

C012947 ABSTRACT: This study examined the effects of a collaborative intervention targeting juvenile detainees with co-occurring mental health and substance abuse problems. Changes in mental health problems, substance use, and delinquency were assessed. The results indicated significant time effects were found for anxiety and depression and for the frequency of substance use and delinquency. Significant time by cluster interactions were found for mental health problems of obsessive-compulsive behavior and interpersonal sensitivity and for property and drug-related offending. The study concluded that cross-system collaboration among mental health, substance abuse, and juvenile justice systems is a promising approach for treating delinquent youth with co-occurring problem behaviors. (authors)

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Authors Jenson, J., Potter, C.

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The Effects of Cross-System Collaboration on Mental Health and Substance Abuse Problems of Detained Youth

Jeffrey M. Jenson
Cathryn C. Potter
University of Denver

Objective: This study examined the effects of a collaborative intervention targeting 107 juvenile detainees with co-occurring mental health and substance abuse problems. Method: Changes in mental health problems, substance use, and delinquency between pretest and 3- and 6-month follow-up were assessed. Three distinct clusters of detained youth characterized by varying levels of self-reported symptoms and behaviors across these three problem domains were included in a series of repeated measures analyses. Results: Significant time effects were found for anxiety and depression and for the frequency of substance use and delinquency between pretest and 3- and 6-month follow-up. Significant time by cluster interactions were found for mental health problems of obsessive-compulsive behavior and interpersonal sensitivity and for property and drug-related offending. Conclusions: Cross-system collaboration among mental health, substance abuse, and juvenile justice systems is a promising approach for treating delinquent youth with co-occurring problem behaviors.

Keywords: juvenile delinquency; mental health; substance abuse

Mental health and substance abuse disorders are common among youth referred to the juvenile justice system (Teplin, Abram, & McClelland, 1998). Practitioners and program administrators have frequently noted the challenges associated with treating adolescents who experience co-occurring problems (e.g., Jenson, 1997a). Yet investigators have only recently begun to examine patterns of mental health problem symptoms and substance use among adjudicated youth.

Authors' Note: Correspondence may be addressed to Jeffrey M. Jenson, Graduate School of Social Work, University of Denver, 2148 S. High Street, Denver, CO 80208, or via e-mail at jjenson@du.edu. The Colorado Division of Youth Corrections funded this study. The authors thank Ceil Boyles, John Befus, and program staff members at each study site for their contributions to this investigation. Points of view stated in this manuscript are the sole responsibility of the authors.

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Considerable evidence exists to support the relationship between substance use and delinquent conduct. Delinquent youth initiate substance use at an earlier age than nondelinquents (Dembo, Pacheco, Schmeidler, Fisher, & Cooper, 1997; Dembo, Williams, Fagan, & Schmeidler, 1993; Van Kammen, Loeber, & Stouthamer-Loeber, 1991) and youth detained in the juvenile justice system use drugs more frequently than nondetained youth (Huizinga & Jakob-Chien, 1998; Jenson, 1997a; Rounds-Bryant, Kristiansen, Fairbank, & Hubbard, 1998). Results from longitudinal investigations reveal that many of the same factors that predict the onset of delinquent behavior are related to the initiation of substance use among adolescents (e.g., Elliott, Huizinga, & Menard, 1989; Hawkins, Catalano, & Miller, 1992; Huizinga, Loeber, Thornberry, & Cothorn, 2000; Jenson, 1997b; Stice, Myers, & Brown, 1998; Zhang, Wieczorek, & Welte, 1997).

Less is known about the relationship between mental health disorders and delinquency. The few empirical investigations of mental health problems among young offenders indicate that between 20% and 84% of adolescents in the nation's juvenile justice system have significant mental health disorders (Garland et al., 2001; Otto, Greenstein, Johnson, & Friedman, 1992; Potter & Jenson, 2003; Teplin et al., 1998; Timmons-Mitchell et al., 1997). Conduct disorder, attention-deficit/hyperactivity disorder, depression, and anxiety are the most frequently reported mental health problem symptoms among juvenile delinquents (Garland et al., 2001; Potter & Jenson, 2003). At least one study indicates that girls evidence significantly higher rates of mental health disorders than boys who are detained in the juvenile justice system (Timmons-Mitchell et al., 1997).

