



Published in final edited form as:

*J Psychopathol Behav Assess*. 2006 June ; 28(2): 85–93.

## Depressive Symptoms Among Delinquent Youth: Testing Models of Association with Stress and Support

Carolyn A. McCarty<sup>1,2,3,6</sup>, Ann Vander Stoep<sup>2,4,5</sup>, Elena S. Kuo<sup>2,4,5</sup>, and Elizabeth McCauley<sup>2,4</sup>

<sup>1</sup>*Department of Pediatrics, University of Washington, Seattle, Washington*

<sup>2</sup>*Child Health Institute, University of Washington, Seattle, Washington*

<sup>3</sup>*Department of Psychology, University of Washington, Seattle, Washington*

<sup>4</sup>*Department of Psychiatry and Behavioral Sciences, University of Washington, Seattle, Washington*

<sup>5</sup>*Department of Epidemiology, University of Washington, Seattle, Washington*

### Abstract

The high prevalence of depression among incarcerated youth indicates a need to better understand factors that contribute to depression within this vulnerable subgroup. Previous research in general community samples has suggested that high levels of stress and low levels of parental support are associated with depression in young people, but it is unclear whether or how they might be associated with depression among incarcerated youth who are already vulnerable. Using a sample of 228 adolescents (aged 13–18 years) who were detained in the juvenile justice system, stress and support were modeled as independent main effects and as interactive risk factors in relation to depressive symptoms. More stressful life events and less caregiver support were each independently associated with depressive symptoms, but no evidence was found for the buffering hypothesis in this sample. Stressful life events were more strongly associated with depressive symptoms among boys compared to girls.

### Keywords

depression; stress; support; incarcerated youth

---

Because of the compelling disruptive behavior exhibited by youth involved in the juvenile justice system, depression is often overlooked, despite being a significant problem in this group. As many as 47% of youth in juvenile detention are affected by moderate-to-severe levels of depressive symptoms (Domalanta, Risser, Roberts, & Risser, 2003), with rates of affective disorder as high as 28–48% (Pliszka, Sherman, Barrow, & Irick, 2000; Teplin, Abram, McClelland, Dulcan, & Mericle, 2002). Unrecognized and untreated depression potentially impacts the criminal course of youth, as depression has been shown to be associated with increased recidivism (Clark-Jones, 1999; Coccozza, 1992; Whitbeck, Hoyt, & Bao, 2000). Youth with a combination of conduct problems and depressive symptoms are a highly vulnerable group, being at an extreme risk for school failure, peer rejection, violent behavior, drug and alcohol abuse, suicide, adult psychiatric illness, and serious criminality (Capaldi, 1991, 1992; Cole & Carpentieri, 1990; McConaughy & Skiba, 1993; Rapp & Wodarski, 1997; Robinson, Jenson, & Yaffe, 1992). To better understand this group of youth who may

---

<sup>6</sup>To whom correspondence should be addressed at Child Health Institute, 6200 NE 74th Street, Suite 210, Seattle, Washington 98115; e-mail: cmccarty@u.washington.edu.

be in “double jeopardy,” more information is needed about factors that might place them at risk for depression.

Two important predictors of depressive symptoms and clinical depression among youth are stressful events and lack of parental support. The relationship between depression and stressful life events has consistently been modest but significant in samples of children and adolescents (Garber & Hilsman, 1992; McFarlane, Bellissimo, & Norman, 1995; Olsson, Nordstrom, Arinell, & von Knorring, 1999; Williamson, Birmaher, Anderson, Al-Shabbout, & Ryan, 1995). Longitudinal studies show that in the 12 months prior to the onset of their depression, depressed youth report more stressful life events, particularly in the areas of romantic relationships, education, relationships with friends or parents, and health (Goodyer, Kolvin, & Gatzanis, 1985; Goodyer, Wright, & Altham, 1988). Likewise, evidence that low levels of parental warmth, support, and low family cohesion are associated with depressive features in adolescence has been generated by many studies (Kobak, Sudler, & Gamble, 1991; Papini, Roggman, & Anderson, 1991; Patten et al., 1997). Youth who have positive family relationships are less likely to become depressed over time (Reinherz et al., 1993; Stice, Ragan, & Randall, 2004).

There are two competing models to explain the way that stress and support operate with respect to depressive symptoms. A main effects model suggests that increased levels of support promote positive mental health at any level of stress and that stress has an independent association with depressive symptoms. That is, regardless of the amount of stress encountered, social support has a negative association with emotional distress and a positive association with adjustment. Alternatively, the buffering hypothesis posits that social support affects emotional well-being only under conditions where a person is exposed to high levels of stress (Cohen & Wills, 1985; Landerman, George, Campbell, & Blazer, 1989) or that weak social support places a person at risk for the negative influence of stressful life events (Jenkins & Smith, 1990; Robinson & Garber, 1995). In the buffering model, social support moderates the effect of stress on depression. Empirical evidence concerning the stress buffering model has been inconsistent with early, cross-sectional studies showing support for buffering (Landerman et al., 1989), but more rigorous, prospective longitudinal studies providing support for the main effects model only (Burton, Stice, & Seeley, 2004).

