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*Criminal Justice and Behavior* 2009; 36; 385  
DOI: 10.1177/0093854808331249

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# MATCHING COURT-ORDERED SERVICES WITH TREATMENT NEEDS



## Predicting Treatment Success With Young Offenders

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The rehabilitation of young offenders and their reintegration into society are important goals of the juvenile justice system. An empirically supported model of service delivery attending to the principles of risk level, criminogenic need, and responsivity provides direction in achieving these goals. Although research on this model thus far has evaluated the principles only at a group level, the present study evaluates the impact on recidivism of matching youth with services at the *individual* level. Files of 122 youth who received court assessments were reviewed to determine whether clinical recommendations and services received were congruent. Youths' criminal records were reviewed to determine reoffense outcomes. As predicted, higher risk scores were associated with earlier and more frequent recidivism. Knowing whether a young offender had his or her specific criminogenic needs addressed in treatment added to the predictive power of risk. Having only a few treatment needs met was associated with significantly earlier recidivism and a greater number of new convictions. These findings may provide direction in enhancing efforts to effectively respond to youth crime.

**Keywords:** young offenders; criminogenic needs; responsivity; Youth Level of Service/Case Management Inventory

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For many years, the question of how the correctional system should respond most effectively to youth crime has remained largely unresolved. Although punitive measures continue to dominate a substantial portion of the juvenile justice landscape in both Canada and the United States (Gendreau, 1996; Myers & Farrell, 2008), there is no evidence indicating a consistently positive effect of penalties (e.g., probation or custody) on recidivism (Andrews & Bonta, 2006; Andrews et al., 1990; McGuire & Priestley, 1995; Myers & Farrell, 2008). Indeed, the deleterious effect of sanctions on recidivism is now so firmly established in the literature that it is impossible to support a reliance on penalties to halt offending behavior on empirical grounds (Andrews & Bonta, 2006; Andrews et al., 1990; McGuire & Priestley, 1995). Alongside evidence revealing the potentially detrimental effects of punishment (McGuire & Priestly, 1995), a risk, need, and responsivity (RNR) model (Andrews et al., 1990)—explaining the positive impact of interventions that attend to youths' level of risk to reoffend, individual needs, and characteristics relevant to their

treatment amenability (i.e., responsivity)—has now been firmly established in the literature (Andrews & Bonta, 2006). The model has been described in extensive detail (e.g., Andrews & Bonta, 2006); thus, only a brief overview of its principles is provided here.

If the objective of the correctional system is to reduce youths' criminal involvement, the probability that each particular youth will continue to engage in such behaviors requires consideration. The *risk principle* states that future criminal behavior can be predicted via attention to an individual's risk level and that the intensity of treatment services provided to a youth should be matched with his or her identified level of risk (Andrews & Bonta, 2006). The risk principle asserts that more intensive treatment services should be reserved for higher risk, rather than lower risk, individuals (Andrews, 1995; Andrews & Bonta, 2006). Therefore, appropriate treatment delivery requires that offenders be assessed on a range of factors known to be predictive of recidivism, and then those youth defined as higher risk cases should be matched with higher degrees of service intervention (Gendreau, 1996; McGuire & Priestley, 1995).

The *need principle* draws attention to the distinction between youths' criminogenic needs (i.e., attributes that are predictive of criminal conduct) and noncriminogenic needs (i.e., attributes that have little influence on offending behavior) and asserts that rehabilitative success depends on a focus on the former (Andrews & Bonta, 2006; Bonta, 1995; McGuire & Priestley, 1995). Criminogenic needs may be categorized as either static (e.g., having criminal biological parents, prior offense history, and some temperamental variables) or dynamic (with the potential for change; e.g., attitudes and peer affiliates; Andrews & Bonta, 2006). The need principle indicates that dynamic needs must necessarily form the intermediate goals of treatment to successfully affect at least some of the predictors of criminal behavior (Andrews & Bonta, 2006; Gendreau, 1996). Research suggests that the most promising criminogenic need treatment targets include antisocial attitudes and behaviors, associations with delinquent peers, low familial affection and parental monitoring, and poor educational or vocational achievement (Andrews, 1995; Andrews et al., 1990).

Rehabilitation is a learning experience; thus, any factors that regulate an adolescent's ability or motivation to learn may play an important role in effectively addressing youths' criminogenic needs (Bonta, 1995). The *responsivity principle* asserts that offenders should be assigned to programs delivering services in a manner that is consistent with their individual learning styles and abilities (Andrews & Bonta, 2006). The responsivity factors that more commonly influence how offenders respond to both treatments and the clinicians applying them include poor reasoning or communication skills, concrete-oriented thinking, and psychological functioning (e.g., depression or anxiety; Bonta, 1995). Although research has largely found that

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**AUTHORS' NOTE:** Tracey Vieira is now at the Toronto Catholic District School Board, Toronto, Ontario, Canada. This study was in part funded by the Ontario Ministry of Children and Youth Services and our thanks go to Vicki Mowat-Leger and Jeff Wright for their support of the project. We are also grateful to Dr. Lindley Bassarath, Ms. Maria Carinelli, Ms. Shira Osher, Ms. Jennifer Turton, and Ms. Shelley Langill for their dedication and hard work in completing many of the original clinical assessments used in this study. We would also like to acknowledge the assistance of The Honourable Mr. Justice Weagant and Ms. Nancy Peters who were instrumental in our accessing information concerning these youth. This article is based on Tracey Vieira's doctoral dissertation. Correspondence regarding this article should be addressed to Tracey A. Skilling, Child, Youth and Family Program, Centre for Addiction and Mental Health, 250 College St., Toronto, Ontario, Canada, MST 1R8; email: tracey\_skilling@camh.net.

these factors are not directly related to reoffending (Bonta, 1995), they nonetheless have the potential to either interfere with or facilitate treatment success (Andrews & Bonta, 2006).