Few interventions targeting the co-occurring mental health and substance use problems of delinquent youth have been developed or evaluated (Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998; Teplin, 2001; U.S. Department of Health and Human Services, 1999; Wierson, Forehand, & Frame, 1992). Investigators and public policy officials suggest that youth with co-occurring problems are likely to be best served by intervention models that emphasize collaboration among mental health, substance abuse, and juvenile justice systems (Bilchik, 1998; Center for Mental Health Services, 1998; Cocozza & Skowrya, 2000). Yet traditional programs in the justice system are generally implemented in community-based or residential settings without the benefit of cross-system collaboration (Jenson & Howard, 1998, 1999; Pumariega et al., 1999; Teplin, 2001). Furthermore, juvenile justice interventions often target only specific behavior problems such as aggression or inadequate social skills and fail to address the underlying mental health and substance abuse problems that may have contributed to the onset or persistence of delinquent conduct (Krisberg & Howell, 1998; Lipsey & Wilson,

1998). Despite good intentions, time and resources required by collaborative interventions have deterred the development of cross-system approaches to treating youth with co-occurring mental health disorders and substance abuse.

In this report, we present results from a longitudinal investigation of a collaborative, cross-system intervention that seeks to reduce mental health and substance abuse problems of detained youth. In the context of this investigation, the term *cross-system* refers to the application of integrated intervention principles and practices jointly selected and administered by professionals representing juvenile justice, mental health, and substance abuse service delivery systems. The study extends previous analyses in which we identified and described variations in three distinct clusters of youth based on measures of mental health problem symptoms, self-reported substance use and delinquency, and other individual and social characteristics (Potter & Jenson, 2003). Youth in Cluster 1 were characterized by high levels of self-reported substance use and mental health problems and by moderate levels of crime. A second group of detainees reported high levels of substance use, moderate levels of mental health problem symptoms, and significant involvement in property and person offending. Detainees in the final cluster had moderate mental health problem symptoms and relatively low levels of substance use and crime. Detailed results regarding attributes and differences among clusters are reported elsewhere (Jenson & Potter, 2001; Potter & Jenson, 2003). In the current analyses, changes in mental health problems, substance use, and delinquent conduct between pretest and 3- and 6-month follow-up are assessed in a series of repeated measures analyses. The relationship between cluster membership and mental health, substance use, and delinquent outcomes is examined. Implications for practice in juvenile justice, mental health, and substance use systems of care are delineated.

METHOD

Screening Procedures and Sample

A screening process was used to identify juvenile detainees with mental health and/or substance abuse problems. All youth referred to two juvenile detention centers between January and October of 1999 were screened for mental health problem symptoms and substance abuse using the Colorado Client Assessment Record (CCAR) (Ellis, Wackwitz, & Foster, 1991) and the Substance Use Survey (SUS) (Wanberg, 1991). Counselor ratings on the CCAR were used to assess individuals' mental health and social functioning

in nine areas including affect or mood, thinking processes, and interpersonal problems (Ellis et al., 1991). Counselors rated the nine areas of functioning and then summarized their ratings on an overall problem severity scale that ranged from *no problem* (1) to *extreme problem* (9). Validation studies using exploratory and confirmatory factor analysis with the CCAR have produced empirical support for the structure of the instrument (Potter, 1995, 1999). The SUS, a self-report measure of current, annual, and lifetime substance use, was used to identify detainees at risk for substance abuse. The instrument is widely used across the state's juvenile justice system; evaluations assessing the psychometric properties of the SUS have yielded acceptable reports of content and criterion validity and internal consistency with delinquent samples (Wanberg, 1991). Youth scoring 5 and above on the CCAR problem severity scale or 8 and above on the 18-point SUS scale assessing youth's degree of involvement in alcohol and other drugs and the level of disruption in their lives attributed to substance use in the past year, met program eligibility. The mean score for referred youth on the CCAR problem severity score was 6.0 ($SD = .8$); individuals averaged 11.9 on the SUS ($SD = 4.9$).

Approximately 1,500 youth were admitted to the two detention centers during the study period; 1,147 were from a detention facility in a large metropolitan center and 363 were from a center located in a medium-sized city in a less populated region of the state. Each center serves youth who are awaiting a court disposition or placement in a community-based program, residential treatment center, or secure care correctional program. Eligible youth and their parents were informed of the program's purpose and were then asked to voluntarily consent to participate in the investigation by the project's research staff. Consent procedures followed standard protocols; research staff members first obtained parental permission for their child's participation. Individual appointments were then made by research personnel to further explain the project and to outline the conditions of participation. One-hundred seventy-five youth were referred to the evaluation sample. Of this total, 88% ($n = 154$) of youth agreed to participate in the study. Sixty-six percent ($n = 102$) of the sample were from the urban detention facility and 34% ($n = 52$) were from the center located in the medium-sized city. No significant differences were found in demographic, social history, or offending characteristics between youth in the two detention centers.

