Socio-Demographic Variables Predicting Formal vs. Informal Juvenile Justice System Handling and Associated Outcomes

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This analysis compares and contrasts first-time juvenile offenders enrolled in a community-based balanced and restorative justice program whose cases were processed either informally or formally. The study examines contributors to both levels of processing and re-offending. This study examines how family characteristics are associated specifically with level of processing, which are unique attributes compared with juvenile justice studies in the literature. Multivariate predictors of formal levels of processing were age, gender, race, type of offense, marital status of biological parents, and the number of children in the home. Analyses also found that almost twice as many youth who were formally processed were recidivists at 1 year as compared to youth who were informally processed. No significant difference was found in regards to rates of recidivism at 3 years.

As questions continue to accumulate in regards to the juvenile justice system's effectiveness, the youthful population being served by this system has risen from U.S. Juvenile Courts handling 1,100 delinquency cases daily in 1960 to 4,500 delinquency cases per day in 2004 (Office of Juvenile Justice Delinquency Prevention [OJJDP], 2007a; Snyder & Sickmund, 2006). A 44% increase in the total number of cases handled by juvenile courts was noted between 1985 and 2004 (OJJDP, 2007b). Looking one step deeper, during that same period (1985 to 2004) the number of formally processed delinquency cases increased 80% in comparison to the number of delinquency

cases that were handled informally, which rose only 15% (OJJDP, 2007c). *Informal case handling* is defined as non-petitioned cases whereby duly authorized juvenile justice system personnel (e.g., judges, referees, probation officers, district attorneys, and other agencies statutorily designated to conduct screening for juvenile court), having screened the case, decide not to file a formal petition and may refer the youth to some other lesser non-court related intervention (Stahl et al., 2005). Formal handing is defined by Stahl et al. as cases petitioned to appear on an official court calendar in response to the filing of a complaint or other legal document requesting the court to adjudicate a youth as a delinquent, status offender, or dependent child or to waive juvenile jurisdiction and transfer a youth to criminal court for processing as an adult criminal offender.

Judging from these court processing data, the juvenile justice system has seemingly progressed into more formalized processes, involving more reliance on court intervention. The factors impacting decisions regarding how youth are handled and the subsequent outcomes associated with those processes remain critical issues to examine. Many studies to date describe formalized processes as predictive of a higher rate of re-offending and progression into more serious offending with each subsequent contact with the juvenile justice system; however, findings are inconsistent among studies and the determinants of how youth are processed continue to appear to be influenced by race, gender, and other less frequently examined factors addressed in this study.

PURPOSE OF THE STUDY

The current study examines the interrelationships of individual and psychosocial characteristics of first-time youthful offenders at an early level of involvement with the juvenile justice system. Gender, race, socioeconomic factors, family structure, and how these variables related to level of juvenile justice processing were of particular interest. The association of psychosocial risk scores on the Problem Oriented Screening Inventory for Teens (POSIT), the level of processing the youth received in the juvenile justice system, and subsequent recidivism rates were explored.

REVIEW OF THE LITERATURE

Factors Influencing Juvenile Justice Processing

The Juvenile Court was created in 1899 and was founded on the belief that children are inherently different from adults and that the state should take responsibility for protecting and rehabilitating young offenders in a separate, less formal system (Butts & Harrell, 1998; Nellis, 2011). Initially the focus of

the juvenile court was on rehabilitation of the offender and not on the offense and associated punishment. According to Butts and Harrell (1998) and the National Research Council and Institute of Medicine (2001), juvenile crimes were handled in juvenile courts with rare exceptions, and the courts tended to be flexible and informal with a range of dispositional options related to the child's situation being available to the judge. This changed dramatically in the latter part of the 20th century as public concern mounted regarding the lack of effectiveness of the juvenile justice system. In response to concerns raised in the 1950s and 1960s, the U.S. Supreme Court rendered a series of decisions that formalized juvenile proceedings and created a much more adult criminal court-like environment (Butts & Harrell, 1998; Nellis, 2011). In the 1990s, a get tough on crime philosophy was supported by more punitive laws, including increases in mandatory sentencing, automatic waivers to adult court, and an emphasis on punishment rather than rehabilitation (Butts & Harrell, 1998; National Research Council and Institute of Medicine, 2001). Now, a decade into the 21st century, the impact of those decisions to emphasize a more formalize, punitive process continues to be questioned in recognition to numerous collateral consequences associated with such processing. Those consequences include youth being forced out of schools because of zero tolerance policies, lower employment for adjudicated youth, higher out-of-home placements and subsequent homelessness, and a growing lack of confidentiality in regards to some youthful offenses (Nellis, 2011).

Currently, overall arrests are down, but juvenile justice system handling remains predominantly formal (OJJDP, 2007c; Snyder & Sickmund, 2006). In review of approximately two million delinquency cases, Stahl et al. (2005) reported 58% were petitioned for formal processing. Overall females were petitioned less to formal court proceedings (540 per 1,000 cases vs. 626 per 1,000 cases for males) and were handled informally at a higher rate (460 per 1,000 vs. 374 per 1,000 for males; Stahl et al., 2005). Black youth were petitioned for formal court proceedings at higher rates than White males (661 per 1,000 cases for Black males petitioned vs. 567 per 1,000 cases for White males; Stahl et al., 2005). Caution should be taken with these results because none of these formal or informal processing rates controlled for differences in offense seriousness, criminal histories, and other risks factors related to delinquency (Snyder & Sickmund, 2006; Stahl et al., 2005).

