# *Chapter Ten*

## Substance Abuse, Child Welfare, and Juvenile Justice

# Onset of Substance Abuse among Youth Served in Systems of Care

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*Author's Note: The original title of the presentation was* Can Family Strengths Reduce Risk of Substance Abuse among Youth with SED?

## Introduction

Most research suggests that psychiatric problems tend to emerge before substance abuse disorders (e.g., Kandel et al., 1997; Kessler et al., 1996; Christie et al., 1988). However, much remains to be learned about the course of development of substance abuse disorders in the context of an existing psychiatric diagnosis. Kessler and colleagues (1996) noted that temporal priority of one or the other disorder does not imply causality. They suggest that "…[It] is also possible that some third variable is a common cause of co-occurring disorders and that the temporal priority between these disorders is due to differences in the typical ages of manifestation resulting from the common cause (p. 28)." This view is supported by research that indicates that adverse life experiences are related to psychological distress (Ge et al., 1994) and onset of substance use (Turner & Lloyd, 2003).

Youth with emotional and behavioral disorders are considerably more likely to use substances and to develop substance abuse disorders (Rohde, Lewinsohn, & Seeley, 1996; U.S.D.H.H.S., 1999). The risk of substance use problems increases with age (Greenbaum et al., 1991). In community populations, positive parenting protects youth from substance abuse and can mediate peer and community influences (Brody & Ge, 2001; Brook et al., 2003). Children of parents with drug dependence are at greater risk of drug-related disorders (Chassin, Pitts, & Prost, 2002; Obot, Wagner, & Anthony, 2000). Research suggests that this is strongly related to a shared physiological sensitivity (Merikangas et al., 1998; Bierut et al., 1998). However, positive family cohesion reduces that risk (Hoffman & Cerbone, 2002).

This study is a preliminary effort to understand the influence of family and child variables in the development of substance use problems among youth with emotional and behavioral disorders.

## Method

***Sample.*** The youth (ages 11 to 18) in this sample were receiving mental health services in systems-of-care sites funded by the Comprehensive Community Mental Health Services for Children and Their Families Program (Holden et al., 2003). Data for this study are from the first 1,375 youth who were 11 years or older when they entered the national evaluation of the program. Descriptive statistics on the samples included in the analyses are reported in Table 1.

***Data.*** Data used in this study were collected at baseline and every six months up to 18 months. This study examined the variables that predicted onset of substance use among this sample. The two outcome variables of interest were first alcohol use and first use of illicit substances (e.g., marijuana, cocaine, inhalants, hallucinogens).

- *Child Behavior Checklist (CBCL).* The total scale score was used in this study as a measure of severity of child psychiatric symptomatology (Achenbach, 1991).
- *Behavioral and Emotional Rating Scale (BERS)* was included as a measure of child strengths (Epstein, Hertzog, & Reid, 2001).
- *Caregiver Strain Questionnaire (CGSQ).* The CGSQ global strain score assessed the extent to which family members are negatively affected by the special demands associated with caring for a child with behavioral health problems (Brannan, Heflinger, & Bickman, 1997).
- *Family Resource Scale (FRS).* The FRS was used to assess the caregiver's perception of the adequacy of the family's resources, e.g., food, shelter, money for bills (Dunst & Leet, 1987).

- *Family Assessment Device (FAD).* The FAD was included as a measure of general family functioning (Epstein, Baldwin & Bishop, 1983).
- *Child and Family Risk Factors.* Child history of physical or sexual abuse was included as a predictor variable. We also included whether the child had a biological relative with a history of (a) substance abuse or (b) substance abuse treatment.
- *Demographic characteristics.* Demographic variables included in this study were youth age, gender and race/ethnicity.

***Analyses.*** We conducted Cox regression analysis to examine the child and family characteristics associated with onset of substance use among youth in treatment for emotional and behavioral disorders. Cox regression is an approach to event history analyses (Landau, 2002; Luke & Homan, 1998) that accounts for right censoring—it allows the inclusion of data from participants who were lost from a longitudinal study or who did not experience the event of interest over the course of the study.

Analyses were conducted separately for onset of use of alcohol and illicit substances. First, we completed forward and backward stepwise regression analysis including variables of theoretical interest and identified those that were likely predictors (i.e., those that approached significance at $p < .15$). The important variables were then entered simultaneously to arrive at the final solution, using the chi-square statistic to assess goodness of fit. After eliminating outliers, we ran the final model.

**Table 1**
**Descriptive Statistics on Samples Included in Analyses**

| | *Analysis* | |
|---|---|---|
| *Variable* | *Alcohol (N = 503)* | *Other Drugs (N = 656)* |
| Mean Age (*SD*) | 13 (1.74) | 13 (1.69) |
| 11-14 *N* (%) | 394 (78) | 512 (78) |
| 15-18 *N* (%) | 109 (22) | 144 (22) |
| Males (%) | 346 (69) | 454 (69) |
| Race | | |
| White *N* (%) | 278 (55) | 370 (56) |
| African-American *N* (%) | 131 (26) | 164 (25) |
| Other *N* (%) | 94 (19) | 122 (19) |
| Hispanic ethnicity *N* (%) | 53 (11) | 62 (9) |
| Risk factors – *N* (%) | | |
| Bio relative history of substance abuse | 331 (66) | 413 (63) |
| Bio parent received substance abuse treatment | 157 (31) | 190 (29) |
| Child was physically abused | 127 (25) | 182 (28) |
| Child was sexually abused | 108 (21) | 140 (21) |
| BERS Strength Quotient *M* (*SD*) | 85.44 (16.17) | 85.97 (16.31) |
| CBCL Total Problems *M* (SD) | 71.50 (9.76) | 70.74 (10.22) |
| CAFAS Total Role Functioning *M* (*SD*) | 25.72 (7.06) | 25.34 (7.54) |
| Global CGSQ *M* (*SD*) | 9.06 (2.52) | 9.01 (2.54) |
| FAD General Functioning *M* (*SD*) | 2.83 (.49) | 2.83 (.48) |
| FRS Average *M* (*SD*) | 3.48 (.71) | 3.51 (.71) |

*Note*: 427 youth were included in both analyses.

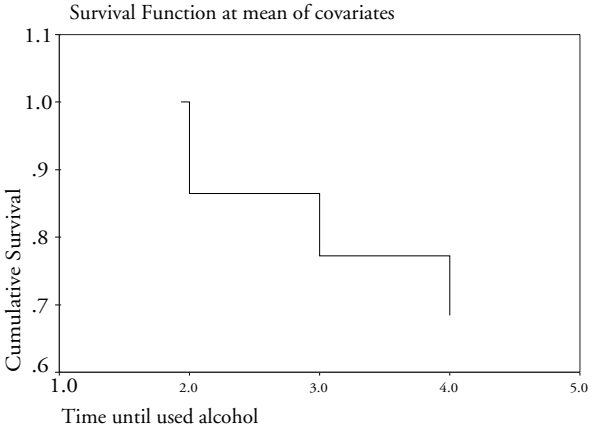
## Results

***Onset of alcohol use findings.*** Of the 1,375 youth who were old enough to participate in the study, 1,101 had reported at baseline never having used alcohol. Of those, 415 (38%) were dropped because they reported having used another substance prior to entering the study. An additional 183 (17%) were dropped because they had missing data. Two youth were excluded because they were outliers, leaving 501 in the alcohol use analyses. Of those, 119 reported some alcohol use in subsequent follow-up reports.

The chi-square statistic revealed that the Cox regression model significantly predicted time until onset of alcohol use, $\chi^2(655, 3) = 22.5$, $p < .001$ (see Figure 1). Figure 1 depicts the survival curve for the mean of the significant covariates. No one in the sample had tried alcohol at baseline, 86% had not tried alcohol by 6 months, 77% had not tried alcohol by 12 months, and 68% had not tried alcohol by 18 months. Further observation of the covariates revealed that three variables predicted onset of alcohol use. A year increase in youths' age elevated the relative risk of first time alcohol use by 30%. Having a biological relative with a substance abuse history increased the relative risk of first time alcohol use by 51%. A unit increase in caregiver strain was associated with a 9% increase in the relative risk of the onset of alcohol use.

***Onset of use of illicit substances findings.*** Of the 1,375 youth in the original sample, 1,221 reported no previous illicit drug use. Of those, 475 (35%) were excluded from analyses because they reported previous alcohol use. Seven percent of youth ($N = 90$) of the original sample were dropped because of missing data and one was eliminated as an outlier. Hence, 655 youth with no history of substance use were included in the onset of illicit drug use analyses. Of those, 115 reported illicit drug use in later assessments.