Several meta-analytic studies have provided support for the application of RNR principles in corrections. The earliest such analysis (Andrews et al., 1990) evaluated the effects of treatment on juvenile offenders by categorizing treatments into two types: Treatment programs that adhered to RNR principles were coded as appropriate services, whereas those that did not were coded as inappropriate services. The findings indicated a strong and positive main effect of type of treatment on recidivism, with effect sizes of .30 for appropriate services,  $-.06$  for inappropriate services,  $-.07$  for criminal sanctions, and .13 for unspecified services.

Using an updated sample of studies and more systematic coding procedures to categorize treatment programs as promising, weak, criminal sanctions, or unspecified, Dowden and Andrews (1999) conducted a subsequent meta-analysis of treatment effectiveness. An overall mean effect size of .09 indicated that the effects of correctional treatment were mildly positive and represented a recidivism rate of 45.5% for the intervention group versus a 54.5% rate for the control group. However, closer examination of the data revealed substantial variability within the effect sizes. At a basic level, there was a significant split between the mean effect size for interventions based solely on criminal sanctions ( $-.02$ ) and that for human service programs (.13; Dowden & Andrews, 1999). Although the mere introduction of treatment services was associated with considerable reductions in the recidivism rates of youth, analyses were also conducted to determine the relationship between the individual principles of RNR and reoffending. The risk principle was supported, as correctional interventions had a significantly greater mean effect on recidivism when delivered to higher versus lower risk youth (Dowden & Andrews, 1999). With general responsivity coded using Andrews et al.'s (1990) methods, the mean effect size for behavioral programs was significantly greater than for nonbehavioral programs. Finally, programs coded as adhering to the need principle (i.e., the majority of treatment targets were factors identified as criminogenic needs) had a significantly greater effect on reoffending in comparison to programs not adhering to the principle (Dowden & Andrews, 1999). In line with Andrews et al.'s previous findings, these results clearly support the applicability of RNR principles for treating young offenders and indicate that adherence to these ideals results in substantial reductions in reoffending. Finally, a more recent reevaluation of the principles has revealed that support for their positive impact on treatment outcomes increases with the precision of the assessment of—and adherence to—RNR (Andrews, Bonta, & Wormith, 2006).

Although it is clear that attention to risk level, criminogenic needs, and client responsivity factors is a very promising route to preventing recidivism, there are avenues of research that have remained neglected and that have the potential to significantly improve our understanding of rehabilitating young offenders. First and foremost, research has established a list of young offenders' common criminogenic needs and evaluated reductions in recidivism solely on the basis of targeting one or more of those generic needs. However, these broad quantitative surveys would be best supplemented by research investigating the value of delivering treatment services on the basis of each youth's *specific* criminogenic needs (Andrews, 1995). It is not unreasonable to speculate that building an understanding of the characteristics and circumstances contributing to a particular adolescent's criminal behaviors would aid in identifying the needs that should be targeted during intervention and

thereby potentially increase the likelihood of treatment effectiveness for that adolescent. Second, previous consideration of responsivity factors in young offender research has more typically evaluated differential effects of treatment delivery styles rather than the effects of matching young offenders with treatment programs according to individual responsivity factors (e.g., psychological functioning, language skills, and cognitive ability).

The objective of this study was to evaluate the impact on recidivism of matching youth with treatment services according to their own *specific* RNR factors. The question we wished to answer was as follows: Does matching young offenders with treatment services according to their specific RNR factors translate into a reduced rate of recidivism, longer times to recidivate, and fewer subsequent convictions among the recidivists, approximately 3 years postconviction?

## METHOD

### PARTICIPANTS

The sample consisted of 122 youth (103 males, 19 females) ranging in age from 12 to 18 years ( $M = 15.49$ ,  $SD = 1.43$ ) who were referred for a court-ordered assessment to a mental health agency in a large urban center in Ontario, Canada. The assessments were ordered by a youth court judge for assistance in making a disposition between October 2001 and February 2005.<sup>1</sup> All assessments were conducted by members of a multidisciplinary team of clinicians (i.e., psychiatrists, psychologists, and social workers) within a child and adolescent mental health program.

At the time of their assessments, youths' living arrangements were as follows: 55 (45%) were living at home with one or both of their biological parents, 7 (6%) were living with another relative, 13 (11%) were wards of the Children's Aid Society, and 48 (39%) were in detention. Data regarding youths' criminal activity revealed that 59 youth (48%) were first-time offenders at the time of their assessments. The offenses precipitating their referrals for assessment were nonviolent (i.e., theft, drug-related offenses, break and enter; 23%), violent but not sexual (i.e., murder, attempted murder, assault; 53%), or sexual (i.e., aggravated sexual assault, sexual assault, invitation to touching; 24%) in nature. The majority of these youth (78%) were also diagnosed with at least one Axis I disorder when assessed for the court, with the number of diagnoses per youth ranging from 0 to 5 ( $M = 1.59$ ,  $SD = 1.29$ ). The most common diagnosis was conduct disorder, with 57% of the sample formally diagnosed in this way. Additional diagnoses in order of frequency included attention-deficit/hyperactivity disorder (25%), a substance use disorder (20%), a mood disorder (i.e., depression or bipolar disorder; 16%), and other disorders (i.e., Asperger's syndrome, pica, and Axis II personality traits; 14%). Smaller proportions of the participants had comorbid learning disabilities (7%), oppositional defiant disorder (7%), mental retardation (3%), anxiety disorders (3%), schizophrenia (3%), and pedophilia (2%).