In studies that do take into account differences in offense, gender, and race, juvenile justice processing differences have been reported. In an examination of gender bias in the handling of juvenile court cases in Hawaii, a series of analyses indicated differences between how male and female cases were processed, particularly for minority youth. In the study, MacDonald and Chesney-Lind (2001) found that female juvenile offenders were more likely than their male counterparts to be handled informally at the preliminary stages of juvenile justice system processing; however, this leniency

was observed to decline as the female offenders moved into the dispositional stages of formal processing.

There have also been a number of studies that have examined how race is associated with juvenile justice decision making. Currently there is an emerging interest in the specific area of disproportionate minority contact at various points in the juvenile justice system and whether this is due to racial bias or risk factors that are highly correlated with race (Bishop, 2005; Huizinga, Thornberry, Knight, & Lovegrove, 2007; McCarter, 2011; Pope & Snyder, 2003). For example, one study reviewing juvenile justice system data from 1997 and 1998 reported that African American youth accounted for 26% of all arrests and 31% of referrals to juvenile court, 34% of youth formally processed by the juvenile court, and 32% of the youth adjudicated delinquent while comprising only 15% of the juvenile population in the United States (Poe-Yamagata & Jones, 2000).

Outcomes Associations with Varying Levels of Juvenile Processing

In support of formal processing, Brown, Miller, Jenkins, and Rhodes (1991) emphasized the importance of adjudication by the juvenile court upon the first referral to the juvenile justice system in order to prevent future imprisonment for crimes in adulthood. In this study, those youth who were not adjudicated at the time of their first referral to the juvenile justice system were more than twice as likely to enter prison as an adult (Brown et al., 1991). Similarly, two large meta-analyses of level of processing yielded little to no support for informal processing. Gensheimer, Mayer, Gottschalk, and Davidson (1986) analyzed 103 studies of informal processing by the juvenile justice system for first-time, minor offenders. In the majority of these diversion practices, the youth was counseled to desist delinquent behavior and attend certain treatment programming and perform community service (Gensheimer et al., 1986). The findings showed there was not substantial evidence for the efficacy of diversion practices and that informal processing interventions produced no strong positive or strong negative effects with youth diverted from the juvenile justice system (Gensheimer et al., 1986). One characteristic that did emerge in the meta-analysis was that the younger the informally processed client, the more likely the intervention would have a positive effect (Gensheimer et al., 1986). In another meta-analysis, Whitehead and Lab (1989) reviewed studies of intervention programs linked to informal and formal justice processing practices. Those programs operating as an extension of the formal justice system were found to be the most effective. They suggested that this result may be linked to a deterrent value not associated with programs operating informally or outside the formal justice system (Whitehead & Lab, 1989).

In contrast to these findings there are a number of studies suggesting more favorable outcomes associated with informal handling of delinquent

youth. Ezell (1989) compared cases of delinquent youth that were arbitrated through a diversion program (i.e., informal processing) versus those that were adjudicated and placed on probation. The Ezell study findings indicated that for those cases that were diverted, the rate of recidivism decreased for some youth when compared to probation (i.e., formal processing). Similarly, Snyder (1988) analyzed the court involvement of youth, ages 10 to 17, and found that the rate of re-referral to juvenile court varied with age and the likelihood of re-referral increased with the number of prior juvenile court contacts. Overall, six out of every 10 juveniles who had been referred to the juvenile courts were identified to have returned to juvenile courts by the time they turned 18 (Snyder, 1988). This is compared with juveniles who had no prior referral to the juvenile court, where four out of every 10 (41%) returned to court after the initial contact (Snyder, 1988). Finally, a recent meta-analysis of 29 experimental studies found that formal processing, more often than not, lead to increased delinquency (Petrosino, Turpin-Petrosino, & Guckenburg, 2010).

In yet another view of system involvement, this one from outside the United States (in Montreal, Canada), neither formal or informal processing appeared to stem the tide of future offending; however, the odds of adult criminal arrest increased with the intensity of the prior juvenile justice system involvement. Controlling for prior delinquency, deviant peers, impulsivity and hyperactivity, parental supervision, family structure, and income, Gatti, Tremblay, and Vitaro (2009) found that male youth involved in the justice system (formally or informally handled) were seven times more likely than youth not involved in the juvenile justice system to commit crime as adults.

Implications of the Literature Review

Based on current literature, the association between levels of processing and re-offending remains unclear and findings vary widely. Much of this literature is also dated and may not take into account more modern formal or informal interventions, like those related to balanced and restorative justice (BARJ) practices. Furthermore, research regarding the factors contributing to decisions to process youth formally versus informally have largely revolved around gender or race and have not looked at many other factors, specifically well-described delinquency risk factors, that may contribute to such decisions.

METHODOLOGY

The design of this study is a longitudinal, retrospective secondary analysis that examines the association of demographic, psychosocial, and system-processing variables of youth who have demonstrated delinquent behavior

and who have been referred to a single intervention program by either informal or formal levels of juvenile processing. The study focuses on individual and psychosocial characteristics and their association with levels of juvenile justice processing and observations of recidivism.

This study sought to answer the following research questions:

1. What are the individual and psychosocial characteristics of first-time juvenile offenders processed at informal and formal levels of the juvenile justice system?
2. What combination of individual and psychosocial characteristics best predicts the level of processing a youth receives in the juvenile justice system?
3. Is either level of processing associated with, or predictive of, recidivism?

Sample

The data for this study were taken from a larger archival program evaluation database. This is a nonprobability sample with reliance on available subjects. This clinical sample includes 1,072 youth who were first-time offenders and who entered the intervention program between the years 1997 and 2002 (followed regarding program and recidivism data through 2005). Each subject included in the study was referred to the intervention program under one of two conditions: informal juvenile justice processing ($n = 610$, 57%) or formal juvenile justice processing ($n = 456$, 43%).

