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Health-risk behaviors in young adolescents in the child welfare system

Laurel K. Leslie, MD^{1,2}, Sigrid James, PhD^{2,5}, Amy Monn, BA⁴, Milena C. Kauten, BA¹, Jinjin Zhang, MS², and Gregory Aarons, PhD^{2,3}

¹ Institute for Clinical Research and Health Policy Studies at Tufts Medical Center

² Child and Adolescent Services Research Center, San Diego, California

³ University of California, San Diego

⁴ Psychiatry, University of Minnesota, Twin Cities

⁵ Social Work & Social Ecology, Loma Linda University

Abstract

Objective—To examine rates and patterns of health-risk behavior (e.g. sexuality, depression/suicidality, substance use, delinquency) among a national probability sample of youth active to the child welfare/child protective services system. Recent federal legislation, P.L. 110–351, encourages child welfare systems, Medicaid, and pediatric experts to collaborate to assure youth entering foster care receive comprehensive health examinations.

Methods—Analysis of baseline caregiver, caseworker and child interviews, and assessment data for a subsample (n=993) of youth, ages 11–15 years, from the National Survey of Child and Adolescent Well-Being, a national probability sample of children and adolescents undergoing investigation for abuse or neglect.

Results—Almost half of the sample (46.3%) endorsed at least one health-risk behavior. On Poisson multivariate regression modeling, factors related to higher rates of health-risk behaviors included older age, female gender, abuse history, deviant peers, limited caregiver monitoring, and poor school engagement.

Conclusion—Given the heightened vulnerability of this population, early screening for health-risk behaviors must be prioritized. Further research should explore specific subpopulations at risk for health-risk behaviors and possible interventions to change these youths' trajectories.

INTRODUCTION

Multiple professional organizations serving children have long championed comprehensive health and mental health examinations of children entering foster care. In fact, some groups such as the American Academy of Pediatrics have identified foster care as one of their top priority areas. These advocacy efforts culminated in the passage of Public Law 110–351 in

For all information, contact: Laurel K. Leslie, M.D., M.P.H. Center on Child and Family Outcomes, The Institute for Clinical Research and Health Policy Studies, Tufts Medical Center, 800 Washington Street, Tufts MC #345, Boston, MA 02111, Telephone: 617–636–5090, lleslie@tuftsmedicalcenter.org

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October 2008, which called for enhanced collaboration between child welfare, Medicaid, and pediatric experts to improve health care for children in foster care.¹

As planning begins for these collaborative initiatives, identifying health priority areas for assessment, prevention and treatment becomes critical. Traditionally, policy statements have focused on the unique needs of young children entering foster care.² The early adolescent entering foster care has received much less attention, even though 113,510 of 463,000 youth in foster care were between 11 and 15 years of age in 2008.³

Health-risk behaviors among the general U.S. youth population are a pediatric public health concern and the target of 28 Critical Health Objectives in Healthy People 2010.⁴ While operationalized differently across studies, consistent domains of health-risk behaviors include sexuality, depression/suicidality, tobacco and substance use, and delinquency.⁵ These behaviors commonly co-occur,^{6, 7} are responsible for much of the morbidity and mortality during adolescence and early adulthood,^{8, 9} and have increasingly been linked to poor health status in adulthood.¹⁰ Health-risk behaviors have also been documented as occurring at younger ages¹¹ highlighting the importance of early prevention and intervention.

An explicit aim of risk and resilience research is screening coupled with the development of targeted and empirically guided interventions to alter risk trajectories and reduce engagement in risk-taking behaviors. Youth who come in contact with child welfare and protective service systems (hereafter, termed “child welfare”) because of allegations of abuse or neglect represent a unique subset of youth at risk for health-risk behaviors. Studies in the general youth population suggest family and school contexts are critical forces influencing behavior.⁷ Youth in child welfare are, by definition, at risk for poor family and school contexts. Their experiences of maltreatment, instability, and family dysfunction along with high rates of poverty, poor health, developmental delays, mental health problems, and educational deficits heighten their vulnerability to health-risk behavior engagement.¹² Furthermore, in retrospective studies with adults, childhood abuse and neglect have been found to be markers of adult risk behaviors including tobacco use, substance abuse, sexually transmitted diseases, unintended pregnancy, criminal actions, mental health symptomatology, and work absenteeism.¹⁰

To date, few studies have examined health-risk behaviors among youth entering child welfare. A limited number of studies focus on youth in foster care and suggest these youth engage in health-compromising behaviors at an earlier age, with an increased frequency and intensity compared to youth in the general population.^{13, 14} Not surprisingly, outcomes for youth transitioning out of foster care at age 18 years have been dismal with low levels of educational attainment; high rates of unemployment, homelessness, welfare dependency, early pregnancy, and criminal justice involvement.¹⁵ However, it is not known how many youth are already displaying risk-taking behaviors around the time of investigation for abuse and neglect or if these behaviors reflect a certain subset of youth who remain in foster care and age out at 18 years.