Missing data at 3- and 6-month follow-up reduced the sample size for the current analysis to 107 participants. Thus, findings reported here are based on 69% of the complete sample and may be influenced by the exclusion of individuals who were not located at follow-up. Characteristics of the current study sample ($N = 107$) and the noncompleter sample ($n = 47$) (e.g., youth not included in the analyses due to missing data at one or more follow-up points)

are shown in Table 1. Youth who did not complete follow-up interviews stayed in detention significantly longer than those who completed follow-up interviews. Participants in the two groups, however, did not differ with regard to gender, ethnicity, social characteristics, or offending patterns.

Seventy-seven percent ($n = 82$) of participants in the study sample were male. Seventy-nine percent ($n = 82$) were Caucasian, 16% ($n = 17$) were Latino, and 6% ($n = 7$) were American Indian, African American, or Asian American. The average age of participants was 15.6 years ($SD = 1.6$). Twenty-five percent of detainees in the study sample ($n = 27$) lived with their natural parents at the time they were referred to detention. Sixty percent ($n = 64$) of youth who completed follow-up interviews participated in drug-selling activities, and 36% ($n = 39$) had thoughts of committing suicide prior to detention.

Type of offenses committed by youth prior to their current detention episodes did not differ between the current study and noncompleter samples. Youth in the noncompleter sample were slightly, although not significantly, more likely than those in the study sample to have committed a person offense immediately prior to detention; 28% ($n = 13$) of youth in the noncompleter sample compared to 13% ($n = 14$) of youth in the study sample were placed in detention as a result of committing a person offense. Fourteen percent ($n = 15$) of youth in the study sample committed property offenses, and 3% ($n = 3$) were detained for drug or weapon charges. Seventy percent ($n = 75$) of youth in the current analysis were placed in detention because of outstanding court warrants, probation violations, or bond revocations. Participants in both samples averaged less than two prior detention stays. Additional characteristics are shown in Table 1.

Design and Intervention

A one-group pretest-posttest design was used to assess changes in self-reported mental health symptoms, substance use, and delinquency between pretest and 3- and 6-month follow-up. The exploratory nature of the study did not allow for the inclusion of a control or comparison group. During detention, all youth referred to the study sample participated in a psychoeducational group conducted by community mental health staff workers that exposed youth to knowledge about co-occurring mental health and substance abuse problems. Detainees also received medication evaluation services by a child psychiatrist and met with mental health case managers to plan postdetention treatment strategies.

Youth received individualized services based on their presenting problems for 3 months following release from detention. To foster cross-system

TABLE 1: Characteristics of Juvenile Detention Study Samples

	Study Sample (N = 107)		Noncompleters (n = 47)	
	%	n	%	n
Gender				
Male	76.6	82	83.0	39
Female	23.4	25	17.0	8
Ethnicity				
Caucasian	78.5	84	78.7	37
Latino/Hispanic	15.9	17	17.0	8
Other	5.6	7	4.2	2
Living arrangements prior to detention				
Both parents	25.2	27	21.3	10
Mother	28.0	30	31.9	15
Father	6.5	7	12.8	6
Parent and stepparent	30.8	33	27.7	13
Other relative	2.8	3	2.1	1
School in the year before detention				
Regular classroom	58.9	63	36.2	17
Alternative school, GED, or vocational training	28.0	30	40.4	19
Not attending	8.4	9	10.6	5
Employed in past 6 months	64.5	69	70.2	33
Gang member	21.7	23	12.8	6
History of drug distribution	59.8	64	46.8	22
History of suicidal thoughts	36.4	39	29.8	14
Offense type at referral				
Person crime	13.1	14	27.7	13
Property crime	14.0	15	8.5	4
Drug and weapon charges	2.8	3	6.4	3
Probation and other violations	70.1	75	57.4	27
	M	(SD)	M	(SD)
Age in years	15.6	(1.6)	15.5	(1.7)
Number of prior detentions	1.4	(1.6)	1.1	(1.4)
Length (days) of current detention episode	35.0	(29.4)	52.6	(44.2)***

NOTE: Noncompleters were youth with missing data at 3- and/or 6-month follow-up.

*** $p < .001$.

collaboration, case managers from the mental health system worked closely with juvenile justice detention staff members to design and implement postdetention treatment plans for youth and parents. Following release from detention, mental health and substance abuse treatments were coordinated

and/or provided by one public mental health center and by mental health case managers at each study site. Forty-three percent ($n = 46$) of participants received peer-based, group therapy for mental health problems in the 3 months following detention. Thirty-seven percent ($n = 40$) of youth participated in substance abuse treatment and 35% ($n = 37$) received family therapy. All participants received case management services. Because postdetention services were tailored to individual needs and problems, the interventions received by participants may best be conceptualized as a form of cross-system collaboration between the mental health and juvenile justice systems. This approach shares some similarities to the well-known multisystemic therapy (MST) developed by Henggeler and associates (Henggeler & Borduin, 1990), but it is considerably less intensive and comprehensive than MST.