Intervention

Subjects participated in a community-based program consistent with descriptions of BARJ model of intervention found in the literature. BARJ is described as a model of community justice that places emphasis on holding offenders accountable for harm caused while also enhancing the competency levels of juveniles so that the likelihood of re-offending is decreased (Freivalds, 1996). Community-based BARJ interventions similar to the program studied in this research have been shown to be effective in reducing the likelihood of recidivism. Rodriguez (2007) reported that juveniles in a community-based restorative justice program were less likely than offenders in a comparison group to recidivate.

Measures and Instrumentation

Psychosocial risk factors are defined as substance abuse, physical health, mental health, family relationships, peer relationships, educational status, and aggressive behavior/delinquency as indicated on the POSIT, an empirical measure designed to indicate potential psychosocial problem areas

(Rahdert, 1991). This 139-question self-administered yes-or-no item response instrument was developed by the National Institute on Drug Abuse (NIDA) (Rahdert, 1991) for use with male and female youth between the ages of 12 to 19 (Rahdert, 1991). According to Leccesse and Waldron (1994), the POSIT can be used by school personnel, juvenile and family court personnel, medical and mental health care providers, and staff in substance use disorder treatment programs. The POSIT was used by the intervention program staff to identify problematic functioning in the psychosocial areas outlined above. Risk scores for each psychosocial area have demonstrated reliability and validity (Dembo & Anderson, 2005; Rahdert, 1991). Studies on the reliability of the POSIT indicate internal consistency exceeded .70, and test-retest reliability was significantly better than chance (Knight, Goodman, Pulerwitz, & DuRant, 2001). Further, research findings indicate the POSIT is useful in the prediction of recidivism (Dembo et al., 1996). Risk for each psychosocial factor was grouped into low-risk, moderate-risk, and high-risk cut-off scores as reported by Dembo and Andersen (2005).

Data Analysis

Descriptive statistics were used to summarize the demographic characteristics of the entire sample and to illustrate variable frequencies and measures of central tendency. Bivariate analyses were used to examine the strength of association and interrelationships among variables, including level of processing and recidivism. Multivariate analyses, specifically logistic regression procedures, for the current study proceeded according to findings yielded at preceding steps in the statistical analyses. Logistic regression methods were used to examine what combination of individual and psychosocial characteristics best predicts the level of processing a youth receives in the juvenile justice system.

The prevalence of cases missing POSIT data was also contended with in the multivariate analysis. The subset of youth who had recorded POSIT scores was isolated and analyzed using the same logistic regression methods used for the entire sample in order to investigate the predictive ability of the risk levels identified on the POSIT in both levels of processing and recidivism. Both the results of the subsample analysis and the full-sample analysis will be reported and similarities and differences will be explored in the findings and discussion sections that follow.

RESULTS

Description of Sample Characteristics

As illustrated in Table 1, the population under analysis was composed of 757 (70.6%) males and 315 (29.4%) females (total $N = 1072$). The mean

TABLE 1 Descriptive Characteristics of Youth Informally ($n = 610$) and Formally ($n = 456$) Processed

Characteristic	Informal (*n*)	%	Formal (*n*)	(%)
Age				
10	2	0.3	2	0.4
11	11	1.8	8	1.8
12	47	7.7	29	6.4
13	66	10.8	53	11.7
14	136	22.3	83	18.3
15	168	27.6	133	29.3
16	179	29.4	146	32.2
Total	609	100	454	100
Gender				
Female	209	34.3	105	23.0
Male	401	65.7	351	77.0
Total	610	100	456	100
Race				
Majority (White/non-Hispanic)	476	78.0	316	69.5
Minority (23.2% Black/African American,	134	22.0	139	30.5
1.0% Hispanic/Latino, 0.6% Asian, 0.7% Other)	610	100%	455	100%
Type of offense				
Status	28	4.6	3	0.7
Misdemeanor	490	80.6	275	60.4
Felony	77	12.7	161	35.4
Other	13	2.1	16	3.5
Total	608	100	455	100
Family structure				
Both parents	253	43.6	170	39.7
Single parent	229	39.5	182	42.5
Parent/step parent	71	12.2	49	11.4
Other	27	4.7	27	6.3
Total	580	100	428	100
Marital status of biological parents				
Married	260	44.4	178	41.6
Separated/divorced	224	38.3	154	36.0
Never married	66	11.3	75	17.5
Widowed	35	6.0	21	4.9
Total	585	100	428	100
Family income				
Under $10,000	100	19.0	89	22.7
$10,000–$24,999	132	25.1	114	29.1
$25,000–$34,999	79	15.0	54	13.8
$35,000–$49,999	87	16.6	57	14.5
$50,000 & above	127	24.2	78	19.9
Total	525	100	392	100
Number of children				
1 to 3	485	83.8	328	77.9
4 to 6	92	15.9	88	20.9
7 & above	2	0.3	5	1.2
Total	579	100	421	100

age of the sample was 14.56 with a standard deviation of 1.34 and median age of 15. The subset of youth with POSIT scores ($n = 357$) was very closely matched with the entire sample in regards to age. The mean age of the POSIT subset was 14.47, with a standard deviation of 1.29 and a median age of 15.

Almost three-quarters of the sample was White/non-Hispanic (74.5%). This group is referred to as the majority in further analyses of race. Just over a quarter of the cases (25.5%) recorded their race as Black/African American (23.2%), Hispanic/Latino (1.0%), Asian (0.6%), or other (0.7%). This latter group of cases is referred to as the minority in further analyses of race. The subset of cases containing POSIT scores closely resembled the characteristics of the entire sample in regards to gender and race.