### MEASURES

The Youth Level of Service/Case Management Inventory (YLS/CMI; Hoge & Andrews, 2002) is a standardized instrument used to assess a youth's criminogenic needs and to provide an estimate of a youth's risk to reoffend. The YLS/CMI also addresses case

management issues relevant to treatment responsiveness. The measure is designed for use with youth aged 12 to 18 years. The first section of the YLS/CMI is a 42-item checklist that produces a detailed survey of youth risk and needs factors in eight categories: history of criminal conduct, family circumstances and parenting, current school or employment problems, criminal peer affiliations, alcohol or drug problems, leisure and recreational activities, personality and behavior, and antisocial attitudes and orientation. Information is gathered from a variety of sources, both directly and through collateral information (e.g., reports from other agencies such as probation, schools, or other mental health agencies). Each item on the YLS/CMI is coded as either present or absent. Items within each of the eight categories are combined, and a level of need score (i.e., low, medium, high) is assigned for each category. In addition, an overall risk for recidivism (i.e., low, medium, high, or very high risk) rating is calculated based on the entire checklist.

Evaluation of the psychometric properties of the YLS/CMI has revealed moderate to strong internal consistency for all subscales except for substance use, the estimate for which falls slightly below .60 (Schmidt, Hoge, & Gomes, 2005). Strong concurrent validity has been established via correlations between YLS/CMI total scores and broad and narrow band scores on the Child Behavior Checklist (Schmidt et al., 2005). The predictive validity of the YLS/CMI has also been reported as moderate to strong, with significant correlations between total scores on the measure and number of subsequent offenses and time elapsed prior to a new offense in both male and female young offenders (Costigan, 1999; Jung & Rawana, 1999; Schmidt et al., 2005; Skilling, Meeks, & Seto, 2008). Interrater reliability in the current study was also found to be very high, with a correlation of .98.

## PROCEDURE

The data used in the study were collected and compiled from a variety of sources. The clinical charts (housed at the mental health facility) of all 122 youth were reviewed to gather information on demographics, offense history, and charges leading to referral for assessment. In addition, the assessing clinicians' recommendations in participants' court reports and each youth's scores on a risk and need measure (YLS/CMI) completed during the assessment were recorded. When youth participated in their original court-ordered assessments, information was gathered via semistructured clinical interviewing with multiple informants (usually youth, parents, teachers, previous probation and mental health providers), standardized questionnaires, and the use of psychological tests (e.g., fourth edition of the Wechsler Intelligence Scale for Children). Collateral sources of information such as probation notes, parent and mental health service reports, and school records were used to supplement the interview information and to code youths' level of risk to reoffend and criminogenic needs on the YLS/CMI (Hoge & Andrews, 2002). Information collected during this assessment was also used to determine a youth's individual responsiveness factors to aid with the development of treatment recommendations for his or her court report.

Participants' probation files and/or court records were also reviewed to ascertain sentencing details and information regarding what programs or components of the sentence were completed by the youth. The information in these records was used to determine whether the services actually received matched the treatment recommendations made by the assessing clinicians. Areas of criminogenic needs coded were education, employment,

family problems, substance use, peer relations, personality (e.g., short attention span, inadequate guilt), anger management, leisure time, and criminal attitudes. The responsivity factors coded were psychological functioning (i.e., anxiety, depression, or psychosis), medication needs, cognitive capacity, cultural and/or language issues, and youth–staff fit (i.e., existing relationship with a clinician or recommended staff style).

Information regarding whether any charges or convictions occurred within the period following the youth's assessment was obtained from the Royal Canadian Mounted Police Criminal Record and Information Services.

## RESULTS

### MATCH CODING VARIABLES

*Risk level.* Youths' level of risk for recidivism was defined in two ways: a total YLS/CMI score (ranging from 0 to 42) and an associated categorical label (i.e., low, moderate, high, very high risk as outlined in the YLS/CMI manual). Youths' YLS/CMI scores for the whole sample ranged from 0 to 38, with a mean score of 17.26 ( $SD = 9.44$ ), indicating that, on average, the participants in the total sample were assessed at moderate risk for recidivism at the time of their court-ordered assessments. Categorically, 24% (29) of the youth in the total sample were deemed low risk for reoffense, 44% (54) of the youth were deemed moderate risk, 30% (36) of youth were deemed high risk, and 2% (3) of the youth were deemed very high risk.

To properly assess whether youths' services were matched according to their risk level, knowledge of the number of services completed and the duration and intensity of those services is required. Unfortunately, because of critical inconsistencies in the information available in youths' probation records, this information was rarely available and would have resulted in risk-matching data of questionable validity. As a result, the risk-matching variable was not computed. Rather, youths' risk for reoffense was controlled for using their total YLS/CMI score in all relevant analyses.

*Criminogenic needs.* The criminogenic needs identified in the present study were as follows: education, employment, family, substance use, peer relations, personality, anger management, leisure time, and antisocial attitudes. The number of needs identified in youths' assessment reports ranged from 0 to 8 (out of a possible 9), with a mean of 3.56 needs ( $SD = 1.90$ ) per youth. The most commonly identified need was education, with 67% of the youth deemed in need of educational intervention. Intervention to address family functioning (55%), peer relationships (46%), personality factors (43%), anger management (38%), use of leisure time (34%), substance use (34%), and employment (31%) were also commonly identified. The least commonly identified criminogenic need in reports was antisocial attitude, with only 21% of the participants deemed to be in need of intervention in this domain.