In addition to the lack of a clear model for the relationships between stress, support, and depression in general population samples of adolescents, it is not yet known whether and how they are associated with depression among specific subgroups of youth who are already vulnerable from many perspectives, such as those involved in the criminal justice system. The youth who are incarcerated in detention tend to have many risk factors for depression and psychopathology (Dixon, Howie, & Starling, 2004; Lewis, Yeager, Lovely, Stein, & Cobham-Portorreal, 1994; National Research Council, 1993), including a comparatively high rate of exposure to negative life stressors and relatively low parental support. It is possible that these multiple competing risk factors would dampen the “signal” of particular risk factors, including stress and support, on depression. Alternatively, youth with multiple risk factors for depression may be primed to experience the effect of these additional extrinsic factors. The hypothesis of the current study was that exposure to multiple stressful events or a deficit in support alone would be associated with depression among juvenile detainees (i.e., main effects model), consistent with the notion that detainee status primes them toward depression in the presence of any additional depression-specific risk factor.

Increasingly, the mental health needs of incarcerated youth are being recognized and addressed (see, e.g., Rohde, Clarke, Mace, Jorgensen, & Seeley, 2004). Knowledge about risk and protective factors for depression in this sector of the youth population will be useful in framing prevention and intervention efforts. If a main effects model holds, then interventions to reduce

depression might focus on generally increasing support and decreasing exposure to stress or increasing stress management. However, if the buffering model proved relevant that would suggest that increasing support for youth who are enduring multiple stresses might be effective. If neither model is supported, then an intervention focus on other risks may be warranted.

Adolescence is a time during which developmental pathways for boys and girls begin to diverge, with girls become more vulnerable to internalizing problems (Werner & Smith, 1992). In community samples, high levels of connectedness and emotional support have been found to be especially critical to the successful development of adolescent girls (Connell & Wellborn, 1991; Davies & Windle, 1997). For example, in a study comparing youths' perceptions of relationships in family, school, and peer contexts, effects of family relationships on depression was moderated by gender; for boys, connection with parents was less strongly related to depression than it was for girls (Eccles, Early, Frasier, Belansky, & McCarthy, 1997). Likewise, the impact of stressful life events may differ for boys and girls, particularly after puberty. Some evidence suggests a stronger relationship between life events and depression in adolescent girls compared to boys and younger girls (Ge, Lorenz, Conger, Elder, & Simons, 1994). The current study hypothesized that stress and support would relate more strongly to depression among incarcerated girls than boys as has been found in general populations.

## METHOD

### Sample

Two hundred and twenty-eight adolescents who were admitted to the King County Detention Center, a typical short-term holding facility for minor offenders (Grisso, Tomkins, & Casey, 1988) with an average length of stay of 4 days, participated in the study. Eligible youth were English speakers, aged 13–17 years, who were current residents of King County admitted to the facility between April 1 and June 13, 2002. Youth were admitted to detention after having been convicted of a crime, sentenced by the court, cited by the police for a crime prior to attending a court hearing, apprehended after having failed to appear for a court hearing, or having violated conditions of probation. Among the detainees, 85% were being held on criminal charges, 8% for probation violations, 5% for status offenses, and 2% for undisclosed reasons. The total number of times previously held in detention ranged from 0 to 31 ( $M = 3.68$ ).

The sample of youth included 170 boys and 58 girls, who were 51% Caucasian, 34% African American, 7% Asian or Pacific Islander, 4% Hispanic, 3% American Indian, and 1% mixed race. The mean age of participating youth was 15.30 years ( $SD = 1.23$ ). Forty-six percent of the sample reported that they qualified for medical coupons, and 48% of the sample qualified for a reduced/free lunch program at school. At the time of detention, 80% of the youth were living in their family homes, while the other 20% lived in foster care (2%), group care (4%), other situations (10%), or homeless (4%). The largest proportion of youth (46.6%) was living in single-parent homes, with 17.4% living with both parents, and the remainder living with neither parent (14.2% living with other adult relatives, 7.8% living with no adults, and 4.1% living with nonrelative adults). As shown in Table I, girls in the sample were significantly younger than boys,  $t(226) = 4.72$ , and had significantly fewer previous bookings in juvenile detention,  $t(226) = 2.61$ . Other study variables did not significantly differ by gender.

### Participant Recruitment

Participants were recruited as follows. A youth advocate, who was a certified nurse working in the detention health clinic, approached youth admitted to the facility to explain them about the study and inform them of their rights as research participants. Youth who were actively psychotic or on suicide watch were not approached for the study. On average, four to six youth

who had been detained at least 8 h were approached each day. Study interviewers then met in the health clinic with youth who expressed to the advocate an interest in participating and obtained their consent to participate. During the study period 582 eligible youth were admitted to the King County detention facility. Of the eligible youth, 367 met with the study advocate. Of the 367 youth, 279 (76.0%) expressed interest in participating in the study. Of the 279 youth, 228 participated (81.7%), 36 left before the interview, and 15 declined during the consent process. Participating youth did not significantly differ from nonparticipating youth in terms of their age [ $t(580) = 1.23, p = .22$ ], gender [ $\chi^2(1, n = 582) = .03, p = .88$ ] or race/ethnic background [ $\chi^2(3, n = 582) = 3.33, p = .34$ ], as shown in Table II.

### Study Procedures

This study was reviewed and approved by the Children's Hospital and Medical Center Institutional Review Board. Each youth who consented to participate in the study completed a 35-min assessment involving self-report questionnaires administered by a trained interviewer 1–5 days following their intake into detention. Interviews were conducted in private examination rooms in the detention health clinic. Youth with violent tendencies were interviewed within eyesight of the nurses' station when such a room was available.

