Hispanic whites. Race/ethnicity was entirely confounded with the intervention, as was age with length of the intervention. The amount saved during childhood that the Indian participants received at age 18 years was also confounded with age cohort, and so its effects could not be estimated separately. However, the fact that all the cohorts had very similar incomes at age 19 and 21 years suggests that the lump sum was not used to buy different levels of long-term benefits (such as education leading to a better job[21]). We were not able to test the hypothesis that the effect on substance use disorders was the indirect result of community benefits of the casino, such as greater opportunity for parental employment,[40] or of community-wide risks such as increased gambling addiction because of the proximity of the casino, although there is no reason to expect cohort differences in such community-wide effects. The study took place in a mixed urban-rural area of the United States, and a family income intervention like this one might not have a similar effect in an inner-city area. Finally, although we observed a long-term effect of a family income supplement, we lack the information to understand how and why it worked as it did.

The fact that the intervention was effective in youth with and without a family history of drug problems is not an argument that behavioral and substance use disorders are not brain disorders and so are outside the remit of psychiatrists in their new manifestation as clinical neuroscientists.[41] Rather, it suggests that whether or not individuals have a genetic vulnerability to a disorder, there are environmental interventions that can have long-term benefits, even after the intervention is over.

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Study concept and design: Costello, Angold.
Acquisition of data: Costello, Angold.
Analysis and interpretation of data: Costello, Angold, Erkanli, Copeland.
Drafting of manuscript: Costello, Angold, Copeland.
Critical revision of manuscript for important intellectual content: Costello, Angold, Erkanli, Copeland.
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