Measures

Mental health problem symptoms. The Brief Symptom Inventory (BSI) (Derogatis, 1993) was used to assess self-reported mental health problem symptoms. The BSI is a 53-item instrument that asks respondents to rate their degree of distress with a variety of mental health problems. Items are rated using a 5-point response set ranging from *not at all* (0) to *extremely* (4). The instrument has nine primary symptom dimensions that assess somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. The BSI also includes a global severity index, a measure that is calculated by adding the sums for the nine symptom dimensions and then dividing this total by the number of individual items. Raw scores for subscales are transformed into t scores relative to national norms. A t score of 60 indicates that the level of symptomology reported exceeds that of 84% of the national population of youth of the same gender.

Number of medications taken for mental health problems was assessed at intake by searching case records. Single dichotomous items asking youth if they had “ever thought of committing suicide” and “ever attempted suicide” were also used in analysis (0 = no, 1 = yes).

Substance abuse. Lifetime and annual alcohol, marijuana, hallucinogen, cocaine, and inhalant use were evaluated. Lifetime use was measured with a response set that included *never* (1), *once or twice* (2), *occasionally* (3), *regularly in the past* (4), and *regularly now* (5). Response options for annual use were *not at all* (0), *once* (1), *2 to 4 times* (2), *5 to 10 times* (3), *once a month*

(4), every 2 to 3 weeks (5), once a week (6), 2 to 3 times a week (7), once a day (8), and 2 to 3 times a day (9). Perceived consequences of substance use were assessed with a five-item scale asking respondents if they had experienced certain types of problems because of their drug use. The range, mean, and alpha for this scale were 5 to 18, 5.6 ($SD = 3.4$), and .76.

Self-reported delinquency. Single-item dichotomous variables were used to assess detainees' lifetime involvement in specific property and person offenses (0 = no, 1 = yes). Annual prevalence of self-reported delinquent acts was based on a 7-point response set that included *not at all* (0), *less than once a month* (1), *once a month* (2), *once every 2 to 3 weeks* (3), *once a week* (4), *two to three times a week* (5), *once a day* (6), and *two to three times a day* (7). Delinquent acts included property offenses such as "stealing something worth more than \$50" and "damaging property on purpose." Person offenses included behaviors such as "using a weapon or a gun to get something from someone," "hurting someone badly enough to need bandages," and "using force to rob a person or store." An additional item employing the identical response set was used to assess participants' annual prevalence of selling drugs.

Cluster membership based on patterns of mental health problem symptoms, substance use, and delinquent conduct. K-means cluster analysis, an exploratory multivariate procedure for detecting groupings in data, was used in an earlier analysis to examine patterns of mental health, substance use, and delinquency at pretest (Potter & Jenson, 2003). Variables used in the original cluster analysis included dichotomous items assessing suicidal ideation and suicide attempts and lifetime reports of stealing property worth more than \$50, hurting someone badly enough to need bandages, engaging in drug sales, and using a weapon in a delinquent or criminal act (0) no and (1) yes. Lifetime alcohol, marijuana, cocaine, hallucinogen, and inhalant use were converted to simple dichotomous variables and included in the analyses (0 = no, 1 = yes). Interval-level variables included the consequences of drug use scale, number of medications, and the t score from the BSI global severity index. Gender, ethnic, and racial group membership were considered in these analyses but no cluster differences in such subgroups were found. Results of this analysis were used to construct an independent variable called *cluster*. This measure is an indicator of variations in patterns of substance use and mental health disorders among the sample and is defined as (1) *high substance use, moderate crime, and high mental health*, (2) *high substance use, high crime, and moderate mental health*, and (3) *low substance use, low crime, and moderate mental health*. Table 2 summarizes the key attributes of

TABLE 2: Attributes of Cluster Membership Across Mental Health, Substance Use, and Delinquency Among Juvenile Detainees

<i>Cluster 1</i>	<i>Cluster 2</i>	<i>Cluster 3</i>
<i>Cluster description</i>	<i>Cluster description</i>	<i>Cluster description</i>
High mental health High substance use Moderate delinquency	Moderate mental health High substance use High delinquency	Moderate mental health Low substance use Low delinquency
<i>Specific characteristics^a</i>	<i>Specific characteristics</i>	<i>Specific characteristics</i>
High suicidal ideation High mental health symptoms Psychoticism Paranoia Depression Anxiety Somatization Obsessive compulsive Hostility Global Symptom Index	No suicidal ideation Moderate mental health symptoms Psychoticism Paranoia Depression Anxiety Somatization Obsessive compulsive Interpersonal sensitivity Phobic anxiety	Low suicidal ideation Moderate mental health symptoms Psychoticism Paranoia Depression Anxiety Somatization Obsessive compulsive Interpersonal sensitivity Phobic anxiety

