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Psychiatric symptoms and substance use disorders in a nationally representative sample of American adolescents involved with foster care

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Abstract

Objective—To ascertain the prevalence of psychiatric symptoms and substance use disorders among adolescents with a lifetime history of foster care placement, using data from a nationally representative sample of US adolescents.

Methods—We studied adolescents aged 12–17 in the public use file of the 2000 National Household on Drug Abuse (N = 19,430, including 464 adolescents with history of foster care placement). Psychiatric symptoms and substance use disorders were ascertained through direct interviewing of adolescents. Logistic regression analyses were used to estimate the odds of past-year psychiatric symptoms and substance use disorders among adolescents involved with foster care, as compared to those without a lifetime history of foster care placement (comparison group)

Results—Adolescents involved with foster care had more past-year psychiatric symptoms, and especially more conduct symptoms, and past-year substance use disorders than those never placed in foster care. Adolescents involved with foster care were about four times more likely to have attempted suicide in the preceding 12 months (AOR, 3.95; 95% CI 2.78, 5.61), and about five times more likely to receive a drug dependence diagnosis in the same period (AOR, 4.81; 95% CI, 3.22, 7.18).

Conclusions—Adolescents involved with foster care have a higher prevalence of psychiatric symptoms and drug use disorders than those never placed in foster care. Additionally, the results of this study suggest that they may be at elevated risk for suicide attempts

INTRODUCTION

The U.S. child welfare system has been considered a de facto behavioral care system because of the large number of children and adolescents who have clinically significant emotional or behavioral problems (1). For example, a recent survey revealed that nearly half of youth involved with child welfare aged 2 to 14 years (N=3,803) had significant emotional or behavioral problems (1). The child welfare system includes, among other services, protective services, foster care, and adoption services. Over half a million children are currently placed in foster care in the U.S. (2). In order to understand why these children are so prone to develop emotional and behavioral problems and disorders, it is important to know who enters the foster care system. Even though a small number of orphans are placed in foster care, nowadays most

are children of drug addicted parents who may also be mentally ill (3). Thus, both nature, i.e. the genetic loading associated with parental impairment, and nurture, i.e. abandonment, parental rejection, and trauma, conspire against these children.

Most published studies focusing on foster children have used small samples, and estimated the prevalence of psychopathological symptoms by reviewing records or using the parent-rated Child Behavior Checklist (CBCL) (4). Typically, foster children, and other children involved with the child welfare system, have a higher prevalence of most symptoms assessed than community norms or comparison groups (1,3,5–9). In several studies the prevalence of conduct symptoms was more elevated than the prevalence of other psychiatric symptoms. For example, a review of the records of 585 foster children (mean age of 13.5 years when first served by the child welfare agency studied) revealed a high prevalence of “conduct problems” (10), which are analogous to the DSM-IV diagnoses of oppositional and conduct disorders. Heflinger et al. (8) examined CBCL scores for 254 children in foster care aged 2 to 18 years. The greatest difficulties were found in the aggressive, delinquent, and withdrawn behavior scales. Similarly, a Canadian study of 248 children in foster care revealed that conduct disorder was the most common disorder (11). Furthermore, several follow-up studies of adults who had been in foster care as children found that a high proportion had criminal records in adulthood (10). Although these follow-up studies have significant methodological limitations, including the use of agency records and the absence of a comparison group, they add to the evidence suggesting that conduct symptoms may be the most prevalent psychiatric symptoms in the foster care population, and may have a long term impact.

Other than a recent observation suggesting that lifetime involvement with foster care was associated with the abuse of inhalants in adolescence (12), we are not aware of any published reports focusing on substance use disorders among children in foster care or with a lifetime history of foster care placement. Since foster children have a high prevalence of conduct symptoms (8,10,11), and these symptoms are often associated with substance abuse (e.g., 13–15), we expected that adolescents involved with foster care would have a higher prevalence of substance use disorders than those never placed in foster care.

Most published studies dealing with children and adolescents in foster care, including large well-designed studies (e.g., 1), provide information about youth involved with foster care or child welfare, without a comparison group. Our study is the first to include a nationally representative sample of adolescents with and without a history of involvement with foster care. Additionally, while most prior studies obtained information solely from caregivers using the CBCL (3,8), the present study is based on direct interviews of adolescents. Parents and adolescents may underestimate internalizing and externalizing symptoms, respectively. Overall, there is more agreement for reports of externalizing symptoms (16,17). Thus, our study may provide a more accurate report of internalizing symptoms, or at least a different perspective. The perspective of all informants is helpful and none can provide all the necessary information (18).

