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Journal of Adolescence 26 (2003) 45–61

Journal of
Adolescence

www.elsevier.com/locate/jado

Female offenders referred for community-based mental health service as compared to other service-referred youth: correlates of conviction

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Abstract

Data from a large federally supported national evaluation of system-of-care community mental health services were analysed to identify correlates of conviction. Female adolescents with a reported history of criminal conviction ($n=88$) were compared to three other service-referred youth groups: females without conviction histories ($n=664$), males with conviction histories ($n=199$), and males without conviction histories ($n=1230$) for possible differences in number and type of family, individual, and school-related life challenges. Multinomial regression analyses were first used to compare the quantity of child and family correlates in each conviction group, and then to test specific correlates in the individual, family, and school domains. The conditional odds of reporting a high vs. low number of child correlates was found to be significantly greater for females with a history of conviction compared to all other groups, over and above the number of family risk factors. Further, service-referred females with a conviction history, when compared to other service-referred youth groups, were much more likely to report having experienced a living instability (e.g. history of running away, multiple living arrangements) and personal adverse life events (e.g. history of drug and alcohol use, sexual abuse). Implications for community-based interventions and treatment are discussed.

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1. Introduction

An estimated 2.5 million juvenile arrests were reported by law-enforcement agencies in 1999, 27% of which were female (Snyder, 2000). Although the overall number of arrests for violent

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crime has declined in recent years, this is not true for females. Between 1990 and 1999, as juvenile male arrests for aggravated assault, larceny theft, vandalism and weapons charges declined, female rates increased (Snyder, 2000). Furthermore, juvenile female arrest rates for robbery, burglary, motor vehicle theft, and runaway have declined slower than for males, and the rates of simple assault and drug-abuse violations have increased faster than for males. Given that approximately 80–85% of youth arrested return to the community, either with findings of non-delinquency, informal supervision, or community-based dispositions (Department of Justice, 1998; Stahl, 2001; US), research focused on justice-involved youth living in the community is pertinent. This is especially crucial for females, who tend to receive less-restrictive dispositions than males and are less likely to be placed out-of-home (Poe-Yamagata & Butts, 1996).

To date, correlates of delinquency and mental health problems have been well documented for committed female offenders (e.g. Miller, Trapani, & Fejes-Mendoza, 1995; Kataoka et al., 2001). However, relatively few studies have been conducted with non-committed youth (Lyons, Baerger, Quigley, Erlich, & Griffin, 2001) or made comparisons between males and females (Rhodes & Fischer, 1993; Timmon-Mitchell et al., 1997).

Available research indicates that a large proportion of the females involved in the juvenile justice system have experienced multiple life challenges. Individual issues such as drug and alcohol abuse, physical, and sexual abuse and emotional victimization are often observed in delinquent and/or violent females (Acoca & Dedel, 1998; Acoca, 1999; Department of Health and Human Services [DHHS], 2000, chap. 4). For example, the 1998 National Council on Crime and Delinquency (NCCD) study of girls in the California juvenile justice system reported that over 90% of interviewed female offenders indicated a history of emotional, physical or sexual abuse (Acoca & Dedel, 1998). Additionally, family challenges such as exposure to violence, parent incarceration, foster-care placement, parent substance abuse, sibling arrest, and absent fathers are often indicated (Fejes-Mendoza, Miller, & Eppler, 1995; Chesney-Lind, 1997; Acoca, 1999). For example, the 1998 NCCD study reported that over half of the girls interviewed had mothers with histories of incarceration (Acoca & Dedel, 1998). Females involved with the juvenile justice system also experience problems in school. High rates of academic failure, suspensions, grade repetition, special education utilization and school drop out are reported (Fejes-Mendoza et al., 1995; Acoca, 1999). Specifically, studies report rates of 50% and higher for grade repetition and school removal. Symptoms of somatization such as dizziness, chest pain, and nausea (Williams & Hollis, 1999) are also documented. How these life challenges compare to other youth, specifically service-referred youth without a conviction history, have yet to be tested. The current investigation will fill this gap by statistically comparing the life challenges reported by service-referred females with histories of conviction to other service-referred youth.

Not only are social, education, and health issues relevant, but mental health problems (e.g. suicide contemplation, psychiatric hospitalization, specialty mental health service use) are also reported for females involved in the juvenile justice system (Acoca, 1999; Coccozza & Skowrya, 2000; Kataoka et al., 2001). Despite methodological flaws and inconsistent definitions of serious mental illness, a conservative estimate suggests at least one in five youths involved in the juvenile justice system has a serious mental health problem (Coccozza & Skowrya, 2000). The overlap in the risks for delinquency and those for child mental illness (DHHS, 1999, Chaps. 3 and 8; 2000, Chap. 4), and the co-occurrence of delinquency and mental disorder has been well documented (Elliott,

Huizinga & Menard, 1989; Cellini, 2000; Kazdin, 2000). The estimated prevalence of mental health disorders has been reported as high as 84% for delinquent females (Timmon-Mitchell et al., 1997). At a time when relatively few arrested youths, disproportionately females, are being placed in residential facilities, the bulk of our mental health interventions with the juvenile justice population must be community-based (Poe-Yamagata & Butts, 1996; Acoca, 1999; Mendel, 2001; Stahl, 2001). If we are to effectively tailor mental health services, we must understand the challenges faced by justice-involved females and how they differ from other service-referred youth.