Moderate mental health symptoms Interpersonal sensitivity Phobic anxiety High levels of alcohol, marijuana, inhalant, and hallucinogen use Moderate levels of cocaine use High involvement in stealing Moderate involvement in drug sales, weapons use, and personal injury crime	Global symptom index High mental health symptoms Hostility High levels of alcohol, marijuana, inhalant, and cocaine use High involvement in stealing, personal injury crime, weapons use, and drug sales	Hostility Global symptom index Moderate levels of alcohol and marijuana use Low levels of inhalant, cocaine, and hallucinogen use Moderate involvement in stealing Very low involvement in other crime
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SOURCE: This table is adapted from Potter and Jenson (2003).

NOTE: N = 154 (Cluster 1 = 35, Cluster 2 = 62, Cluster 3 = 49).

a. Mental health symptom scores are derived from the Brief Symptom Inventory (Derogatis, 1993). All other characteristics are based on individuals' responses to self-report items concerning suicide, drug use, and involvement in delinquent conduct at pretest.

individual clusters across the domains of mental health, substance use, and delinquency. The labels low, medium, and high are used to characterize the general pattern across clusters. These terms are used to describe the relative position of clusters.

Analytic Approach

Repeated measures ANOVA was used to assess changes in self-reported mental health problem symptoms, substance use, and delinquency between pretest and 3- and 6-month follow-up. Repeated measures was selected as an analytical approach because of our interest in assessing main effects of time and cluster membership and in understanding interactions between time and group status. Preliminary analyses detected no significant time by program site effects; thus, program location was excluded from the final analyses reported here. Cluster membership was included as an independent variable in all repeated measures analyses to examine the influence of differential patterns of mental health problems, substance use, and delinquent conduct at pretest on outcomes at 3- and 6-month follow-up.

RESULTS

Changes in Mental Health, Substance Use, and Delinquency

Mental health problem symptoms. Forty-three percent ($n = 46$) of detainees had t scores greater than 60 on at least one of the nine BSI subscales at pretest. Symptoms of depression and psychoticism (e.g., thoughts of being controlled by others or never feeling close to another person) were most likely to be reported by youth; 26% ($n = 28$) and 21% ($n = 22$) of participants reported symptoms that exceeded a score of 60 on these two scales, respectively. Seventeen percent ($n = 18$) of detainees exceeded a t score of 60 on problem symptoms associated with anxiety at pretest.

Significant time effects for levels of self-reported mental health problem symptoms were found on the anxiety, depression, obsessive-compulsive, interpersonal sensitivity, psychoticism, paranoid ideation, and somatization subscales between pretest and follow-up. A significant time effect was also found on the global severity index. Mean pretest scores on the BSI ranged from a low of 45.1 ($SD = 8.9$) for interpersonal sensitivity to a high of 51.6 ($SD = 9.7$) for depression. By 6-month follow-up, average BSI scores ranged

from a low of 42.2 ($SD = 8.6$) for interpersonal sensitivity to a high of 47.5 ($SD = 9.4$) for hostility (Table 3).

Significant Time \times Cluster interactions were found for obsessive-compulsive and interpersonal sensitivity domains. Youth in Cluster 1 reported slightly, although not significantly, higher problem symptom levels for obsessive-compulsive and interpersonal sensitivity at 3-month follow-up when compared to pretest. This pattern reversed itself between 3- and 6-month follow-up; problem symptom levels associated with obsessive-compulsive were significantly lower among youth in Cluster 1 between 3- and 6-month follow-up. Problem symptoms for interpersonal sensitivity were lower at 6-month follow-up than at 3 months following detention; this change, however, was not statistically significant. Youth in Cluster 2 evidenced significant reductions in obsessive-compulsive and interpersonal sensitivity between pretest and 3-month follow-up. This pattern continued for Cluster 3 detainees between 3- and 6-month time intervals whereas youth in Cluster 2 reported slight increases in problem symptoms following the 3-month follow-up interview. Figures 1 and 2 show significant time by cluster interactions for obsessive-compulsive and interpersonal sensitivity domains.