A clinician–probation needs match variable representing the match between clinicians' recommendations and any services received through probation was calculated and utilized in the analyses. The matching variables were coded to include only services received *prior* to their first new offense for recidivists or the selected cutoff date of July 1, 2006, for individuals who did not reoffend. This was done to allow for the most accurate representation of needs and responsivity matching prior to youths' recidivism. The number of criminogenic needs identified in the assessment reports and addressed by probation prior to youths'

reoffense ranged from 0 to 7, with a mean match on 1.29 needs ( $SD = 1.38$ ). The percentage clinician–probation needs match variable was computed by dividing the total number of matched needs (i.e., the total number of need areas targeted by the clinician’s recommendations *and* addressed via probation prior to reoffense or July 1, 2006) by the total number of needs identified by the assessing clinician. When coded in this manner, the percentage clinician–probation needs match ranged from 0% to 100%, with a mean percentage match of 35% ( $SD = 35%$ ).<sup>2</sup>

*Responsivity factors.* The responsivity factors identified for use in the present study were mental health functioning (i.e., anxiety, depression, or psychosis), medication needs, cognitive functioning, cultural and/or language issues, and staff characteristics (i.e., an existing relationship with a clinician or agency). The assessment reports for youth in the total sample identified between 0 and 5 (out of a possible 5) responsivity factors, with a mean of 1.54 factors noted ( $SD = 1.15$ ). The most commonly noted responsivity factor was medication needs (39%), followed closely by 34% of youth deemed in need of treatment that was considerate of their mental health functioning (i.e., anxiety, mood, or psychotic symptoms). In order of frequency, the remaining responsivity factors identified were staff characteristics (21%), limited cognitive capacity (19%), and cultural or language needs within a treatment setting (11%).

As calculated for the needs variables, a clinician–probation responsivity match variable was calculated by dividing the match on responsivity factors (i.e., the total number of responsivity factors targeted by the clinician’s recommendations *and* addressed via probation prior to reoffense or July 1, 2006, for nonrecidivists) by the total number of responsivity factors identified by the assessing clinician. The total number of responsivity factors matched between the assessing clinician and probation ranged from 0 to 4, with a mean of 1.28 ( $SD = 0.85$ ). The clinician–probation responsivity match variable was computed by dividing the total number of matched responsivity factors (i.e., the total number of responsivity factors targeted by the clinician’s recommendations and addressed via probation before reoffense or July 1, 2006) by the total number of responsivity factors identified by the assessing clinician. The percentage clinician–probation responsivity match also ranged from 0% to 80%, with a mean percentage match of 26% ( $SD = 17%$ ).

## RELATIONSHIP BETWEEN MATCHING AND RECIDIVISM

The first goal of this study was to determine whether a youth’s receipt of services matched with his or her criminogenic needs and responsivity factors would predict reduced recidivism. The cutoff date for calculating reoffense was July 1, 2006, for all youth; thus, depending on the dates of their assessments, the participants’ follow-up periods ranged from 13.92 to 65.40 months. To equalize youths’ opportunity to reoffend, any time spent in secure custody between their assessment and the aforementioned cutoff date was deducted from the total follow-up period. Three youth spent the entire follow-up period in secure custody; therefore, given their lack of opportunity to reoffend, they were eliminated from subsequent recidivism analyses. Of the remaining 119 youth, the follow-up period during which there was opportunity for reoffense ranged from 4.92 to 65.40 months, with a mean of 32.28 months ( $SD = 14.40$  months).

The recidivism rate for the adjusted total sample ( $N = 119$ ) was 55% ( $n = 65$ ), with a mean time to first reoffense of 13.08 months ( $SD = 11.88$  months). For the purposes of the present

study, a conviction event was operationalized as a single point in time when a youth was convicted of one or more concurrent offenses (i.e., each conviction event occurred on a separate date). Using this definition, the recidivists had between one and seven new conviction events in the approximate 2.5 years following their clinical assessments, with a mean of 2.62 conviction events per youth ( $SD = 1.99$ ). It is interesting that the correlation between the number of new convictions and the amount of time during which youth had an opportunity to reoffend was not significant ( $r = -.08, p = .40$ ). Of the 65 youth who reoffended, the most serious of the new offenses ranged from first-degree murder (1 youth) to miscellaneous minor offenses (11 youth; e.g., failure to comply, mischief), and 2 youth reoffended sexually.

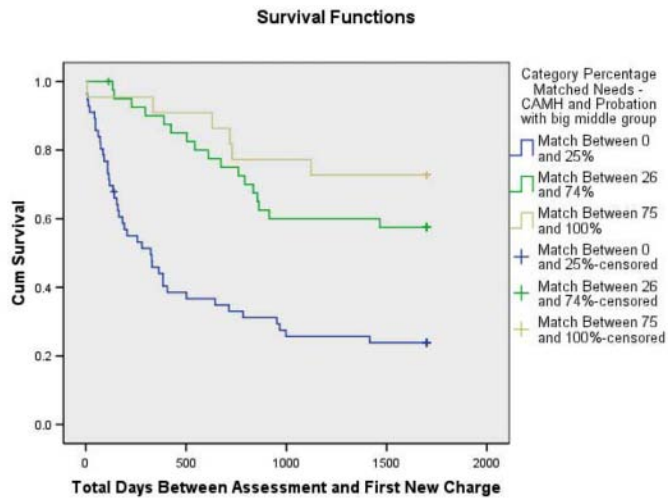
Correlations were computed to examine the associations among youths' risk scores (i.e., total YLS/CMI scores) at the time of their assessments, percentage clinician–probation needs match, percentage clinician–probation responsivity match, and number of postassessment convictions. The correlation between youths' risk scores and number of new convictions was moderate ( $r = .40$ ) and significant ( $p < .001$ ). There was also a moderate and significant negative correlation ( $r = -.48, p < .001$ ) between the percentage of clinician–probation needs match and number of new convictions. A third noteworthy and significant ( $r = -.21, p = .02$ ) negative correlation was between the percentage of clinician–probation responsivity match and the number of new convictions.