It is also not known if rates of risk-taking behaviors are higher for youth placed in foster care compared to those youth who remain in their home of origin or are placed informally with kin (termed “in-home” hereafter). While organizations such as the American Academy of Pediatrics,¹⁶ the Child Welfare League of America¹⁷ and the American Academy of Child and Adolescent Psychiatry¹⁷ have affirmed the need for conducting comprehensive evaluations for all youth entering foster care, experts have advocated for evaluations for all children undergoing investigation for abuse and neglect, regardless of whether or not they are placed in foster care.¹²

The present analysis uses data from the National Survey of Child and Adolescent Well-Being (NSCAW), the first national probability study of 5504 youth referred to child welfare, to obtain

baseline estimates of nine health-risk behaviors in four broad domains - sexuality, depression/suicidality, tobacco and substance use, and delinquency. Because the cohort was targeted toward youth age 15 or less at investigation, this sample permits examination of health-risk behaviors in early adolescence among youth investigated for abuse and neglect who remain in-home following investigation or are placed in foster care. NSCAW also allows comparison of rates of risk behaviors across a range of risk and protective factors in the literature affecting developmental outcomes in the general youth population.¹⁸ Three studies have examined specific risk behaviors in the NSCAW sample (e.g. delinquency,^{19, 20} depression and substance use)²¹ but have not investigated health-risk behaviors in a more comprehensive manner. In addition, no comparisons were made to reports of health-risk behaviors in similar types of surveys completed with youth in the general population. Among the national studies examining risk behaviors in youth in the late 1990's (i.e. the Youth Risk Behavior Survey, the Monitoring the Future Survey, and the National Longitudinal Study of Adolescent Health (ADD Health)),^{7, 8, 22} ADD Health was identified as the national study with the most similar measures to the NSCAW study; comparisons are drawn in the Discussion where possible.

METHODS

Study Design

The NSCAW study examined the characteristics, needs, and outcomes of children and families who underwent investigation for alleged abuse and neglect. For the current analysis, we chose a cross-sectional approach, investigating risk behaviors and risk and protective factors at Wave 1, approximately five months following maltreatment investigation.

Sample

NSCAW used a stratified two-stage cluster sampling strategy to select 100 primary sampling units (PSU) from a national sampling frame, with the probability of PSU selection proportional to the size of the PSU's service population. Of the 100 PSUs identified, the NSCAW study ultimately collected child-level data in 92 PSUs representing 96 counties in 36 states. In participating counties, children were randomly selected from among the population of children ages birth to 15 years, with an investigation opened during a 15-month period beginning October 1999. Information regarding the sampling design and recruitment process are available on-line. (http://www.acf.hhs.gov/programs/opre/abuse_neglect/nscaw.html). This research reports on a subset of youth (n=993/5501) who were at least eleven years of age at the Wave 1 interview.

Procedures

Field representatives conducted face-to-face interviews with youth, biological parents, caregivers, and caseworkers at four waves (baseline, 12 months, 18 months, and 36 months). Wave 1 interviews with child welfare workers and caregivers were completed an average of 5.1 months (SD= 2.7) and 5.5 months (SD=2.8), respectively, after investigation.

Measures

Health-risk behaviors—These behaviors were operationalized as nine dichotomous risk behavior variables: sexual behaviors (sexual relations; getting someone pregnant/becoming pregnant), emotional distress (depression, suicidality), substance use (tobacco, alcohol, marijuana use), and delinquency (fighting, carrying a weapon).

Risk and protective factors—Considerable theoretical and empirical work has shown that biological, psychological, and social factors at multiple levels (individual, family, school, peer group, and community) contribute to health-risk behaviors in the general youth population.