Substance use. Ninety-four percent ($n = 101$) of youth used marijuana in their lifetime prior to detention, 93% ($n = 100$) drank alcohol, and 63% ($n = 67$) used hallucinogens. Forty-one percent ($n = 44$) of detainees used cocaine at some time in their life. Youth began using alcohol and marijuana just past their 12th birthday; the average age of initiation for these two substances was 12.3 ($SD = 2.6$) and 12.1 ($SD = 2.4$) years old, respectively.

Significant time effects were found for alcohol, marijuana, hallucinogen, and cocaine use indicating that detainees significantly reduced their use of substances between pretest and 3- and 6-month follow-up. Reductions in drug use were most pronounced between pretest and 3-month follow-up. Youth reported using marijuana an average of three times per week in the year preceding detention. At 3- and 6-month follow-up, participants used marijuana fewer than five times during each of the 3-month time periods. Similar patterns of significantly lower substance use were found for alcohol, hallucinogens, and cocaine. No significant Time \times Cluster interactions were found on any of the substance use measures (Table 3).

Delinquency. Detainees participated in numerous property and person crimes prior to incarceration. Sixty percent ($n = 60$) of youth reported lifetime involvement in selling drugs, 54% ($n = 58$) of youth indicated they had hurt someone badly enough to require bandages, and 61% ($n = 65$) had been in a

TABLE 3: Repeated Measures Analysis of Selected Mental Health Problem Symptoms, Drug Use, and Delinquency by Cluster

	Items M	Pretest (SD)	3-Month Follow-Up		6-Month Follow-Up		Repeated Anova F	
			M	(SD)	M	(SD)	M	(SD)
Brief Symptom Inventory scales								
Anxiety	47.5 _b	(10.0)	46.6 _c	(9.5)	42.9	(9.3)	10.65***	1.47
Depression	51.6 _{a,b}	(9.7)	49.0 _c	(9.7)	45.5	(9.4)	13.27***	.51
Obsessive-compulsive	48.9 _b	(9.8)	49.0 _c	(9.7)	44.5	(11.3)	10.37***	2.80*
Interpersonal sensitivity	45.1 _b	(8.9)	43.7	(8.8)	42.2	(8.6)	5.20**	3.84**
Psychoticism	49.9 _b	(8.8)	48.4	(9.3)	45.4	(9.2)	9.47***	.70
Paranoid ideation	48.8 _{a,b}	(9.3)	46.8	(10.0)	44.3	(11.0)	8.49***	.92
Hostility	48.5	(8.9)	48.5	(9.7)	47.5	(9.2)	1.09	2.07
Phobia	47.7	(8.2)	47.0	(7.5)	46.2	(7.8)	1.31	1.10
Somatization	47.8 _b	(10.0)	44.8	(9.8)	44.5	(10.1)	5.49**	1.41
Global symptom index	48.3 _b	(9.5)	46.6 _c	(9.8)	42.9	(11.1)	12.83***	1.54
Drug use								
Marijuana	6.7 _{a,b}	(2.7)	2.0	(3.1)	2.2	(3.4)	77.72***	.46
Alcohol	4.9 _{a,b}	(2.6)	1.9	(2.7)	1.8	(2.6)	41.67***	1.15
Hallucinogens	2.5 _{a,b}	(2.0)	.5	(1.4)	.5	(1.4)	11.56***	.91
Cocaine	3.0 _{a,b}	(2.3)	.3	(.8)	.4	(1.4)	6.65**	.05
Delinquency								
Property offending	3.8 _{a,b}	(4.6)	.8	(2.1)	.4	(1.6)	26.49***	3.27*
Person offending	2.6 _{a,b}	(3.6)	.7	(1.6)	.6	(1.4)	12.26***	1.73
Drug-related offending	4.8 _{a,b}	(5.2)	.7	(1.8)	1.2	(3.4)	35.94***	9.26***

NOTE: N = 100 (Cluster 1 = 31, Cluster 2 = 41, Cluster 3 = 28).

a. Significant difference ($p < .05$) between pretest and 3-month follow-up.

b. Significant difference ($p < .05$) between pretest and 6-month follow-up.

c. Significant difference ($p < .05$) between 3-month follow-up and 6-month follow-up.