In the present study, we hypothesized that adolescents involved with foster care, i.e. those with a lifetime history of foster care placement, would have more psychiatric symptoms, use more illicit drugs, and have more substance use disorders than those without such a history; and that the most frequent type of psychiatric symptoms among children involved with foster care would be conduct symptoms. We were able to test these hypotheses using a nationally representative sample of U.S. adolescents aged 12–17 years to compare past-year prevalences of substance used disorders and psychiatric symptoms among adolescents with and without a history of foster care involvement.

METHODS

Data Source

This study is based on data from the public use file of the 2000 National Household on Drug Abuse (NHSDA) (19). This study was declared exempt from the RTI International institutional review board because it used an existing public use data file. No information or identifiers on the data file can be associated with any survey respondent. The annual NHSDA is designed to provide national estimates of the use of a variety of licit and illicit substances by Americans aged 12 or older. A secondary focus of the survey is mental health and mental health treatment service utilization. Foster care placement and other childhood experiences were included in the mental health section of the survey. Civilian, noninstitutionalized populations residing within the United States and the District of Columbia were selected for participating in the study via multistage area probability sampling methods (20). They include residents of noninstitutional group quarters (e.g., shelters, rooming houses, dormitories, and group homes), residents of Alaska and Hawaii, and civilians residing on military bases. Persons who had no fixed household address at the time of the survey (e.g., homeless transients not in shelters) and residents of institutional group quarters (e.g., jails and hospitals) were excluded from the sampling frame (19).

To increase the accuracy of self-reports of drug use and other behaviors of a sensitive nature (21), the 2000 survey utilized a combination of computer-assisted personal interviewing (CAPI) and audio computer-assisted self-interviewing (ACASI) methodologies. ACASI interviewing was used for questions of a sensitive nature. Respondents either read the questions on the computer screen, or the questions were read to them through headphones, and the respondents entered their responses directly into the computer.

Respondents were interviewed at their place of residence for about an hour. Interviewers requested the respondents to identify a private area in the home away from other household members to conduct the interview. A total of 71,764 individuals completed the 2000 survey. The weighted interview response rate was 74% in 2000 and was higher among adolescents aged 12–17 (83%) than among adults (72–77%). Analysis weights were developed to adjust for variation in household selection, nonresponse, and poststratification of the selected sample to the census data. The NHSDA sample was representative of the U.S. general population aged 12 or older. The NHSDA design and data collection procedures have been reported in detail elsewhere (19,20)

Study Sample

We studied adolescents aged 12–17 in the public use file of the 2000 survey. In the sample (N = 19,430), 49% were females, 33% were aged 12–13, 35% were members of nonwhite minority groups, 26% reported an annual family income less than \$40,000, and 23% resided in nonmetropolitan areas.

Study Variables

All psychiatric symptoms, including substance use, abuse, and dependence refer to the past 12 months. Foster care status (yes/no) refers to a lifetime history of foster care placement.

Foster Care Status—Adolescents who responded affirmatively to the question “Have you ever been in foster care?” were considered to have a lifetime history of foster care placement.

Psychiatric Symptoms—All questions in the “Adolescent Mental Health” section of the interview except one (“During the past 12 months have you taken medication for being overactive, being hyperactive, or having trouble paying attention?”) were included in this

analysis. The question about medication for hyperactivity was excluded because it refers to treatment—not to a symptom. All questions in this section refer to the last 12 months. These questions can be found in the SAMSHA web site (<http://oas.samhsa.gov/nhsda/methods.cfm#2k>). They address symptoms of anxiety disorders (31 items, Cronbach alpha=0.9), eating problems (3 items, Cronbach alpha=0.8), major depression (9 items, Cronbach alpha=0.8), mania (3 items, Cronbach alpha=0.6), enuresis (2 items, Cronbach alpha=0.6), encopresis (1 item), and disruptive behavior disorders (24 items, Cronbach alpha=0.8). Disruptive behavior disorders include attention deficit hyperactivity disorder, oppositional defiant disorder, and conduct disorder. Two items included among the nine associated with major depression (suicidal ideation and suicide attempts) were also considered separately because of their public health importance.

