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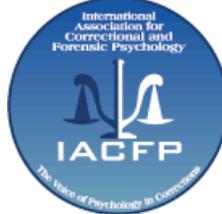
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TREATMENT RESPONSE OF ADOLESCENT OFFENDERS WITH PSYCHOPATHY FEATURES

A 2-Year Follow-Up

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This study examines the treatment response of 141 juvenile offenders with high scores on the Psychopathy Checklist: Youth Version (M total > 27). Two groups of potentially psychopathic offenders are compared: one that participates in the Mendota Juvenile Treatment Center (MJTC), an intensive treatment program (MJTC, $n = 56$), and another that receives “treatment as usual” in conventional juvenile correctional institution (JCI) settings (JCI, $n = 85$). Offenders in the JCI group are more than twice as likely to violently recidivate in the community during a 2-year follow-up than those who participate in MJTC treatment. Treatment is associated with relatively slower and lower rates of serious recidivism, even after controlling for the effects of nonrandom assignment to treatment groups and release status. Implications for further research, treatment development, and juvenile justice issues are discussed.

Keywords: psychopathy; treatment; juvenile delinquents; treatment outcomes; violence

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Psychopathy has been delineated as a clinical condition encompassing chronic interpersonal, affective, and behavioral features. Traditionally, psychopathy has been regarded as a difficult-to-treat syndrome (Cleckley, 1988; Karpman, 1946). More than 60 years ago, Cleckley (1941) was impressed by the psychopath's "lack of response to psychiatric treatment of any kind" (p. 433). These sentiments were shared by Karpman (1946), who described the primary psychopath as "incurable," "requiring indefinite institutionalization rather than temporary punishment" (p. 285). Such views are "so deeply ingrained in the culture of mental health and legal professionals alike that few objective efforts have actually examined the treatability of psychopaths" (Zinger & Forth, 1998, p. 256). Several recent studies are commonly mentioned to support the contention that psychopathy is difficult to treat. (For a more extensive review, see Salekin, 2002.)

PSYCHOPATHY AND TREATMENT FOR ADULTS

Two oft-cited studies of the relation between psychopathy and treatment response have solidified this opinion. First, Harris, Rice, and Cormier, (1991; see also Harris, Rice, & Cormier, 1994; Rice, Harris, & Cormier, 1992) found that relative to untreated psychopaths, treated psychopaths were as likely to recidivate generally (90% untreated group vs. 87% treated group), and more likely to recidivate violently (55% vs. 77%, respectively). Although this study frequently is offered to support conclusions that therapy worsens the psychopathic condition, methodological limitations prevent firm conclusions (see Skeem, Monahan, & Mulvey, 2002). The 1960s-based treatment was peer driven, highly coercive, and perhaps particularly iatrogenic for those with psychopathic traits.

Hemphill and Wong (1992) completed a follow-up study of a structured, professionally driven therapeutic community for personality-disordered offenders that was previously studied by Ogloff, Wong, and Greenwood (1990). The earlier study found that patients classified as psychopaths demonstrated less motivation and clinical improvement during the course of treatment. In the Hemphill and Wong follow-up, psychopaths were more likely to be reconvicted than nonpsychopaths.

The belief that psychopaths are impossible to treat is not well supported by available evidence. First, extant examinations generally contain methodological limitations (see Skeem et al., 2002; Wong, 2000). Second, there are recent suggestions that psychopathy may be treatable, given sufficient “doses” of treatment. Salekin’s (2002) review of treatment reports indicated that psychopathic individuals often did improve with treatment, as indexed by a reduction in psychopathic traits or rates of recidivism. The most successful interventions tended to be intensive and lengthy in duration. Similarly, Skeem et al. (2002) found that psychopathy did not moderate the effect of treatment on subsequent violence in a study of outpatient psychiatric patients: Psychopathic patients were as likely as nonpsychopathic patients to benefit from adequate doses of treatment.

Although these make valuable contributions, it remains unclear whether treatment of psychopaths can go beyond management and control to achieve more lasting behavioral and characterological change. Although some investigators (Gacono, 2000; Hare, 2002) assert that management may be the only viable solution, recent research (Caldwell & Van Rybroek, 2002; Salekin, 2002; Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003) suggests there are grounds for more optimism about the potential for change.

Considerable evidence suggests that early conduct problems and apparent traits of psychopathy place youth at risk for a range of future difficulties, including school failure, peer rejection, substance abuse, and extensive contact with law enforcement (e.g., Frick, 2002; Kazdin, 2000; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996). Measures of psychopathic traits in nonreferred children have also been found to be moderately stable during a 2- to 4-year period (Frick, Kimonis, Dandreaux, & Farell, 2003), reinforcing the assumption that these characteristics are stable from childhood onward. Considering that juvenile psychopathy, as defined by the Psychopathy Checklist: Youth Version (PCL:YV; Forth, Kosson, & Hare, 2003), has an average prevalence of 25% in correctional settings (Forth & Burke, 1998; Salekin, Neumann, Leistico, DiCicco, & Duros, 2004), pessimism about the potential for change in these youth carries with it considerable consequences.