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

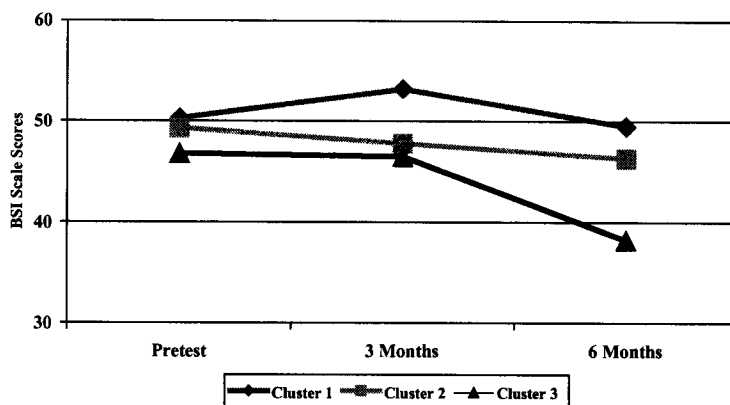


Figure 1: Obsessive-compulsive behavior by cluster membership at pretest and follow-up.

NOTE: Numbers reflect average subscale scores at pretest and 3- and 6-month follow-up on the Brief Symptom Inventory (Derogatis, 1993).

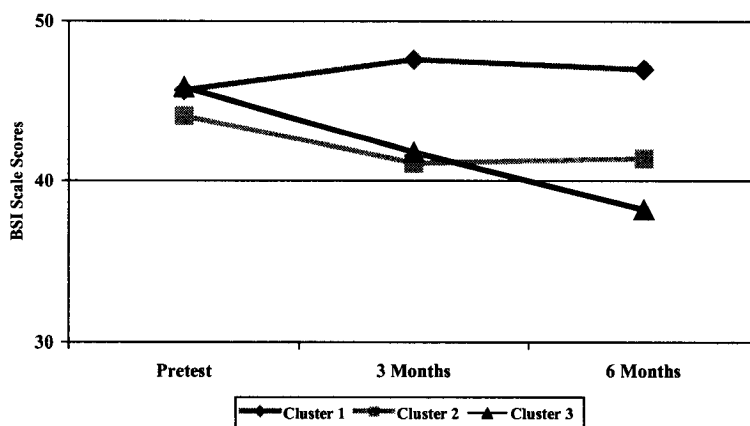


Figure 2: Interpersonal sensitivity by cluster membership at pretest and follow-up.

NOTE: Numbers reflect average subscale scores at pretest and 3- and 6-month follow-up on the Brief Symptom Inventory (Derogatis, 1993).

serious fight at school. Nearly 70% ($n = 75$) of adolescents had stolen something worth more than \$50 in their lifetime.

Significant reductions in self-reported property, person, and drug-related offending were found between pretest and 3- and 6-month follow-up. Changes in delinquent conduct were most pronounced between pretest and 3-month follow-up. Self-reported property, person, and drug-related offending occurred once a week, once every 2 to 3 weeks, and two to three times per week respectively in the year prior to detention. During 3- and 6-month follow-up, youth averaged one event for each of the three types of offending (Table 3).

Significant Time \times Cluster interactions for property and drug-related offending are shown in Figures 3 and 4. These effects were produced by significant reductions in offending among youth in Cluster 2 relative to youth in Clusters 1 and 3 between pretest and 3-month follow-up.

DISCUSSION AND APPLICATIONS TO SOCIAL WORK PRACTICE

Findings suggest that cross-system mental health and substance abuse services during and after detention may be critical components for youth with co-occurring disorders in the juvenile justice system. Participating youth evidenced significant reductions in mental health problem symptoms and in self-reported delinquency and substance use in the 6 months following their release from detention. Reductions in mental health problems were most pronounced between 3- and 6-month follow-up, suggesting that postrelease detention services had a positive impact on youth in community settings. Unlike the delayed reductions in mental health problem symptoms, changes in substance use and delinquency were most significant between pretest and 3-month follow-up.

Cluster membership had a significant effect on mental health indicators of obsessive-compulsive behavior and interpersonal sensitivity at follow-up. In each case, youth in Cluster 1 displayed moderate increases in problem symptom levels between pretest and 3-month follow-up whereas youth in Clusters 2 and 3 evidenced reductions in problem levels. This may be reflective of the more pervasive mental health problems experienced by Cluster 1 youth relative to youth in the other two groups and should be the focus of continued investigation. There were also significant Time \times Cluster membership interactions for property and drug-related offending. These interactions can be largely attributed to the very high levels of offending reported by youth in

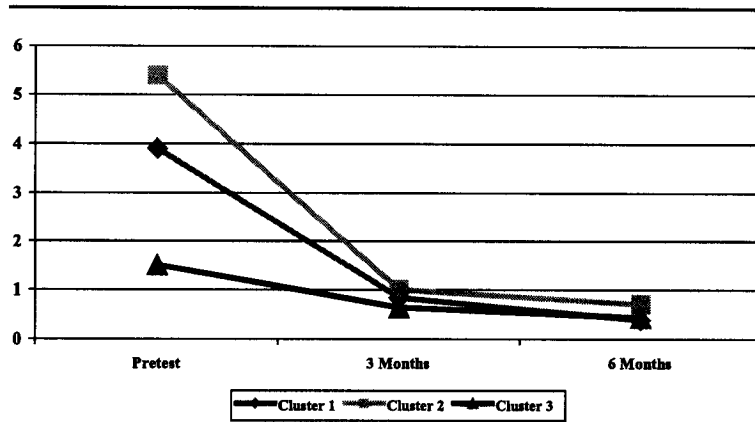


Figure 3: Self-reported property offending by cluster membership at pretest and follow-up.