For these analyses, we examined: youth demographics (age, gender, ethnicity), placement-related variables (maltreatment type(s), placement at Wave 1), youth cognitive and behavioral functioning, and association with deviant peers. Caregiver factors included caregiver education and parental risk assessment. Protective factors included caregiver monitoring, youth religiosity, school engagement, and future expectations (see Table 1 for a detailed description of variables).

Analyses

Initial analyses aimed to determine the prevalence of nine health-risk behaviors across four domains. Bivariate analyses examined the relationship between each of the risk and protective factors and health-risk behaviors. Age was categorized into three groups (age 11, ages 12–14, and age 15) to facilitate broad comparisons with the 1997 ADD Health study results (see Discussion). Next, we created four combined variables from the nine risk behavior variables: (1) any sexual behaviors, (2) any depression, (3) any delinquency, and (4) any substance use. Based on these, we created clusters of youth based on different types of risk behaviors to investigate patterns of co-occurring behaviors. In preparation for modeling, we looked at the 187 youth who were missing any data. Only one variable, caregiver education, was significant and this was at a level of $p = 0.05$. Finally, we computed a cumulative risk score based on engagement in health-risk behaviors (range 0–9), which served as the outcome variable in the subsequent multivariate analysis. We used Poisson regression, a statistical method appropriate when rates of events – such as the number of health-risk behaviors – vary across observations and show a skewed distribution.²³ Coefficients are reported as rate ratios and refer to the individual variables' rate ratios after adjusting for all other covariates. Sample weights (Wave 1) and the two-stage cluster sample design were accounted for using the statistical software SUDAAN (version 10.0).²⁴ All variables were entered simultaneously into the multivariate model.

RESULTS

Sample Characteristics

The majority of youth were between the ages of 12 and 14 (71.5%) with a mean age of 12.67 ($se = 0.07$) (see Table 2). Over half of the sample was female (57.4%). In terms of ethnicity of the respondents, half were Caucasian (50.9%), 27.1% were African American, and 16.6% were Hispanic. The most common maltreatment types were neglect (49.8%) and physical abuse (41.5%). The majority (87.8%) were living in-home; only 12.2% were in foster care at Wave 1. About half the youth fell into the clinical range for behavioral functioning, and almost one-fifth scored in the severe range for cognitive functioning. Close to three-quarter of caregivers (71.0%) had at least a high school diploma. Two-thirds of youth (62.3%) reported “hanging out with deviant peers.” Parental risk assessments conducted by caseworkers indicate an average risk rate level of 0.3 with a range from 0.047 to 2.00, which means that families presented with 6–7 risk factors on average. Regarding protective factors, a score of 4.1 on caregiver monitoring indicated that youth in the sample reported being monitored “pretty often.” Youth attended religious services or were engaged in spiritual activities during the past year on average once or twice a month. Youth also reported to be “often” engaged in school activities. Finally, an average score of 4 on the future expectation scale indicated that youth in this sample felt “pretty likely” to have positive life experiences, (e.g. complete high school, have a family, or obtain a good job).

Prevalence and Patterns of Risk-Taking Behaviors

Almost half of the sample indicated at least one health-risk behavior (46.3%). At Wave 1, 25.5% of youth had engaged in sexual intercourse (see Table 2) and 4.5% reported having become pregnant or gotten someone pregnant. Thirteen percent of youth met criteria for

depression and 7.9% reported “suicidality.” About one fifth (19.5%) reported smoking, 16.1% reported drinking alcohol, and 8.2% reported smoking marijuana within the last 30 days. About 13.0% of youth reported getting into fights and 6.6% reported carrying a weapon within the last six months.

On bivariate analyses, the nine health-risk behaviors were predicted by different risk and protective factors, with a few variables fairly consistently associated with elevated rates of multiple health-risk behaviors, such as age, having deviant peers, and lower degrees of caregiver monitoring (see Table 2).

No dominant pattern of health-risk behaviors was identified (see Table 3); the most common pattern involved sexual risk behaviors (8.7%) followed by substance use (7.9%).

Multivariate Findings

Poisson regression results indicated that youth ages 12–14 years demonstrated a risk rate 0.57 times that of older youth (95% CI 0.39, 0.84) (see Table 4). Interestingly, males demonstrated a risk rate 0.63 times that of females (95% CI 0.47, 0.86). Youth with histories of physical abuse had a risk rate 1.33 times greater than youth without a history of physical abuse (95% CI 1.03, 1.72). Those who reported “hanging out” with deviant peers had a risk rate 1.67 times greater than those who did not (95% CI 1.19, 2.36). Increased caregiver monitoring lowered the rate by 0.76 times (95% CI 0.65, 0.88); similarly, a higher level of school engagement reduced the rate by 0.56 times (95% CI 0.43, 0.72).