Correlations were also computed to explore whether it was merely the receipt of treatment—as opposed to *matched* treatment—that was associated with the number of new convictions incurred by participants. In contrast with the moderate and significant negative correlation between needs matched services and number of new convictions, the correlation between the total number of services received (both criminogenic and noncriminogenic) via probation and number of new convictions was not significant ( $r = -.06, p = .51$ ). The correlation between number of new convictions and *broadly* matched service (i.e., the number of services that youth received targeting any criminogenic need, not necessarily one of their own) was significant ( $r = -.23, p < .05$ ) but was not as strong as the aforementioned relationship between recidivism frequency and youths' receipt of individually matched services. These results demonstrate that, as predicted, as a youth's level of risk score increased, so did his or her likelihood of reoffending, but that matching on a youth's *specific* criminogenic needs and responsivity factors is related to a decreased likelihood of recidivism.<sup>3</sup>

#### TIME TO REOFFENSE

To understand the above relationships more precisely, a survival analysis was conducted to examine the proportion of youth who reoffended over the course of the follow-up period and evaluate whether their percentage clinician–probation needs and responsivity match affected the rate of recidivism beyond knowledge of risk level alone. The “survival time” for the present study was the number of days between youths' court-ordered assessments and their first reconviction. For the youth who did not reoffend, their end date was set at 1,700 days (4.7 years), which was the time elapsed between the date of the assessment for the first youth sampled and the cutoff date of July 1, 2006, used for all analyses.

Youth were categorized into low (0% to 25% match), moderate (26% to 74% match), and high (75% to 100%) needs match groups for this analysis. The survival function for the three needs match groups is presented in Figure 1. The results indicate that youth for whom less than one fourth of their criminogenic needs were matched were at greater risk for early



**Figure 1: Survival Function for Time to Reoffend According to Percentage Criminogenic Needs Match Group**

Note.  $N = 119$ .

recidivism (even after controlling for risk to reoffend). The probability that a randomly selected youth from the low match group would reoffend prior to July 1, 2006, was 76.2%. By contrast, the probabilities that a randomly selected youth from the moderate and high match groups would reoffend prior to July 1, 2006, were 42.5% and 27.3%, respectively. A log rank test indicated that the probability of reoffense was significantly higher among youth in the low needs match group than among those within the moderate and high match groups,  $\chi^2(2, N = 119) = 27.83, p < .001$ ; the moderate and high match groups did not differ significantly from one another. Youth were also categorized into either a low (less than 50%) or high (50% or greater) responsivity match group for the analyses. The survival function for the two percentage responsivity match groups is presented in Figure 2. Consistent with the needs analysis, the youth for whom less than half of their responsivity needs were matched were at greater risk for early recidivism. Although the probability that a randomly selected youth from the low match group would reoffend prior to July 1, 2006, was 62%, the probability that a randomly selected youth from the high match group would reoffend during the follow-up period was lower, at 44%. The median survival time for youth in the low percentage responsivity match group was 731 days (24.4 months). However, 50% of the youth in the high percentage responsivity match group never reoffended during the 4.7-year follow-up period. A log rank test indicated that these survival functions were significantly different,  $\chi^2(1, N = 119) = 4.29, p < .04$ .

A Cox regression analysis was subsequently conducted to examine the relationship between the predictor variables (i.e., total risk score, category needs match, and category responsivity match) and survival time (i.e., time to first reoffense). Youths' total YLS/CMI scores were entered in Block 1 to control for a youth's risk to reoffend. The results of this analysis indicated that a youth's risk score significantly predicted reoffense; however, the addition of matching according to youths' criminogenic needs also yielded a statistically significant model,  $\chi^2(5, N = 119) = 30.69, p < .001$ , whereby youth whose needs were