Suicidal ideation and suicide attempts—Ideation and attempts were considered present when adolescents responded affirmatively to “During the past 12 months has there been a time when you thought seriously about killing yourself?” and to “During the past 12 months have you tried to kill yourself?”, respectively.

Substance Use and Substance Use Disorders—We examined past year use of alcohol and drugs (cocaine/crack, hallucinogens, heroin, inhalants, marijuana/hashish, pain relievers, sedatives, stimulants and tranquilizers; prescription drugs were included only when not used for medical purposes), and past year alcohol and drug use disorders (12,22). Past year alcohol and other drug abuse and dependence were assessed using DSM-IV criteria (19,23). Diagnostic assessments were based on the questions used in the National Comorbidity Survey (NCS) (24) and were revised to meet DSM-IV criteria.

Data Analysis: Because of the use of multistage probability sampling methods in the NHSDA, data were weighted to adjust for variations in household selection and non-response and to reflect the representativeness of the NHSDA sample. We used SUDAAN software (25) to analyze the data, which applies a Taylor series linearization method to account for the effects of the complex NHSDA design features (weighting). All percentages reported in this paper are weighted estimates, while sample sizes are unweighted. First, we examined demographic characteristics of the sample in relation to foster care placement status (Table 1). Second, we examined the bivariate association between a history of foster care placement and each category of psychiatric symptoms via the chi square test for binary variables and the t test for continuous variables (Table 2). With the exception of encopresis and bulimia, which were addressed in the NHSDA interview using a single question, symptoms of psychiatric disorders were summed separately for each disorder. We then calculated the mean number of symptoms for adolescents with and without a lifetime history of foster care.

In order to estimate the odds of psychiatric symptoms (Table 3), we created a 5-category variable representing no symptoms and 4 levels of symptoms (i.e., grouping those reporting symptoms in quartiles). This variable was created separately for symptoms of anxiety, mood, and disruptive behavior disorders. Except for suicidal ideation and attempts, the odd ratios shown in Table 3 were estimated using multinomial logistic regression analysis (26). We compared each different symptom level of a psychiatric category to the absence of symptoms. The reference group is youth without a lifetime history of foster care. For binary outcome variables (i.e., presence or absence of suicidal behaviors, substance use, abuse, or dependence), we conducted (binary) logistic regression analyses (26) to estimate the strength of its association with a history of foster care placement. Each regression model controlled for the potential confounding influences of age, gender, race/ethnicity, family income, and population density on the association between the outcome variables and foster care placement.

RESULTS

In this section, we refer to adolescents with a lifetime history of foster care placement as “FC adolescents” and to those without such a history as the comparison group.

Demographics

There were no significant differences in the age and gender distribution of FC and comparison adolescents (Table 1). African-American and adolescents from low-income families were disproportionately represented among those ever placed in foster care.

Psychiatric Symptoms

FC adolescents had more symptoms than those in the comparison group in every category assessed. They had more than twice the number of conduct symptoms (1.54 vs. 0.62 mean number of conduct symptoms), and were significantly more likely to report suicide attempts and ideation than comparison adolescents (Table 2).

As shown in Table 3, FC adolescents were about three times more likely to present with 8 or more past-year symptoms of anxiety (AOR=3.36; 95% CI 2.19, 5.14), and were about four times more likely to present with 7 or more past-year symptoms of disruptive behavior disorders (AOR=4.26; 95% CI 2.99, 6.06) than comparison adolescents. They were also about four times more likely to have a history of suicide attempts (AOR=3.95; 95% CI 2.78, 5.61) in the preceding 12 months.

Substance Use and Substance Use Disorders

Compared to adolescents without a lifetime history of foster care, FC adolescents were slightly more likely to use alcohol, about two times more likely to engage in illicit drug use (AOR = 2.41, 95% CI 1.87, 3.11), about five times more likely to be drug-dependent (AOR = 4.81, 95% CI 3.22, 7.18), and about two to four times more likely to have other substance use disorders (Table 4).

DISCUSSION

Adolescents involved with foster care had more psychiatric symptoms of every type assessed than adolescents in the comparison group. This finding concurs with the extant literature (1, 3,5,6,27,28). Compared to adolescents never placed in foster care, the past year prevalence of conduct and anxiety symptoms was higher among adolescents involved with foster care. The preponderance of conduct symptoms among foster children has been reported by numerous investigators in the U.S. and elsewhere (e.g., 8,10,11,29).