The current study investigates the life challenges of service-referred females with conviction histories as compared to other service-referred youth using data from the national evaluation of the federally funded Comprehensive Community Mental Health Services for Children and Their Families Program. This is the largest community-based mental health services data set of youth, both male and female, with and without arrest with conviction histories, to date. It therefore affords the unique opportunity to understand the similarities and differences in their psychosocial characteristics at time of referral.

This investigation uses the domains of risk outlined in recent reports by the National Research Council and Institute for Medicine (2001) and the Surgeon General (DHHS, 2000, Chap. 4), to compare the life challenges of service-referred females to other service-referred youth. It is expected that females with conviction histories will have different life challenge profiles than other service-referred youth. Findings from this study will inform the field via: (1) the investigation of the correlates of conviction in a large non-committed sample of youth referred for mental health service, (2) the comparison of correlates of conviction history between male and female youth referred for mental health service, and (3) the expansion of the existing delinquency literature in a subpopulation of youth receiving mental health service (i.e. those with arrest with conviction histories).

2. Methods

2.1. Data source

The current study population is a subsample of youth receiving system-of-care services through the Comprehensive Community Mental Health Services for Children and Their Families Program (funded by the federal Substance Abuse and Mental Health Services Administration, Center for Mental Health Services). Over 50,000 children have entered the program since 1993. Multiple components of the congressionally mandated national evaluation include a cross-sectional descriptive study and a longitudinal outcomes study. Data were collected between 1993 and 1998 from 28 communities in 22 system-of-care grant communities. Study enrollment and data-collection protocols were established nationally. Due to the diversity of needs being met and the uniqueness of each system-of-care, aspects of the evaluation were customized in some grant communities to meet site-specific requirements. A description of the national evaluation protocol and data-collection procedures has been given elsewhere (Center for Mental Health Services [CMHS], 1998, 1997, 1999a; Holden, Friedman, & Santiago, 2001).

2.2. Sample selection

Study participants were selected from youth participating in the longitudinal outcome study component of the national evaluation. Beyond caregiver consent, inclusion in the outcome study requires that the youth be between 5 and 17.5 years of age at the time of service referral and the only sibling enrolled in the evaluation. Several sites chose to enroll youth outside of the required age range and included siblings in the outcome study. Though the data-collection procedures preclude the identification of siblings, the current sample is indeed restricted to the nationally defined age range. An additional criterion for inclusion in the current analysis is complete data for all variables analysed. The complete data restriction is necessary for the purposes of rigorous statistical analysis and it has been applied in previous investigations using the same data set (Walrath et al., 2001a,b).

The national evaluation includes 43,009 children served by the first group of system-of-care sites funded in 1993 and 1994. Of those served, 24,779 participated in the cross-sectional descriptive study and 18,230 participated in some aspect of the longitudinal outcome study. Two thousand two hundred and twenty youth ($n=2220$) participating in the outcome study are included in the current investigation. Given that a consistent sample of youth was desired for interpretation of findings and that the chosen analytic procedures eliminate cases with missing data, the reduction in sample reflects a complete data requirement across 22 variables. While the differences in demographic characteristics between the current study sample and the remaining samples reach statistical significance, in practice these differences are actually quite small. Most notably, the study sample is slightly younger on average and contains a larger percentage of males as compared to the youth participating in the descriptive study (Table 1). In addition, a larger

Table 1
Demographic characteristics of the current study sample *vs.* remaining outcome sample, and descriptive study sample

	Current study sample ($N=2220$)	Youth in outcome study sample but <i>not</i> in current study sample ($N=16,010$)	Youth that participated in cross-sectional descriptive study ($N=24,779$)	Statistical comparison
Age at referral	$M=11.58$ (s.d. = 3.36)	$M=11.94$ (s.d. = 3.86)	$M=12.31$ (s.d. = 4.18)	$F=58.72^{***}$
Missing	0	11.8% (1896)	3.5% (859)	
Gender				$\chi^2=740.39^{***}$
Male	65.6% (1,455)	65.2% (9241)	59.6% (14,325)	
Missing	0	11.5% (1846)	3.1% (761)	
Race				$\chi^2=131.67^{***}$
Non-Hispanic White	65.6% (1,456)	54.2% (7291)	54.0% (12139)	
African-American	11.0% (243)	18.9% (2547)	12.6% (2828)	
Hispanic	13.6% (301)	20.2% (2713)	28.2% (6343)	
Other	9.9% (220)	6.8% (909)	5.1% (1151)	
Missing	0	15.9% (2550)	9.4% (2318)	

*** $p < 0.001$. Percentages for demographic variables are valid per cents — their calculation does not include missing cases in the denominator. Percentage of missing cases for each variable is also reported.

percentage of the study sample youths are Non-Hispanic White and fewer are Hispanic and African-American. Given that conviction history is one in a series of questions asked at intake into service, it is unlikely these study group differences are related to report of conviction history, but are more likely a function of site differences in data-collection procedure that resulted in subsequent variation in data completeness.