**Figure 1**
**Survival Curve for Time Until Alcohol Use**



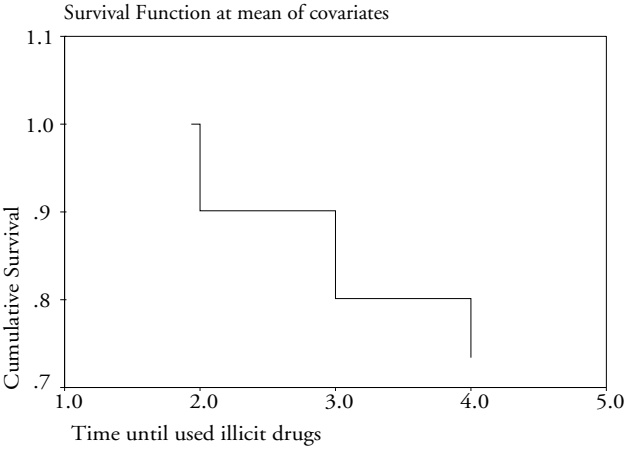

Predictors of Onset of Alcohol Use

| | β | SE | Exp (β) | *p* |
|---|---|---|---|---|
| Child age | .081 | .04 | 1.085 | .030 |
| Substance abuse in biological relative | .413 | .21 | 1.512 | .048 |
| CGSQ global strain | .263 | .05 | 1.301 | <.001 |

$N = 501$ (Event = 118, Censored = 313), -2 Log Likelihood = 1,350, $\chi^2(501, 3) = 36.9$, $p < .001$

The chi-square statistic revealed that the Cox regression model significantly predicted time until onset of illicit drug use, $\chi^2(501, 2) = 36.9$, $p < .001$ (see Figure 2). Figure 2 depicts the survival curve for the mean of the significant covariates; no one in the sample had tried illicit drugs at baseline, 90% had not tried illicit drugs by 6 months, 80% had not tried illicit drugs by 12 months, and 73% had not tried illicit drugs by 18 months. Among the child and family variables included in the analyses, only CBCL total problems and child age significantly predicted onset of illicit drug use. For every year increase in age, youth were 23% more likely to use some illicit drug. A unit increase in symptoms was associated with a 3% increase in the relative risk of illicit substance use.

**Figure 2**
**Survival Curve for Time Until Illicit Drug Use**




Predictors of Onset of Illicit Drug Use

| | β | SE | Exp (β) | *p* |
|---|---|---|---|---|
| Child age | .208 | .05 | 1.232 | <.001 |
| CBCL total problem score | .027 | .01 | 1.028 | .007 |

*N* = 655 (Event = 114, Censored = 514), -2 Log Likelihood = 1,359,
$\chi^2(655, 2) = 22.5$, $p < .001$

## *Discussion*

Getting older was associated with increased risk of first-time alcohol and illicit drug use. This finding is consistent with findings from previous research on samples of youth in mental health treatment (e.g., Greenbaum et al., 1991). Youth psychiatric symptomatology was also associated with increased likelihood of onset of illicit drug use. A history of substance use among biological relatives was a significant predictor of onset of alcohol use. This is consistent with previous research that found that family members may share a physiological sensitivity that predisposes them to substance abuse disorders (Merikangas et al., 1998; Bierut et al, 1998). Finally, the more strain a caregiver reported, the more likely the youth would initiate alcohol use.

It is possible that the other family variables included in the model were not precise enough to impact substance use. Family variables that have been found to protect youth from substance use disorders in other studies such as intra-family communication, family cohesion, and parenting practices were not available in this dataset. In addition, the youth included in this study were already in treatment for emotional and behavioral disorders.

***Limitations.*** Several limitations to this study warrant discussion. In these analyses, time was operationalized as study time (i.e., from one data collection period to another), not developmental time. The loss of participants due to missing data in predictive variables brings into question whether these findings are generalizable to the whole sample. The use of stepwise regression to identify important predictor variables capitalizes on chance. Finally, because this was secondary data analysis we only had access to the variables in this dataset; the family variables available were not those previously found to protect youth from substance abuse.

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# Youth with Emotional, Behavioral and Substance Abuse Disorders Served in Systems of Care

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## Introduction

Adolescent substance abuse has been linked with negative outcomes including poorer school performance, risk of trauma, delinquency, contact with law enforcement, sexual risk taking, and poorer social functioning. Co-occurring psychiatric and substance abuse disorders exacerbate these difficulties. Early onset of substance use is associated with more severe drug problems in the future (Anthony & Petronis, 1995).

Approximately one-third of youth ages 16 to 17 report having used substances (US Department of Health and Human Services [USDHHS], 1999). Community estimates of lifetime prevalence of co-occurring substance abuse and psychiatric disorders among 12 to 18 year old youths range from 2% to 8.5% (Giaconia et al., 2000; Kandel et al., 1999; Turner & Gil, 2002). Among mental health treatment samples, estimates of lifetime co-morbid substance abuse samples range from 24% to 50% (Aarons, Brown, Hough, Garland, & Wood, 2001; Eisen, Youngman, & Grob, 1992; Greenbaum, Prange, Friedman, & Silver, 1991; Grilo et al., 1995, 1996; King, Gaines, Lambert, Summerfelt, & Bickman, 2000). Among youth who have received substance abuse treatment, estimates of lifetime co-occurring psychiatric disorder range from 59% to 87% (Garland et al., 2001; Molina, Bukstein, & Lynch, 2002; Robbins et al., 2002; Westmeyer, Specker, Neider, & Lingenfelter, 1994).

While we can assume that there is variation in substance use involvement among youth receiving mental health treatment, the field tends to treat and study co-occurring disorders with little consideration for those differences. The field knows little about variations in the severity of adolescent substance use (e.g., severe use versus experimentation, any use versus dependency, use of alcohol versus other drugs), differences in the indicators of use, or the interplay among those indicators. In addition, there has been little attention to the differences among groups in terms of how those variations relate to psychiatric symptomatology or psychosocial functioning. The purpose of this study is to improve our understanding of the variation in substance use among youth in treatment for emotional and behavioral disorders, and how those variations relate to behavioral and emotional symptoms and functioning.

## Methods

This study examines data from the Comprehensive Community Mental Health Services for Children and Their Families Program (Holden, Friedman, & Santiago, 2001). The current study uses data collected from over 35 sites across the United States that received funding to develop systems of care for children with emotional and behavioral disorders and their families.

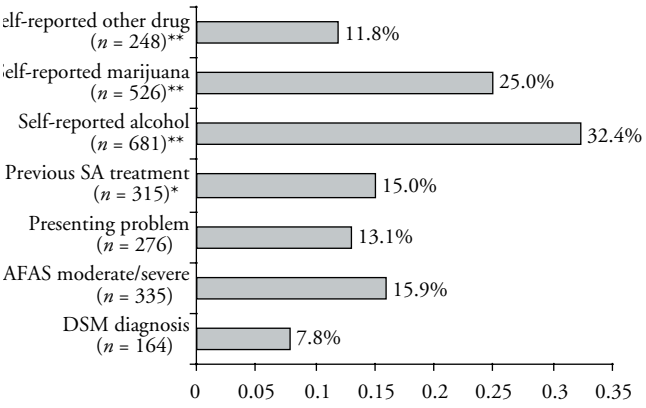
***Sample.*** Data are from 2,102 youth who entered the national evaluation outcome study and provided data on two or more indicators used in this study (see description of indicators below). Boys made up 64% of the sample and the mean age was 13.9 years (*SD* = 1.8). Mean externalizing and internalizing Child Behavior Checklist (CBCL; Achenbach, 1991) T-scores were in the clinical range (i.e., 69.7 and 65.0, respectively).

***Analyses.*** Latent class analysis (LCA) is a technique for analyzing relationships in categorical data. LCA was performed to identify groups of youth who were similar in levels of substance use involvement (Muthén, 2001). Identification of latent classes allows for categorization of youth into groups with similar profiles on several substance use indicators at a point in time. The indicators used in the LCA assessed the absence or presence of the following: (a) substance abuse diagnosis; (b) Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1997) substance abuse scores in the moderate to severe range; (c) previous use of substance abuse services; (d) presenting problem of substance abuse; and (e) self-disclosure of alcohol use, marijuana use, or use of other illicit drugs. Figure 1 shows the distribution of youth across those indicators.

Youth reported their own substance use, and CAFAS scores were based on youth report of use and consequences of use. Caregivers of youth provided information on youth's previous use of substance abuse treatment and DSM diagnosis was taken from the clinical record.

To determine the best fitting model, models with increasing numbers of classes were compared. The Bayesian Information Criterion (BIC) and the sample size adjusted Bayesian Information Criterion (SSA BIC) were used for model comparison; lower scores represent better fitting models. In addition, the Lo-Mendell-Rubin likelihood ratio test of model fit, and an adjusted version, were used to compare the estimated and alternative models. Finally, a summary measure of the overall classification quality was given by the entropy measure. Entropy values range from zero to one, with values closer to one indicating better classifications of individuals to specific classes. The estimation for a model with an increasing number of classes was stopped, when none of the fit indices showed further improvement.

**Figure 1**
**Distribution of Sample on Indicators*****




*SA treatment in past 12 months.
**Use on 4 or more occasions in past 3 months.
**Note: Total number of youth = 2,149. Some youth endorsed more than one indicator.