### Measures

**Mood and Feelings Questionnaire (MFQ)**—The MFQ is a 33-item self-report scale that was developed as a screening tool for depression for children and adolescents aged 8–18 years. Items are statements derived from diagnostic criteria for major depressive disorder and dysthymia, and cover the affective, melancholic, vegetative, cognitive, and suicidal aspects of depression as specified by the DSM diagnostic system (Angold, 1989). Each item has three response options: *true*, *sometimes*, and *not true*, coded 2, 1, and 0, respectively. The total MFQ score is the sum of the coded responses across all 33 individual items and was used as an index of depressive symptoms. Three-week and 3-month test–retest reliabilities of 0.84 and 0.80, respectively, have been reported (Sund, Larsson, & Wichstrom, 2001). The MFQ has a high internal consistency (Angold, Costello, Messer, & Pickles, 1995; Sund et al., 2001) and shows good concordance with depressive diagnoses derived from standardized, diagnostic interviews (Kent, Vostanis, & Feehan, 1997; Wood, Kroll, Moore, & Harrington, 1995). A correlation of  $r = .91$  has been reported with the Beck Depression Inventory and correlation of  $r = .71$  with the internalizing scale of the Youth Self Report (Sund et al., 2001).

In the current detention study sample, the Cronbach's alpha for the MFQ was 0.92. A subset of the highest loading 13 items from the MFQ comprises the short form (SMFQ) that was used to compare depressive symptoms in this sample with a general adolescent population since epidemiological data are available for this condensed scale only. However, the full 33-item MFQ was used in regression analyses. The MFQ was chosen for this study over the Children's Depression Inventory (CDI) or comparable scales because (1) wording of MFQ items is very close to that of the Diagnostic Interview Schedule for Children that was written and tested for ease of understanding by children, (2) MFQ items correspond more closely than CDI items to DSM-IV criterion items (Costello & Angold, 1988), (3) the MFQ has a simpler response format than the CDI, and (4) the MFQ adds more depression-specific items than the CDI.

**Exposure to Stressful Life Events (SLE)**—The SLE is a 13-item subscale of the Comprehensive Adolescent Severity Inventory assessing the occurrence of stressful life events during the past year (Johnson, 1986). Types of events included were residential moves, witnessing violence, experiencing illness or injury, and having crises and financial problems in the family. Scores ranged from 0 to 13 with higher scores reflecting greater numbers of stressful life events.

**Caregiver Support**—People in My Life is a 15-item self-report scale assessing adolescent perceptions of the supportiveness of their relationships with their caregiver(s) (Gifford-Smith, 2000). It was derived from a longer, 76-item instrument (by the same name) developed by Cook, Greenberg, and Kusche (1995). Because many detained youth do not reside with two parents, youth were asked consider the two adult caregivers who were the most influential in their lives in making their ratings. Youth who could not identify two caregivers instead made ratings for the single caregiver identified. Responses for each item ranged from 1 *almost never or never true* to 4 *almost always or always true*. Internal consistency reliability of this scale was .60 in this sample. The total score was used, with higher values reflecting more positive caregiver support.

**Covariates**—The following five variables were included as covariates in analyses: age, gender, racial/ethnic minority status, previous number of bookings in detention, and substance use frequency. Age and gender were considered important covariates given the large age range of the sample and the increased prevalence of depression in adolescence among girls. Minority status was included as a dichotomous covariate (Caucasian vs. others) to control for potential differences in exposure to discrimination and stress. Previous number of bookings in detention was used as a covariate to approximate the extent to which the youth was involved in criminal behavior. Because depressive symptoms and substance use frequently co-occur (Piacentini & Pataki, 1993) and because they are both associated with low family support and high stress (Aseltine & Gore, 2000; Hoffmann, Cerbone, & Su, 2000), substance use was also controlled for in all analyses. The Customary Drinking and Drug Use Questionnaire (Winters, 1992) was administered to determine the past year frequency of use of a variety of drugs, including marijuana, cocaine/crack, heroin, amphetamines, scherm,<sup>7</sup> hallucinogens, and alcohol. Youth were asked to rate their use of each substance using 8 ordered options, ranging from 1 *never* to 8 *more than once a day*. A total score of monthly substance use was created by converting the responses to monthly use estimates and summing the frequencies across the seven types of substances assessed, with higher values indicating more frequent substance use.

## RESULTS

### Descriptive Information About Sample

Many of the adolescents indicated significant levels of depressive symptoms. Youth were considered to have elevations in depression if their SMFQ score was 11 or higher, which is 1.5 *SD* above the mean previously established in the general adolescent population (Angold et al., 1995). Twenty-three percent of the sample scored above this cutoff for elevated depression on the SMFQ ( $M = 6.85$ ;  $SD = 5.64$ ). Using a 1.5 *SD* above the mean cutoff, approximately 6% of youth from epidemiological samples would typically evidence elevated depression. Thus, the relative risk of an elevated depression score was 3.81 times higher (95% CI 2.94–4.93) for youth in detention compared to youth in the community.

When queried about caregiver support, 99% of the youth could identify at least one adult caretaker who was currently involved in their life; 15% identified only one caretaker and 84% identified two. Fifty-six percent of youth identified one of their parents as involved in their life, 21% identified two involved parents, and 23% indicated neither parent was involved. Forty-seven percent of adolescents had a mean score below 3 (meaning that they described their caregiver(s) as supportive *sometimes* or *almost never*).