2.3. Measures and indicators

The recent [National Research Council and Institute of Medicine \(2001\)](#) report on Juvenile Crime and Justice and the Youth Violence Report of the Surgeon General ([DHHS, 2000, Chap. 4](#)) outline domains that include individual (e.g. offense history, substance use, psychological problems, and medical condition), family (e.g. low socioeconomic status, antisocial parents, and broken home); school (e.g. poor performance, school attendance, and attitude), peer group (e.g. weak social ties, delinquent peers, and gang membership), and community (e.g. neighbourhood crime and disorganization) correlates of delinquency. In addition to demographic information, this study assessed the importance of correlates in three of those domains. Specifically, events experienced directly by the individual, events indirectly experienced by the individual via membership in the family, and those that occur in a school environment.

2.3.1. Demographic information and history of arrest with conviction

Information on age, race, gender, and gross annual income was collected either directly from the child's caregiver during an intake assessment or through clinical records. Age was dichotomized at 15 years and older *vs.* those younger based on frequency distribution and mean age for female youths with convictions ($M = 14.91$, $s.d. = 1.62$). Gross annual income was used to create a dichotomized income variable (living at or below poverty [\$15,000 per year] *vs.* living above poverty).

History of arrest with conviction (subsequently referred to as conviction history), a conservative indicator of delinquent behaviour, was gathered from local departments of juvenile justice or from caregiver reports. Approximately, half of the communities participating in the outcome study obtained their information from the caregivers, while the other half obtained the information from juvenile court records or interviews with probation officers. This information was requested as part of a standard intake assessment into services. As with any information gathered at entry into services, caregiver report of arrest were not necessarily confirmed.

2.3.2. Individual correlates

Individual risk correlates of conviction include lifetime history of physical abuse, substance abuse, psychiatric hospitalization, running away, suicide attempt, being sexually abusive, and being sexually abused. These variables represent adverse life events experienced directly by the youth. Variables such as suicide attempt and prior psychiatric hospitalization are considered indications of the severity of a mental health problem and therefore are correlates of conviction. Youths and/or caregivers provided information in response to dichotomous (yes/no) questions delivered either verbally or in a written format. Consistent with prior research ([Rosenblatt et al., 1998](#); [Walrath, Sharp, Zuber, & Leaf, 2001c](#)), a summation variable was created for individual correlates. The summation was then collapsed into three categories: zero or one, between two and

four, and between five and seven correlates. The frequency distribution was examined in an effort to select categories that would generate the most stable categories with regard to their size.

2.3.3. Family correlates

Family correlates of conviction include lifetime history of caregiver felony conviction, substance abuse and psychiatric hospitalization; history of family violence and mental illness; a sibling placed in foster care and a sibling placed in an institutional setting. In addition, current living placement of the youth (in the community *vs.* outside of the community), income level and living instability (one or two lifetime residences *vs.* three or more) were considered as family correlates. These variables represent adverse living situations that the youth indirectly experience via membership in the family. The youth or caregiver provided information, either verbally or in a written questionnaire, in response to dichotomous (yes/no) questions. A summation variable of family correlates was created similar to those used in previous studies (Rosenblatt et al., 1998; Walrath et al., 2001c). The summation was then collapsed, in an effort to stabilize cells, into three categories based on the frequency distribution: between zero and two, between three and six, and between seven and ten correlates.

2.3.4. School correlates

School performance in the previous 90 days (failing [59% performance average and below] *vs.* not) and school absences were included in the analysis as school correlates of conviction. School absences over the last 90 days was dichotomized at the sample mean ($M = 2.77$, $s.d. = 9.45$) to create the school absence variable (three or fewer *vs.* four or more absences). School-related information was gathered from school system administrative records or caregiver reports. As described for arrest with conviction, approximately half of the communities participating in the outcome study obtained their information from the caregivers, while the other half obtained the information from school administrative records. The school domain is sometimes overlooked; however, previous studies have indicated a negative relationship between academic proficiency and delinquency (DHHS, 2000, Chap.4; National Research Council and Institute of Medicine, 2001), thereby necessitating its inclusion in the current analyses.

3. Data analysis

Service-referred females with a history of conviction were compared to three service-referred gender-conviction categories (i.e. females without a history of conviction, males with a conviction history, and males without a history of conviction) in an effort to understand life challenges and how they correlate with female conviction history. Comparisons between females and males with a history of conviction enlighten gender differences between delinquent youth, while comparisons between females with and without conviction history enlighten within-gender correlates of delinquency.

Multinomial logistic regression is a binary statistical procedure for multiple outcome categories (analogous to multi-variate regression for multiple linear outcome categories) (StataCorp, 1999). This technique is especially useful in the current study as it allows direct comparisons for multiple groups of youth, comparing two groups at a time while taking into account all other variables and

categories. In the current analyses, there are four binary outcome categories: females with a history of conviction (the reference category), females without a history of conviction, males with a history of conviction, males without a history of conviction.

For each binary outcome category except the reference category, a linear predictor is estimated. Resulting regression equations reflect the probability that a response falls into a particular outcome category compared to the reference category. Three regression equations were obtained in the current analyses: females without a history *vs.* females with a history of conviction; males with a history *vs.* females with a history of conviction; and males without a history *vs.* females with a history of conviction. Exponentiated coefficients are then interpreted as the ratio of the conditional odds for a one-unit increase in the response variable, or for categorical response variables, the ratio of conditional odds (COR) for the specific category compared to the reference category. In the current analysis, females with a history of conviction were set as the reference category, yielding regression equations estimating the conditional odds of being in another gender-arrest category compared to being in the female with arrest category. In order to estimate the conditional odds ratios of being a female with arrest compared to each other gender-arrest category, respectively, the reciprocal odds were then calculated.