Several scholars have recommended that interventions for psychopathy target children and adolescents (Forth & Burke, 1998;

Frick, 1998; Lynam, 1998). Youth, they reason, possess emerging traits that are more malleable than those of adults. Salekin, Rogers, and Machin (2001) found that psychologists belonging to the American Psychological Association's Society of Clinical Child and Adolescent Psychology generally agreed, reporting that psychopathy-like children and adolescents in their practices had made moderate-to-marked gains in psychotherapy. This view also is consistent with the principle that youth experiment with different roles as they develop, allowing for some shaping of personality (Caspi & Bem, 1990). On the other hand, some scholars have noted the persistence of antisocial behavior in adolescent offenders with early, chronic, and serious antisocial behavior (Moffitt, 1993; Tate, Reppucci, & Mulvey, 1995).

PSYCHOPATHY FEATURES AND TREATMENT FOR ADOLESCENTS

The few studies that have examined the performance of youth with psychopathic features in treatment settings have found these youth to be more apt to disrupt the treatment and make less progress than youth with fewer psychopathic features (Falkenbach, Poythress, & Heide, 2003; O'Neill, Lidz, & Heilbrun, 2003; Rogers, Johansen, Chang, & Salekin, 1997; Spain, Douglas, Poythress, & Epstein, 2004). For example, in a study of 81 adolescent offenders from a residential treatment program, Rogers et al. (1997) found that scores on the PCL-R were moderately but significantly correlated with treatment noncompliance and acts of physical aggression in treatment. Spain et al. (2004) examined institutional adjustment and treatment progress in a sample of 85 adjudicated delinquents. They found that measures of psychopathic features in juveniles were correlated to institutional rule violations, but they found inconsistent results with respect to measures of treatment progress.

Several studies have included posttreatment outcomes in an examination of treatment response of adolescents with psychopathic features. O'Neill et al. (2003) retrospectively examined the psychopathy features, treatment process, and outcomes of 64 individuals referred for treatment to a substance abuse program for adjudicated adolescents. These authors found that psychopathic features, as assessed by

the PCL:YV, were inversely related to treatment process and outcome variables (i.e., attrition, participation, substance use, clinical improvement) and positively related to the number of arrests during the year following treatment completion. Falkenbach et al. (2003) found that two measures of psychopathic features in youth were significantly correlated to program failure and rearrest at a 1-year follow-up in a group of 786 court-diverted juveniles.

Gretton, McBride, Hare, O'Shaughnessy, and Kumka (2001) retrospectively examined 220 adolescent males in an outpatient sex offender program. Files, including treatment notes, were used to rate the PCL:YV, code criminal history, and record demographic data for each participant. During the 10-year follow-up, adolescents with high PCL:YV scores committed significantly more violent offenses in the community and were relatively more likely to attempt escape from custody. Nevertheless, these effects appear partially attributable to premature dropout or termination for adolescents with high PCL:YV scores. Only 64% of those with high PCL:YV scores completed treatment, compared to 79% to 80% of those with low-medium scores (Gretton, McBride, Hare, & O'Shaughnessy, 2000). Of those with high PCL:YV scores, only 30% who completed the treatment program recidivated violently, compared to 80% who did not complete the program (Gretton et al., 2000). Thus, psychopathy-like youth who received sufficient doses of treatment appeared to benefit from it.

Like the other published studies on this topic (Falkenbach et al., 2003; Rogers et al., 1997; Spain et al., 2004), Gretton et al. (2000) and O'Neill et al. (2003) did not include a comparison group and relied solely on records that included treatment records to assess psychopathic features in their participants. Treatment notes may provide the most extensive information on interpersonal functioning, and progress notes of more treatment resistant adolescents may provide more characterizations (e.g., denial of responsibility, anger, and manipulation of treatment staff) that mimic psychopathy features. Therefore, in this type of study design, disentangling treatment resistance from features of psychopathy is, at best, challenging. To avoid this potential pitfall, the current study relied on an initial interview and records that were generated before treatment was started.

THE PRESENT STUDY

The present study was designed to assess the impact of an intensive treatment program on the recidivism of adolescent boys with pronounced psychopathy features. This study compares rates of recidivism for two groups of adolescent male offenders with high PCL:YV scores: a group that participated in an intensive treatment program and a comparison group that participated in less intensive “treatment as usual.” Unlike prior research, the present study includes a comparison group.

Standards for discretionary transfer or waiver of youth to the criminal justice system typically require that professionals identify youth who are likely to be dangerous and unresponsive to treatment in the juvenile system (Seagrave & Grisso, 2002). If psychopathy-like youth manifest no significant benefit from treatment, then seminal theorists may have been accurate in suggesting that management and control are the best forms of treatment for psychopathy, regardless of age. If, on the other hand, psychopathy-like youth manifest meaningful treatment gains, then relying on measures of psychopathy to infer that youth are untreatable and unmanageable in the juvenile system is inappropriate.

Throughout this article, youth with high PCL:YV scores are referred to as psychopathy-like or having psychopathy features. The term *psychopathic* has been avoided because the developmental appropriateness of extending these terms downward from adults to adolescents remains an open question (e.g., Edens, Skeem, Cruise, & Cauffman, 2001; Ogloff & Lyon, 1998; Seagrave & Grisso, 2002; Zinger & Forth, 1998).