DISCUSSION

This research contributes to the existing literature by establishing baseline rates of health-risk behaviors and associated risk and protective factors in the first national probability sample of early adolescent youth involved with child welfare. Findings should be interpreted within the context of the study’s reliance on youth self-report. Specifically, validity and reliability of data obtained from youth involved in child welfare about their engagement in health-risk behaviors cannot be assured. Fear of loss of privacy, concerns about repercussions, and issues of social desirability may undermine accurate reporting on sensitive personal behaviors in youth in the general population.^{25, 26} Such concerns may be amplified for youth in child welfare who may have experienced first-hand that the revelation of personal events can have significant consequences, namely intervention by a public institution in the form of continued monitoring and supervision, and in some cases removal from their biological family. These methodological concerns warrant further research within this population.

In addition, public health is concerned with identifying populations with heightened risk for poor outcomes. Yet, comparison of our findings with rates reported for large samples of youths in the general U.S. population is complicated by several factors, including differences in age, measures used, and populations from which samples are drawn (usually youth identified through schools). To provide a benchmark for the data presented here, we researched available national studies examining risk behaviors in youth in the late 1990’s including the Youth Risk Behavior Survey, the Monitoring the Future Survey, and the National Longitudinal Study of Adolescent Health (ADD Health).^{7, 8, 22} Measures used in the NSCAW study most closely paralleled those in the ADD Health Study. Below we provide data from the ADD Health study as a way of contextualizing our data rather than as a direct comparison.

Overall, our findings indicate that a little under half of the sample engaged in one or more health-risk behaviors. This finding converges with prior work, which found that not all maltreated youth engage in such behaviors.²⁷ However, rates of health-risk behaviors for this sample appear to be elevated in most areas when contextualized against the ADD Health study.

Specifically, in ADD Health, 17% of youth in grades 7 and 8 (often ages 12 through 14) reported having sexual intercourse; pregnancy history was only calculated for sexually active females at least 15 years of age. In our sample, 28.5% of 12–14 years olds had had intercourse, and approximately 4.3% in this group and 18.7% of 15 year olds reported becoming pregnant or getting someone pregnant. With regard to depression, ADD Health reported rates of emotional distress at 17.7% for the previous week and/or year and more than one suicide ideation or attempt in 3.7% of middle school youth. We found clinically significant rates of depression for 15.6% of youth with suicidal ideation or harm among 7.4% of youth aged 12–14. The rate of violence perpetration in ADD Health middle schoolers was 9.2%. By comparison, 13.4% of NSCAW youths, ages 12–14, reported getting into fights, and 7.0% of youths indicated having carried a weapon. It is more difficult to compare rates of tobacco and substance use, given differences in measures across the two studies. In ADD Health, 3.2% of middle schoolers had smoked more than 6 cigarettes per day, 7.3% had drunk alcohol or beer more than two days in the preceding month, and 6.9% had smoked marijuana at least 1 time in the past month. In our sample, 23.0% in the 12–14 age group smoked cigarettes at least once during the past month; 16.6% reported drinking at least one day during the past month, and 8.7% smoked marijuana at least one time during the last thirty days.

Implications

Similar to findings in Grogan-Kaylor and colleagues' ¹⁹ analyses of risk and protective factors specific to delinquency in NSCAW, our more comprehensive examination reinforces the role of preventive services when youth first enter child welfare. Our findings also highlight the need for targeted prevention and interventions efforts for youth interacting with the child welfare system and for those youth identified with active health-risk behaviors.

In addition, our results suggest that all youth in child welfare should be targeted for screening regarding health risk behaviors, no matter what their placement status. Our findings caution that assumptions about a youth's engagement in health-risk behaviors cannot be made based on their placement status alone. The lack of statistically significant differences between the youth remaining in-home and those in foster care is somewhat surprising. However, recent work has shown that foster care placement has less impact on measures of child well-being than previously suggested, when analytic methods appropriately account for selection bias. ²⁸ At a minimum, all youth ages 11 and up undergoing an investigation for abuse and neglect should be assessed for health-risk behaviors using a standardized assessment approach such as the Guidelines for Adolescent Preventive Services (GAPS).