For example, the parsimonious model of significant conviction correlates includes a dichotomous indicator of age (15 years and older *vs.* being younger). The exponentiated coefficient yielded from the multinomial logistic model for age and females without a history of conviction was 0.28. Thus, the conditional odds of being a female without a history of conviction for youth 15 years or older *vs.* being younger is 72% lower compared to females with a history of conviction, adjusting for all other factors in the model. In order to estimate the conditional odds of instead being a female with a history of conviction compared to without a history, the reciprocal is calculated, and the conditional odds ratio of 3.57 results. Therefore, for youth 15 years or older compared to being younger, the conditional odds of being a female with conviction history are 3.57 higher than for being a female without a conviction history.

Unadjusted comparisons between the four groups of youth were performed using multinomial logistic regression analyses for each demographic variable, the family and individual summation variables, and for each specific correlate (i.e. individual, family and school). After these preliminary descriptive analyses, two adjusted multinomial logistic regressions were performed.

It has been noted that risk for aggression, violence, and other maladaptive behaviours (DHHS, 2000, Chap. 4) is rarely due to one factor, but rather their accumulation. For this reason, the first multinomial logistic regression was a simultaneous analysis of the family summation (i.e. quantity of family correlates) and individual summation (i.e. quantity of individual correlates) was performed, thereby controlling for one another. The model was adjusted by age and race. Given that only two school-related characteristics were available, a school summation was not analysed.

Second, a parsimonious model of significant correlates of conviction was identified by testing specific individual correlates (i.e. history of running away, drug abuse, suicide attempt, sexual abuse, history of physical abuse, and psychiatric hospitalization) and specific family correlates (i.e. history of adult criminal arrest, caregiver substance abuse, family violence, caregiver psychiatric hospitalization, caregiver mental illness, sibling in foster care, sibling institutionalized, the number of lifetime living residences the child has experienced, the youth's current living placement, and income) simultaneously. Specific school correlates (i.e. school absence, academic failure) were also included given previous indication of their with regard to delinquent behaviour

(DHHS, 2000, Chap. 4; National Research Council and Institute of Medicine, 2001). While a reported history of being sexually abusive was included in the summation variable, it was dropped from the individual correlate analyses due to its low prevalence and the resulting cell instability across gender-conviction groups.

The parsimonious model of specific correlates (i.e. individual, family and school) was established based on significant contribution to the model (Hosmer & Lemeshow, 2000, Chap. 4). Wald tests were performed to analyse within category (i.e. significant difference for females-with-conviction *vs.* the specific youth gender-conviction grouped being compared) and across variable (i.e. significant difference between females-with-conviction and at least one of the three comparative groups) differences. Variables were dropped if the exclusion of the variable to the model was non-significant based on a chi-square *p*-value greater than 0.05. Retained variables were then tested for possible interactions with age. Those that were significant across categories based on Wald tests were included in the full multinomial logistic regression model and parsimony was re-established.

4. Results

4.1. Descriptive analyses

Four per cent ($n = 88$) of youths in this study are female with a history of conviction and 90% ($n = 210$) are male with a history of conviction. Females without a conviction history represent 31% of this sample ($n = 677$) and males without a conviction history represent 56% ($n = 1245$). The mean age for both males and females with history of conviction is 15 years old; while for females and males without conviction history it is 11 and 12, respectively.

Over one-quarter of the youth with data indicating referral source were referred to system-of-care services by a mental health agency (25.2%) and the remaining were referred by schools (21.5%), the family (16.7%), child welfare (13.7%), juvenile justice (10.7%), or from elsewhere (12.3%). While it may be expected that the majority of youths with conviction histories are referred from the justice sector, this is not the case. Fifty per cent of convicted youth were referred from sources other than the juvenile justice system. Clearly, the source of referral in and of itself is not a sufficient indicator of conviction history.

Both males and females with a conviction history tend to be older than those without such a reported history (Table 2). Non-Hispanic White youth are most prevalent across gender-conviction status groups, with Hispanic ethnicity the second most common for all but non-convicted females. All youth in this sample report a high number of individual and family correlates of delinquency, although females with a history of conviction report a significantly higher number compared to other groups. More than two-thirds of females with a conviction history report running away whereas less than half of males with a similar history report such behaviour, and less than a quarter of non-convicted youth report previous runaway attempts. Similarly, over one-third of females with conviction history report a past suicide attempt as compared to 20% of females with no conviction history and 10% for males both with and without conviction histories. Over one-third of females report a history of sexual abuse compared to 12% and 13%, respectively, for males with and without conviction histories. Over one-third of