METHOD

TREATMENT

Resource differences. The Mendota Juvenile Treatment Center (MJTC) had greater treatment resources than standard juvenile corrections institutions (JCIs). The 14- to 15-bed units on MJTC were less than half the size of JCI units. Frontline staff-resident ratios were more than double that of the JCIs. The MJTC had one

psychiatrist on staff for every 28 youth, one psychologist for every 26 youth, one social worker for every 14 youth, and a psychiatric nurse assigned to the day shift. A psychiatric nurse supervised day-to-day operations.

In contrast, mental health professionals were not normally assigned to specific JCI units. Psychiatric services typically were medication assessments and follow-up provided in a clinic format by a part-time contracted psychiatrist with a potential caseload of 300 to 500 youth. Psychological services typically were assessments, individual and group psychotherapy, and crisis intervention. The ratio of residents to full-time psychologist positions was approximately 75 to 1. The ratio of residents to frontline staff typically was 20 to 1. Units were supervised by experienced but nonmental health (often security) staff.

Philosophical differences. The JCIs' correctional philosophy is rooted in an administrative code that specifies sanctions as the main tool for controlling institutional misbehavior. According to this philosophy, holding youth accountable for their actions serves their rehabilitation needs and provides the necessary incentive to deter institutional misbehavior.

The youth studied here typically had failed repeatedly in community programs, leading to their incarceration, and then failed in the institutional treatment programs before being transferred to MJTC. They represented an unusual population that seemed to consistently respond to deterrent sanctions with an escalation of illegal and violent behavior.

The treatment philosophy of the MJTC borrows from the theory of defiance articulated by Sherman (1993) to explain the behavior of the minority of offenders who react to deterrent sanctions with an increase in the frequency, persistence, or seriousness of violent or other criminal behavior. The approach is rooted in the notion that defiant behavior can become cyclic when the defiant response to a sanction is itself sanctioned, resulting in more defiance and increasing sanctions. With each iteration, the young offender is further disenfranchised from conventional goals and values and is increasingly "compressed" into a behavior pattern that is actively and antagonistically defiant. The

youth does not see an acceptable escape route from the cycle and thus becomes trapped in a deteriorating behavior pattern. Using a variation of the decompression model described by Monroe (Monroe, Van Rybroek, & Maier, 1988; see also Caldwell, 1994; Caldwell & Van Rybroek, 2001, 2002), the program attempts to erode the antagonistic bonds with conventional roles, expectations, and agents of convention to replace them with conventional bonds.

PARTICIPANTS AND TREATMENT ASSIGNMENT

Participants were youthful male offenders who were consecutively released from the MJTC between 1995 and 1997, after participating in either a brief evaluation or full treatment that was prompted by disruptive and unmanageable behavior. The MJTC had no exclusion criteria and did not prescreen youth for admission. Youth were transferred at the discretion of the sending JCI when they were deemed nonresponsive to rehabilitation services, and they were returned to the JCI when viewed as more amenable to the usual services. To investigate the treatability of juvenile offenders with high levels of psychopathy features, offenders who obtained PCL:YV total scores of less than 27 were excluded, resulting in a sample of 141 offenders. The cut score of 27 was used to capture a group of adolescents who scored above the high average range of recent normative data for institutionalized adolescents (Forth et al., 2003). This group was specifically selected to examine treatment effects in a population of youth that clearly possessed substantial psychopathy-like traits.

Typical of the general population on MJTC, about 40% ($n = 56$) of youthful offenders in this study were treated on MJTC and composed the treatment group. Youth were classified as MJTC treatment cases if they (a) served a substantial portion (e.g., more than 45%) of their incarceration time at MJTC ($n = 50$, 35%) or (b) were electively released to the community from MJTC ($n = 6$, 4%). The remaining youth ($n = 85$, 60%) were classified as JCI cases. These offenders were assessed or briefly treated on MJTC, but they obtained the majority of their treatment elsewhere and were released to the community from other facilities.

Considering the 141 participants as a whole, 59% ($n = 83$) were African American, 31% ($n = 44$) White, and 10% ($n = 14$) Hispanic,

Native American, Asian, or Arab. Typically, they had come from economically disadvantaged, violent, or disrupted homes. Many began their criminal careers early: 50% ($n = 71$) were involved in crime before their 10th birthday. Before their incarceration, they averaged 13.3 ($SD = 9.9$) formally filed charges. Of these youth, 60% ($n = 85$) had been charged with three or more crimes against persons, 51% ($n = 72$) were committed for a violent felony offense, and 49% ($n = 69$) had hospitalized or killed a victim.

MEASURES

At its inception, MJTC was mandated to measure program outcomes. Toward this end, a database was established to code demographic, historical, and clinical variables routinely collected during JCI and MJTC admission assessment procedures. Demographic and clinical information was collected and coded on admission to MJTC, before any determination was made regarding the length of time the youth would be treated on MJTC. The study measures tapped four domains: demographic and legal characteristics, clinical variables assessed during the MJTC admission, incarceration days and release status, and postrelease recidivism.