Adolescents involved with foster care were also more likely to have significant anxiety and mood symptoms than those without foster care involvement. Previous studies reported a similarly high prevalence of internalizing symptoms, a CBCL category that includes depression, anxiety, withdrawal, and somatic complaints. For example, Heflinger et al. (8) reported that 23% and 19% of the foster children in their study, had symptoms in the clinical range of the externalizing and internalizing scale, respectively. Scores in the clinical range of the CBCL significantly discriminate between children referred for mental health and special educational services for behavioral or emotional problems and demographically similar children who are not referred (4).

Even though, as shown in this study, children involved with foster care have a higher prevalence of both internalizing and externalizing symptoms, the accumulating evidence suggests an association between foster care placement and conduct symptoms (3,10,11). Is this relationship

cause and effect? Most children enter foster care after they have been abused or neglected, and often after their behavior becomes problematic (3). Child abuse is often associated with aggressive behavior (30,31), and a seminal study found that adult criminal activity was associated with child maltreatment, not with living in a foster home (32).

There is an extensive literature suggesting that attachment problems and traumatic separations in early childhood interfere with children's ability to learn that parents can be essentially benevolent. According to Katz (33) such children are unable to tolerate limits and frustrations that are part of the socialization process. Willock (34) suggests that children of unavailable parents feel unloved and disregarded. Lacking a conviction that somebody cares for them, they feel alone, threatened and frightened. They "must therefore constantly be ready to fend for themselves" (34, p. 63). According to this formulation, by being aggressive or defiant, these children disregard others and devalue them, thus reversing their conviction about themselves, i.e. that they are of little value to others.

Compared to those without a history of foster care placement, the prevalence of past year suicidal ideation (26.8% vs. 11.4%) and attempts (15.3% vs. 4.2%) among adolescents involved with foster care was markedly elevated. There is consistent evidence that child maltreatment is associated with suicide attempts, and less consistent evidence of an association with suicidal ideation (35). Since different types of abuse experiences can have different outcomes (30) it is difficult to identify the mechanism that may underlie this association. Wagner (35) has suggested that child maltreatment is associated with a sense of expendability. There are some reports suggesting that living away from both parents increases the risk of suicide attempts (e.g. 36, 37), but it is unclear whether separation from both parents or its antecedents, which may include overt parental rejection, account for the association with suicide attempts.

Adolescents involved with foster care had a higher prevalence of substance use disorders, and were about five times more likely to have a past year diagnosis of drug dependence than adolescents in the comparison group, after adjusting for gender and age. To the best of our knowledge, there are no published reports of the prevalence of substance use disorders among adolescents in foster care or with a history of foster care placement. The literature, however, suggests that childhood maltreatment may be a frequent antecedent of adult substance abuse (e.g., 38). This literature is subject to recall bias because it is largely based on retrospective reports of childhood maltreatment by adult substance abusers.

Adolescents involved with foster care have numerous risk factors that precede their entry into foster care, and therefore we view foster care as a marker of adversity, rather than a cause of psychopathology. Nevertheless, foster care often constitutes another stressful experience for youth with a prior history of multiple stressors, such as parental addiction, neglect, abuse, and other environmental conditions often associated with poverty in the U.S., e.g., dilapidated schools and lack of recreational facilities. Former foster children frequently have multiple negative adult outcomes, including criminality and incarceration (e.g., 10), homelessness (39), and selected adult psychiatric symptoms (40).

Involvement with foster care is often a marker of prior adversities, and an antecedent of negative adult outcomes. Most of these outcomes are associated with the aforementioned childhood adversities, and these adversities may have a greater impact on adult outcomes than foster care per se. Thus, involvement with foster care should be seen by clinicians as a possible marker—not necessarily a cause—of high risk for psychopathology and substance use disorders in childhood and adolescence, and as a risk factor for the above mentioned negative adult outcomes.

Limitations

This study relies solely on information provided by the adolescents. As discussed above, adolescents may under-report externalizing symptoms, and the most complete picture is obtained when all informants (parents, teachers, and adolescents) participate in the evaluation of the adolescent. Another limitation is that the data is cross-sectional, and therefore causal attributions are not warranted. For example, we do not know whether symptoms arose before or after placement in foster care. Nevertheless, the preponderance of conduct symptoms, observed both in this study and in prior studies of foster children, suggests that children in the present study had similar symptoms to those noted in prior research. As in most large epidemiological studies, the diagnoses of substance use disorders are not based on clinician-administered interviews. Last, the survey does not include information about the duration of foster care placement.