## Results

The LCA discovered four latent classes of youth with similar profiles on the indicators. The class posterior probabilities, expressed as percentages, are presented. Indicator profiles for the four groups can be seen in Figure 2 (BIC = 9903.30, SSABIC = 9805.31, Entropy = .80, *p*-values for the LMR and Adj. LRT = .001). Descriptions of the groups are provided below.

***Low probability on all indicators (n = 1,429).*** The youth in this group endorsed very few of the substance use indicators. With the exception of a few reports of alcohol use, this group endorsed almost no use of substances.

***Self-reported use (n = 285).*** This group of youth was very likely to report having used alcohol and marijuana on at least four occasions in the past 30 days. They were somewhat likely to report use of other illicit drugs. However, they had a low probability of receiving a DSM diagnosis of substance abuse, being rated as moderate to severe on the CAFAS Substance Abuse scale, or having received substance abuse services in the previous year. In addition, virtually none of the parents of these youth identified substance use as a reason for bringing the child into services (i.e., presenting problem).

***High probability on all indicators (n = 250).*** This group of youth was very likely to have serious and ongoing substance abuse problems. Virtually all these youth reported using alcohol and marijuana at least 4 times in the previous 30 days, and a large majority reported use of other illicit drugs. More than half had received substance abuse treatment in the past 12 months and roughly half carried a substance abuse diagnosis. These youth were much more likely than youth in the other groups to have substance abuse listed among their presenting problems.

***Struggling with recovery (n = 138).*** The youth in this group are distinguished by their high rates of previous substance abuse treatment and having substance abuse as a presenting problem, and relatively low rates of self-reported substance use in the past three months. They had a moderate risk of having a DSM substance abuse diagnosis and having a CAFAS Substance Abuse score in the moderate to severe range.

The substance abuse groups differed in expected ways on important variables. The low probability group was significantly younger and was more likely to be male (see Table 1). Interestingly, the struggling with recovery group had the lowest mean CBCL internalizing score and was closest to the low probability group on the CBCL externalizing mean score. The struggling with recovery group was also less impaired in psychosocial functioning at school and home, and had the greatest strength score on the BERS. All groups were similar in terms of family resources on the FRS and family functioning on the FAD. Youth in the high probability on all indicators group were more likely to have a family history of substance abuse and their caregivers reported more objective and subjective internalized strain.

**Figure 2**
**Probability of Endorsing Indicators by Group**

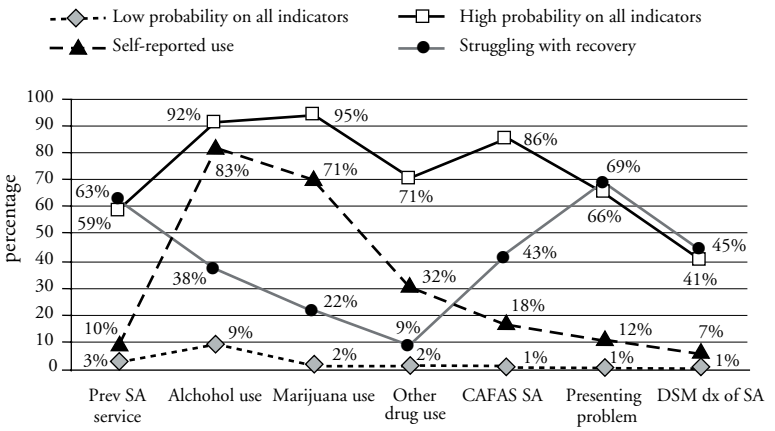



**Table 1**
**Youth Characteristics by Group**

| *Variable* | *Low Prob* *N = 1,429* | *Self-reported Users* *N = 285* | *High Prob* *N = 250* | *Stuggling w/Recovery* *N = 138* |
|---|---|---|---|---|
| Youth age – *M* (*SD*) | 13.5 (1.75) | 14.51 (1.6) | 15.2 (1.2) | 15.3 (1.3) |
| Male – *N* (*SD*) | 942 (66) | 168 (59) | 150 (60) | 79 (57) |
| CBCL Externalizing – *M* (*SD*) | 69.0 (10.6) | 71.6 (9.7) | 72.0 (11.3) | 68.9 (11.0) |
| Externalizing borderline/clinical – *N* (*SD*) | 1065 (75) | 228 (80) | 198 (79) | 101 (73) |
| CBCL Internalizing – *M* (*SD*) | 65.3 (11.4) | 64.6 (10.8) | 64.8 (10.8) | 63.0 (11.9) |
| Internalizing borderline/clinical – *N* (*SD*) | 926 (65) | 178 (62) | 155 (62) | 76 (55) |
| CAFAS School Role – *M* (*SD*) | 22.3 (10.2) | 24.9 (8.9) | 24.8 (9.4) | 21.8 (11.1) |
| CAFAS Home Role – *M* (*SD*) | 21.1 (10.7) | 22.6 (10.1) | 24.4 (9.5) | 20.3 (11.8) |
| CAFAS Community Role – *M* (*SD*) | 10.4 (11.5) | 14.9 (11.7) | 20.0 (10.5) | 16.5 (11.7) |
| BERS Strength Quot. – *M* (*SD*) | 85.8 (16.3) | 85.2 (16.7) | 84.3 (18.6) | 87.8 (15.5) |
| Family SA history – *N* (*SD*) | 898 (61) | 206 (72) | 198 (80) | 98 (71) |
| FRS score – *M* (*SD*) | 3.5 (7.1) | 3.6 (.71) | 3.6 (.78) | 3.6 (.70) |
| General FAD – *M* (*SD*) | 2.8 (.48) | 2.8 (.44) | 2.8 (.49) | 2.9 (.46) |
| CGSQ Objective – *M* (*SD*) | 2.8 (1.1) | 2.9 (1.0) | 3.3 (1.0) | 2.8 (1.1) |
| CGSQ Subj Externalizing – *M* (*SD*) | 2.5 (.99) | 2.7 (.97) | 2.8 (.97) | 2.5 (.98) |
| CGSQ Subj Internalizing – *M* (*SD*) | 3.7 (.97) | 3.8 (.89) | 4.1 (.80) | 3.8 (.87) |

*Note:* Some youth are not included in this table because they were missing data on these measures.

## Implications

These findings indicate that youth presenting for mental health services exhibit broad differences in substance use involvement. These differences likely have implications for prevention, early intervention, and treatment. The categories that emerged from the LCA appear useful for identifying youth at different levels of substance abuse involvement. This information can be used to develop more targeted approaches for substance abuse prevention and treatment.

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# Using Medicaid Claims to Examine Co-Occurring Substance Use and Psychiatric Disorders Among Adolescents

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## Introduction

Interest in co-morbidity of psychiatric disorders among people with substance use problems (New Freedom Commission, 2003; USDHHS, 2001) has been systematically addressed over the past two decades, with most studies focusing on the adult population (Greenbaum, Foster-Johnson, & Petrila, 1996). However, there is growing attention to adolescents with co-occurring substance use and mental disorders (Armstrong & Costello, 2002; USDHHS, 1999). Prevalence of co-occurring disorders has been examined among clinical/treatment and community/epidemiological samples (e.g., Costello et al., 1996; Boyle & Offord, 1991; Greenbaum, Prange, Friedman & Silver, 1991). Community studies examining the co-occurrence of any psychiatric disorder among youth with substance use disorders reported high levels of co-morbid psychiatric disorders similar to clinical studies, from over half to three-quarters of youth (Armstrong & Costello, 2002).

The purpose of this study is to document the extent of co-morbid psychiatric disorders among a statewide population of treated adolescents identified with substance use disorders in order to inform treatment and policy planning for this population. We follow up on Armstrong and Costello's (2002) literature review on adolescent substance use, abuse, or dependence and psychiatric morbidity by providing information from a statewide clinical sample to answer three of their questions: (1) How often do substance-using or abusing youth have comorbid psychiatric disorders? (2) Is co-occurrence with some disorders more common than with others, and are some forms of substance abuse more likely than others to be comorbid with psychiatric disorders? (3) Are some groups of children (male or female, White or minority) more at risk than others of comorbid psychiatric with substance use disorders?

## Method

Existing Medicaid claims/encounter data for one state (Tennessee) were analyzed using descriptive and multivariate methods. Data were extracted from Medicaid paid claims/encounter data for the statewide population of adolescents (ages 12 to 17 years at the time of their service) for fiscal years (FY) 1994 - 2001. All claims/encounters with primary or secondary diagnoses for alcohol or drug disorders were selected. These are subsequently referred to as substance use claims. Primary and secondary diagnoses from the substance use claims were grouped into categories representing the following disorders: alcohol, drug, depression, conduct, anxiety, attention deficit, serious mental illness, other mental disorders, developmental/mental retardation, and other medical.

***Sample.*** All adolescents with a substance use claim during any of the fiscal years of the study were included. The unduplicated number of adolescents with a primary or secondary diagnosis of substance use disorders in any year ranged from 1,285 to 2,163. The sample was approximately one-third female and one-fifth minority youth.