---

<sup>7</sup>Scherm refers to embalming fluid, formaldehyde, or another solvent that produces a euphoric and hallucinatory state when combined with marijuana.

The mean number of stressful life events reported by the detained youth in the past year was 4.80 ( $SD = 2.94$ ), with the highest proportion of youth (62.4%) endorsing having witnessed the arrest of a relative, neighbor, or friend. Additionally, the following stressors were each experienced by over 40% of the youth: changing schools/moving residences a lot, witnessing severe violence or abuse, and having someone close to them experience a serious, disabling, or life-threatening illness or injury. Approximately 17% of the sample reported witnessing the murder or attempted murder of someone in the past year.

As expected in this juvenile offending sample, the prevalence of drug use was high. Marijuana was the substance most commonly used. The proportion of adolescents who endorsed using each of seven substances once a month or more was as follows: marijuana (78.2%), alcohol (70.7%), amphetamines (17.8%), hallucinogens (8.9%), cocaine (7.6%), and heroin (1.7%). As with depression, the frequency of substance use was considerably higher in this detained sample compared to a general adolescent population. On the basis of the Youth Risk Behavior Surveillance System data (Centers for Disease Control and Prevention, n.d.), prevalence of substance use in the past 30 days among high school students was 23.9% for marijuana, 47.1% for alcohol, and 4.2% for cocaine. In this sample of detained juveniles, estimates of any use of each of these substances were between 1.5 (alcohol use, 95% CI 1.37–1.63) and 3.27 (marijuana use, 95% CI 3.03–3.52) times higher than national estimates.

### Relationship Between SLE, Caregiver Support, and Youth Depression

Hierarchical multiple-regression analyses were conducted to examine the independent and interactive contributions of stressful life events and caregiver support to the youths' reports of depressive symptoms. In the first step of the model, youth age, gender, minority status, previous number of bookings, and frequency of substance use were entered as covariates. The second step included main effects of stressful life events and caregiver support. In the third step, the buffering hypothesis was tested (i.e., a test of moderation) by adding the product term for stressful life events and caregiver support to the model. Step 4 of the model included interaction terms for gender  $\times$  stressful life events and gender  $\times$  caregiver supportiveness to test for moderation of these main effects by gender. To examine the incremental contribution of each set of variables, change statistics were derived at each step of the equation. Using the recommendations of Aiken and West (1991), the stressful life events and caregiver support variables were centered (i.e., the mean of each variable was subtracted from the individual scores of that variable), and the interaction terms created were the product of the centered variables, minimizing problems with multicollinearity.

In step 1 of the regression, the frequency of substance use and minority status were significantly related to youth depressive symptoms on the MFQ,  $F(5, 206) = 4.51, p = .001$ , explaining 10% of the variance ( $R^2$ ). Youth who used substances more frequently and those who were Caucasian reported more symptoms of depression ( $\beta$ s = .24 and .14, respectively). The addition of the two main constructs of interest in step 2—stressful life events and caregiver supportiveness—yielded significant associations with youth depressive symptoms, and collectively contributed to a significant change in the explained variance,  $\Delta R^2 = .11, \Delta F(2, 204) = 13.81, p < .001$ . The number of stressful life events was positively associated with depressive symptoms ( $\beta = .25$ ), whereas caregiver support was negatively related to depressive symptoms ( $\beta = -.19$ ). This stage of the model accounted for 20.6% of the variance in depressive symptoms. The third step, which included only the interaction between stress and support, was not significant,  $\Delta R^2 = .00, \Delta F(1, 203) = 0.04, p = .84$ , still accounting for 20.6% of the variance. In the fourth step, the addition of the interaction term between gender and stress was associated with youth endorsement of depressive symptoms ( $\beta = .32$ ), while the interaction between gender and support was not. The  $R^2$  change for this fourth step was small but significant,  $\Delta R^2 = .03, \Delta F(2, 201) = 3.30, p = .04$ . The overall regression model retained significance when

step 4 was added,  $F(10, 201) = 6.06, p < .001$ , accounting for 23.2% of the variance in depressive symptoms.

Examining the correlation between depression and stressful life events by gender revealed that the relationship between stresses and depression was stronger for boys ( $r = .43, p < .05$ ) than it was for girls ( $r = .11, p = .40$ ). Whereas girls evidenced relatively high levels of depressive symptoms even at lower levels of stress, boys who had experienced fewer stressful life events reported much lower levels of depressive symptoms.

## DISCUSSION

In terms of overall level of psychopathology in this delinquent sample, there were elevated levels of depressive symptoms and more frequent and varied substance use than has been reported on the basis of administering equivalent measures in general adolescent populations, consistent with other studies of incarcerated youth (Domalanta et al., 2003; Teplin et al., 2002). To better understand factors that contribute to increased depression in this particular high-risk sample, analyses of two constructs drawn from the literature on youth depression, stress and support, were conducted. When main effects versus buffering models were examined to explicate the relationship between caregiver support, stress, and youth depressive symptoms, evidence supported the main effects model. Perceived caregiver support was associated with youth self-reports of depressive symptoms regardless of stress levels. Both boys and girls who rated their caregiver(s) to be less supportive of them reported more depressive symptoms. This stands apart from prior cross-sectional studies of depression in community samples of adults who emphasize the buffering role of support in relation to stress and depression (Brown, 1987) but is aligned with more recent prospective studies conducted with adolescents (Burton et al., 2004). The findings are consistent with the notion that social support has a generalized positive impact on depression in this sample even among detained youth who come from backgrounds and environments laden with multiple risk factors. It may be that detained youth are primed toward depression and that the absence of caregiver support, when added to the myriad of other risks, increases vulnerability among these youth.