Factors related to higher rates of health-risk behaviors paralleled those in the general child population, including older age, caregiver education less than high school, deviant peers, limited caregiver monitoring, and poor school engagement. ^{29–33} Much of the literature on risk behaviors in the general population has focused on males; however, girls are at high risk for depression post-puberty and are beginning to surpass boys with respect to substance use. ^{34, 35} Wall and Barth's analyses of delinquent behavior among subjects 11 to 15 years in the NSCAW sample also suggested that female gender was predictive of aggression and delinquency on multivariate modeling. ²⁰ The unique vulnerabilities of girls in child welfare deserve further exploration. The central role of abuse in predicting health-risk behaviors has been previously documented in retrospective and prospective clinical populations. ³⁶ but also address the vulnerability of this population.

Our findings underscore both the need to reinforce protective factors and diminish risk factors. The social development model, which integrates knowledge about the effect of empirical predictors, or risk factors, and protective factors in the development of health-risk behavior ¹⁸ suggests the multi-level contributions to health risk behaviors (e.g. individual, family, school, peer group and community). These youth, in particular, need concentrated attention at

all of these levels to encourage health-promoting behaviors. It has also been suggested that prevention efforts may need to target multiple behaviors concurrently, given the strong correlation among different risk behaviors and their predictors.³⁷ Even in this young sample where engagement in health-risk behaviors is emerging, more than one-fifth of youth reported engaging in multiple types of health-risk behaviors.

Last, given overall dismal outcomes of youth who emancipate from foster care, much more needs to be learned about specific factors that put subgroups of youth at risk. Our sample is younger than samples used in previous foster youth health-risk studies.^{14, 15, 38} A recent study using NSCAW data, investigating sexual risk behaviors at Wave 4 (36-month) when youth were 3 years older, found much higher rates of pregnancy and engagement in sexual intercourse compared to rates reported at Wave 1.³⁹ While this study identified independent variables associated with risky behaviors, we were unable to examine causality because of its cross-sectional design. Future studies should investigate developmental trajectories of engagement in health-risk behaviors and to determine whether other developmental or time-dependent factors beyond age elevate risk for subgroups of youth, such as youth who remain in foster care for extended periods of time or experience frequent placement changes.

Summary

While a recent report from the AAP Committee on Child Abuse and Neglect and Section on Adoption and Foster Care concurs that youth with histories of maltreatment are at high risk for health-risk behaviors, current policy statements by professional and advocacy organizations regarding comprehensive evaluations for youth in foster care do not specifically highlight the assessment of risk behaviors as part of this evaluation.⁴⁰ This study affirms the critical role of screening, prevention, and treatment of health-risk behaviors in these youth, as well as youth who undergo investigation but remain in their home of origin or are placed informally with kin.

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Table 1
Health-Risk Behaviors Reported and Independent Variables Examined in a Subsample (N=993) of Youth ages 11 and older in the NSCAW Study

Variables	Measure	Respondent	Description of Measure or Item
Sexual Behaviors			
Sexual Relations	LongSCAN	Youth	Single item: Have you ever had sexual intercourse?
Got Someone Pregnant/or Pregnant	LongSCAN	Youth	Single item: Have you ever been pregnant/gotten someone pregnant?
Emotional Distress			
Depression	Children's Depression Inventory	Youth	A 27-item rating instrument of depressive symptoms with cutoff T-score (65) for determining clinically significant depression.
Suicidality	Youth Self-Report	Youth	Single item: I have deliberately tried to hurt or kill myself.
Substance Use			
Tobacco Use	Drug Free School Community Act Outcome Study Questions	Youth	Single item: In the last 30 days, on how many days did you smoke a cigarette?
Alcohol Use	Drug Free School Community Act Outcome Study Questions	Youth	Single item: In the last 30 days, on how many days did you drink an alcoholic beverage?
Marijuana Use	Drug Free School Community Act Outcome Study Questions	Youth	Single item: In the last 30 days, on how many days did you use marijuana or hashish?
Delinquency			
Fight	Modified Self Report of Delinquency	Youth	Single item: In the past 6 months, have you hit someone with the idea of hurting them?
Carry a weapon	Modified Self Report of Delinquency	Youth	Single item: In the past 6 months, have you carried a hidden weapon?
Independent Variables			
Youth Demographics	Not applicable	Caseworker report from case records	Age, gender, race/ethnicity.
Youth Maltreatment	Modified Maltreatment Classification Scale	Caseworker report from case records	Indicator (i.e. not mutually exclusive) variables for the following categories: neglect/abandonment, physical abuse, sexual abuse, emotional abuse.
Youth Placement	Not applicable	Caseworker report from case records	Derived variable of placement disposition following investigation: remain in-home of origin or removal to out-of-home care. Children legally placed with kin were labeled as "out-of-home care".
Youth Behavioral Functioning	Child Behavior Checklist (CBCL), Social Skills Rating System, Parent & Teacher Forms (SSRS – P/T), Vineland Adaptive Behavior Scale – Screener (VABS)	Caregiver and Teacher	Derived variable based on the CBCL, SSRS-P/T, and the VABS; the lowest score was used to determine severity; social skills were coded as severely impaired if above the clinical cut point on the CBCL (≥ 64), or 2 standard deviations below the mean on the SSRS or the VABS.
Youth Cognitive Functioning	Kaufman Brief Intelligence Test (K-BIT); Mini-Battery of Achievement (MBA); Preschool Language Scale 3	Youth	Derived variable based on the lowest K-BIT, PLS 3 and MBA score. K-BIT: standardized assessment tool