***Analyses.*** Descriptive statistics were generated to describe the sample and answers to all three research questions on patterns of co-morbid diagnoses. In order to address questions 2 and 3 more fully, we also estimated a logistic regression to examine the probability of having a co-morbid psychiatric disorder among youth with a substance use claim. Gender, race, age, time of service, and presence of an alcohol versus drug diagnosis were included as covariates. The use of Medicaid data poses potential limitations that will be discussed.

## Results

The unduplicated number of youth with a substance use claim increased over time at the same time that enrollment grew in Tennessee's managed care Medicaid/TennCare (see Saunders & Heflinger, 2003). The proportion of the total enrolled Medicaid population that had a substance use claim, therefore, stayed relatively constant at one percent of the enrolled adolescent population. Approximately half of the substance use claims had only substance use disorders documented, with no other types of diagnoses. However, that proportion declined over time (from 62% in FY1994 to 42% in FY2001) as the proportion of substance use claims with co-morbid psychiatric diagnoses increased. Initially, less than one third of the substance use claims had a co-morbid psychiatric diagnosis, but by 2001, this proportion rose to approximately half of the claims. From 6-10% of youth with a substance use claim had a co-morbid medical condition at the time of treatment. Less than 1% had a co-morbid developmental/ mental retardation diagnosis.

Another interesting pattern in the co-morbid diagnoses is that, in youth classified as having co-morbid substance use and psychiatric disorders, the pattern of listing the alcohol or drug diagnosis as secondary and the co-occurring psychiatric diagnosis as primary became more common over time. In 1994, 65% of these co-morbid claims had the psychiatric disorder as primary. By 2001, this proportion has risen to 74% of the co-morbid claims.

Conduct disorders were the most frequent co-morbid psychiatric diagnosis, with depressive disorders being the second most frequent. Serious mental disorders, anxiety disorders, and attention deficit disorders were infrequently diagnosed in this statewide population of youth with substance use claims. Youth with drug disorders were more likely to have a co-occurring psychiatric disorder than those with an alcohol disorder. By 2000, over half of those with a drug disorder had a comorbid psychiatric disorder, while approximately one-third of those with an alcohol disorder had a co-morbid psychiatric disorder. It should also be noted that the number of claims with a drug diagnosis increased by 66% while the number of claims with an alcohol diagnosis decreased during this same time period.

Youth with substance use and co-morbid psychiatric disorders were consistently more likely to be male and White. Approximately one-third of youth with co-occurring substance use and psychiatric disorders were female, and one-fifth minority. However, the proportion of TennCare youth with co-morbid substance use and psychiatric diagnoses who were female (35-41%) was higher than that in the total substance use claims (32-35%).

## Discussion and Implications

This study documents an increasing identification of psychiatric disorders in youth with substance abuse claims in the Medicaid program over time. Rather than indicating that an increasing proportion of youth were experiencing psychiatric disorders, we believe that several factors influenced diagnostic documentation over time. First, many activities aimed at providers during this time period focused on issues of co-occurring mental and substance use disorders, both in this state and across the nation. The primary influence, however, was likely related to the implementation of managed care during this time period, with significant changes in pre-authorization for outpatient and inpatient behavioral health services. Identification of children and adolescents as having a serious emotional disturbance became an apparent prerequisite for the authorization of higher intensity levels of service (e.g., inpatient, day treatment) and higher reimbursement mechanisms to community mental health centers. There were also disincentives for documenting substance abuse diagnoses. Despite a benefit plan that included a wide range of substance abuse benefits for adolescents, providers reported increasing difficulty in obtaining authorization for substance abuse treatment unless a co-occurring psychiatric diagnosis was included. Similarly, documentation of a co-occurring substance use disorder for a youth with a psychiatric diagnosis raised more reimbursement issues than that of a psychiatric diagnosis alone (Northrup & Heflinger, 2000). Given these factors, it is reasonable to believe that substance abuse diagnoses, in general, were under-reported and that many youth who had only a psychiatric disorder in their claims actually had co-morbid substance use disorders.

However, service system factors likely reinforced the high proportion of youth who only had substance use diagnoses on their claims. Even though it fell over time, 42% of the youth by FY2001 still had only substance abuse diagnoses documented. This is a higher proportion than other clinical studies that generally found one third of the substance-using youth without a psychiatric diagnosis (e.g., Grella, Jser, Joshi & Rounds-Bryant, 2001; Wise, Cuffs & Fischer, 2001). This high proportion likely reflects the continuing separate substance abuse treatment sector, where the focus has been and continues to be on alcohol and drug issues. Training and payment issues in that sector pose barriers to the identification and treatment of psychiatric disorders.

Despite these factors that likely influenced diagnostic documentation on the Medicaid claims, these findings are similar to those from previous clinical and community studies on co-morbid substance use and psychiatric disorders in several ways. Conduct disorders were the most frequent co-morbid psychiatric diagnoses among this population of substance-using youth, as was reported in other studies. This study also confirmed the finding that male adolescents had higher rates of co-morbid substance use and psychiatric disorders than did females.

These findings have implications for treatment, research, and policy planning. Staff and clinical directors in both mental health and substance abuse programs for youth need increased training and supervision for identifying and treating co-occurring disorders. Despite the pitfalls of using Medicaid data, this study demonstrated that they can provide important information at the system-level. These data, and other existing data sets about substance abuse services, are a rich source of information to describe the service system and the youth actually involved in treatment. System-wide studies are needed to examine the influences of system-level changes such as managed care and implementation of statewide or national policies. At the same time, it is important that clinical and epidemiological studies continue to better document detailed descriptions of the population and their treatment needs. Policy makers also need to focus on this area and better understand the barriers and facilitating factors at work. Contract renegotiation with managed care companies, such as is happening in TennCare at this time, is a good time to address these issues. In addition, policy makers need good performance measures. Data from state Medicaid and SAMHSA-funded block grant programs should be assessed for current level of quality and completeness and steps made to improve and to generate performance indicators on specific populations, such as this one of youth with co-morbid substance use and psychiatric disorders.

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# Substance Abuse, Systems of Care, and Adolescents with Serious Emotional Disturbance (SED): A One Year Follow-up

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## Introduction

Substance abuse is quite prevalent among adolescents in the United States (Johnston, O'Malley, & Bachman, 1993). Epidemiological research shows that at least 5% of adolescents meet DSM criteria for an alcohol use disorder (Rohde, Lewinsohn, & Seeley, 1996). Substance use is highly correlated with many negative consequences, such as greater impairment in school, depression, and acting out behaviors. Psychosocial and interpersonal problems experienced by adolescents who use alcohol and drugs regularly include low self-esteem, depression, anxiety, impaired peer relations, social isolation, and adjustment difficulties. Participants in a residential adolescent drug treatment program were described as having low self-esteem, lack of self-confidence, identity problems, disturbed family and peer relations, and a tendency toward physical and sexual acting out (Bischoff, & Wilcox, 1990). According to Hawkins, Catalano, & Miller (1992), it is clear that a sizeable portion of young people are vulnerable to the short-term and long-term consequences associated with problem drinking (e.g., threats to well being, physical health, schooling, the attainment of life goals, and in some cases, survival).

Many studies have focused on the variables associated with substance use (Biederman, Wilens, Mick, & Faraone, 1997; Costa, Jessor, & Turbin, 1999; Dobkin, Tremblay, Masse, & Vitaro, 1995; Fisher & Fagot, 1998; Haggerty, Sherrod, Garmezy, & Rutter, 1994; Hawkins, Arthur, & Catalano, 1995; Hawkins, Catalano, & Miller, 1992; Kessler, Nelson, McGonagle, Edlund, Frank, et al., 1996; Lewinsohn, Gotlib, & Seeley, 1995; Mayhew & Lempers, 1998; Newcomb, 1995; Stowell & Estroff, 1992;Yu & Williford, 1992; Windle & Windle, 1993); however, the variables that correlate with continued substance use have not been well researched. The purpose of this study was to identify variables associated with continued substance use among adolescents with serious emotional disturbance after one-year of participation in a systems-of-care treatment program. Understanding the differences among these adolescents may assist in developing and tailoring services to meet their specific needs.

## Method

### Participants

The sample was drawn from seven North Carolina counties enrolled in the Center for Mental Health Services'national Evaluation of the Comprehensive Community Mental Health Services Program for Children and Their Families, and included 788 males, 312 females, and 80 participants with missing gender information, aged 5 years 0 months to 17 years 6 months. There was no difference in the gender distribution between youth classified into the user and abstainer groups ($\chi^2$ = 1.4, $p$ = .23). The mean age was 12.29 ($SD$ = 3.35). The racial distribution was 632 Caucasian, 394 African American, 42 Hispanic, 17 Native American or Alaskan Native, 8 Asian, 3 Hawaiian or Other Pacific Islander, and 52 other (because individuals may claim more than one racial background, the race variable may add to more than 100%).