INDIVIDUAL, PSYCHOSOCIAL CHARACTERISTICS, AND LEVELS OF PROCESSING

The ages of the informally processed and formally processed cases were very similar. Over three-fourths (79.3%) of informally processed cases were ages 14, 15, and 16. Similarly, over three-fourths (79.8%) of the formally processed cases were the same ages, noting there were 121 fewer cases formally processed for those age categories. Gender, on the other hand, showed some variation between informal and formal levels of processing. A greater proportion of females were processed at the informal level (66.6%) than at the formal level (33.4%). Although male processing was more evenly distributed with 53.3% processed informally and 46.7% processed formally. Furthermore, a higher percentage of minority youth (30.5%) were represented in the formally processed group than in the informally processed group (22.0%).

Type of offense committed by the youth was distributed with a higher proportion of status and misdemeanor offenses processed informally (85.2%). Approximately 25% fewer youth who committed status or misdemeanor offenses (61.1%) were formally processed. Furthermore, in terms of proportions, almost three times as many youth who were formally processed committed felony offenses (35.4%) than youth who were informally processed (12.7%).

Characteristics of the youths' families differed in a number of areas between the informally and formally processed cases. A slightly higher percentage of youth reported a family structure consisting of both parents in the informally processed group (43.6%) than in the formally processed group (39.7%). Likewise, those formally processed had slightly higher proportions of single-parent family configurations (42.5%) than did those who were informally processed (39.5%). Furthermore, a greater proportion of youth whose biological parents were reported as never married were formally processed (17.5%) than were those who were informally processed (11.3%). Families reporting an annual income of below $24,999 were found in over

half of the formally processed group (51.8%) and just under half (44.1%) of those informally processed. Family size also differed slightly between informal and formal processing. Families with four or more children represented a larger proportion of those formally processed (22.1%) than those who were informally processed (16.2%).

INDIVIDUAL, PSYCHOSOCIAL CHARACTERISTICS, AND RECIDIVISM

As shown in Table 2, 8% of the youth ($n = 87$ were described as having re-offended within one year of referral to the program. Twelve percent of the youth ($n = 133$) were identified as having re-offended within three years of referral to the program. The greatest proportion of youth who recidivated were between the ages of 14 and 16 (70.0%) when they were first referred to the intervention program. Three-fourths of the re-offenders were male (75.2%). Just over three-fourths of recidivists (76.7%) were categorized as the racial majority (i.e., White/non-Hispanic) and a similar proportion of the racial majority was found for nonrecidivists (74.1%). Just under three-fourths of recidivists (73.7%) and nonrecidivists (71.8%) were originally referred for a misdemeanor offense.

Over half of the youth who were recidivists (58.0%) and nonrecidivists (58.2%) were identified as having family structures made up of a configuration other than both of their parents. Proportions of youth whose biological parents were reported as married, separated or divorced, or never married were similar for both the recidivists and non-recidivists. Just over half (56.8%) of cases that were recidivists and just under half of non-recidivists (46.7%) had reported their family income as below $24,999 a year.

Bivariate Analyses of Associations

The results of bivariate chi-square analyses showed associations between variables at the $p < .05$ level of significance. The variables significantly associated with level of processing included the following summary:

- Race: Youth from the racial majority group were significantly more likely to be informally processed than those in the minority group, $\chi^2(1, N = 1065) = 10.069, p = .002$.
- Gender: Females were significantly more likely to be informally processed than formally processed, $\chi^2(1, N = 1064) = 16.133, p < .001$.
- Type of offense: Status and misdemeanor offenses were significantly associated with informal processing, while felony offenses were significantly associated with formal levels of processing, $\chi^2(3, N = 1063) = 90.395, p < .001$.

TABLE 2 Descriptive Characteristics of Recidivists ($n = 133$) and Non-Recidivists ($n = 937$)

Characteristic	Nonrecidivist (n)	%	Recidivist (n)	%
Age (at first offense)				
10	5	0.5	0	0.0
11	17	1.8	2	1.5
12	61	6.5	15	11.3
13	96	10.3	23	17.3)
14	192	20.6	28	21.1)
15	268	28.7	35	26.3
16	295	31.6	30	22.6
Total	934	100	133	100
Gender				
Female	281	30.0	33	24.8
Male	656	70.0	100	75.2
Total	937	100	133	100
Race				
Majority	694	74.1	102	76.7
Minority	242	25.9)	31	23.3
Total	936	100	133	100
Type of offense				
Status	29	3.1	2	1.5
Misdemeanor	671	71.8	98	73.7
Felony	207	22.2	31	23.3
Other	27	2.9	2	1.5
Total	608	100	133	100
Family structure				
Both parents	368	41.8	55	42.0
Single parent	356	40.4	59	45.0
Parent/stepparent	109	12.4	11	8.4
Other	48	5.4	6	4.6
Total	881	100	131	100
Marital status of biological parents				
Married	382	43.0	56	43.8
Separated/divorced	333	37.5	49	38.3
Never married	122	13.7	19	14.8
Widowed	52	5.8	4	3.1
Total	889	100	428	100
Family income				
Under $10,000	165	20.8	25	20.0
$10,000–$24,999	201	25.3	46	36.8
$25,000–$34,999	120	15.1	14	11.2
$35,000–$49,999	131	16.5	15	12.0
$50,000 & above	178	22.4	25	20.0
Total	795	100	125	100
Number of children				
1 to 3	713	81.5	103	79.8
4 to 6	156	17.8	25	19.4
7 & above	6	0.7	1	0.8
	579	100	421	100

- Marital status of biological parents: A higher percentage of youth whose biological parents were single, never married were associated with formal levels of processing, $\chi^2(3, N = 1013) = 8.255$, $p = .041$.