Demographic and legal characteristics. Demographic (e.g., age, ethnicity) and legal history variables were coded at the point of admission to MJTC. Legal history variables included the age at which behavioral problems were first evident, the age at first crime, age at first arrest, number and type of prior charges, worst victim injury (where 0 = *no injury*, 1 = *injury not requiring medical attention*, 2 = *injury requiring emergency room or other outpatient treatment*, 3 = *injury requiring hospitalization*, and 4 = *fatal injury*), and the average number of institutional misconducts reported in the 12 weeks prior to transfer to the MJTC.

Clinical assessment variables. MJTC records were used to record clinical assessment variables related to cognitive functioning, conduct disorder (CD), psychopathy features, and treatment needs. Records were reviewed to record offenders' Weschler Intelligence Scale for Children–Revised (Wechsler, 1991) Full Scale Intelligence

Quotient, and institutional records were reviewed to code the academic achievement level. As part of the initial MJTC diagnostic assessment, clinical staff completed a CD symptom checklist, based on criteria specified in the *Diagnostic and Statistical Manual* (4th ed.; *DSM-IV*; American Psychiatric Association, 1994). These clinical records were used to record offenders' number of CD symptoms. Similarly, the diagnosis of substance abuse was assigned by the unit psychiatrist based on *DSM-IV* criteria.

The PCL:YV (Forth et al., 2003) was used to assess offenders' psychopathy features. The PCL:YV is a minimally adapted version of its parent measure for adults, the Revised Psychopathy Checklist (Hare, 1991), and consists of 20 items, each of which are rated for their degree of match to the youth (from 0 to 2). Although factor analytic studies have found the PCL:YV to have acceptable three-factor and four-factor structures, at the time of the data collection, these analyses were not available. Consistent with the recommendations of the developers in the experimental version of the PCL:YV, two factors were coded. Factor 1 (F1) captures interpersonal and affective features, and Factor 2 (F2) reflects impulsive, irresponsible, and antisocial lifestyle features. The PCL:YV possesses reasonably good interrater reliability (Forth & Burke, 1998) and moderate predictive utility for violence. Based on their review of studies, Forth and Burke (1998) reported acceptable levels of internal consistency ($M r = .83$). Similarly, in their review, Edens et al. (2001) found that the PCL:YV was moderately predictive of future violence. In 11 samples of institutionalized adolescents, Forth et al. (2003) found mean PCL:YV total scores from 20.73 to 26.48. In an investigation of the relationship between PCL:YV scores and recidivism in adolescent offenders, Gretton, Hare, and Catchpole (2004) used a slightly higher cut score (30 and higher) to identify a subgroup of youth with high levels of the underlying trait.

Scores for the PCL:YV were compiled at the time of admission to MJTC and were based on an interview and review of records. Raters were a licensed psychologist certified in the PCL system and two bachelor's-level counselors. Two raters scored each participant, discussed any differences in scores, and generated a consensus final score. Independent ratings of a subgroup of 37 offenders manifested acceptable rates of interrater reliability (interclass correlation

coefficients [ICCs], $F1 = .69$, $F2 = .87$, total score = $.81$). Internal consistency also was acceptable (for PCL:YV total, Cronbach's $\alpha = .85$; for $F1$, $\alpha = .77$; for $F2$, $\alpha = .72$).

Information collected when youth were admitted to the MJTC was used to score the 62-item adaptation of the Young Offender Level of Service Inventory (YO-LSI; Shields & Simourd, 1991). The YO-LSI is a comprehensive assessment of treatment needs related to criminal offending in youth. The YO-LSI is one of several adaptations for youth (Hoge & Andrews, 2002; Jung & Rwanda, 1999; Simourd, Hoge, & Andrews, 1994) of the Revised Level of Service Inventory (LSI-R; Andrews & Bonta, 1995) for adults. Based on a review of studies, Andrews and Bonta (1995) reported acceptable internal consistency ($M r = .77$). The instrument has also shown good predictive utility for institutional misconduct and recidivism (for institutional misconduct, $r = .26$ to $.70$; for recidivism, $r = .29$ to $.66$). YO-LSI scores were compiled with the same procedure as was used for the PCL:YV. Internal consistency was acceptable (Cronbach's $\alpha = .85$). Interrater reliability for a subgroup of 40 cases was also acceptable (ICC = $.79$). Treatment staff remained blind to the results of the YO-LSI and PCL:YV.

Incarceration days and release status. The days that youth spent incarcerated for the current offense were computed. Also, because variation in supervision and services provided to youth on their release to the community likely affects their rate of recidivism, release status for the two groups was coded from their institutional records. Seventy-two percent ($n = 40$) of MJTC youth and 68% ($n = 58$) of JCI youth were released to unlocked community facilities. All but six of these youth had their aftercare service plans developed, and were released, by the JCI. The services provided by the community facilities varied greatly, but they generally included minimal mental health and vocational services directed at the transition to independent living.

Recidivism. The recidivism variables included the number and type of charges filed in a state circuit court against the individual over the 730 days following release from secured custody. Recidivism data were collected from a statewide computer database

of circuit court records. Offenses committed after transfer to the MJTC, but prior to release from a secured correctional institution, were coded as institutional offenses. Those offenses committed after release from secured custody were coded as community offenses.