Subjects were included in the current study if they met the following criteria: subject indicated substance use at baseline, subject was between 11 and 18 years old, and subject had a complete data set on all variables of interest at baseline, six month and 12 month follow-up. The final sample included 33 males and 22 females ($N$ = 55). The mean age was 14.2 ($SD$ = 1.5). The racial distribution was 35 Caucasian, 19 African American, 2 Hispanic, and 1 Native American or Alaskan Native. The sample was classified into two groups based on the adolescents' history of substance abuse; that is, whether they had or had not continued to abuse substances after six-month or one-year participation in the SOC.

Any adolescent that indicated continued substance abuse at either the 6-month or 12-month follow-up was included in the continued substance abuse group (i.e., "users"). Those who did not report ongoing substance use at 6 or 12 month follow-up became the "abstainers." There were 12 adolescents who had histories of substance abuse but were not currently engaging in substance abuse, and 43 adolescents who had histories of substance abuse and had continuedthis behavior.

### Measures

***Substance Use Scales A & B.*** History of substance abuse and current status of substance abuse was drawn from Hodges' Substance Use Scales A & B). This measure was adapted from the Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1990) interview (Parent Report), with permission of the author and for use only in the CMHS Evaluation study. Youth, ages 11 to 17.5, were asked to respond openly to the following questions, "Have you ever had an alcoholic beverage?" and "Have you ever used marijuana, inhalants, psychedelics, heroin, crack, cocaine, amphetamines, Quaaludes, barbiturates, tranquilizers, narcotics?" For the age of onset of substance use and for continuing or current use, youth were then asked to respond to the same questions, now indicating how old they were when they first used the substance, whether or not they had used the substance in the past six months, and on how many occasions they had used the substance.

***Child and Adolescent Functional Assessment Scale (CAFAS).*** The CAFAS was designed to rate impairment in children and adolescents who have or may have emotional, behavioral, substance use, psychiatric, or psychological problems. The CAFAS assesses level of functioning across three role performance domains (school/work, home, community), two mood domains (moods/emotions, self-harmful behavior), behavior toward others, substance use and thinking. For the purposes of this study, a modified total CAFAS score (excluding the substance use domain) was used rather than the original total composite CAFAS score because the original total composite score included a measure of substance use history and therefore the dependent variable would be confounded by the independent variable.

***Child Behavior Checklist (CBCL).*** The CBCL (Achenbach, 1991a) provides a standardized measure for describing the emotional and behavioral status of children and adolescents ages 4-18 from the perspectives of their caregiver. Children's symptoms are assessed on a continuum, producing a total problem score, two broad-band syndrome scores (internalizing and externalizing), and eight narrow-band syndrome scores (withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, aggressive problems, delinquent problems).

***Youth Self-Report (YSR).*** The YSR (Achenbach, 1991), the adolescent self-report version of the CBCL, assesses an adolescent's perceptions of his or her own problems. The YSR includes 112-item behavior problem questionnaire assessing symptoms on a continuum, producing a total problem score, two broad-band syndrome scores (internalizing and externalizing), and eight narrow-band syndrome scores (withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, aggressive problems, delinquent problems).

***Caregiver Strain Questionnaire (CGSQ).*** The CGSQ (Brannan, Heflinger, & Bickman, 1990) assesses stress resulting from caregiving responsibilities. Caregivers are asked how much of a problem the child's emotional or behavioral difficulties were for them and their families in the past six months. Objective Strain refers to strain resulting from observable negative events such as missed work or the child getting into trouble with the neighbors, the school, the community or law enforcement. Subjective strain-internalized refers to negative feelings the caregiver may have experienced such as worry, guilt, and fatigue. Subjective strain-externalized refers to negative feelings the caregiver may have experienced such as embarrassment, anger, and resentment.

## Results

Group means and standard deviations for each dependent variable are reported in Table 1. The overall MANOVA (Wilk's Lambda = .655, $F$ (9, 45) = 2.63, $p$ = .015, $\eta^2$ = .345, power =.899) was significant. These results indicate a significant difference between those who continued to use substances versus those who abstained. Results of individual univariate $F$-tests are reported in Table 2 for each dependent variable. Age of onset of substance use, as measured on Substance Use Scales A & B, approached significance ($p$ = .057), but was not significantly different between the group of users versus the group of abstainers (see Table 2). There was not a statistically significant difference between the group of users and the group of abstainers on the externalizing (intrusive, aggressive, delinquent behavior) or on the internalizing (anxious/depressed, withdrawn) scales of either the CBCL parent report or the YSR youth form; the CGSQ external strain scale; or the modified CAFAS total score (see Table 2). However, there were statistically significant differences between the group of users and the group of abstainers in terms of CGSQ objective, internal and global caregiver strain (see Table 2). In each of these latter findings, higher caregiver strain was associated with continued substance use.

It appears from the results of this study that there is a statistically significant difference between users and abstainers on the amount of internalized subjective strain, objective strain, and overall global strain experienced by the caregiver. In other words, youth may be more at risk for continuing substance use if the caregiver experiences negative effects as a result of their caretaking duties. The disruption of observable events such as family routines and relationships, social activities, personal time, and trouble with neighbors and community and negative feelings such as worry, guilt and fatigue due to the child's emotional and behavioral problems are particularly associated with continued substance use. We can not, from these results, infer causality (i.e., does the child's substance use lead the caregiver to experience more negative feelings or do the parent's internalized negative feelings lead the youth to continue substance use?).

**Table 1**
**Group Means and Standard Deviations for Users and Abstainers on Selected Measures**

| *Dependent Variable* | *Group* | *Mean* | *SD* |
|---|---|---|---|
| Internalizing T-score, CBCL | abstainers | 60.25 | 12.48 |
| | users | 62.19 | 12.90 |
| Externalizing T-score, CBCL | abstainers | 66.17 | 14.54 |
| | users | 72.40 | 9.18 |
| Internalizing T-score, YSR | abstainers | 57.17 | 13.98 |
| | users | 52.74 | 12.51 |
| Externalizing T-score, YSR | abstainers | 63.08 | 12.97 |
| | users | 63.77 | 10.42 |
| Objective Strain | abstainers | 28.83 | 11.27 |
| | users | 35.77 | 10.11 |
| Internal Strain | abstainers | 7.83 | 3.95 |
| | users | 11.02 | 2.90 |
| External Strain | abstainers | 21.67 | 6.83 |
| | users | 23.51 | 6.22 |
| Global Strain | abstainers | 58.33 | 17.99 |
| | users | 70.30 | 17.41 |
| Modified CAFAS Total | abstainers | 93.33 | 41.19 |
| | users | 112.09 | 35.43 |
| Age of Onset | abstainers | 9.5 | 1.93 |
| | users | 11.05 | 2.54 |

**Table 2**
**Differences between Users and Abstainers on Selected Measures**

| *Dependent Variable* | *F* | *df* | *p* | $\eta^2$ | *Power* |
|---|---|---|---|---|---|
| Internalizing T-score, CBCL | 0.214 | 1 | .645 | .004 | .074 |
| Externalizing T-score, CBCL | 3.291 | 1 | .075 | .058 | .429 |
| Internalizing T-score, YSR | 1.115 | 1 | .296 | .021 | .179 |
| Externalizing T-score, YSR | 0.36 | 1 | .850 | .001 | .054 |
| Objective Strain | 4.199 | 1 | .045* | .073 | .521 |
| Internal Strain | 9.607 | 1 | .003** | .153 | .861 |
| External Strain | 0.792 | 1 | .378 | .015 | .141 |
| Global Strain | 4.372 | 1 | .041* | .076 | .537 |
| Modified CAFAS Total | 2.452 | 1 | .123 | .044 | .337 |
| Age of Onset | 3.801 | 1 | .057 | .067 | .482 |

*$p$ < .05, **$p$ <.01

## Conclusion

Findings from our study suggest that the caregiver's negative feelings regarding the child's problems are related to the child's continued substance use. Thus, services to aid caregivers in alleviating their negative feelings may help to reduce or absolve the child's substance use. Areas of focus for helping the caregiver may include his or her feelings of sadness or unhappiness, worrying about the family's future, worrying about the child's future, feeling guilty, feeling tired and strained, and sensing that a toll has been taken on the family. Once again, the direction of the relationship between caregiver strain and substance abuse among youth is unclear. If the relationship is reversed, and it is the child's substance use that is exacerbating the caregiver's internalized strain, then helping the child to abstain may reduce the caregiver's internalized strain.

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# Characteristics and Outcomes of Justice-Involved Girls with Mental Health and Substance Abuse Disorders

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## Introduction

Over the past decade there has been a marked increase in the number of girls arrested in the United States. Between 1980 and 2000, the arrest rate for all offenses increased 35% for juvenile females (Snyder, 2002). In 2000, girls were involved in one-third of all arrests of youth ages thirteen to fifteen (Snyder, 2002). Similarly, during the 1990s the number of female delinquency cases increased markedly. In 1997, females comprised almost one-quarter or 403,673 of all delinquency cases, which represents an increase of 83% over the prior decade (Scahill, 2000).