Being exposed to more stressful life events was also associated with higher depression scores above and beyond the effect of caregiver support, with a somewhat stronger relationship between stressful life events and depressive symptoms for boys compared to girls. In this study, detained girls had relatively high levels of depression, regardless of the number of stressors to which they were exposed, while detained boys who reported low stress experienced lower levels of depression. In contrast, boys with high stress levels had much higher depression scores than did boys with low stress levels. This finding ran counter to the hypothesis and differed from other research studies on adolescents, which have either found no sex differences (Berden, Althaus, & Verhulst, 1990; Goodyer, Kolvin, & Gatzanis, 1986) or have found a stronger relationship between stressful life events and depression among girls (Ge et al., 1994). The phenomenon of greater male vulnerability to stress has been found to exist between children and younger adolescents, but the reverse pattern (girls' greater vulnerability) has been documented among older adolescents (Goodman, Brumley, Schwartz, & Purcell, 1993; Hops, 1995; Zaslav & Hayes, 1986). There are several possible explanations for the gender findings in this study being divergent with the literature.

One possibility is that for girls, and particularly those involved in the juvenile justice system, the role of stress per se may in fact be relatively diminished compared to other biological, psychological, and social factors involved in the etiology of depression. There is a whole host of factors that create vulnerability toward depression for postpubertal girls, including hormonal and genetic factors. Consistent with this idea, Silberg and colleagues' (1999) study of genetic and life stress influences on adolescent depression among twins concluded that "for boys,

depression appears to be largely attributable to the occurrence of negative life events, since any age-related increase in male depression is evidenced only among those who have experienced a life event in the past year. For girls, the rise in depressive symptoms is still evident (although to a lesser extent) among those who have not experienced a notable life event, implicating other putative risk factors” (p. 230). This may be particularly true of girls who are involved in the juvenile justice system. According to the relative deviance hypothesis, because criminal behavior is both less common and less socially acceptable among girls, female detainees would be expected to have a higher risk profile compared to boys who get detained (Dembo et al., 1994; Eme, 1992).

An alternative explanation for this finding is that among detained youth the number of different types of stressful life events is less important than the valence or impact upon their daily lives. It may be the case that the stressful events measured were more salient to boys or resulted in a more “stressful” response on their part and that other stressors were more relevant for girls in correctional settings. For example, the boys in the sample had experienced more episodes in juvenile detention compared to girls. The measure of stressful life events used in this study did not make a distinction between having any arrest and experiencing multiple arrests in the past year, thus yielding what would appear to be similar responses in spite of multiple arrests suggesting more chronic stress. Certainly, the relationship between the personal salience of stress and depression is an area ripe for future research.

There are several limitations to the study that must be taken into account in considering its conclusions and planning future research. Due to the constraints of conducting research in a juvenile detention setting, youths were the sole informants. While it would clearly be advantageous to interview caregivers and other informants, the small window of time during which many of the youth were retained in detention (4 days on average) did not afford this opportunity. Although most information on stress buffering has relied heavily on self-report (e.g., Burton et al., 2004), it is clear that convergent data from multiple sources would give more confidence in these findings. It is also possible that responses to assessment were affected by the detention process per se. The current study, like other studies of detained adolescents (e.g., Domalanta et al., 2003; Teplin et al., 2002), is cross-sectional and observational in design, so that it cannot tease out whether lack of supportive adult relationships plays a causal role in the development of depression among these youth. Because this is a prevalence survey, there is no information about the duration of their depressive symptoms or about the temporal sequence among onset of depressive symptoms, occurrence of stressful life events, and experiences of parental support. A final caveat of this study is that only a small number of possible variables that might influence depression was examined, and effects were generally modest in size.

Despite these limitations, this study corroborates other research findings that show that many youth in custody have significant mental health needs, including elevated levels of depressive symptoms and frequent substance use, and goes a step further in testing two plausible models for depression risk among this susceptible population. From a public health standpoint, juvenile detention could be considered an opportunity for screening and assessment of mental health needs, stresses, and supports and for referral to appropriate services. As Grisso and colleagues (Grisso, Barnum, Fletcher, Cauffman, & Peuschold, 2001) have noted that “. . . in the interests of public safety, we should attend to the treatment of youths’ disorders that may have played a role in their illegal behavior.” This is particularly important in light of the association between depression and increased incidence of incarceration and recidivism (Clark-Jones, 1999; Coccozza, 1992; Whitbeck et al., 2000). In considering intervention programs, enhancement of caregiver and other adult support as well as stress reduction/stress management techniques may be promising strategies in ameliorating youth depression. Future research could test intervention programs that work to increase support from existing caregivers or temper the



impact of stressful life events, depending on a youth's profile of risk. Examining the course of adolescents' depression with and without such added supports would provide additional information about the potential of these strategies to lessen the risk of depression among criminally involved adolescents.