Table 2
Demographics and conviction correlates

Characteristics	Females		Males	
	History of conviction (<i>n</i> = 88)	No history of conviction (<i>n</i> = 677)	History of conviction (<i>n</i> = 210)	No history of conviction (<i>n</i> = 1245)
<i>Demographic characteristics</i>				
Age (15 years and older)	60.23% (53)	27.77% (1 88)***	56.67% (1 19)	14.14% (1 76)***
Race				
Non-Hispanic White	46.59% (41)	72.23% (4 89)	47.62% (1 00)	66.35% (8 26)
Hispanic	27.27% (24)	7.98% (54)***	32.86% (69)	12.37% (1 54)
Other	18.18% (16)	9.01% (61)*	11.90% (25)	9.48% (1 18)
African-American	7.95% (7)	10.78% (73)	7.62% (16)	11.81% (1 47)
<i>Individual correlates</i>				
Sum score ^a				
0 – 1 (Reference)	28.41% (25)	56.68% (3 82)	44.02% (92)	72.67% (9 04)
2 – 4	52.27% (46)	38.43% (2 59)***	51.67% (1 08)***	25.16% (3 13)***
5 – 7	19.32% (17)	4.90% (33)***	4.31% (9)***	2.17% (27)***
Previous runaway attempts	69.32% (61)	24.67% (1 67)***	40.00% (84)***	15.50% (1 93)***
Hx of drug/alcohol use	65.91% (58)	18.61% (1 26)***	64.29% (1 35)	11.16% (1 39)***
Hx of physically abused	39.77% (35)	28.51% (1 93)*	28.57% (60)	22.41% (2 79)***
Hx suicide attempts	37.50% (33)	20.09% (1 36)***	10.95% (23)***	9.72% (1 21)***
Hx of sexual abuse	36.36% (32)	33.38% (2 26)	12.38% (26)***	13.49% (1 68)***
Hx of psych hospitalization	29.55% (26)	21.57% (1 46)	23.33% (49)	22.41% (2 79)
Hx of sexual abusiveness	4.71% (4)	6.63% (44)	7.04% (14)	6.26% (77)
<i>Family correlates</i>				
Sum score ^a				
0 – 2 (Reference)	36.36% (32)	37.96% (2 57)	34.76% (73)	41.61% (5 18)
3 – 6	42.05% (37)	48.60% (3 29)	53.81% (1 13)	49.48% (6 16)
7 – 10	21.59% (19)	13.44% (91)	11.43% (24)	8.92% (1 11)*
Hx of caregiver substance abuse	71.59% (63)	55.83% (3 78)**	66.67% (1 40)	52.77% (6 57)***
Hx of family violence	56.82% (50)	51.40% (3 48)	56.67% (1 19)	47.47% (5 9 1)
Income (\$15,000 or below)	52.27% (46)	57.90% (3 92)	54.29% (1 1 4)	58.63% (7 3 0)
Hx of family mental illness	40.91% (36)	49.34% (3 3 4)	34.76% (73)	44.18% (5 5 0)
Living instability (two or more placements)	36.36% (32)	11.08% (75)***	25.24% (53)	7.79% (97)***
Hx of caregiver criminal arrest	29.55% (26)	20.68% (1 4 0)	27.62% (58)	16.31% (2 0 3)**
Sibling in institutionalized setting	26.14% (23)	16.10% (1 0 9)*	20.48% (43)	13.25% (1 6 5)***
Sibling in foster care	25.00% (22)	18.02% (1 2 2)	14.76% (31)*	12.69% (1 5 8)***
Hx of caregiver psychiatric hospital	22.73% (20)	21.86% (1 4 8)	14.76% (31)	18.31% (2 2 8)
Current living placement (out of community)	11.36% (10)	1.77% (12)***	3.81% (8)*	2.57% (32)***
<i>School correlates</i>				
School absence (4 or more days absent)	30.68% (27)	14.48% (98)***	28.57% (60)	12.21% (1 5 2)***
School performance (average grades 59% or below)	21.59% (19)	11.67% (79)**	18.10% (38)	12.77% (1 5 9)*

^a Sum score analyses include sexual abusiveness as a required variable, therefore dropping the groups sizes to *n* = 85 females—conviction; *n* = 664 females—no conviction; *n* = 199 males—conviction; *n* = 1230 males—no conviction.

* *p* < 0.05; ** *p* < 0.01; *** *p* < 0.001, statistical significance compared to females with history of conviction based on CORs from simple unadjusted multinomial logistic regressions.

convicted females report living instability as compared to approximately 10% of non-convicted youth. Similarly, 11% of females with conviction histories report an out-of-community placement at the time of referral as compared to fewer than 4% for all other gender-conviction groups.

4.2. Multinomial logistic analyses: quantity of correlates

Correlate summations (i.e. individual summation and family summation) were examined to explore whether the *quantity* of negative experiences was in some way associated with female conviction (Log Likelihood = -2110.5 , $p < 0.001$) (Table 3). Little confounding was observed between unadjusted and adjusted regression results for individual summations, though results for family correlate summations were affected. For example, unadjusted comparisons reveal a 2.94 times higher conditional odds ($p < 0.001$) for females with conviction *vs.* males without conviction to report a high *vs.* low number of family risk factors; this falls to 1.29 and loses significance ($p < 0.10$) after adjusting for age, race, and individual summations. For this reason and because the intent was to observe the influence each summation had on the other, both family and individual scores were included in one statistical model. The conditional odds of reporting a higher number of individual correlates *vs.* a small number was significantly greater for females

Table 3

Multinomial logistic model: conditional odds ratios for female conviction compared to other gender-conviction categories, based on the total number of individual and family correlates, controlling for age, and race