NOTE: Self-reported delinquency at 3- and 6-month follow-up was based on average frequency of behavior across each of the follow-up periods. These variables ranged from 0 to 7 (0 = *not at all*, 1 = *less than once a month*, 2 = *once a month*, 3 = *once every 2 to 3 weeks*, 4 = *once a week*, 5 = *two to three times a week*, 6 = *once a day*, 7 = *two to three times a day*). The comparable pretest measures used the same scale but are taken from frequencies reported for the year prior to detention.

Cluster 2 and are consistent with profiles of Cluster 2 youth characterized by extensive involvement in delinquent conduct.

Our findings have several practice implications. First, it is critical that practitioners in the juvenile justice system be trained to screen and identify mental health and substance abuse problems. Adoption of the screening instruments used in this investigation, or of recently tested inventories such as the Massachusetts Youth Screening Instrument-2 (Grisso, Barnum, Fletcher, Cauffman, & Peuschold, 2001), provide effective ways to identify youth with mental health and/or substance use problems. Practitioners should be required to systematically use valid and reliable screening instruments.

Our results also suggest that placing mental health services within the structure of a juvenile correctional facility may be a promising form of cross-system collaboration. Although encouraging, these findings must also be interpreted in the context of several limitations. Participants received a variety of intervention services following release from detention. The exact constellation of services may have contributed to outcomes in ways that were impossible to assess in this report. Furthermore, the lack of a no-treatment control group or comparison group in the study introduces the possibility that

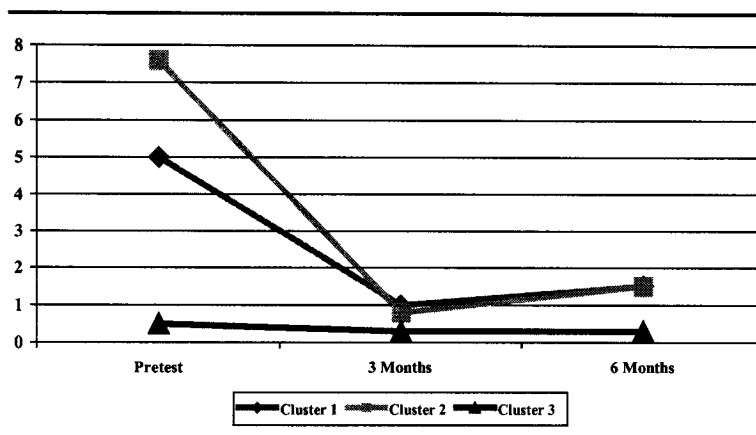


Figure 4: Self-reported drug-related offending by cluster membership at pre-test and follow-up.

NOTE: Self-reported delinquency at 3- and 6-month follow-up was based on average frequency of behavior across each of the follow-up periods. These variables ranged from 0 to 7 (0 = *not at all*, 1 = *less than once a month*, 2 = *once a month*, 3 = *once every 2 to 3 weeks*, 4 = *once a week*, 5 = *two to three times a week*, 6 = *once a day*, 7 = *two to three times a day*). The comparable pretest measures used the same scale but are taken from frequencies reported for the year prior to detention.

youth may have reduced their problem behaviors simply due to being detained, monitored, or referred to treatment. Moreover, examination of patterns in several outcomes using multiple statistical tests has inflated the studywise error rate, an issue that is not easily addressed in studies featuring small sample sizes. Future practice and research efforts with delinquent youth experiencing mental health and substance abuse problems should strive to develop manualized treatments that ensure the consistency and replication of intervention. Controlled studies with large sample sizes comparing alternative treatments should be encouraged.

Many graduate-level social workers are employed in mental health and correctional settings. The importance of the training they receive in the etiology of mental health disorders, substance use, and delinquency and their awareness of patterns of co-occurring problems among high-risk and troubled youth cannot be minimized. Our findings suggest interdisciplinary collaboration across systems is a key element to reducing the mental health and substance abuse problems among delinquents. Specific aspects of service that best predict outcomes at follow-up have yet to be isolated and should be the subject of additional practice research.

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