However, females are less likely than males to be removed from their homes and placed in either short-term custody (detention) or long-term custody (commitment and out-of-home placement) following juvenile court adjudication and disposition (Poe-Yamagata & Butts, 1996). Placement was also less common for females regardless of the seriousness of the offense charge against the youth (Poe-Yamagata & Butts, 1996). The difference in placement between boys and girls might be explained by the diverse risk factors experienced by girls. Risk factors for girl's involvement in the juvenile justice system include early childhood behavioral patterns; childhood abuse and neglect; family contexts and poor parenting skills; mental health problems and substance use; peer and dating relationships; and general neighborhood characteristics. In contrast to male justice-involved youth, female juvenile offenders are likely to be at the lower end of the adolescent age range (Bergsman, 1994). They are more likely than justice-involved male youth to have run away from home (Chesney-Lind, 1998) and to have attempted suicide (Miller, 1994).

Existing studies suggest that many of the girls in contact with the juvenile justice system have mental health disorders. Research suggests that a majority of girls in the juvenile justice system meet the criteria for at least one mental health disorder and show higher prevalence rates of mental health disorders than boys (Nordness et al., 2002; Teplin et al., 2002; Timmons-Mitchell et al., 1997). Perhaps more importantly, girls are more likely than boys to be diagnosed with more than one disorder, particularly a mental health disorder with a substance use disorder. Studies of psychiatric co-morbidity consistently report higher prevalence rates among girls in detention than comparable boys (Randall, Henggeler, Pickerl & Brondino, 1999; Ulzen & Hamilton, 1998). Among specific disorders, justice-involved girls tend to have high rates of major depression, anxiety disorders, including post-traumatic stress disorder, somatization disorders and borderline personality disorders (Dembo, Williams & Schmeidler, 1993; Offord, Boyle & Szatmari, 1987; Rohde, Mace & Seeley, 1997; Timmons-Mitchell et al., 1997; Ulzen & Hamilton, 1998).

Little is known about the pathways of youth with mental health problems into the juvenile justice system or what happens to them as a consequence. Further, most studies in the past have focused attention on boys. Few studies have girl-only samples or analyze by gender. Fewer yet are studies that focus solely on justice-based outcomes of youth with behavioral health issues. This study focuses on differences between girls and boys with mental health and/or substance use disorders who participated in a specialized diversion program. Of particular interest is the effect of gender on the two primary outcomes: out of community placement and recidivism.

### The Mental Health Juvenile Justice Diversion Project

The Mental Health/Juvenile Justice Project (MH/JJ) is an 11-county diversion program for delinquent youth who have an identified mental health and/or substance abuse need, and who are believed to be able to benefit from community-based treatment. The MH/JJ Project is sponsored by

the New York State Office of Children and Family Services (NYS OCFS) and has been in operation since June 1997. Each site involved in the Project is required to demonstrate cooperation between the County Probation Department, which is responsible for intake, investigation and supervision activities, and MH/JJ Project staff who may be members of local behavioral health organizations or probation department employees. The county MH/JJ Project staff provides at a minimum: screening, assessment, individual, group and family counseling, and referral services. Follow-up to assure the youth and his/her family are receiving all necessary mental health, substance abuse, medical, educational, vocational and family support services is key to the success of the Project. The 11 sites represent a broad spectrum of implementation strategies while delivering a core set of services. The primary goals of the Project are: (1) to reduce criminal/delinquent behavior, (2) to reduce out of community placements, including detention, and (3) to improve youth well being and family functioning.

## Method

The data for the present study are drawn from a non-probability sample of youth that exhibited mental health and substance abuse problems and had contact with the juvenile justice system of 11 counties in New York State ($N$ = 4,117). Youth who were referred to MH/JJ services through the year 2003 are included. Data were collected by project and probation staff using data abstraction forms developed specifically for this project.

Data collected on each youth included information routinely collected by probation officers during intake interviews with the youth and his/her family (e.g., arrest charges and description of the target event, contact and identifying information, youth supports and needs, family supports and needs, history of abuse and investigations by Child Protective Services, school performance, recent youth stressors), accompanying medical, psychiatric, and school records, and historical juvenile records. An assessment is conducted by the MH/JJ staff within 30 days of referral and provides information on diagnoses, prior service use, need for services, referral dates, and the receipt of MH/JJ services. Youth follow-up information is collected at 120 days. This information includes new arrests and violations, utilization of MH/JJ and other community-based services, and cost expenditures.

## Results

Bivariate comparisons of girls and boys on demographic, crime, behavioral health and outcomes are presented in Table 1. As can be seen, girls were more likely to be White (32% for girls vs. 23% for boys), while males were more likely to be African American (51% for girls vs. 58% for boys) and Hispanic (8% for girls vs. 13% for boys). Girls and boys also differed in terms of target offense. In this sample, girls were more likely to commit crimes against persons (41% for girls vs. 37% for boys) and property crimes (38% for girls vs. 32% for boys), while boys were more likely to commit drug related crimes (2% for girls vs. 12% for boys). In addition, girls were less likely to have had a prior placement (9% for girls vs. 14% for boys) but equally likely to have had a prior arrest.

With regards to behavioral and life stressors, girls were less likely to have a history of substance abuse (54% for girls vs. 62% for boys) than boys. There was no difference between boys and girls on the percent who had evidence of a mental disorder prior to the current offense, nor were there differences between the genders on most youth life stressors (i.e., change in parental marital/relationship status, death in the family or the presence of a family member with an addiction, mental illness or criminal history). However, girls were more likely to have attempted suicide than boys (7% for girls vs.4% for boys). Finally, on the two outcome variables out of community placement and recidivism, girls were less likely to be placed out of the community (9% for girls vs. 14% for boys), but were no more or less likely to recidivate.

In order to further explore the relationship between gender, out of community placement and recidivism, while controlling for relevant factors, two logistic regression analyses were run. Covariates in each model included: age, race, crime type, prior placements, prior arrest, mental health and substance abuse problems, and youth life stressors.

**Table 1**
**Characteristics of MH/JJ Youth by Gender (*n* = 1,992)**

| *Indicator* | *Female (n=450)* | *Male (n= 1542)* | *Total* |
|---|---|---|---|
| **Age (*sd*)** | 15.6 (1.3) | 15.5 (1.6) | 15.5 (1.6) |
| **Race*** ** | | | |
| White | 32.0% | 23.0% | 25.0% |
| African American | 51.2 | 57.8 | 56.3 |
| Hispanic | 8.3 | 12.8 | 11.8 |
| Other Race | 8.5 | 6.4 | 6.9 |
| **Crime*** ** | | | |
| Crimes Against Persons | 41.3 | 36.8 | 37.8 |
| Drug Related | 2.3 | 11.5 | 9.4 |
| Property | 38.4 | 31.9 | 33.4 |
| Other Crime | 18.0 | 19.8 | 19.4 |
| **Prior Placement**** | 8.7 | 13.8 | 12.7 |
| **Prior Arrest** | 12.2 | 15.9 | 15.1 |
| **Prior Psych Eval** | 40.3 | 40.5 | 40.5 |
| **Hx Substance Abuse**** | 53.8 | 61.5 | 59.9 |
| **Change in Marital/Relationship** | 31.0 | 30.1 | 30.3 |
| **Death in Family** | 11.9 | 14.0 | 13.5 |
| **Suicide Attempt**** | 7.1 | 3.8 | 4.5 |
| **Serious Problem Family Member** | 38.8 | 42.0 | 41.3 |

Results of the out of community placement logistic regression are presented in Table 2. Overall, the model is statistically significant ($\chi^2 = 104.32_{(16)}$, $p < .001$) with a Nagelkerke $R^2$ of .15. Of the covariates included in the model, five were found to be statistically significant (age, race, prior placement, substance abuse, and suicide attempt). In contrast to what was found at the bivariate level, our primary predictor variable, gender, was not found to be statistically significant in predicting out-of-community placement (Wald = 3.38, $p = .06$).

Results of the recidivism logistic regression are presented in Table 3. The overall model is a statistically significant predictor of recidivism ($\chi^2 = 43.84_{(16)}$, $p < .001$) with a Nagelkerke $R^2$ of .05. Of the covariates included in the model, two were found to be statistically significant (i.e., target offense and prior placement). With regards to a primary predictor variable, gender was not found to be a significant predictor of recidivism (Wald = 2.68, $p = .10$).

## Conclusions

Contrary to most studies of recidivism in general youth samples, gender was not a significant predictor of out-of-community placement or recidivism. At the bivariate level, gender was significantly related to many of the covariates and both of the dependent variables. The complicated nature of these relationships to court and probation assessments of risk and therefore placement and the nature of criminality and therefore recidivism must be explored further, particularly with this population of vulnerable youth. While we cannot make any conclusive statements, this analysis does suggest that girls and boys with mental health and/or substance abuse behave differently from general samples of delinquent youth.