Variables	Measure	Respondent	Description of Measure or Item
Caregiver Education	Not applicable	Caregiver	compromised of two subsets; vocabulary (expressive vocabulary and definitions) & matrices (ability to perceive relationships and complete analogies). MBA: Standardized test of academic achievement; two subsets including reading and mathematics. PLS 3: Standardized assessment tool comprised of expressive communication and auditory comprehension. A score less than 70 on any of these tools was coded as "severe cognitive impairment".
Deviant Peers	Youth Self Report, CBCL	Youth & Caregiver	
Parental Risk Assessment	Derived Measure for NSCAW	Caseworker report from case records	Derived variable of caseworker assessment of family risk factors, including caregiver substance abuse, mental and physical health problems, arrests or detentions, parenting style, family stress, and social support.
Caregiver Monitoring	Parental Monitoring Scale	Youth	6 items (5-point Likert scale) examining the extent to which the primary caretaker monitors youth behavior.
Youth Religiosity	LongSCAN	Youth	2-items (4-point Likert scale) regarding importance of spirituality & religious attendance.
School Engagement	Drug Free School Community Act Outcome Study Questions	Youth	11-items (4-point Likert scale) addressing enjoyment of school, completion of assignments and homework, relationships with teachers and peers.
Future Expectations	Adolescent Health Survey	Youth	8-items (6-point Likert scale) regarding what youth thinks will happen in the future (e.g. live to 35, marry, graduate from high school, have a good job, have a family, have a child before age 18).

Table 2

Prevalence of Health-Risk Behaviors in Youth 11 Years or Greater in the NSCAW Sample (N=993) ^{a,b}