RESULTS

Analyses were designed to assess the extent to which these psychopathy-like youths' involvement in MJTC treatment related to their (a) subsequent involvement in general and violent recidivism during a uniform 2-year follow-up period and (b) length of survival or "offense-free" time in the community following institutional release. To help correct for the effect of nonrandom assignment to the MJTC treatment group, basic analyses of the relation between treatment and outcome were supplemented with propensity score analyses (Rubin, 1997).

PRELIMINARY ANALYSES

Before these analyses were completed, two preliminary steps were taken. First, missing values for variables with no greater than 10% missing data were replaced with randomly chosen values (for categorical variables), average scores of the relevant treatment group (for continuous variables on which the MJTC and comparison groups obtained significantly different scores), or average scores of the entire sample (for continuous variables on which the groups did not differ). This was done to avoid excluding whole cases in multivariate analyses. Second, the two treatment groups' basic characteristics were compared to help estimate whether nonrandom assignment to treatment produced any observable differences. As shown in Table 1, the MJTC treatment and JCI comparison groups were comparable in most demographic, legal history, MJTC assessment, and release variables.

In fact, there were only two significant differences between the two groups. First, the JCI group had a significantly higher proportion of African American youth (72% vs. 41%, $n = 61$ vs. $n = 23$). Second, the JCI group spent significantly more days incarcerated

TABLE 1: Comparison of Treatment Groups' Characteristics

	<i>JCI</i>			<i>MJTC</i>		
	%	M	SD	%	M	SD
Demographic and legal history						
African American*	71.8			41.1		
Age of first offense		9.4	2.1		9.2	2.1
Age at first arrest		10.9	2.1		11.4	2.2
Age released from custody		17.2	1.0		17.0	0.87
Number of prior charges		13.3	9.9		15.6	11.9
Number of prior crimes v. persons		5.1	4.4		4.8	6.5
Percentage that had hospitalized or killed victim	49.4			48.2		
Percentage adjudicated for a violent felony	52.9			51.8		
Weekly rate of institutional infractions pre-MJTC		3.8	3.6		2.5	2.6
Clinical features at MJTC						
WISC-R Full Scale IQ		85.4	12.9		84.4	16.6
Grade achievement level		6.3	2.9		6.9	3.2
Conduct disorder symptoms		10.3	2.6		10.2	2.1
Percentage that had substance abuse diagnosis	85.9			84.3		
PCL:YV total		33.8	3.1		33.5	2.9
YO-LSI total		53.9	7.1		51.5	6.7
Incarceration and release						
Days of incarceration**		717	342		559	255
Released to unsupervised settings	28			32		

Note. JCI = juvenile correctional institution; MJTC = Mendota Juvenile Treatment Center; WISC-R = Weschler Intelligence Scale for Children – Revised; PCL: Y = Psychopathy Checklist: Youth Version; YO-LSI = Young Offender Level of Service Inventory.

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

($M = 717$ vs. 559). The racial disparity reflects the relatively large number of urban African American youth that had no previous mental health assessments when they were confined and were sent to the MJTC for these time-limited assessments. Although the African American youth studied here reported similar or slightly more mental health symptoms at admission, they were 20% less likely to have any previous mental health assessment or treatment, $X^2(1, N = 141) = 6.00, p < .01$.

ASSESSING THE RELATION BETWEEN MJTC TREATMENT AND RECIDIVISM

To determine whether youths assigned to the MJTC were less likely to recidivate than those in the JCI within the defined follow-up period, the basic relation between treatment status, general recidivism, and violent recidivism during the 2 years (730 days) following institutional release was analyzed. Of the 141 youths, 15 (10.6%) were released directly to adult prison. For these youths, recidivism occurred in the juvenile institutional settings after treatment on MJTC. Most (80%, $n = 12$) of these imprisoned youths belonged to the JCI group. For this reason, the relation between MJTC treatment and (a) combined institutional and community recidivism and (b) community recidivism only has been reported.

General recidivism. Youth treated in the MJTC were significantly less likely to recidivate generally. Some 57% ($n = 32$) of MJTC-treated youths recidivated in the institution or community within 2 years of JCI release, compared with 78% ($n = 66$) of comparison cases, $X^2(1, N = 141) = 7.58, p < .01$. Considering only those cases with some access to the community during this follow-up period, 56% ($n = 31$) of MJTC-treated youths committed an offense following release, compared with 73% ($n = 62$) of the comparison cases, $X^2(1, N = 141) = 3.93, p < .05$. Notably, given that all six of the youth who were electively released from MJTC as “successful” recidivated, differences in MJTC aftercare planning or placement patterns do not appear to have played a substantial role in reducing recidivism.

Violent recidivism. There was a clear relation between youths’ MJTC treatment and subsequent involvement in violence. Only 21% ($n = 12$) of MJTC-treated youths were involved in institutional or community violence within 2 years after JCI release, compared with nearly half (49%, $n = 42$) of the comparison cases, $X^2(1, N = 141) = 12.87, p < .001$. Isolating only those cases with access to the community, only 18% ($n = 10$) of MJTC-treated youths were involved in community violence, compared with 36% ($n = 31$) of the comparison cases, $X^2(1, N = 141) = 5.16, p < .05$. The type of community placement (with aftercare services and supervision vs. unsupervised)

appeared to have no significant impact on community violence. Supervised cases engaged in community violence at nearly the same rate as those who received no additional community supports. Thirty-six percent ($n = 31$) of supervised comparison cases and 38% ($n = 32$) of unsupervised comparison youth engaged in community violence, $X^2(1, N = 85) = .036, ns$. For MJTC youth, there was a small but nonsignificant increase in violent recidivism among youth who were provided additional community services. Eighteen percent ($n = 10$) of supervised and 12% ($n = 7$) of unsupervised treatment cases engaged in community violence, $X^2(1, N = 56) = .38, ns$. Thus, JCI youth were nearly twice as likely as youth who received MJTC treatment to become involved in violence.