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Table 1

Selected sample characteristics of youth aged 12–17 in 2000, by history of foster care placement (N = 19,430)

Demographic characteristics	All youth aged 12–17 (N=19,430)	History of foster care placement		χ^2 test (df) P- values
		Yes (N= 464)	No (N= 18,966)	
	%	%	%	
Age in years				
12–13	33.0	28.9	33.2	
14–15	34.6	35.4	34.6	3.28 (2)
16–17	32.4	35.7	32.3	p=0.1950
Gender				
Male	51.2	47.7	51.3	1.73 (1)
Female	48.8	52.4	48.7	p=0.1893
Race/Ethnicity				
White	65.5	54.4	65.8	
Black	14.3	23.3	14.1	
Hispanic	14.2	16.5	14.1	18.07 (3)
Other	6.0	5.9	6.0	P <.001
Family Income				
\$0 – \$19,999	17.9	36.9	17.4	
\$20,000 – \$39,999	25.8	26.8	25.8	
\$40,000 – \$74,000	33.9	26.4	34.1	59.24 (3)
\$75,000+	22.4	10.0	22.7	P < .001
Population Density				
Large metropolitan	43.6	46.7	43.5	
Small metropolitan	33.4	29.0	33.5	2.98 (2)
Non metropolitan	23.1	24.3	23.0	P= 0.2255

Table 2

Mean number (standard errors) or proportion of past year psychiatric symptoms among youth aged 12–17 according to foster care status (N = 19,430)

Symptoms ¹	Lifetime History of Foster Care		χ^2 test (df) p-values or t test p-values
	Yes	No	
Anxiety symptoms			
Social phobia (2)	0.87 (0.04)	0.65 (0.01)	t=5.54, p<0.0001
Separation anxiety disorders (7)	1.79 (0.11)	0.99 (0.01)	t=7.23, p<0.0001
Agoraphobia ² (4)	0.74 (0.07)	0.37 (0.01)	t=5.68, p<0.0001
Panic attacks ³ (2)	0.39 (0.04)	0.21 (0.00)	t=4.30, p=0.0001
Generalized anxiety disorder ⁴ (4)	1.22 (0.08)	0.89 (0.01)	t=4.24, p<0.0001
Specific phobias (7)	1.54 (0.11)	0.95 (0.01)	t=5.57, p<0.0001
Obsessive compulsive disorder (5)	1.10 (0.09)	0.72 (0.01)	t=4.06, p=0.0001
Any anxiety symptoms (31)	7.65 (0.42)	4.78 (0.04)	t=6.76, p<0.0001
Eating Disorders symptoms			
Anorexia nervosa (2)	0.27 (0.04)	0.14 (0.00)	t=3.56, p=0.0004
Bulimia nervosa (1)	9.5%	4.1%	$\chi^2=8.52$ (1), p=0.0036
Elimination disorders symptoms			
Enuresis (2)	0.11 (0.02)	0.04 (0.00)	t=3.10, p=0.005
Encopresis (1)	3.8%	0.3%	$\chi^2=6.35$ (1), p=0.0119
Mood symptoms			
Major depression (9)	3.53 (0.15)	2.60 (0.02)	t=6.24, p<0.0001
Mania (3)	0.97 (0.05)	0.74 (0.01)	t=4.16, p<0.0001
DBD symptoms ⁵			
ADHD (5)	2.08 (0.09)	1.40 (0.01)	t=7.34, p<0.0001
Oppositional defiant disorder (6)	2.64 (0.11)	1.89 (0.02)	t=6.99, p<0.0001
Conduct disorder (9)	1.54 (0.14)	0.62 (0.01)	t=6.39, p<0.0001
Any DBD ⁵ symptoms (24)	6.44 (0.30)	3.97 (0.03)	t=8.33, p<0.0001
Suicidality			
Suicidal ideation (1)	26.8%	11.4%	$\chi^2=38.47$ (1), p<0.0001
Suicidal attempts (1)	15.3%	4.2%	$\chi^2=27.55$ (1), p<0.0001

¹ The numbers shown in parenthesis indicate the total number of symptoms included in the interview. For example, the interview includes 2 social phobia and 7 separation anxiety symptoms.

² With or without panic attacks.

³ With or without agoraphobia.