Risky Behaviors	Sexual Relations		Got someone Pregnant/or Pregnant		Depression		Suicidality		Tobacco Use		Alcohol Use		Marijuana Use		Fight		Carry Weapon		Total	
	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %	N %
Categorical Variables																				
Youth Age																				
11	19(5.3)	2(0.7)	13(4.2)	14(7.7)	11(2.0)	15(10.9)	7(1.8)	15(7.7)	6(0.7)	231(22.1)										
12-14	177(28.5)	31(4.3)	77(15.6)	44(7.4)	143(23.0)	98(16.6)	68(8.7)	102(13.4)	55(7.0)	686(71.5)										
15	43(58.5)	12(18.7)	10(16.8)	6(14.4)	29(39.4)	18(27.6)	17(23.3)	16(22.2)	15(21.6)	76(6.4)										
Youth Gender																				
Male	86(24.9)	11(3.8)	26(7.8)	21(6.7)	69(18.1)	53(15.5)	37(7.7)	54(15.2)	38(8.9)	417(42.6)										
Female	153(25.9)	34(4.9)	74(17.1)	43(8.8)	114(20.5)	78(16.5)	55(8.5)	79(11.0)	38(5.0)	576(57.4)										
Youth Race/Ethnicity																				
African American	85(30.7)	15(3.1)	25(2.6)	16(7.9)	34(9.4)	37(13.1)	25(8.0)	38(11.6)	21(5.1)	295(27.1)										
Caucasian	112(26.4)	21(5.6)	49(16.6)	28(8.2)	110(26.5)	64(15.0)	43(7.4)	63(14.7)	36(8.0)	460(50.9)										
Hispanic	22(17.8)	4(3.7)	17(19.4)	10(6.3)	19(14.6)	20(27.7)	13(7.6)	16(7.9)	10(5.8)	149(16.6)										
Other	20(12.5)	5(3.0)	9(14.5)	10(10.1)	20(19.1)	10(7.7)	11(17.4)	16(15.8)	9(4.2)	89(5.4)										
Youth Maltreatment																				
Neglect	113(21.2)	20(3.6)	44(9.2)	33(7.1)	82(18.1)	64(11.9)	45(8.3)	72(10.7)	36(5.1)	505(49.8)										
Emotional Abuse	22(10.4)*	4(0.9)**	17(16.2)	11(8.5)	21(9.8)*	14(3.7)***	10(5.2)	22(12.5)	8(2.4)*	148(11.9)										
Physical Abuse	90(32.4)	15(6.1)	38(17.2)	19(7.9)	79(24.8)	55(19.5)	39(9.1)	58(16.1)	32(9.6)	360(41.5)										
Sexual Abuse	79(50.8)**	18(9.5)	33(14.4)	19(9.1)	45(19.1)	24(14.5)	19(4.4)	20(9.8)	15(11.2)	213(15.3)										
Youth Placement																				
In-Home	150(25.2)	32(4.8)	63(12.6)	41(7.7)	134(19.6)	98(16.4)	61(8.0)	90(11.4)	50(6.1)	720(87.8)										
Out-of-Home	89(27.6)	13(2.1)	37(16.6)	23(9.2)	49(18.7)	33(13.2)	31(8.9)	43(23.5)	26(10.2)	273(12.2)										
Youth Behavioral Functioning																				
Severe	139(32.5)*	30(6.8)	67(16.7)	45(11.4)	117(21.7)	78(16.8)	57(10.6)	80(13.8)	45(6.3)	480(48.9)										
Moderate/Normal	100(18.7)	15(2.3)	33(9.7)	19(4.5)	66(17.3)	53(15.3)	35(5.8)	53(11.8)	31(7.0)	513(51.1)										
Youth Cognitive Functioning																				
Severe	52(24.6)	18(8.6)	33(20.1)	12(10.3)	34(19.6)	33(20.7)	21(15.0)	18(13.0)	16(8.9)	197(18.8)										
Moderate/Normal	187(26.0)	27(3.6)	67(11.6)	51(6.9)	149(19.7)	98(15.3)	71(6.7)	114(12.9)	60(6.2)	796(81.2)										

Risky Behaviors	Sexual Relations	Got someone Pregnant/or Pregnant*	Depression	Suicidality	Tobacco Use	Alcohol Use	Marijuana Use	Fight	Carry Weapon	Total
Caregiver Education										
< High School (HS)	50(27.8)	15(10.7)	31(19.6)	13(8.6)	42(23.4)	31(20.7)	20(12.4)	25(12.0)	14(7.2)	247(29.0)
HS Diploma/Equivalent	100(19.1)	21(2.7)	33(8.2)	28(9.8)	81(17.4)	54(14.2)	37(6.4)	59(15.1)	40(9.3)	427(39.5)
> High School (HS)	89(31.1)	9(1.0)	36(13.4)	23(4.8)	60(18.3)	46(14.1)	35(6.5)	49(10.8)	22(2.8)	319(31.5)
Deviant Peers	***		**	**	***		**	**	***	
Yes	180(33.1)	32(5.9)	78(17.3)	54(11.9)	148(26.7)	96(17.0)	76(11.4)	101(17.0)	61(10.0)	605(62.3)
No	59(13.2)	13(2.1)	22(6.2)	10(1.3)	35(7.3)	35(14.4)	16(3.0)	32(5.9)	15(1.2)	388(37.7)
Continuous Variables n (mean)										
Parental Risk Assessment	239(0.3)	45(0.3)	100(0.3)	64(0.3)	183(0.3)	131(0.3)	92(0.3)*	133(0.3)	76(0.3)	993(0.3)
Caregiver Monitoring (1–5)	239(3.7)***	45(3.4)***	100(3.7)**	64(3.5)**	183(3.7)**	131(3.8)*	92(3.3)***	133(3.8)*	76(3.6)	993(4.1)
Youth Religiosity (1–4)	239(2.8)*	45(3.1)	100(2.8)*	64(2.9)	183(2.9)	131(2.9)*	92(3.0)	133(3.1)	76(3.0)	993(3.1)
School Engagement (1–4)	239(2.8)**	45(2.8)	100(2.6)***	64(2.7)	183(2.7)***	131(2.8)**	92(2.7)*	133(2.8)*	76(2.6)*	993(3.0)
Future Expectations (1–6)	239(3.8)*	45(3.4)**	100(3.5)**	64(3.5)*	183(3.8)	131(3.8)	92(3.5)*	133(3.7)	76(3.5)*	993(4.0)
Total	239(25.5)	45(4.5)	100(13.1)	64(7.9)	183(19.5)	131(16.1)	92(8.2)	133(12.8)	76(6.6)	100
National Population N	122294	21434	65707	39528	92840	76724	39724	61491	32218	100