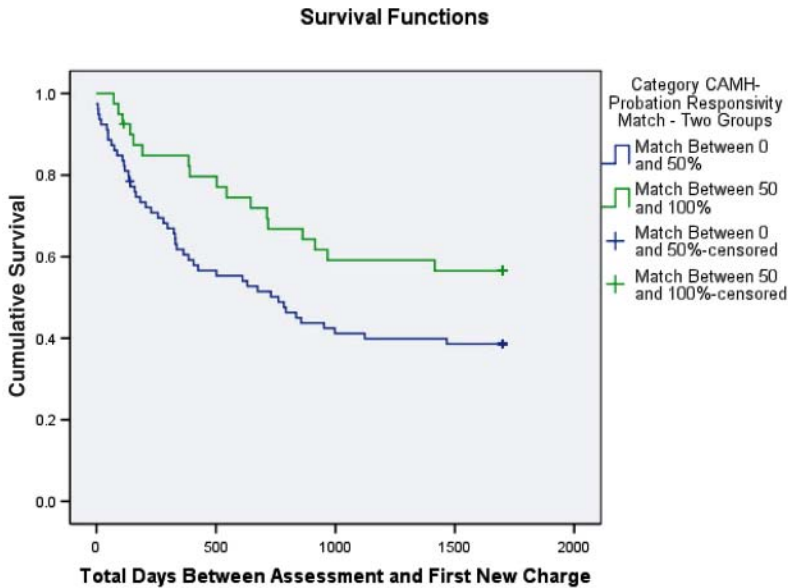


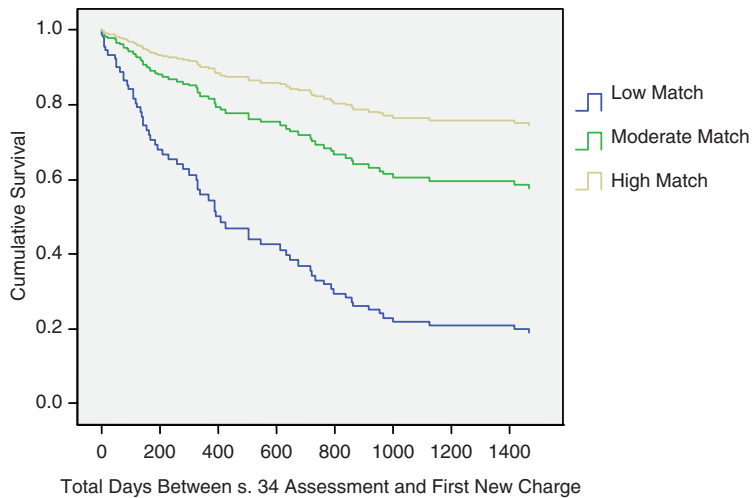
Figure 2: Survival Function for Time to Reoffend According to Percentage Responsivity Match Group  
 Note. N = 119.

TABLE 1: Summary of Cox Regression Analysis Predicting Time to Reoffense

Variable	B	Odds Ratio	Confidence Interval	p
Block 1				
Time 1 static risk score	0.07	1.07	1.04, 1.10	<.001
Block 2				
Category needs match				
Low vs. moderate	2.90	18.08	2.30, 142.06	.01
Moderate vs. high	1.28	3.59	0.43, 29.82	.24
Category responsivity match	1.21	3.35	0.39, 28.80	.27
Category Needs × Category Responsivity (low)	-1.56	0.21	0.02, 2.01	.18
Category Needs × Category Responsivity (high)	-0.84	0.43	0.04, 4.61	.49

Note. N = 119.

essentially not met had significantly greater odds of reoffense over the follow-up period than did youth in either the moderate or high match groups. Specifically, the odds for reoffense for youth in the low needs match group were 18.08 times higher than the odds for reoffense for youth in the high match group. The odds for reoffense for youth in the low match group were 3.59 times those for youth in the moderate match group. Thus, youth whose risk scores were higher and for whom less than one fourth of their criminogenic needs were met via probation services recidivated most rapidly among the participants sampled. Counter to expectations, however, although matching of more than half of a youth’s responsivity factors did significantly slow the recidivism rate, it did not contribute



**Figure 3: Survival Function for Time to Reoffend According to Percentage Criminogenic Needs Match Group Controlling for Time 1 Risk Score**

Note.  $N = 119$ .

to the overall model after accounting for risk score and criminogenic needs. Furthermore, the interaction between needs and responsivity matching was not significant. Refer to Table 1 for a summary of the Cox regression analysis. The survival function for the needs match groups, with risk score controlled, is presented in Figure 3.

#### FREQUENCY OF RECIDIVISM

To explore whether matching services with youths' clinician-identified criminogenic needs and responsivity factors also affected chronic offending (i.e., the number of new convictions), a hierarchical multiple linear regression was conducted using only the recidivists ( $n = 65$ ). To control for the impact of youths' level of risk to reoffend, risk scores (total YLS/CMI score) were entered as a predictor first. Youths' percentage clinician-probation needs match and percentage clinician-probation responsivity match (over the entire follow-up period) were entered in the second block. Results indicated that needs matching accounted for a significant amount of variance in the number of new convictions, over and above knowing a youth's risk score,  $F(1, 63) = 6.68$ ,  $p = .01$ . However, the percentage clinician-probation responsivity match did not significantly contribute to the model. Consistent with expectations, youths' risk level did play a predictive role in subsequent offending behavior; however, matching youth with treatment services according to their individual criminogenic needs significantly exceeded the predictive power of risk alone, accounting for an additional 19% of the variance. Refer to Table 2 for a summary of the regression analysis.

**TABLE 2: Summary of Hierarchical Multiple Linear Regression Analysis for Time 1 Risk Level, Percentage of Clinician–Probation Needs Match, and Percentage of Clinician–Probation Responsivity Match (Prior to First Reoffense) Predicting Number of New Convictions Among Recidivists**

Variable	B	SE B	$\beta$	$\Delta R^2$
Step 1				.10*
Time 1 risk score	0.07	0.03	.31	
Step 2				.19**
Percentage needs match	-2.76	0.73	-.41	
Percentage responsivity match	-0.51	0.62	-.09	

Note.  $N = 65$ .

\*Significant at the .01 level. \*\*Significant at the .001 level.

## DISCUSSION

Philosophically, the juvenile justice system strives to rehabilitate and reintegrate young offenders while simultaneously reducing recidivism rates. To that end, identifying and addressing the needs underlying youths' offending behaviors are paramount. The present research endeavored to provide greater insight into the outcomes of matching services with youths' individual criminogenic needs and responsivity factors among a sample of offenders court referred for comprehensive mental health and risk and needs assessments.