- Number of children in the home: Youth who lived in families with more than seven children were almost two and a half times more likely to be associated with the formally processed group, $\chi^2(7, N=1000)=6.901$, $p=.032$.
- POSIT "family relationship" risk level: Youth at high family relationship risk were more likely to be formally processed, $\chi^2(2, N=351)=11.928$, $p=.003$).

A two-tailed independent samples t-test was also performed to examine associations between level of processing and age and chi-square analyses were conducted to examine associations between level of processing, family structure, and family income; however, no significant associations were found.

The variables significantly associated with one-year recidivism were level of processing and POSIT "educational status" risk. In terms of proportions, almost twice as many youth who were formally processed were recidivists (10.4%) as compared to youth who were informally processed (6.6%), $\chi^2(1, N=1064)=4.993, p=.025$. Furthermore, a greater proportion of recidivists were at lower educational status risk (52.2%) than those at moderate (26.1%) and high risk (21.7%), $\chi^2(2, N=356)=6.605, p=.037$, on the POSIT. However, there was no significant association between level of processing and three-year recidivism found, $\chi^2(1, N=1064)=0.178, p=.673$.

Multivariate Analyses of Predictors

Multivariate analyses were performed using binary logistic regression to examine the research questions pertaining to what combination of individual and psychosocial characteristics and psychosocial risk factors best predicts the level of processing in the juvenile justice system and recidivism. Individual and psychosocial characteristics were predictive of both level of processing and recidivism as described below; however, neither formal or informal levels of processing predicted recidivism at one or three years.

LEVEL OF PROCESSING

The predictor variables age, gender, race, type of offense, family income, marital status of biological parents, family structure, and number of children living in the home were entered into the regression analysis to identify the best model for classifying youth into one of two levels of processing. According to the model, summarized in Table 3, gender, race, type of offense (variables status and misdemeanor), marital status of biological parents (variable single, never married), and the number of children living in the home (variable one to three children) are predictors of level of processing and all had significant partial effects. This model was statistically significant,

TABLE 3 Binary Logistic Regression Model Classifying Youth into One of Two Levels of Processing[a]

Predictor	B	SE	Wald χ^2	Exp(B)	95% CI Lower	95% CI Upper
Age	.115*	.053	4.646	1.122	1.010	1.246
Gender	−.376*	.157	5.736	.686	.505	.934
Race	.366*	.168	4.717	1.442	1.036	2.005
Type of offense						
Status	−3.100**	.751	17.021	.045	.010	.196
Misdemeanor	−1.248**	.162	59.407	.287	.209	.394
Married status of biological parents						
Single/never	.456*	.209	4.772	1.578	1.048	2.375
Number of children						
1 to 3 children	−.424*	.177	5.764	.654	.463	.925
Constant	−.745	.804	.860	.475		

Note. Model: χ^2(7, $N = 967$) = 115.987, $p < .001$. Age ($M = 14.56$, $SD = 1.34$). Gender is male = 0 and female = 1. Race is majority = 0 and minority = 1. Informal processing is coded as 0 and formal processing as 1.
[a]Model correctly classified 66.2% of the cases.
*$p < .05$, **$p < .01$.

χ^2(7, $N = 967$) = 115.987, $p < .001$. The inclusion of seven variables in the model explained approximately 15% of the variance in the dependent variable. The model was able to correctly classify 66.2% of the formally processed cases.

The odds ratio for age (Exp[B] = 1.122) shows that youth above the mean age of 14.56 are more likely than youth below that age to be placed in formal processing. The odds ratio for gender (Exp[B] = .686) indicated that when holding other variables constant, a female youth was almost 31% less likely to be placed in formal processing than was a male. Minority youth were almost one and a half times more likely (Exp[B] = 1.442) to be placed in formal processing than were majority youth. Having a status (Exp[B] = .045) or misdemeanor (Exp[B] = .287) offense also predicted a decreased likelihood of the youth being placed in formal processing. A youth with a status offense was about 95% less likely to be formally than informally processed. A youth with a misdemeanor offense was almost 70% less likely to be formally than informally processed. The odds ratio for youth whose biological parents were single and never married indicated that those youth were one and a half times (Exp[B] = 1.578) more likely to be in the group that was formally processed. The odds ratio for families with one to three children (Exp[B] = .654) living in the home predicted a 35% lower likelihood of the youth being formally processed.

Level of processing with POSIT subsample of psychosocial risk factors. A binary logistic regression to analyze the POSIT subsample showed that age,

race, and type of offense (variable felony) are predictors of level of processing and all had significant partial effects; however, POSIT risk scores did not significantly predict a youth's level of processing. This model was statistically significant, $\chi^2(5, N=341)=45.848, p<.001$. The inclusion of five variables in the model explained 17% of the variance in the dependent variable. The model was able to correctly classify 66.6% of the formally processed cases.

One-year recidivism. Income (variables under $10,000, $10,000 to $24,999, and $50,000 and above) and program non-completion are predictors of one-year recidivism, and all had significant partial effects. This model, shown in Table 4, was statistically significant, $\chi^2(8, N=965)=28.763, p=.001$. The inclusion of nine variables in the model explained approximately 7% of the variance in the dependent variable. The model was able to correctly classify 91.8% of the one-year recidivist cases.