^a See table 1 for complete description of each variable; note all percentages are weighted to account for the study's sampling plan and raw numbers will not always correspond with percentages, given the weighted nature of the data.

^b Significant at $p < .05$.

** Significant at $p < 0.01$.

*** Significant at $p < 0.001$; indicated above rows if categorical variable or next to percentile if continuous or dichotomous variable.

Table 3

Patterns of Health-Risk Behaviors (N=993)

Risk-Taking Behaviors Endorsed	Weighted Percent and Frequency in Sample in Descending Order N (%) <i>a</i>
No risk taking behaviors	527 (53.7)
Sexual behavior only	78 (8.7)
Substance use only	69 (7.9)
Depression only	55 (5.6)
Substance use, sexual, and delinquency	43 (4.3)
Delinquency only	55 (3.2)
Substance use, sexual, and depression	17 (3.1)
Substance use and sexual	49 (2.6)
All risk taking behaviors	15 (2.2)
Substance use and depression	13 (1.9)
Substance use and delinquency	22 (1.7)
Sexual behavior and depression	12 (1.6)
All other risk taking behaviors (weighted percents less than 1.5)	38 (3.7)

^aNote all percentages are weighted to account for the study's sampling plan and raw numbers will not always correspond with percentages, given the weighted nature of the data.

Table 4

Multivariate Poisson Regression of Categorical and Continuous Variables on Number of Health-Risk Behaviors Among Early Adolescents in Child Welfare(N=993)^a

Variables	Rate Estimate	95% Confidence Interval
Categorical Variables		
Child Age ***		
11 ***	0.25	0.13, 0.48
12-14 **	0.57	0.39, 0.84
15 ^b	--	--
Gender **		
Male	0.63	0.47, 0.86
Female ^b	--	--
Race/Ethnicity		
Black/Non-Hispanic	1.04	0.74, 1.47
Hispanic	1.08	0.67, 1.73
Other	1.03	0.62, 1.71
Caucasian ^b	--	--
Maltreatment History (Yes/No)		
Neglect	0.97	0.69, 1.37
Emotional Abuse	0.77	0.52, 1.12
Physical Abuse *	1.33	1.03, 1.72
Sexual Abuse	1.37	0.95, 1.98
Child Placement		
In-Home	0.73	0.47, 1.13
Out-of-Home ^b	--	--
Youth Behavioral Functioning		
Severe	0.93	0.67, 1.28
Moderate/Normal ^b 1	--	--
Youth Cognitive Functioning		
Severe ^b	0.96	0.69, 1.33
Moderate/Normal	--	--
Caregiver Education		
< High School	1.22	0.83, 1.80
HS Diploma/Equivalent	0.83	0.55, 1.24
> High School ^b	--	--
Deviant Peers ** (Yes/No)	1.67	1.19, 2.36
Continuous Variables		
Caregiver Risk Assessment	0.91	0.46, 1.83
Caregiver Monitoring ***	0.76	0.65, 0.88
School Engagement ***	0.56	0.43, 0.72

Variables	Rate Estimate	95% Confidence Interval
Religiosity	0.90	0.78, 1.04
Future Expectations	0.82	0.67, 1.00

^aSignificant at $p < .05$.

** Significant at $p < 0.01$.

*** Significant at $p < 0.001$; indicated above rows when categorical variable with 3 or more values examined as a group or next to variable name if comparison between categories, dichotomous variable, or continuous variable.

^bIndicates referent group.