Quantity of risk	Females				Males	
	No history of conviction ($n = 664$)		History of conviction ($n = 199$)		No history of conviction ($n = 1230$)	
	COR	95% CI	COR	95% CI	COR	95% CI
<i>Individual correlate summation^a</i>						
0–1 (Reference)	1		1		1	
2–4	2.18**	(1.27, 3.75)	1.66	(0.92, 2.99)	3.74***	(2.19, 6.40)
5–7	5.49***	(2.47, 12.22)	7.29***	(2.71, 19.60)	12.34***	(5.42, 28.11)
<i>Family correlate summation^b</i>						
0–2 (Reference)	1		1		1	
3–6	0.71	(0.42, 1.20)	0.58	(0.33, 1.04)	0.72	(0.42, 1.22)
7–10	1.24	(0.62, 2.47)	1.12	(0.51, 2.48)	1.69	(0.85, 3.39)

^a Individual correlate summation includes: previous runaway attempts, hx of drug/alcohol abuse, hx of sexual abuse, hx of sexual abusiveness, hx of physically abused, hx of suicide attempts, hx of psychiatric hospitalization, and hx of sexual abusiveness.

^b Family correlate summation includes: hx of caregiver substance abuse, hx of family violence, hx of family mental illness, hx of caregiver criminal arrest, hx of caregiver psychiatric hospitalization, sibling institutionalized, sibling in foster care, living out of the community, living instability, and income.

CORs are the conditional odds of being a female with conviction history compared to being a youth in another category.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Log likelihood = -2110.5 , $p < 0.001$.

with conviction compared to all other youth even after adjusting for age, race, and the number of family correlates reported. Females with a history of conviction are more than two times as likely ($COR = 2.18, p < 0.01$) to report between two and four individual correlates (*vs.* only zero or one), and more than five times ($COR = 5.49, p < 0.001$) as likely to report between five and seven, as compared to those without. Females with a conviction history are also more likely than males with a conviction history to report a high number of individual correlates for conviction ($COR = 7.29, p < 0.001$). Compared to males without a conviction history, females with conviction history have three and a half times the conditional odds of reporting between two and four individual correlates *vs.* zero ($COR = 3.74, p < 0.001$), and more than *twelve* times the conditional odds ($COR = 12.34, p < 0.001$) of reporting five or more correlates.

Alternatively, the conditional odds of being a female with conviction history given a greater number of family correlates *vs.* a smaller number, was no greater than that associated with being in any other group after controlling the effects age, race, and the summation of individual correlates.

4.3. Multinomial logistic regression: types of correlates

Specific correlates in the individual, family, and school domain were simultaneously entered into the model (Log Likelihood = $-1913.80, p < 0.001$). Lifetime history of being sexually abusive was included in the summation score of individual correlates, but dropped from this and subsequent analyses of specific correlates due to small sample size. The most parsimonious multinomial logistical model was identified based on chi-square calculations using likelihood ratio tests (Log Likelihood = $-2099.03, p < 0.001$). Variables that significantly influenced the model were retained and included: age, race, all individual correlates (except for child history of physical abuse), living instability, and the interaction of drug and alcohol use and age. All other interactions tested were non-significant. The specific findings are reported in [Table 4](#) and summarized below.

4.3.1. Females with and without conviction history

Age is a discriminating factor between females with and without conviction histories after adjusting for all other factors ($COR = 3.57, p < 0.001$). Females with conviction history are more likely to report a history of drug use ($COR = 7.76, p < 0.001$) and previous runaway attempt ($COR = 2.78, p < 0.001$) compared to non-convicted females. An interaction between history of drug use and age indicates that females with conviction history are 66% less likely ($COR = 0.34, p < 0.05$) to be over the age of 15 if they have a history of drug and alcohol abuse compared to females without such a history. Females with arrest history are significantly more likely to be Hispanic than African-American compared to non-delinquent but otherwise similar females ($COR = 2.72, p < 0.05$).

The only specific family correlate that differentiated females by conviction history was reported living instability, those with a conviction history being at twice the conditional odds ($COR = 2.62, p < 0.001$) compared to non-convicted females.

4.3.2. Females and males with conviction histories

Specific types of individual correlates for conviction also differ by gender. Females with a conviction history have greater conditional odds of reporting previous runaway attempts

Table 4

Significant specific correlates included in the final, parsimonious multinomial logistic model for female youth conviction ($n=88$) compared to other service-referred youth