The odds ratio for the income variables indicated that when holding other variables constant, youth from families with lower- and upper-level income ranges were more likely to recidivate at one year than those from families falling in the mid-income range. Youth whose family income was under $10,000 were over eight times (Exp[B] = 8.213) more likely to recidivate. Youth whose family income ranged from $10,000 to $24,999 were 12.5 times (Exp(B) = 12.579) more likely to recidivate, and youth whose family income was $50,000 and above were almost over eight times (Exp[B] = 8.268) more likely to recidivate. The odds ratio for youth who failed to complete the program indicated that when holding all other

TABLE 4 Binary Logistic Regression Model Explaining One-Year Recidivism[a]

Predictor	B	SE	Wald χ^2	Exp(B)	95% CI Lower	95% CI Upper
Race	−.641	.332	3.732	.527	.275	1.009
Income						
Under $10,000	2.106*	1.056	3.976	8.212	1.037	65.072
$10,000 to $24,999	2.532*	1.030	6.046	12.579	1.672	94.660
$35,000 to $49,999	1.910	1.057	3.268	6.755	.851	53.592
$50,000 and above	2.112*	1.038	4.145	8.268	1.082	63.177
Marital status of biological parents						
Married	.449	.259	3.016	1.567	.944	2.603
Level of processing	.407	.241	2.860	1.502	.937	2.408
Program completion	.522*	.256	4.163	1.685	1.021	2.783
Constant	−4.892	1.031	22.527	.008		

Note. Model: χ^2 (8, $N=965$) = 28.763, $p=.001$. Race is majority = 0 and minority = 1. Level of processing is informal = 0 and formal = 1. Program completion = 0 and program non-completion = 1. Recidivism is coded as 1 and non-recidivism is coded 0.
[a]Model correctly classified 91.8% of the cases.
*$p<.05$, **$p<.01$.

variables constant, these youth were almost twice (Exp[B] = 1.685) as likely to recidivate.

Using a binary logistic regression to analyze the POSIT subsample showed that income and marital status of biological parents are again predictors of one-year recidivism and all had significant partial effects; however, POSIT risk scores did not significantly contribute to prediction of one-year recidivism. This model was statistically significant, $\chi^2(9, N = 340) = 23.191$, $p = .006$.

Three-year recidivism. Age, income (variable $10,000 to $24,999), and program non-completion are predictors of three-year recidivism and all had significant partial effects. This model was statistically significant, $\chi^2(4, N = 971) = 19.941$, $p = .001$, and is summarized in Table 5. The inclusion of four variables in the model explained almost 4% of the variance in the dependent variable. The model was able to correctly classify 87.1% of the three-year recidivist cases.

The odds ratio for age indicated that when holding other variables constant, youth below the mean age of 14.56 when entering the intervention program were approximately 16% more likely (Exp[B] = .837) to be a three-year recidivist. The odds ratio for youths from a family with an income range from $10,000 to $24,999 indicated that when holding other variables constant, youth were 1.74 times more likely to recidivate within three years. Similarly, youth who failed to complete the intervention program were over one and a half (Exp[B] = 1.618) times more likely to recidivate within three years. However, level of processing did not predict recidivism within three years.

In regards to the analysis of the POSIT subsample, age, marital status of biological parents, and the POSIT-mental health risk factor are predictors of three-year recidivism and all had significant partial effects. This model was

TABLE 5 Binary Logistic Regression Explaining Three-Year Recidivism[a]

Predictor	B	SE	Wald χ^2	Exp(B)	95% CI	
					Lower	Upper
Age	−.178**	.069	6.674	.837		
Income						
$10,000 to $24,999	.552**	.209	7.018	1.738	1.162	2.634
Program completion	.481*	.206	5.470	1.618	1.084	2.436
Constant	.374	.997	.140	1.453		

Note. Model: χ^2 (4, N = 971) = 19.941, $p = .001$. Age (M = 14.56, SD = 1.34). Program completion = 0 and program non-completion = 1. Recidivism is coded as 1 and non-recidivism is coded as 0.
[a]Model correctly classified 87.1% of the cases.
*$p < .05$, **$p < .01$.

statistically significant, $\chi^2(4, N = 340) = 31.418, p < .001$. The inclusion of four variables in the model explained approximately 16% of the variance in the dependent variable. The model was able to correctly classify 85.0% of the three-year recidivist cases. None of the risk factors screened by the POSIT predicted recidivism at three years; however, youth at moderate to high risk of mental health problems were less likely to recidivate within three years.

DISCUSSION

This study builds on previous literature that has shown significant relationships between levels of processing, recidivism, and certain individual and psychosocial factors. The current study extends knowledge about juvenile offenders in important ways. This study examines youth who are considered less severe in their delinquent behavior. These non-violent, first-time offenders are typically not the focus of current research (Loeber, Farrington, & Petechuk, 2003; Petrosino et al., 2010; Thornberry, Huizinga, & Loeber, 2004) and do not often command the attention of policy makers; however, these are the youth who are observed in the largest proportions in a system where formal processing can be a significant predictor for further juvenile justice system involvement (Butts & Snyder, 1992; Petrosino et al., 2010; Smith & Paternoster, 1990; Snyder, 1988). Developing knowledge about youth at the early stages of their involvement in the juvenile justice system may lead to more responsive interventions that decrease exposure to formal processes.

What Are the Individual and Psychosocial Characteristics of First-Time Juvenile Offenders?