The predictive power of criminal history with regard to recidivism is well established (Andrews & Bonta, 2006; Gendreau, Goggin, & Paparozzi, 1996), and in keeping with the literature there was a moderate and significant correlation between youths' criminal history score on the YLS/CMI and their number of new convictions. Although this relationship is certainly informative and relevant to those working with young offenders, it is far more productive from a treatment perspective to focus on the dynamic factors that have the potential to improve over time. For this reason, the present research endeavored to evaluate the effects of matching services with youths' criminogenic needs and responsivity factors on subsequent reoffending, above and beyond merely the knowledge of their assessed likelihood of recidivism at a particular point in time.

### ADDRESSING CRIMINOGENIC NEEDS

The results of the present study clearly support the value of attending to and directly servicing youth according to their individual criminogenic needs as a means of meeting the rehabilitation ideals of the juvenile justice system. As hypothesized, the positive impact of service matching according to specific criminogenic needs on time to recidivism and frequency of recidivism over the course of an approximate 3-year follow-up period was evident in the data. Specifically, youth for whom a low proportion (i.e., less than 26%) of clinically identified needs were met via therapeutic services reoffended significantly earlier than did youth for whom a greater proportion of criminogenic needs was matched. Youth for whom less than one third of criminogenic needs were met through probation were more than 18 times more likely to reoffend prior to the end of the follow-up period than were those for whom the majority of their needs were met. Moreover, youth in the low needs match group had only a 24% probability of "surviving" (i.e., remaining crime free) over the approximate 3-year follow-up period in comparison with those in the moderate and high needs match groups.

Research has shown that a small proportion of chronic offenders accounts for the majority of new arrests and convictions (Levesque, 1996). Thus, intervening with youth who continue to reoffend is an important goal for researchers and clinicians alike (Catchpole & Gretton, 2003). As such, in addition to evaluating the impact of matching on time to recidivism, the impact of matching on the number of new convictions acquired by recidivists was also explored. Among the youth who incurred at least one new conviction during the almost 3-year mean follow-up period, risk scores were moderately and significantly correlated with the number of new convictions. However, as anticipated, when youths' therapeutic services were matched with their individual criminogenic needs, significant additional variance was accounted for. This significant improvement in the prediction model indicates that regardless of youths' criminal history and assessed risk for reoffense, the greater the percentage of youths' individual criminogenic needs matched via services received through probation, the greater the reduction in number of new convictions.

Although the addition of matching according to criminogenic needs significantly reduced the frequency of youths' offending, a large proportion of the variance in repeat offending nonetheless was not explained by the model. A few important pieces of information could not be captured, and they may play a predictive role with regard to chronic offending. First, coding of the percentage needs match in the present study was heavily reliant on probation data. Aside from the inevitable variability in the detail with which these services are described in file notes, it is also possible that youths' criminogenic needs were affected—either positively or negatively—by events or services outside of or unbeknown to probation officers.

An associated consideration is the issue of *which* criminogenic needs were typically matched in the present sample and the relationship between those particular needs and offending. In the present study, three of the least frequently met criminogenic needs were family problems, antisocial attitudes, and peer relationships. Poor parent-child relationships and insufficient parenting skills have long been identified as significant risk factors for delinquent and offending behavior (Chitsabesan & Bailey, 2006; Granic & Dishion, 2003; Quinsey, Skilling, Lalumière, & Craig, 2004). Undermatching of needs in the family domain may therefore have weakened the power of the total percentage match variable. According to Andrews and Bonta (2006), antisocial attitude and peers are among the "big four" predictors of criminal conduct (along with antisocial personality and a history of antisocial behavior). Had these particular needs been matched more frequently via probation services, the impact of the needs match on the rate and frequency of recidivism would very likely have been greater. Although evaluation of services addressing attitudes and affiliates will prove challenging given the limited treatment options available, future efforts in this regard would be very useful.

#### ADDRESSING RESPONSIVITY FACTORS

Rehabilitative interventions should be tailored not only to youths' needs but also to their personal abilities and characteristics (Andrews & Bonta, 2006; Chitsabesan & Bailey, 2006). Although research has established that treatment programming can fail because of responsivity-related barriers, the responsivity principle has been largely neglected in previous research (Kennedy, 2000). In particular, the frequency with which youth are matched with services according to their individual (i.e., specific) responsivity factors (e.g., rather than general responsivity; Dowden & Andrews, 2000) has not previously been explored. As

was investigated for criminogenic needs, the percentage match between clinical recommendations and probation services with regard to psychological functioning, medication needs, cognitive capacity, cultural or language needs, and staff fit issues was measured.

Unlike the significant impact of matching youths' needs on recidivism, counter to expectations, matching services with youths' clinician-identified individual responsivity factors did not significantly contribute (over and above needs matching and risk) to either the time to recidivate or the number of new convictions incurred by the recidivists in the sample. This finding was unexpected and may reflect that the true effects of matching according to several of the responsivity factors measured were possibly diluted because of their potential overlap with criminogenic needs. For example, for youth who presented with mild cognitive limitations, concurrent successful matching with regard to their educational needs may have diminished the necessity for more specialized programming (a responsivity factor). Similarly, if matching of youths' anger or personality (e.g., impulsivity, inattention) needs incorporated medication management, coding the medication match as a met responsivity factor may do little to capture more information about treatment success. Chitsabesan and Bailey (2006) recently suggested that cognitive-behavioral and problem-solving skills training programs geared toward anger reduction and antisocial behavior might also have a beneficial impact on mild to moderate emotional symptoms. Consequently, there might have been instances in which youths' psychological functioning might have been doubly matched, indirectly via criminogenic needs matching and directly as a responsivity factor.