CONTROLLING FOR THE EFFECT OF NONRANDOM ASSIGNMENT TO TREATMENT

Although these basic results are promising, simple posttreatment comparisons such as those described above could partially reflect selection bias. To address this propensity, score analyses (Rosenbaum & Rubin, 1983; Rubin, 1997) were completed. These scores can provide more accurate estimates of treatment effects in studies without random group assignment. This process involved two steps. First, a set of demographic, clinical, and crime variables that were plausible covariates of the treatment assignment and/or recidivism risk were reduced into a single composite score for each case that modeled the treatment assignment process. This propensity score reflected the probability of assignment to MJTC treatment, given the vector of observed covariates. Second, an estimate of the relationship between MJTC treatment and future violence and recidivism among youths was conditioned on propensity scores.

Developing propensity scores. Propensity scores were computed by entering 12 plausible covariates of treatment assignment and/or recidivism risk in a stepwise logistic regression analysis to predict MJTC versus JCI treatment group membership. These variables were race, grade attainment, estimated full scale IQ, days of JCI treatment before transfer to MJTC, PCL:YV Factor 1 and Factor 2 scores, number of conduct disorder symptoms, total YO-LSI scores,

worst victim injury, age at first crime, age of onset of behavioral problems, and the number of prior charges. Of these 12 variables, only race and the days of JCI treatment before transfer to MJTC entered the equation. A test of the full model with these two predictors indicated that the set of predictors reliably distinguished between the treatment groups, $X^2(3, N = 141) = 30.04, p = .000$. Prediction success was fair, with an overall success rate of 69%. The association between participants' propensity scores and MJTC assignment was moderately strong ($\eta = .45$). In addition to modeling and assessing the treatment assignment process independent of outcome, another key benefit of using propensity scores rather than individual covariates is that propensity scores allow one to determine whether there is sufficient overlap in the covariates to support a valid comparison of the two groups (e.g., enough Black youth with longer stays in the JCI before transfer in the MJTC treatment group). Thus, propensity scores were used to subclassify youth into five groups based on their estimated probability of MJTC assignment. A cross-tabulation of treatment type (MJTC vs. JCI) by propensity score classification (Groups 1 to 5) indicated that 7.1% ($n = 4$) of MJTC cases were in the lowest MJTC probability class and 8.2% ($n = 7$) of JCI cases were in the highest MJTC probability class. In short, there appeared to be sufficient overlap even at the extreme ends of the distribution of propensity scores.

Conditioning the estimated treatment effect on propensity scores. Next, the effects of (a) the treatment assignment process with propensity scores; (b) "opportunity" for violent and general offenses, based on the type of release (e.g., prison, supervised community, nonsupervised community); and (c) psychopathy features, as reflected by total PCL:YV scores, were controlled. These three covariates were entered as a block in the first step of sequential logistic regression analyses in which future (a) general recidivism and (b) violent recidivism were predicted. MJTC treatment was entered as the second block in these analyses.

With respect to general recidivism, there was good model fit on the basis of the covariates alone, $X^2(4, N = 141) = 11.37, p < .05$. After the addition of MJTC treatment, however, the model did not

significantly predict general recidivism, $X^2(5, N = 141) = 11.7, ns$, and the log likelihood ratios of the model with MJTC treatment did not differ significantly from the model with the covariates alone. Similarly, nonsignificant results were obtained when the analyses were restricted to those who had an opportunity to offend in the community.

With respect to violent recidivism, adding treatment status as a block to the covariates-only model yielded a full model that was significant, $X^2(5, N = 141) = 44.63, p < .001$. The change in the chi-square value with the addition of MJTC treatment status to the covariates-only model was also significant, X^2 change $(1, N = 141) = 6.40, p < .01, R^2$ change = .03. The coefficient for treatment variable was in the expected direction, $(B = 1.18, SE = .48, p < .05, \text{odds ratio} = 3.3)$, indicating that MJTC treatment youth were significantly less likely to have violently reoffended.

Similar results were obtained when the analyses were restricted to those who had an opportunity to offend in the community. Specifically, the change in the chi-square value with the addition of the MJTC treatment status to the covariates-only model block showed significant improvement in the prediction of future community violence, X^2 change $(1, N = 126) = 5.39, p < .05, R^2$ change = .07. Similarly, the coefficient for the treatment variable was significant and in the expected direction $(B = 1.11, SE = .50, p < .05, \text{odds ratio} = 3.1)$. Thus, even after controlling for the treatment assignment process and release status, youth with psychopathy features who received MJTC treatment were less likely to violently recidivate within 2 years of release than those who did not.