Type of risk factor	Females		Males			
	No history of conviction ($n=677$)		History of conviction ($n=210$)		No history of conviction ($n=1245$)	
	COR	95% CI	COR	95% CI	COR	95% CI
<i>Demographic characteristics</i>						
Age: 15 years and older ***	3.57***	(1.65, 7.71)	0.99	(0.42, 2.35)	8.30***	(3.83, 17.98)
Race: ***						
African American (Reference)	1.0		1.0		1.0	
Hispanic	2.72*	(1.05, 7.10)	0.73	(0.26, 2.05)	1.90	(0.74, 4.90)
other	2.14	(0.78, 5.88)	1.42	(0.46, 4.35)	2.00	(0.73, 5.46)
Non-Hispanic white	0.70	(0.29, 1.67)	0.83	(0.31, 2.20)	0.73	(0.31, 1.74)
<i>Individual correlates</i>						
Hx of drug/alcohol use ***	7.76***	(3.58, 16.84)	0.65	(0.28, 1.51)	11.18***	(5.18, 24.15)
Previous runaway attempts ***	2.78***	(1.61, 4.81)	2.79***	(1.55, 5.03)	3.99***	(2.31, 6.90)
Hx suicide attempts ***	1.06	(0.60, 1.85)	4.16***	(2.16, 8.03)	2.18**	(1.23, 3.86)
Hx of sexual abuse ***	0.87	(0.52, 1.46)	2.93***	(1.59, 5.41)	2.83***	(1.67, 4.82)
Hx of psych hospitalization ***	0.65	(0.36, 1.18)	0.46*	(0.24, 0.87)	0.29***	(0.16, 0.53)
Hx of drug use & being over 15 years old ***	0.34*	(0.12, 0.93)	1.06	(0.36, 3.15)	0.18***	(0.07, 0.51)
<i>Family correlates</i>						
Living instability ***	2.62***	(1.50, 4.57)	1.16	(0.65, 2.08)	3.29***	(1.88, 5.78)

CORs represent the odds of being a female with conviction history compared to the category in question. p -values associated with correlate label denotes across category statistical significance.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Log likelihood = -2099.03 , $p < 0.001$.

(COR = 2.79, $p < 0.001$), being suicidal (COR = 4.16, $p < 0.001$), and a history of sexual abuse (COR = 2.93, $p < 0.001$) compared to males with a conviction history. They face lower conditional odds of reporting a past psychiatric hospitalization (COR = 0.46, $p < 0.05$). All family correlates examined failed to discriminate between male and female offenders.

4.3.3. Females with conviction history and males without conviction histories

Individual correlates indicate disparity in conditional odds between females with conviction histories and males without. For example, the conditional odds of being 15 years or older is more than eight times higher (COR = 8.30, $p < 0.001$) for females with history of conviction compared to males without history of conviction in this sample. After accounting for other characteristics, females with a conviction history are also significantly more likely to report a history of previous runaway attempts (COR = 3.99, $p < 0.001$), past suicide attempts (COR = 2.18, $p < 0.01$), and sexual abuse (COR = 2.83, $p < 0.001$). Females face more than 11

times the conditional odds ($COR = 11.18$, $p < 0.001$) of reporting a history of drug and alcohol use, and are significantly more likely to be under the age of 15 if they report drug and alcohol involvement ($COR = 0.18$, $p < 0.001$) compared to their non-convicted male peers. Females are significantly less likely to indicate a previous psychiatric hospitalization ($COR = 0.29$, $p < 0.001$).

The only family correlate to reach significance was living instability, with convicted females facing three times greater conditional odds ($COR = 3.29$, $p < 0.001$) than non-convicted males.

5. Discussion

Females have received increasing attention in the mental health and juvenile justice literature due to the alarming increase in their arrest rates. Using the largest community-based sample of service-referred youth available, correlates of female youth conviction were identified. Findings from this study clearly indicate that these young women with conviction histories are not exclusively referred into service from the juvenile justice system, but rather are equally as likely to be referred by way of a non-justice agency (e.g. mental health, child welfare, education). Understanding the unique challenges of these young women when entering mental health service systems may indicate strategies for prevention and targeted intervention.

Consistent with existing literature, the more life challenges reported by youth in this sample, the greater the odds of youth conviction (DHHS, 2000, Chap. 4). Surprisingly however, this was observed for the number of individual correlates, but not for the number of family correlates. Specifically, while females with a conviction history were more likely than all other youth to report a higher number of individual correlates they were equally likely to report a high number compared to low number of family correlates. This is not to say that the number of family correlates in this population is low or that their importance is minimal. But rather, it was the number of individual correlates that seemed to differentiate females with a conviction history from other service-referred youth.

Specific types of correlates also appear influential. For example, service-referred females with a conviction history were much more likely to report an unstable living situation (e.g. history of running away and multiple living situations) and exposure to personal life challenges (e.g. history of drug and alcohol use, sexual abuse). It seems that these young delinquent females, much like those seen deeper in the juvenile justice system, were facing personal challenges across many fronts (Rhodes & Fischer, 1993; Miller et al., 1995; Timmon-Mitchell et al., 1997; Acoca & Dedel, 1998; Acoca, 1999; Kataoka et al., 2001).

It is interesting to note that while other studies have indicated high risk for psychiatric hospitalization (Acoca & Dedel, 1998), these females were significantly less likely to report a psychiatric hospitalization than males and a similar trend was found when compared to females without conviction histories. This may indicate that females with conviction histories are more likely to be treated in a less restrictive mental health setting than males. Further, given the existing literature on delinquency and violence, the lack of unique information that school correlates offer is interesting (CMHS, 1999b; DHHS, 2000, Chap. 4). It is possible that the results indicate a high overall level of school problems in the sample, minimizing the gender-conviction status

discriminating value. Finally, the interaction between age and drug use indicates that early intervention is clearly necessitated, as these young women were more likely to initiate drug use before the age of 15 compared to non-convicted youth.