#### LIMITATIONS AND FUTURE DIRECTIONS

The present study represents the first exploration of the process and effects of matching youth with services according to their individual criminogenic needs and responsivity factors. Although every effort was made to assess and capture all of the necessary information properly, constraints on the design imposed by the system and time limitations of data collection demand that certain caveats be placed on the interpretation of results. First, it is important to note that the sample of young offenders was not randomly selected and was drawn from a large mental health facility in Toronto, Ontario, and subsequently tracked across the entire province. The generalizability of the findings is limited, as only youth referred for court-ordered assessments were eligible for inclusion, and recent estimates have indicated that this group represents less than 1% of young offenders (Statistics Canada, 2005). Researchers have previously suggested that these referred and nonreferred youth differ in ways (e.g., nature of the offense) that might render findings related to this subgroup less applicable to young offenders in general (Campbell & Schmidt, 2000). Referred youth were selected for the present study because the potential for matching of services with clinically identified criminogenic needs and responsivity factors was consistent across all of the youth sampled, and tracking these youth over an approximately 3-year period provided a unique opportunity to observe the unfolding of the matching process at various levels. Certainly, it remains to be seen whether the impact of individualized service matching on recidivism extends to nonreferred youth. However, there is nothing in the present data to indicate that the results could not be generalizable given alternative mechanisms (i.e., predisposition reports) for identifying youths' needs. Future efforts to explore the matching process would therefore benefit from the inclusion of comparison groups of nonreferred youth who, minimally, are matched with referred youth regarding the duration of services received.

Historically, responsivity factors have been underresearched (Kennedy, 2000), and this is likely because of the wide array of factors considered under the umbrella of the responsivity principle as well as the differences in how the concept is operationally defined by various researchers. For instance, responsivity has been conceptualized as general (e.g., behavioral or cognitive-behavioral programming) versus specific (e.g., consideration of cognitive, language, mental health factors; Dowden & Andrews, 2000), as internal (e.g., motivation, engagement in treatment) versus external (e.g., counselor and setting characteristics; Kennedy, 2000), and as treatment readiness (e.g., motivation and goal setting) versus treatment performance (Serin, 1998). Although there is no doubt that youths' motivation to improve in a given area or their level of engagement with a service provider have the potential to affect treatment success, the limitations associated with accurately coding a youth's level of motivation or engagement based on file notes rendered the inclusion of these factors in the present research impractical. Moreover, exploration of these newer responsivity factors is in its infancy; thus, the accuracy with which these types of factors can currently be measured is questionable (Day & Howells, 2002). Certainly, future research in this area would benefit from more exhaustive coverage of all possible responsivity factors and the measurement of internal responsivity factors (e.g., motivation) via conversations with probation officers and treatment providers during the youth's probation term.

Recent reviews of the RNR principles have emphasized the importance of therapeutic integrity as the fourth principle in the model (Andrews & Bonta, 2006). The present research endeavored to evaluate the system and processes related to matching as a whole, and it was not possible to measure individual program or staff quality in all of the many private and public agencies from which youth ultimately received services. The associated issue of service length and fragmentation (i.e., the same need partially addressed by multiple services and agencies) also could not be controlled for because of the inconsistent availability of this information in probation files. Researchers have recommended services be at least 100 hours in length and provided over a minimum of 3 to 4 months (Day & Howells, 2002; Gendreau & Goggin, 1996), and Simpson, Joe, and Brown (1997) argued that a very strong predictor of treatment success is the amount of time spent in the program. However, knowledge of this ideal is useful only if treatment options are actually available within the juvenile justice system. Without question, a very important next step to evaluating the matching process and its impact on youths' recidivism and subsequent functioning is to evaluate and control for these factors. The Correctional Program Assessment Inventory (Gendreau & Andrews, 1996), an inventory that evaluates program implementation, staff characteristics, and program quality, could be a very useful tool in this regard.

Without the appropriate intervention, youth offending can be highly resistant to change and, minimally, result in substantial costs to victims, the system, and the youth themselves (Tarolla, Wagner, Rabinowitz, & Tubman, 2002). Youth justice officials are faced with balancing the ideals of proportionate accountability, protecting community safety, and rehabilitation and reintegration (Maurutto, Hannah-Moffat, & Bloomenfeld, 2008) amid the realities of limited and, at times, ineffective services. The present research suggests the need for efforts to ensure better and more consistent matching of services with youths' clinically identified needs, as doing so appears to lead to reduced recidivism and improvements in youths' functioning. In short, although the RNR principles have provided information regarding the "who" and "how" of correctional intervention (Dowden & Andrews, 2000), advancement of these principles requires continued attention to, and collaboration regarding, matchmaking techniques by clinicians, researchers, and policy makers alike.

## NOTES

1. The Youth Criminal Justice Act (YCJA) came into effect in April 2003; thus, 61 of the youth were referred for an assessment under Section 13 of the Young Offenders Act and 61 of the youth were referred for an assessment under Section 34 of the YCJA. The assessment processes and reports produced for the courts, however, remained consistent throughout the sampling period despite the legislative change because the content of the two sections (Section 13 vs. Section 34) remained consistent.

2. A paired-samples *t* test revealed that significantly fewer of youths' needs were met prior to their first reoffense than when provided the entire follow-up period to receive services,  $t(121) = -5.11, p < .001$ .

3. To explore whether youth were more or less likely to have their needs "matched" depending on their number of clinician-identified criminogenic needs (i.e., only youth with fewer needs obtained high "match" scores), the correlation between percentage of clinician-probation needs match and number of clinician-identified needs was investigated. The correlation was not significant ( $r = .01, p = .92$ ), alleviating the concern that only youth with few needs received matched services.

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