**Table 2**
**Logistic Regression of Gender on Out of Community Placement (*n* = 1992)**

| *Predictor* | *Logit* | *Wald* | *OR* |
|---|---|---|---|
| **Male** | .47 | 3.38 | 1.60 |
| **Age** | -.32 | 27.24*** | .72 |
| **Race** | | 10.60* | |
| (Caucasian) | | | |
| African American | .54 | 5.37 | 1.72 |
| Hispanic | -.01 | .00 | .99 |
| Other Race | -.45 | .89 | .64 |
| **Target Offense** | | .91 | |
| (Crimes Against Persons) | | | |
| Drug Related | -.13 | .17 | .88 |
| Property | -.13 | .35 | .88 |
| Other Crime | .08 | .12 | 1.09 |
| **Prior Placement** | 1.04 | 20.54*** | 2.83 |
| **Prior Arrest** | .20 | 1.03 | 1.22 |
| **Prior Psych Eval** | .32 | 2.95 | 1.37 |
| **Hx Substance Abuse** | .72 | 11.20*** | 2.04 |
| **Change in Marital/Rel** | -.18 | .78 | .83 |
| **Death in Family** | -.09 | .31 | .91 |
| **Suicide Attempt** | 1.21 | 13.15*** | 3.35 |
| **Serious Prob Family Member** | .11 | .39 | 1.12 |
| Model $\chi^2$ (*df*) | | 104.323 $_{(16)}$*** | |
| Nagelkerke $R^2$ | | .15 | |

*$p < .05$, **$p < .01$,***$p < .001$

**Table 3**
**Logistic Regression of Gender on Recidivism (*n* = 1992)**

| *Predictor* | *Logit* | *Wald* | *OR* |
|---|---|---|---|
| **Male** | .34 | 2.68 | 1.41 |
| **Age** | .06 | .96 | 1.06 |
| **Race** | | 7.07 | |
| (Caucasian) | | | |
| African American | .42 | 4.15 | 1.52 |
| Hispanic | .57 | 4.45 | 1.77 |
| Other Race | .69 | 4.82 | 1.20 |
| **Target Offense** | | 10.14 | |
| (Crimes Against Persons) | | | |
| Drug Related | 1.11** | .16 | .89 |
| Property | .48 | 6.66 | 1.62 |
| Other Crime | .44 | 4.33 | 1.56 |
| **Prior Placement** | .39 | 3.41* | 1.47 |
| **Prior Arrest** | .34 | 4.45 | 1.41 |
| **Prior Psych Eval** | .20 | 1.56 | 1.22 |
| **Hx Substance Abuse** | .17 | .90 | 1.18 |
| **Change in Marital/Rel** | .20 | 1.46 | 1.22 |
| **Death in Family** | -.33 | 2.13 | .72 |
| **Suicide Attempt** | -.52 | 1.70 | .59 |
| **Serious Prob Family Member** | -.09 | .00 | .99 |
| Model $\chi^2$ (*df*) | | 43.84 $_{(16)}$*** | |
| Nagelkerke $R^2$ | | .05 | |

*$p < .05$, **$p < .01$,***$p < .001$

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# Predictors of Successful Permanency Planning in Florida's Child Welfare System

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## Background

Until recently, child welfare research has largely focused on child abuse reporting, child fatalities, child maltreatment predictors, recidivism and exit from foster care. Less attention has been given to predictors of successful permanency planning and services to families. This lack of attention to permanency planning success and support for services to families may be reflected in the high recurrence figures for maltreatment and extended length of time children spend in out-of-home placements. In FY 1999-2000, more than 70,000 cases of documented child maltreatment were identified by the Florida Department of Children and Families' (DCF) Office of Family Safety, and more than 22,000 children utilized foster care. In FY 2000-2001, the estimated median length of stay for a child entering foster care in Florida was 14.1 months. This length of stay varies from a low of 6.6 months to a high of 29.9 months (Brown, et al., 2001).

The goals of the current study were to: (a) identify predictors of successful permanency planning after an occurrence of documented child maltreatment and foster care placement in Florida's foster care system; (b) identify factors that can be used in intervention studies targeted toward increasing the number of children who exit foster care for a permanent placement within 12 months, and reducing length of stay in foster care (hence reducing public costs); and (c) improve short and long-term outcomes for children placed in the foster care system.

## Methods

Study subjects included all Florida Medicaid-enrolled children with the given circumstance that the child had a documented occurrence of maltreatment and was placed into the foster care system in FY 1998-1999 or FY 1999-2000 ($N$ = 7799). Documented occurrences of child maltreatment and foster care placements were identified from the Office of Family Safety Client Information System files. Medicaid enrollment status, mental health diagnoses and service usage were identified from Medicaid enrollment and claims files provided by the Florida Agency for Health Care Administration. Successful permanency planning was defined as exiting foster care within 12 months of placement and having a successful exit code. Fifty percent of the subjects were female, and over half (57%) were White. Children ages 0-5 were the largest group (43%), followed by ages 6-12 (35%), and 13-18 (22%). Demographic characteristics for the study subjects are shown in Table 1.

## Results

Study findings document that there was great variation across health planning districts in rates of successful permanency planning and length of stay in foster care. Less than a quarter (24%) of foster care children in the study experienced a successful exit from foster care within 12 months of placement.

As shown in Figure 1, there were important differences in the probability of successful exit across Florida's districts of residence ($N$ = 4490). The probability of successful exit from foster care was highest during the study period in district 3, where 47% of foster care children successfully exited foster care within 12 months. District 15 had the second highest success rate (46%). District 10 and 11 had the lowest rates of successful exit during the study period, 8% and 9% respectively.

There were also modest differences in the probability of successful exit across the various mental health diagnoses, as seen in Figure 2 ($N$ = 7,807). Successful exit was lowest (11%) for children diagnosed with major psychotic disorders, followed by bipolar disorder (13%), major affective disorder (15%), and Attention Deficit Hyperactive Disorder (ADHD)/disruptive disorder (16%). The rate of successful exit was 19% for children diagnosed with more minor mental disorders and 30% for children with no mental disorder. Slightly more than 50% of children in the sample were diagnosed with a mental disorder.

Logistic regression confirmed that these findings persisted in multivariate analysis. District of residence was the greatest predictor of success, and having no mental disorder was also a big predictor of successful permanency planning.

## Conclusions

Child welfare success, as defined by successful permanency planning, varies widely by geographic area within Florida and is much lower than the national standard of 76% (U.S. Department of Health and Human Services, 2000). The current findings are in keeping with previous studies that have shown a negative association between Florida DCF district of residence and successful exit from foster care within 12 months. Also, findings suggest that children with mental health diagnoses are less likely to have successful permanency planning. Continuing to research and address district level differences and mental health service needs of child welfare families may be just as important as child welfare interventions.

**Table 1**
**Demographic Characteristics of the Study Sample**

| *Sample Characteristics* | *N* | *%* |
|---|---|---|
| **Gender** | | |
| Female | 3896 | 50% |
| Male | 3903 | 50% |
| **Race** | | |
| Non-White | 3329 | 43% |
| White | 4453 | 57% |
| **Age Category** | | |
| Age 0-5 | 3364 | 43% |
| Age 6-12 | 2755 | 35% |
| Age 13-18 | 1688 | 22% |
| **DCF District of Residence** | | |
| 1 | 263 | 3% |
| 2 | 238 | 3% |
| 3 | 399 | 5% |
| 4 | 566 | 7% |
| 5 | 448 | 6% |
| 6 | 955 | 12% |
| 7 | 1249 | 16% |
| 8 | 386 | 5% |
| 9 | 305 | 4% |
| 10 | 636 | 8% |
| 11 | 904 | 12% |
| 12 | 214 | 3% |
| 13 | 674 | 9% |
| 14 | 315 | 4% |
| 15 | 248 | 3% |

**Figure 1**
**Probability of Successful Exit Within 1 Year of Foster Care Placement by DCF District**
**(July 1998 - December 1999)**