5.1. *Limitations*

This study has several limitations: first, due to small numbers within each of the many specific offense categories, conviction history was defined as arrest with associated conviction, without regard to type of crime. In other words, the findings may not be directly generalizable to situations of violent crime, self-reported delinquent behaviour, or any other specific measure of juvenile delinquency. Second, having no conviction history does not preclude the possibility of prior arrest, but rather of prior substantiated arrest. Understanding the correlates of youth conviction is clinically imperative, however, given their implication for future socialization and adjustment. Third, juvenile justice administrative records or caregiver reports provided conviction history information, both of which carry their own potential data quality issues. Fourth, there is a potential confound between the reason for conviction and some of the correlates (i.e. running away and drug use). The inclusion of these correlates is warranted however, as these can serve as indicators of life challenge that do not necessarily lead to adjudication. The data set unfortunately does not allow investigation into the reason for conviction or the temporal relationship between correlate and conviction. Fifth, the cross-sectional nature of the current data disallows any predictive analyses and hence any conclusions about cause and effect. For example, while female youth with a history of conviction were more likely to report a history of living instability compared to their non-arrested peers, it cannot be said that living instability in any way caused the arrest. However, identifying life challenges that co-occur with conviction history is an important first step in understanding the pathways youth take into the justice system. Sixth, though the researchers based their definitions of individual and family correlates on previous literature (DHHS, 2000, Chap. 4; National Research Council and Institute of Medicine, 2001), different classifications are possible. For example, one might argue that a history of sexual abuse more appropriately belongs under the rubric of ‘family correlates’ because there is a tendency for such abuse to occur within families. While this is true, abuse is something that is experienced directly by the youth whereas family mental illness or caregiver substance abuse affects the youth indirectly via their membership in the family. It is important to note however, that the choice of categorization is only influential in the summation analyses; analyses of specific types of correlates statistically compare each variable irrespective of category. Finally, these youth were referred into a system-of-care service environment and may in some way differ from a traditional mental health services sample. Given that the number of children served by, and resources available to, systems of care continue to grow, it is necessary to understand this population in its own right.

5.2. *Implications*

Despite limitations, the findings from this study provide critical information regarding a population of youth referred for community-based mental health service. Clearly, findings from studies of committed populations extend to non-committed community-based youth with juvenile

justice involvement (Rhodes & Fischer, 1993; Miller et al., 1995; Timmon-Mitchell et al., 1997; Kataoka, et al., 2001; Lyons et al., 2001). This is critical in light of the emphasis on prevention and early community-based intervention (National Research Council and Institute of Medicine, 2001). In a recent report released by the American Youth Policy Forum (Mendel, 2001), the importance of providing a broad array of community-based interventions for delinquent youth and comprehensive supports to those with behavioural disturbances was emphasized. Given unique developmental, interpersonal, and societal issues specific to the female juveniles, experts contend that treatment approaches within the juvenile justice system should be gender conscious and directed (Calhoun, Jurgens, & Chen, 1993; Miller et al., 1995; Timmon-Mitchell et al., 1997; Chesney-Lind, 2001).

The American Youth Policy Forum outlines promising practices for community-based interventions and comprehensive supports (Mendel, 2001). Similarly, Guiding Principles for Promising Female Programming (US Department of Justice, 1998) provides detailed information around gender-specific policies, programme development, service provision and promising practices with female offenders. The findings from the current investigation indicate unique characteristics associated with being female as well as with history of conviction, thereby substantiating the need for community-based comprehensive gender-specific planning and programming.

Increasing female arrest rates coupled with relatively few youth being committed to facilities suggest that more and more community-based providers will be faced with treatment planning decisions for these young women. As indicated, young women with histories of conviction are not referred into service exclusively by the juvenile justice sector and simple awareness of the referral source is not sufficient for targeted service planning and intervention.

In concert with system-of-care service delivery principles (Stroul & Friedman, 1986), the identified differences in life challenges, both as a function of gender and conviction history, underscore the need for individualized treatment planning. The needs of these offending young women not only differ from those of offending young men but also from those of non-offending youth referred for mental health services. Understanding the importance of increased individual lifetime challenges (e.g. running away, drug abuse, suicide attempt, and sexual abuse) and living placement and stability is crucial for prevention, service programming, planning, and delivery with female juvenile offenders. Resources can be more efficiently targeted, treatment goals more effectively defined, and interventions more appropriately initiated, all in an attempt to affect positive and sustained impact on this vulnerable and unique group of at-risk youth.

With the desire to further understand and inform the field, future research should include investigation into the predictive ability of these life challenges with regard to recidivism, mental health symptomatology and life functioning. In addition, understanding the relationship of the challenge to the nature of offense (e.g. violent *vs.* non-violent) and level of involvement with the juvenile justice system (e.g. arrest *vs.* arrest with conviction) is required in efforts to meet the justice and mental health needs of the female offenders. Furthermore, investigation and inclusion of protective factors are paramount in our goal to better formulate and implement strength-based service plans and interventions. Finally, and of great importance, is the need to investigate which interventions most effectively meet the needs of these young female offenders

Acknowledgements

The Comprehensive Community Mental Health Services for Children and Their Families Program of the Center for Mental Health Services, Substance Abuse and Mental Health Services Administration (#280-94-0012 and #280-99-8023) and the National Institute of Mental Health (MH19545) supported this research. This research was made possible by the hard work of the local sites, funded across the country, which contributed to the national data set.

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