ASSESSING THE RELATION BETWEEN MJTC TREATMENT AND "SURVIVAL" TIME

Cox regression survival analyses were used to assess the effectiveness of MJTC treatment in reducing the rate of recidivism after adjusting for the effects of the three covariates identified above (propensity scores, release status, and PCL:YV total score). To focus on community recidivism, offenses that occurred during institutionalization and offenders who spent no time in the community were excluded.

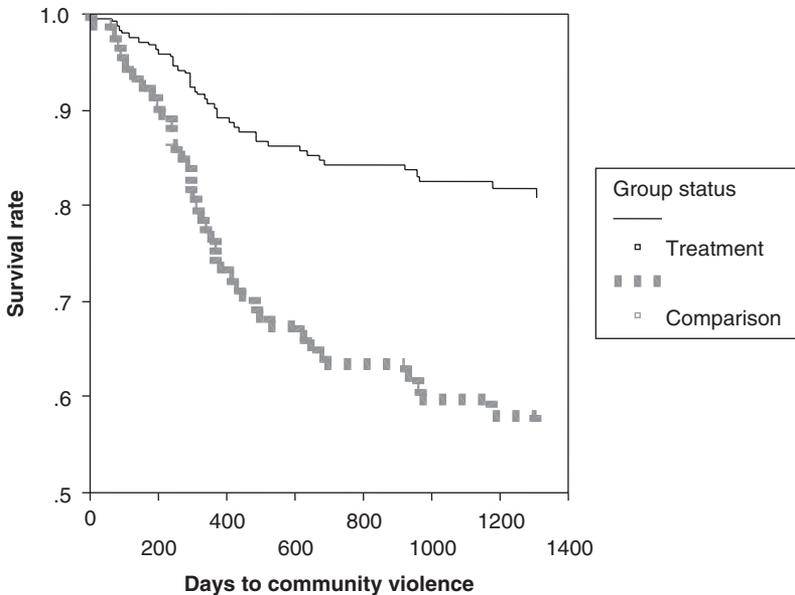


Figure 1: Survival Function for Violent Community Recidivism for MJTC Treated and Comparison Group

Note. MJTC = Mendota Juvenile Treatment Center.

General recidivism. After adjusting for the effect of these covariates, MJTC treatment had no reliable effect on general recidivism in the community, $X^2_{\text{change}}(1, N = 126) = 0.85, ns$.

Violent recidivism. Despite the lack of effect for general recidivism, MJTC treatment clearly predicted a slower and lower rate of violent recidivism for these youth. After controlling for the effect of the three covariates, MJTC treatment reliably reduced the risk of future community violence, $X^2_{\text{change}}(1, N = 126) = 6.45, p < .05$. In fact, as shown in Table 2, only MJTC treatment reliably predicted survival time at $\alpha = .05$. Moreover, survival time was fairly well predicted by MJTC treatment, $R^2 = 1 - 2.5(-.2681)$, with youths who completed MJTC treatment being 2.7 times less likely to become violent in the community than those who did not. As shown in Figure 1,

TABLE 2: Cox Regression of Treatment Group and Covariates on Youth's Time to Community Violence

<i>Covariate</i>	<i>B</i>	<i>df</i>	<i>Probability</i>	<i>Odds Ratio</i>
Propensity score	.21	1	.81	1.2
Release status	-.13	1	.69	0.88
PCL:YV	.08	1	.12	1.1
MJTC treatment	.99	1	.02	2.7

Note. PCL:YV = Psychopathy Checklist: Youth Version; MJTC = Mendota Juvenile Treatment Center.

the probability of community violence by 2 years was approximately 16% for the MJTC group and 37% for the comparison group.

EXPLORING THE RELATION BETWEEN MJTC TREATMENT AND SERIOUS OFFENSES

Because the differences between the MJTC treatment and comparison groups appeared to widen with increasing offense severity, the relation between MJTC treatment and very serious recidivism was specifically examined. These analyses are exploratory because the low base rate and disproportionate marginal distributions limit the power of univariate statistical tests.

First, offenders treated in the MJTC program were less likely than comparison offenders to be charged with a violent felony that injured someone within 2 years of JCI release. During this period, 10.7% ($n = 6$) of the MJTC youth were charged with such a violent, injurious felony, compared with 29.5% ($n = 25$) of comparison youth, $X^2(1, N = 141) = 6.88, p < .01$. When restricted to those cases with access to the community, the results were not significant, $X^2(1, N = 141) = .16, ns$.

Second, offenders treated in the MJTC were less likely than comparison offenders to be charged with homicide during a longer follow-up period (up to 2,200 days). None of the offenders treated in the MJTC (0%) were accused of homicide, whereas 9 (10.6%) members of the comparison group were charged with, and convicted of, at least one offense that included a homicide, $X^2(1, N = 141) = 6.33, ns$. These individuals accounted for 16 total deaths.

DISCUSSION

The results of this study found that youth with psychopathy features who received intensive MJTC treatment had significantly lower rates and more days in the community before violent recidivism than those who received treatment as usual in the JCI. Although their general recidivism rates were similar, only one fifth (21%, $n = 12$) of the MJTC-treated youths were involved in institutional or community violence within 2 years after release, compared to approximately half (49%, $n = 42$) of the comparison cases. After conservatively controlling for a number of covariates, we found that MJTC-treated youth were 2.7 times less likely to become violent in the community than those who did not participate in this intensive treatment program. The disparity in recidivism rates between those who participated in MJTC treatment and those who received treatment as usual became more pronounced as the severity of offenses increased, and it was most pronounced for homicide.