⁴ Includes two somatization symptoms (“a lot of headaches” and “a lot of other aches and pains”). These are symptoms of “overanxious disorder”, a DSMIII-R diagnosis, and they are not included in the criteria for generalized anxiety disorder in DSM-IV.

⁵ Disruptive behavior disorders.

Table 3

Odds of past year psychiatric symptoms and suicidal behaviors among children with a lifetime history of foster care placement (N = 19,430)

Symptoms ¹	Unadjusted OR ² (95% confidence interval)	Adjusted OR ^{2,3} (95% confidence interval)
Anxiety (31)		
1–2 vs. no symptoms	1.36 (0.86 – 2.17)**	1.37 (0.86 – 2.17)**
3–4 vs. no symptoms	1.87 (1.19 – 2.93)**	1.83 (1.16 – 2.87)**
5–8 vs. no symptoms	2.10 (1.35 – 3.26)**	2.04 (1.31 – 3.17)**
>8 vs. no symptoms	3.66 (2.44 – 5.47)***	3.36 (2.19 – 5.14)***
Mood (12)		
1–2 vs. no symptoms	1.18 (0.81 – 1.72)	1.27 (0.87 – 1.85)**
3–4 vs. no symptoms	1.51 (1.05 – 2.18)*	1.64 (1.13 – 2.37)**
5–6 vs. no symptoms	1.52 (1.05 – 2.20)*	1.58 (1.09 – 2.30)**
>6 vs. no symptoms	2.63 (1.87 – 3.69)***	2.75 (1.93 – 3.92)***
Disruptive Behavior Disorders (24)		
1–2 vs. no symptoms	1.37 (0.92 – 2.06)	1.40 (0.94 – 2.10)***
3–5 vs. no symptoms	1.89 (1.30 – 2.73)***	1.96 (1.35 – 2.84)***
6–7 vs. no symptoms	2.14 (1.43 – 3.20)***	2.20 (1.47 – 3.29)***
>7 vs. no symptoms	4.34 (3.06 – 6.16)***	4.26 (2.99 – 6.06)***
Suicidal ideation (1)	2.86 (2.24 – 3.65)***	2.78 (2.14 – 3.60)***
Suicide attempts (1)	4.15 (3.01 – 5.72)***	3.95 (2.78 – 5.61)***

¹The number in parenthesis indicates the number of symptoms included in each category (e.g., 31 anxiety symptoms are included). Each row within a symptom category represents a quartile, e.g., children with more than eight anxiety symptoms represent the upper quartile (or the top 25%) for that symptom category.

²The reference group is youth without a history of foster care

³Each separate logistic regression adjusted for age, gender, race/ethnicity, family income, and population density.

* $p \leq 0.05$;

** $p \leq 0.01$;

*** $p \leq 0.001$

Table 4

Proportion (%) of youth aged 12–17 engaged in past year substance use, abuse, and dependence, and adjusted odds of substance use, abuse, and dependence according to foster care status (N = 19,430).

Outcome: past year substance use or disorder	All youth N=19,430 %	Foster care		Unadjusted Odds ^I (95% confidence interval)	Adjusted Odds ^{I,2} (95% confidence interval)
		Yes N = 464 %	No N =18,966 %		
Any alcohol use	33.1	40.0	32.9	1.36 (1.07 – 1.73) [*]	1.45 (1.12 – 1.87) ^{**}
Alcohol abuse	3.3	5.9	3.2	1.89 (1.11 – 3.23) [*]	1.97 (1.15 – 3.39) [*]
Alcohol dependence	1.9	6.5	1.8	3.91 (2.45 – 6.24) ^{***}	3.81 (2.30 – 6.30) ^{***}
Any drug use	18.5	34.2	18.1	2.36 (1.87 – 2.98) ^{***}	2.41 (1.87 – 3.11) ^{***}
Drug abuse	2.0	7.1	1.9	3.94 (2.53 – 6.15) ^{***}	3.78 (2.38 – 6.01) ^{***}
Drug dependence	2.4	9.8	2.2	4.90 (3.35 – 7.16) ^{***}	4.81 (3.22 – 7.18) ^{***}

^IThe reference group is youth without a lifetime history of foster care.

²Each separate logistic regression adjusted for age, gender, race/ethnicity, family income, and population density.

* $p \leq 0.05$;

** $p \leq 0.01$;

*** $p \leq 0.001$.