### Acknowledgements

This study was funded with a grant from the General Research Endowment Fund of Children's Hospital and Regional Medical Center in Seattle, WA. Dr. McCarty was supported with a Young Investigators Award from NARSAD during the analysis of this study. Portions of this study have been presented at the meeting of the Society for Research in Child Development, Tampa, FL, April, 2003.

The authors wish to thank the staff of the King County Detention mental health clinic, particularly Boni Robinson, the lead nurse, and Marcia Navajas, the clinic administrator, for their help and support in conducting this study. Thanks also to the detention study interviewers, Dana Elkun, Sandy Fields, Nailah Mu'ied, and Glen Boyd, for their skills and dedications. The authors are grateful to David Stewart and Jerry Herting for their comments on a previous version of this manuscript. They also extend their heartfelt appreciation to the children who participated in this study.

### References

- Aiken, L.S.; West, S.G. Multiple regression: Testing and interpreting interactions. Newbury Park: Sage; 1991.
- Angold, A. Structured assessment of psychopathology in children and adolescents. In: Thompson, C., editor. The instruments of psychiatric research. Chichester, NY: Wiley; 1989. p. 271-304.
- Angold A, Costello EJ, Messer SC, Pickles A. Development of a short questionnaire for use in epidemiological studies of depression in children and adolescents. *International Journal of Methods in Psychiatric Research* 1995;5:237-249.
- Aseltine RH, Gore SL. The variable effects of stress on alcohol use from adolescence to early adulthood. *Substance Use and Misuse* 2000;35:643-668. [PubMed: 10807150]
- Berden GF, Althaus M, Verhulst FC. Major life events and changes in the behavioral functioning of children. *Journal of Child Psychology and Psychiatry* 1990;31:949-959. [PubMed: 2246343]
- Brown GW. Social factors and development and course of depressive disorders in women: A review of a research programme. *British Journal of Social Work* 1987;17:615-634.
- Burton E, Stice E, Seeley JR. A prospective test of the stress-buffering model of depression in adolescent girls: No support once again. *Journal of Consulting and Clinical Psychology* 2004;72:689-697. [PubMed: 15301654]
- Capaldi DM. Co-occurrence of conduct problems and depressive symptoms in early adolescent boys: I. Familial factors and general adjustment at Grade 6. *Development and Psychopathology* 1991;3:277-300.
- Capaldi DM. Co-occurrence of conduct problems and depressive symptoms in early adolescent boys: II. A 2-year follow-up at Grade 8. *Development and Psychopathology* 1992;4:125-144.
- Centers for Disease Control and Prevention(n.d.). Youth risk behavior surveillance system: 2001 information and results. Retrieved March 17, 2003 from <http://www.cdc.gov/nccdphp/dash/yrbs/2001/index.htm>
- Clark-Jones F. Depression and conduct disorder in native and non-native children. *Journal of Child and Family Nursing* 1999;2:122-123. [PubMed: 10639929]
- Cocozza, J.J. Responding to the mental health needs of youth in the juvenile justice system. Seattle, WA: National Coalition for the Mentally Ill in the Criminal Justice System; 1992.
- Cohen S, Wills TA. Stress, social support and the buffering hypothesis. *Psychological Bulletin* 1985;98:310-357. [PubMed: 3901065]
- Cole D, Carpentieri S. Social status and the comorbidity of child depression and conduct disorder. *Journal of Consulting and Clinical Psychology* 1990;58:748-757. [PubMed: 2292624]
- Cook, E.; Greenberg, M.; Kusche, C. People in my life: Attachment relationships in middle childhood; Paper presented at the biennial meeting of the Society for Research in Child Development; Indianapolis, IN. 1995.