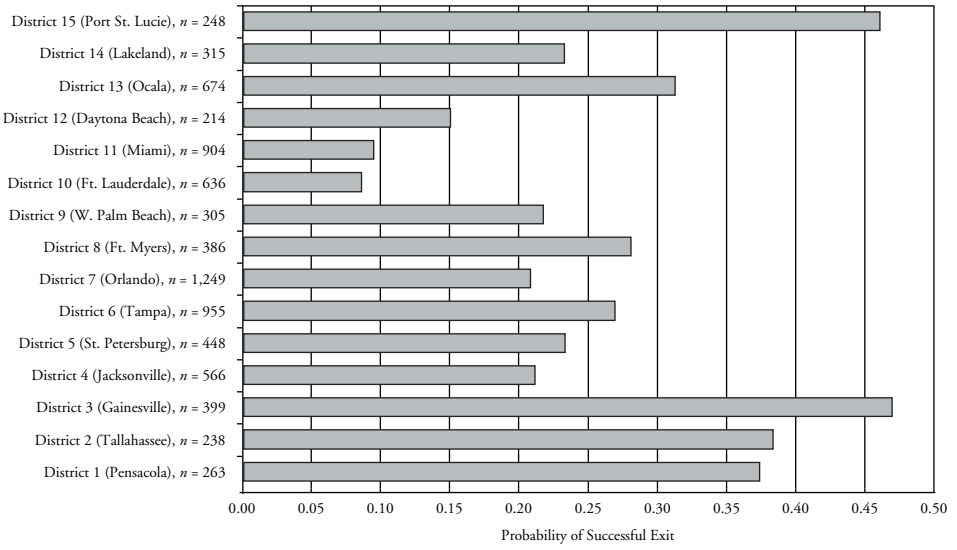
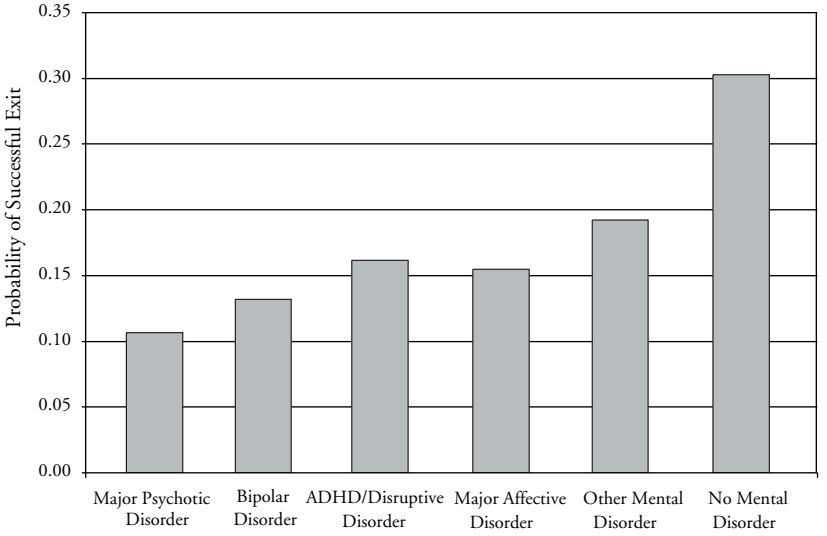



**Figure 2**
**Probability of Successful Exit Within 1 Year of Foster Care Placement by Mental Disorder**
**(July 1998-December 1999)**



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# Outcomes of a Randomized Trial of Continuum of Care Services for Children in the Connecticut Child Welfare System

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## Introduction

In July 1999, the Connecticut Department of Children and Families (DCF) launched a demonstration program to evaluate whether the well being of children in need of residential mental health services could be improved, and lengths of stay in restrictive placements reduced, by providing case rate payments to a community agency. This demonstration project was funded through a waiver on a portion of the federal reimbursements that the state received through Title IV-E of the Social Security Act. Under the demonstration, children between 7 and 15 years of age who were approved for residential out-of-home placement and met eligibility criteria based upon the acuity of their needs were randomly assigned for services to Lead Services Agencies (LSAs) for up to 15 months or state supported treatment as usual (TAU). The LSAs organized collaborative networks of children's mental health service providers, and coordinated care among the community and residential services within their local agency partners. This presentation reports the final results of this randomized controlled trial of continuum of care services to children served in the child welfare system in the state of Connecticut.

## Methods

Three components were included in the evaluation of the randomized trial. To evaluate the program's successes in meeting clinical, functional and placement outcomes, a series of structured interviews were conducted with children and their caregivers at the time of program entry and then 6, 12, and 24 months after program entry. The interviews included standard psychometric instruments focused upon measuring clinical symptoms and behavioral functioning: (a) Child Behavior Checklist (CBCL; Achenbach, 1991); (b) Child and Adolescent Functional Assessment Scale (CAFAS; Hodges, 1995); and (c) Behavioral and Emotional Rating Scale (BERS; Epstein & Sharma, 1998). Interviews also included detailed tracking of child living arrangements: Restrictiveness of Living Environments (ROLES-R; Hawkins, 1992). To determine how the operational objectives of the project were met, a process study was conducted. Structured interviews were conducted with 26 different stakeholders representing both demonstration and TAU sites including site program directors, network participants, direct service providers, and parents of participating children. Document and interview descriptions of service delivery were compared to case activities as recorded in a random sample of case records. Finally, utilizing Management Information Systems (MIS) data, the services and costs mix of the demonstration was compared with that of the ongoing state services model to determine whether the LSAs offered a cost effective way to deliver services.

## Results

### Characteristics of the sample

One hundred fifty-seven children were randomly assigned to the LSAs ($n$ = 78) and DCF services as usual ($n$ = 79) samples. Fifty-three percent were male and 46% were White. African American and Hispanic children each represented 24% of the enrollees. The average age was 12.1 years with 56% 13-15 years old at the time of program entry. Fifty-eight percent of children were referred from within DCF child welfare programs, 14% from Probation Departments or the Juvenile Court, 12% from caregivers, and the remainder from other community sources. Eighty-one percent of the children presented behavioral symptoms at or above the clinical range on the CBCL, and 79% were assessed with marked or severe levels of functional impairment on the CAFAS. Over half showed lower levels of behavioral

strengths on the BERS than children in the general population. Over 90% of the youth had two or more DSM-IV (American Psychiatric Association, 1994) diagnoses at entry into the project. Demographic and clinical characteristics did not differ significantly between the groups. Ninety-two percent of the sample participated in the six-month interview and 94% of the sample participated in the 12-month interview. Only 64% of the sample participated in the 24-month interview, due to the state's decision to discontinue the demonstration in favor of a broader system reform project.

### *Process Study Results*

The differences in programming by the demonstration sites compared to the services provided through usual departmental treatment models were largely in the intensity, direction, and quality of the case management model implemented under the Waiver contracts. When examining units of services received per month through an intensity analysis, the LSAs provided significantly more intensive services than DCF in the areas of case management, family support, and transportation, while DCF provided more units for medication monitoring, residential treatment and inpatient hospitalization. Clinical service implementation successes did not extend, however, to system development activities as the process study documented several barriers to sustained systems development.

### *Outcomes Results*

Despite high levels of impairment with lower levels of strength, all children regardless of site demonstrated improvement. Repeated measures analysis of variance indicated that both groups made significant progress on all three major outcome measures: CBCL total score, $F$ (2,132) = 27.6, $p < .001$, CAFAS total score, $F(2,126) = 18.1$, $p < .001$, and BERS total score $F(2,114) = 10.9$, $p < .001$ over the first 12 months. The children receiving services through DCF and the LSAs continued to make progress in their outcomes through 24 months. Rates of clinically significant improvement as assessed by the reliable change index (Jacobson & Truax, 1991) on the CBCL, climbed above 50% for both groups of children (DCF at 54% and LSAs at 51%), and clinically significant improvement in strengths as assessed by the BERS was above 40% (DCF at 41% and LSAs at 45%). Similar to the results at 12 months, levels of improvement were not significantly different between the two groups.

The LSAs were more successful at maintaining children in non-institutional settings, and were able on average to maintain children for longer periods in at-home settings than DCF for the first 12 months. At entry into services, 22% of the children assigned to DCF and 20% of the children assigned to the LSAs were placed at home. This percentage increased to 38% of the LSA group and decreased to 14% for the DCF group at 12 months, $\chi^2(2) = 11.2$, $p < .01$. The percentage of days placed at home in the first six months followed the same pattern (38.4% for the LSAs versus 13.7% for DCF; $\chi^2(4) = 16.6$, $p < .01$). Examination of placement data for the children participating in the 24-month interview indicated that 44% of the children who received services in the LSAs were in in-home placements while 37% of the children who received services through DCF were in in-home placements at the end of the 24-month follow up period. Percentage of days placed at home did not differ significantly between the two groups.

At 12 months, children placed at home showed the most improvement in behavior and functioning. CAFAS scores decreased significantly from services entry to 12 months for children placed at home while the scores for those placed out of home remained similar from services entry to 12 months, $F(2,125) = 6.3$, $p < .01$. Similarly, CBCL scores decreased significantly from services entry to 12 months for children placed at home while the scores for those placed out of home remained similar from services entry to 12 months, $F(2,131) = 3.2$, $p < .05$). Repeated measure analyses of change to the 24-month data collection point did not reveal any significant difference as a function of placement status.

### Cost Analyses

Cost analysis results indicated that the overall costs of services delivered by the LSAs, which were paid with a case rate, were cost neutral. Average 15-month expenditure per child at the LSAs ($51,618) was lower than that estimated for the State residential costs for 15 months ($62,000). Overall, 46% of the children served by the LSAs required expenditures below 90% of the case rate. Forty percent of the children at the LSAs required expenditures at 110% or more of the case rate. Less than 15% of the children at the LSAs were served within the risk corridor of 90% to 110%.

## Discussion

Evaluation of the Demonstration project indicated that in a situation that is essentially cost neutral, improvement in outcomes occurred in less restrictive settings. The LSAs were more effective at: (a) returning children to in-home placements, especially in the first 12 months; (b) reducing the length of stay in restrictive placements; and (c) utilizing higher levels of case management, coordination among agencies and family support services. These results provide important information for ongoing efforts to reform mental health services within child welfare systems.

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