At the point of referral, the ages of youth in this study ranged from 10 to 16 ($M = 14.56$), with over half of the sample (58.9%) between the ages of 15 and 16. This distribution is consistent with national U.S. Department of Justice juvenile arrest data in 2003 (U.S. Department of Justice, 2004). The distribution of gender in this study was consistent with that described in national samples. For example, data gathered by the Federal Bureau of Investigation Uniformed Crime Report shows a similar proportion of female juvenile arrests (29%) nationally in 2003 (Snyder & Sickmund, 2006). The racial composition of the youth in the study sample is also similar to the distribution of race seen in arrests of youth in the United States where, according to national data, arrests of persons under the age of 18 were 70.6% White/Caucasians, 26.6% Black/African Americans, and 2.9% other race categories (i.e., American Indian, Alaska Native, Asian, and Pacific Islander) (U.S. Department of Justice 2004). However, the racial makeup of the

region where this study sample was derived suggests a disproportionate representation of minority youth as first-time offenders in the juvenile justice system. According to the 2000 U.S. Census, 84.2% of the people living in this Deep South geographic area where this sample was derived were White, 11.8% were Black, and 2.9% were Asian, Hispanic/Latino, Multiracial, or Other (U.S. Census Bureau, 2007).

Over a third (37.6%) of the youth reported that their biological parents were divorced or separated. This rate of divorce for the study sample was disproportionately higher than 2000 U.S. Census figures for the geographic area, which reported marital status as 59.2% married and 12.4% divorced or separated (U.S. Census Bureau, 2007). These findings are consistent with the literature describing high proportions of delinquent youth living with single or divorced parents (Dornbusch et al., 1985; Steinberg, 1987; Wells & Rankin, 1991).

Just under two-thirds (61.9%) of the youths' families reported an annual family income of at or below $34,999. This finding is inconsistent with household income statistics collected by the U.S. Census showing that 37.1% of families in the same geographic area reported incomes at or below $34,999 (U.S. Census Bureau, 2007). Thus, families in the lower income ranges are disproportionately represented in this sample of youth. In fact, families at the two lowest income ranges were disproportionately represented in this study. Over twice as many families reported incomes under $10,000 (20.6%), as compared with census data showing that 8.0% of families in the geographic area reported incomes in the lowest range (U.S. Census Bureau, 2007). Over one-fourth of the families in the sample fell within the $10,000 to $24,999 range (26.8%), whereas fewer than one-fifth (16.9%) fell in that same range, according to census data (U.S. Census Bureau, 2007).

Both the one-year and three-year recidivism rates yielded in the present study are lower than those reported in the much of the literature. For example, in Beck, Hevener, Calhoun, Katzenelson, and Moore-Gurrera (2007), 22% of the informally processed youth and 37% of the formally processed youth were shown to recidivate within two years. Snyder (1988) found 29% of females and 46% of males who came into contact with the juvenile court were repeat offenders. One explanation for the program having such a low recidivism rate compared to Snyder's (1988) analysis is that this study included both informally processed and formally processed youth. Further, an explanation as to the difference with the Beck et al. study is that this program specifically targets non-violent, first-time offenders. The programs included in the Beck et al. study were described as serving youth ranging from nonviolent to much more serious offenses in the community. However, these finding do support Freivalds (1996) and Rodriguez (2007) conclusions that community-based restorative justice programs are effective in reducing the likelihood of recidivism.

What Combination of Characteristics Best Predicts Levels of Processing?

This study showed that youths' level of processing was predicted by age, gender, race, type of offense, marital status of biological parents, and the number of children in the home. Male felony offenders, over the age of 15, who were members of a racial minority group, whose biological parents were single and never married, and who lived in large families were more likely to be formally than informally processed. These findings are consistent with the literature describing the demographic characteristics of juvenile offenders. For example, female offenders appear to enter into juvenile offending via status offenses more so than males (Acoca, 1999; MacDonald & Chesney-Lind, 2001). Males comprised over two-thirds of the sample in the current study, yet they represented just over half of the status offenders. Females represented less than a third of the sample, but comprised well over a third of the status offender group. Further, being a member of a racial minority is associated with formal rather than informal levels of processing in the literature (Stahl et al., 2005).

The present study yielded findings emphasizing the predictive ability of a number of family structure variables with respect to level of processing. Previous research has shown a relationship between family size and recidivism, with youth from families with four or more children offending with greater frequency than those from smaller families (Wasserman & Seracini, 2001). However, the influence of this variable on processing decisions has not emerged in previous studies. In a similar vein, the finding that youth whose parents are single and never married were more likely to be formally than informally processed has not emerged in previous studies except for Johnson's (1989) study showing the association between families with absent fathers and frequency of court appearances. Because processing decisions have been shown to influence outcomes (Petrosino et al., 2010; Smith & Paternoster, 1990; Snyder, 1988), the findings of this study suggest that family structure variables may be equally as important as individual characteristics when determining at which level offenders are processed. Additional research, therefore, is warranted to examine the role of family structure in processing decisions and whether certain factors constitute greater risk for youth entering the juvenile justice system.

A similar unexpected finding was yielded by a second regression equation that examined predictors of level of processing. For this latter equation, the psychosocial risk variables included in the POSIT screening instrument (in addition to the other independent variables) were entered into the model. Although the model was statistically significant, indicating that the set of predictors distinguished between youth who were formally processed from those who were informally processed, none of the psychosocial risk factors (as measured with the POSIT) significantly contributed to the final model.

This is inconsistent with previous research showing mental health and substance abuse problems overrepresented among youth processed formally (Cocozza & Skowyra, 2000). This could be due to the characteristics of the sample or due to measurement error. It may be prudent, therefore, to develop an additional model that includes POSIT scores as continuous, rather than categorical data; however, according to Dembo and Anderson (2005), youths' total scores in each psychosocial risk category can be compared to empirically based cut-off scores allowing for a classification of low, moderate, or high risk for that psychosocial risk area.