- Connell, JP.; Wellborn, JG. Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In: Gunnar, R.; Sroufe, LA., editors. *Minnesota symposia on child psychology*. 23. Hillsdale, NJ: Lawrence Erlbaum; 1991. p. 43-77.
- Costello EJ, Angold A. Scales to assess child and adolescent depression: Checklists, screens, and nets. *Journal of the American Academy of Child and Adolescent Psychiatry* 1988;27:726–737. [PubMed: 3058677]
- Davies PT, Windle M. Gender-specific pathways between maternal depressive symptoms, family discord, and adolescent adjustment. *Developmental Psychology* 1997;33:657–668. [PubMed: 9232381]
- Dembo R, Schmeidler J, Sue CC, Borden P, Manning D, Rollie M. Psychosocial, substance use, and delinquency differences among Anglo, Hispanic White, and African-American male youths entering a juvenile assessment center. *Substance Use and Misuse* 1998;33:1481–1510. [PubMed: 9657413]
- Dixon A, Howie P, Starling J. Psychopathology in female juvenile offenders. *Journal of Child Psychology and Psychiatry* 2004;45:1150–1158. [PubMed: 15257671]
- Domalanta DD, Risser WL, Roberts RE, Risser JMH. Prevalence of depression and other psychiatric disorders among incarcerated youth. *Journal of the American Academy of Child and Adolescent Psychiatry* 2003;42:477–484. [PubMed: 12649635]
- Eccles JS, Early D, Frasier K, Belansky E, McCarthy K. The relation of connection, regulation, and support for autonomy to adolescents' functioning. *Journal of Adolescent Research* 1997;12:263–286.
- Eme RF. Selective female affliction in the developmental disorders of childhood: A literature review. *Journal of Clinical Child Psychology* 1992;21:354–364.
- Garber J, Hilsman R. Cognition, stress, and depression in children and adolescents. *Child and Adolescent Psychiatric Clinics of North America* 1992;1:129–167.
- Ge X, Lorenz FO, Conger RD, Elder GH, Simons RL. Trajectories of stressful life events and depressive symptoms during adolescence. *Developmental Psychology* 1994;30:467–483.
- Gifford-Smith, M. *People in My Life* (Technical Report). 2000. Retrieved March 17, 2003 from <http://www.fasttrackproject.org/allmeasures.htm>
- Goodman SH, Brumley HE, Schwartz KR, Purcell DW. Gender and age in the relation between stress and children's school adjustment. *Journal of Early Adolescence* 1993;13:329–345.
- Goodyer I, Kolvin I, Gatzanis S. Recent undesirable life events and psychiatric disorder in childhood and adolescence. *British Journal of Psychiatry* 1985;147:517–523. [PubMed: 4075046]
- Goodyer I, Kolvin I, Gatzanis S. Do age and sex influence the association between recent life events and psychiatric disorders in children and adolescents? A controlled enquiry. *Journal of Child Psychology and Psychiatry* 1986;27:681–687. [PubMed: 3771684]
- Goodyer IM, Wright C, Altham PME. Maternal adversity and recent stressful life events in anxious and depressed children. *Journal of Child Psychology and Psychiatry* 1988;29:651–667. [PubMed: 3192666]
- Grisso T, Barnum R, Fletcher K, Cauffman E, Peuschold D. Massachusetts youth screening instrument for mental health needs of juvenile justice youths. *Journal of the American Academy of Child and Adolescent Psychiatry* 2001;40:541–548. [PubMed: 11349698]
- Grisso T, Tompkins A, Casey P. Psychosocial concepts in juvenile law. *Law and Human Behavior* 1988;12:403–437.
- Hoffmann JP, Cerbone FG, Su SS. A growth curve analysis of stress and adolescent drug use. *Substance Use and Misuse* 2000;35:687–716. [PubMed: 10807152]
- Hops H. Age- and gender-specific effects of parental depression: A commentary. *Developmental Psychology* 1995;31:428–431.
- Jenkins JM, Smith MA. Factors protecting children living in disharmonious homes: Maternal reports. *Journal of the American Academy of Child and Adolescent Psychiatry* 1990;29:60–69. [PubMed: 2295580]
- Johnson, JH. *Developmental clinical psychology and psychiatry series*. 8. Newbury Park, CA: Sage; 1986. Life events as stressors in childhood and adolescence.
- Kent L, Vostanis P, Feehan KC. Detection of major and minor depression in children and adolescents: Evaluation of the Mood and Feelings Questionnaire. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 1997;38:565–573.

- Kobak RR, Sudler N, Gamble W. Attachment and depressive symptoms during adolescence: A developmental pathways analysis. *Development and Psychopathology* 1991;3:461–474.
- Landerman R, George LK, Campbell RT, Blazer DG. Alternative models of the stress buffering hypothesis. *American Journal of Community Psychiatry* 1989;17:625–642.
- Lewis DO, Yeager CA, Lovely R, Stein A, Cobham-Portorreal CS. A clinical follow-up of delinquent males: Ignored vulnerabilities, unmet needs, and the perpetuation of violence. *Journal of the American Academy of Child and Adolescent Psychiatry* 1994;33:518–528. [PubMed: 8005905]
- McConaughy S, Skiba R. Comorbidity of externalizing and internalizing problems. *School Psychology Review* 1993;22:421–436.
- McFarlane AH, Bellissimo A, Norman GR. The role of family and peers in social self-efficacy: links to depression in adolescence. *American Journal of Orthopsychiatry* 1995;65:402–410. [PubMed: 7485425]
- National Research Council. *Losing generations: Adolescents in high-risk settings*. Washington, DC: National Academy Press; 1993.
- Olsson GI, Nordstrom ML, Arinell H, von Knorring AL. Adolescent depression and stressful life events. *Nordic Journal of Psychiatry* 1999;53:339–346.
- Papini DR, Roggman LA, Anderson J. Early-adolescent perceptions of attachment to mother and father: A test of emotional-distancing and buffering hypotheses. *Journal of Early Adolescence* 1991;11:258–275.
- Patten CA, Gillin CJ, Farkas AJ, Gilpin EA, Berry CC, Pierce JP. Depressive symptoms in California adolescents: Family structure and parental support. *Journal of Adolescent Health* 1997;20:271–278. [PubMed: 9098730]
- Piacentini, J.; Pataki, CS. Substance abuse in depressed adolescents. In: Koplewicz, HS.; Klass, E., editors. *Depression in children and adolescents*. Monographs in clinical pediatrics. 6. Langhorne, PA, England: Harwood Academic Publishers/Gordon; 1993. p. 133-148.
- Pliszka SR, Sherman JO, Barrow MV, Irick S. Affective disorder in juvenile offenders: A preliminary study. *American Journal of Psychiatry* 2000;157:130–132. [PubMed: 10618028]
- Rapp LA, Wodarski JS. The comorbidity of conduct disorder and depression in adolescents: A comprehensive interpersonal treatment technology. *Family Therapy* 1997;24:81–100.
- Reinherz HZ, Giaconia RM, Pakiz B, Silverman AB, Frost AK, Lefkowitz ES. Psychosocial risks for major depression in late adolescence: A longitudinal community study. *Journal of the American Academy of Child and Adolescent Psychiatry* 1993;32:1155–1163. [PubMed: 8282659]
- Robinson, NS.; Garber, J. Social support and psychopathology across the life span. In: Cicchetti, D.; Cohen, DJ., editors. *Developmental psychopathology, Vol. 2: Risk, disorder, and adaptation*. New York: Wiley; 1995. p. 162-209.
- Robinson K, Jenson J, Yaffe J. Depression and conduct disorder among hospitalized adolescents. *Child and Adolescent Social Work Journal* 1992;9:329–339.
- Rohde P, Clarke GN, Mace DE, Jorgensen JS, Seeley JR. An efficacy/effectiveness study of cognitive-behavioral treatment for adolescents with comorbid major depression and conduct disorder. *Journal of the American Academy of Child and Adolescent Psychiatry* 2004;43:660–668. [PubMed: 15167082]
- Silberg JL, Pickles A, Rutter M, Hewitt J, Simonoff E, Maes H, Carbonneau R, Murrelle L, Foley D, Eaves L. The influence of genetic factors and life stress on depression among adolescent girls. *Archives of General Psychiatry* 1999;56:225–232. [PubMed: 10078499]
- Stice E, Ragan J, Randall P. Prospective relations between social support and depression: Differential direction of effects for parent and peer support? *Journal of Abnormal Psychology* 2004;113:155–159. [PubMed: 14992668]
- Sund AM, Larsson B, Wichstrom L. Depressive symptoms among young Norwegian adolescents as measured by The Mood and Feelings Questionnaire (MFQ). *European Child & Adolescent Psychiatry* 2001;10:222–229. [PubMed: 11794547]
- Teplin LA, Abram KM, McClelland GM, Dulcan MK, Mericle AA. Psychiatric disorders in youth in juvenile detention. *Archives of General Psychiatry* 2002;59:1133–1143. [PubMed: 12470130]
- Werner, E.; Smith, RS. *Overcoming the odds: High risk children from birth to adulthood*. Ithaca, NY: Cornell University Press; 1992.