The MJTC's apparent lack of impact on general and nonviolent misdemeanor offending may indicate that these offenses (primarily property and minor drug offenses) are more influenced by life circumstances in the youth's local neighborhood (e.g., socioeconomic strain) than by any personal changes that occur in treatment. Moreover, the MJTC treatment program was specifically geared toward reducing antagonistic interactions and interpersonal aggressiveness. For the remarkably aggressive and psychopathy-like population of youth studied here, reducing serious and violent recidivism is arguably the top priority.

The process that generated referrals to the MJTC yielded a study group of extraordinarily serious juvenile offenders. Although longitudinal research is needed before firm conclusions about the developmental appropriateness of applying the label of *psychopathic* to youth can be made, the present results contribute to the weight of evidence that those with features of psychopathy can respond to sufficient "doses" of appropriate treatment (Gretton et al., 2000; Salekin, 2002; Skeem et al., 2003).

IMPLICATIONS FOR RESEARCH AND TREATMENT DEVELOPMENT

Research implications. It is important for future research to systematically describe whether and how treatment changes psychopathy features and the extent to which these changes (or others) relate to reductions in recidivism risk. The present study is limited by the lack of information about what may have changed in these treated youth. This limits what can be said about whether psychopathy features truly are malleable in youth or whether some other factor is responsible for the reductions in recidivism risk.

Despite this limitation, the present study differs from the two past studies of adolescents with psychopathic features and treatment outcome in three important ways. First, the treatment program of focus in the present study was specifically designed to address the needs of aggressive adolescent offenders, in part by eroding their antagonistic defiance of authority figures. Second, the sample studied here comprised juvenile offenders who uniformly scored at or near traditional cutting scores for defining psychopathy on commonly used measures. Third, the study design included a comparison group who participated in “treatment as usual.” These analyses included systematic controls for the potential effect of the treatment assignment process and juveniles’ supervision status on release.

Additional quasi-experiments or randomized controlled trials (RCTs) are needed to assess the response of adolescents with psychopathy features to psychopathy-relevant treatment programs. For quasi-experiments, propensity score analyses such as those used in the present study are among the best available approaches for assessing treatment response. However, these analyses are not perfect. On one hand, these analyses cannot control for unobserved variables that might affect the treatment assignment process. It is possible that variables beyond the set of 12 key demographic (e.g., race), clinical (e.g., YO-LSI, PCL Factors, IQ), and offense-related (e.g., age of onset, number of offenses) characteristics that were condensed into propensity scores in this study both affected where the offenders were treated (MJTC or JCI) and were related to recidivism risk.

However, given the chiefly system-driven referral system (e.g., how many beds are available in what setting), this seems unlikely. On the other hand, propensity score analyses and related statistical control techniques may be overly conservative in estimating treatment effects. For example, to the extent that greater treatment response is associated with a less restrictive setting on release, controlling for supervision status may control some of the variance of treatment response itself.

Treatment development implications. In addition to conducting RCTs or carefully conceptualized and analyzed quasi-experiments, it will also be important in future research to disentangle the effect of treatment resistance from treatment type. Although it is reasonable to assume that psychopathy may require specialized treatment techniques, it is also possible that individuals with psychopathic features may derive benefit from existing treatment techniques if they are delivered in sufficiently consistent and intensive doses, overcoming any resistance.

Based on the design of the present study, it cannot be definitively determined whether the relation between MJTC treatment and reduced recidivism risk reflects quantitative factors (i.e., the intensity and persistence of treatment) or qualitative ones (i.e., specialized treatment techniques).

The most consistent “qualitative” factor in place during the study period was contextual: The MJTC program relied on a mental health administrative structure and philosophy with substantially more clinical staff, as contrasted with a correctional administration structure and staffing in the usual JCI treatment (see Lipsey, Wilson, & Cothorn, 2000). Although cognitive-behavioral treatment techniques were used, the program was repeatedly reorganized during the study period. Thus, it is unlikely that specialized treatment techniques account for the treatment effects seen here.

Individuals with psychopathy features tend to disrupt treatment programs, and as a result, they are more likely to be screened out, to drop out, or to be expelled from treatment. Oftentimes, security-based behavior management expands and treatment services are reduced. If the treatment program is not designed to retain individuals with very difficult characteristics, it is unlikely that these individuals will derive much benefit from treatment.

The MJTC program attempted to keep youth involved in treatment regardless of their behavior. Disruptive and aggressive behavior was responded to with a priority given to providing continuous intensive treatment. In this respect, the greatest challenge to effective treatment of psychopathic individuals may be in the implementation and management of a treatment program that addresses safety issues without sacrificing the continuity of treatment.

These results raise the prospect that the violence potential of adolescents with significant psychopathy features may be significantly reduced through intensive treatment. These findings also suggest that concentrating treatment resources on this high-risk group of youth may be a maximally effective and efficient means of reducing violent and criminal behavior. And these possibilities necessitate much more study.

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