Is Either Level of Processing Associated with Recidivism?

The findings of this study offer some limited support that an association exists between formal levels of juvenile justice processing and recidivism; however, the association does not appear to remain significant over time. In the current study, a formal level of processing was significantly associated with recidivism within one year but not at three years lending at least partial support of the previous research by Ezell (1989), Petrosino et al. (2010), and Snyder (1988). Finally, neither informal nor formal levels of processing successfully predicted recidivism at one or three years when combined with and holding constant other individual and psychosocial variables.

Other Predictors of Recidivism

The findings on age are consistent with previous studies showing age of onset as a predictive factor in recidivism (Loeber et al., 2003; Thornberry et al., 2004). These studies have shown younger first-time offenders are more likely to reoffend. Coupled with the previous findings in Ezell (1989), showing participation in early intervention programs increasing the likelihood of an offender receiving a harsher sentence if he or she is rearrested, age, program participation, and subsequent reoffending are strong potential predictors for poor outcomes in the juvenile justice system, which warrant further study.

The present study also yielded findings emphasizing the predictive ability of family structure variables with recidivism. This is consistent with previous research that has shown a relationship between lower family income and offending (Rosen, 1985). However, in the current study, youth from families with income $50,000 and above were more likely to recidivate within one year. This finding has not emerged in previous studies. This could be due to the characteristics of the sample, which has almost one fourth of families reporting in this income range, or, because the same factor did not significantly predict recidivism at three years, it could be that higher family income afforded these youth a different level of participation in the program components. For example, they may have elected to use family

financial resources to pay monetary restitution incurred by the youth's delin-quent acts instead of the youth participating in increased community service hours or they may have elected to use private counseling resources instead of those offered within the program. Regardless of either speculation, this cur-rent study does not examine the impact of participation in specific program components on recidivism.

In the current study, the predictive model resulting from the analysis of the POSIT subsample produced the sole predictor from the POSIT psycho-social risk scores. In this model, youth scoring as moderate to high risk on the POSIT mental health factor were 52% less likely to be placed in the recidivist group. This finding is inconsistent with the previous finding that indicated the POSIT was a valid measure in regards to predicting recidivism (Dembo et al., 1996). In light of such a finding, a Cronbach's alpha was per-formed on the 357 cases in this study with complete POSIT scores. This analysis of the internal consistency for the original raw scores of the POSIT produced a Cronbach's alpha of .788. Performing the analysis again on the recoded data of the POSIT (i.e., raw scores converted to low, moderate, high risk) produced a Cronbach's alpha of .740, suggesting the internal con-sistency of the items remained sufficient. Because of these unexpected find-ings related to the POSIT and psychosocial risk described earlier, further exploration of the validity, reliability, and utility of this screening instrument is warranted.

Implications

Results suggest that both the characteristics of the individual youth and his or her family have direct effects on how that youth is processed within the sys-tem and the predicted outcomes. Identifying and reducing known risk is a cornerstone of modern approaches to juvenile justice prevention and inter-vention (Hawkins, 1995; Hawkins, Catalano, & Miller, 1992; Howell, 1995; Zahn, Hawkins, Chiancone, & Witworth, 2008). It is hoped that an increased knowledge of the characteristics of first-time juvenile offenders, including risk factors most associated with higher levels of processing and recidivism, might assist in the development of approaches to service delivery to inter-vene at the points of greatest risk. This can provide practitioners with a guide for developing programs of prevention and effective, early interventions to reduce the likelihood of juveniles entering or re-entering the justice system.

Resource allocation is also a substantial issue for practitioners and sys-tems (Aos, Phipps, Barnoski, & Lieb, 2001; Robertson, Grimes, & Rogers, 2001). Practitioners serving the juvenile justice system have limited resources to provide to a large population of juvenile offenders. Based on the findings of this study, very few first-time juvenile offenders progress into the re-offending group after receiving a low-cost, community-based diver-sion. Being able to identify the factors that place youth most at risk of

recidivism is one way to manage valuable resources and direct them to those most in need.

Although it was not the purpose of the study to evaluate the effectiveness of the intervention program, the findings support the need to look further at the methodology used by an intervention program that appears to have favorable outcomes in terms of low rates of recidivism with the youth who complete the program. The programs in the literature describing themselves as BARJ models appear to vary widely in the methods and dosage administered to the youth they serve (Frievalds, 1996; Rodriguez, 2007). Greater knowledge of the specific methods prescribed by this program could benefit practitioners challenged to design and implement effective approaches for youth entering the juvenile justice system.

From a policy perspective, it would be important for practitioners to become involved in education and advocacy efforts geared toward acknowledging disproportionate representation of lower income and minority youth in the more formal levels of processing (Stahl et al., 2005). Practitioners should also work to raise the overall awareness of at least the association between formal levels of processing and higher rates of recidivism. As the juvenile justice system has been described to have drifted from its initial rehabilitative nature to a more punitive one by Butts and Harrell (1998) and Nellis (2011), it is critical for practitioners to encourage policy and budgetary support for programs that effectively intervene at a community level and, when in the best interest of public safety, help keep youth out of more formalized processes.

CONCLUSIONS

This study contributes to the understanding of both informal and formal levels of juvenile justice system processing and subsequent recidivism. Statistically significant relationships were revealed associating race, gender, type of offense, marital status of the biological parents, the number of children living in the home, and family relationship risk with level of processing for first-time juvenile offenders in a juvenile justice system. An association, although limited, between formal processing and recidivism also emerged offering some value to the argument that formal processing may fail to significantly reduce further delinquency with first-time nonviolent offenders.

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