- Whitbeck LB, Hoyt DR, Bao WN. Depressive symptoms and co-occurring depressive symptoms, substance abuse, and conduct problems among runaway and homeless adolescents. *Child Development* 2000;71:721–32. [PubMed: 10953939]
- Williamson EE, Birmaher B, Anderson BP, Al-Shabbout M, Ryan ND. Stressful life events in depressed adolescents: the role of dependent events during the depressive episode. *Journal of the American Academy of Child and Adolescent Psychiatry* 1995;34:591–598. [PubMed: 7775354]
- Winters KC. Development of an adolescent alcohol and other drug abuse screening scale: Personal Experience Screening Questionnaire. *Addictive Behaviors* 1992;17:479–490. [PubMed: 1332434]
- Wood A, Kroll L, Moore A, Harrington R. Properties of the Mood and Feelings Questionnaire in adolescent psychiatric outpatients: A research note. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 1995;36:327–334.
- Zaslow, MJ.; Hayes, CD. Sex differences in children's response to psychosocial stress: Toward a cross-context analysis. In: Lamb, ME.; Brown, AL.; Rogoff, B., editors. *Advances in developmental psychology*. 4. Hillsdale, NJ: Lawrence Erlbaum; 1986. p. 285-337.

**Table I**

## Descriptive Statistics by Gender

Variable	Boys	Girls
Age <sup>*</sup> , mean ( <i>SD</i> )	15.5 (1.19)	14.7 (1.15)
Number of previous bookings <sup>*</sup> , mean ( <i>SD</i> )	4.13 (4.89)	2.34 (3.07)
Number of persons in household, mean ( <i>SD</i> )	6.85 (12.48)	6.76 (14.13)
Caucasian race, %	52	48
African-American race, %	35	29
MFQ Score, mean ( <i>SD</i> )	16.47 (12.42)	18.60 (12.03)
Number of stressful life events (past year), mean ( <i>SD</i> )	4.65 (2.91)	5.25 (2.99)
PIML item score, mean ( <i>SD</i> )	3.00 (0.60)	2.91 (0.81)
Monthly substance use score, mean ( <i>SD</i> )	17.17 (7.55)	16.93 (7.29)

*Note.* MFQ: Mood and Feelings Questionnaire; PIML: People in My Life.

\*  $p < .01$ .

Table II

Demographic Characteristics of Eligible Youth and Study Participants

	Eligible youth		Study participants		Significance test
	<i>n</i>	(%)	<i>n</i>	(%)	
Age (years)					
13	56	9.6	19	8.3	$t(580) = 1.23, p = .22$
14	104	17.6	46	20.2	
15	125	21.5	55	24.1	
16	154	26.5	63	27.6	
17	143	24.6	45	19.7	
Gender					$\chi^2(1, n = 582) = .03, p = .88$
Female	146	25.1	58	25.4	
Male	436	74.9	170	74.6	$\chi^2(3, n = 582) = 3.33, p = .34$
Ethnicity					
African American	209	35.9	77	33.8	
Asian/Pacific Islander	46	7.9	15	6.5	
Caucasian	270	46.4	116	50.9	
Hispanic	31	5.3	10	4.4	
Native American	16	2.7	6	2.6	
Other	10	1.8	4	1.5	
Total	582	100.0	228	100.0	