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Anger and Depression among Incarcerated Male Youth: Predictors of Violent and Non-Violent Offending during Adjustment to Incarceration

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Abstract

Objective: Anger and depression are associated with a number of psychosocial problems, and their comorbidity may exacerbate maladjustment among incarcerated youth. The present study aims to identify whether anger and its different facets (cognitive, arousal, and behavioral), either independently or when conjoined with depressed mood, affects violent and non-violent institutional infractions.

Method: Males (14–17 years of age) were recruited within 48 hours of arrival at a juvenile detention facility and were administered psychometric measures of anger (NAS) and depression (CES-D) at baseline, 1 month, and 2 months. Offending within the facility was assessed via self-report and institutional records.

Results: Controlling for prior offending and other background factors, individuals having high anger scores were more likely to offend over the 2-month period, compared to those with lower levels of anger. NAS scores, especially its Behavioral facet, predicted both official- and self-reported (violent and non-violent) institutional offending. There was evidence for the interaction of depression and anger at baseline predicting self-reported offending at 1 month only.

Conclusions: Given that juveniles' self-report of emotional distress, particularly anger, is predictive of their violent and non-violent infractions, focused intervention programs could reduce behavior problems during incarceration that add to juveniles' maladjustment and continued exposure to adversities.

Public Health Statements: Addressing the emotional well-being of youth during the initial adjustment to incarceration is critical to preventing offending. Although anger is a prime therapeutic target, juvenile justice facilities should attend to the interactive effects of anger and depression on offending behavior during this most vulnerable transition period.

Keywords

Anger; Depression; Violence; Incarceration; Adolescents

Violent offending among youth is a serious social problem and public health concern. The Centers for Disease Control surveillance report of youth risk behavior in the United States indicated that 24.7% of high school students had been in a physical fight in the previous 12 months for the year 2013 (Kann, Kinchen, & Shanklin, 2014), and Kann et al. (2016) report that rate to be 22.6% for 2015. In 2015, there were 48,083 juveniles in residential facilities in the United States, of whom 12,087 were detained for violent offenses (Hackenberry, 2018). While physically assaultive behavior occurs among community youth, it is much more common among juveniles in detention (e.g., Cornell, Peterson, & Richards, 1999; Davidson-Arad, 2005; Khoury-Kassabi & Attar-Schwartz, 2014). As such, this violent behavior has cascading consequences for future offending and management within the institution. Similarly, psychological distress is prevalent among those in juvenile detention centers (Cauffman, 2004; Ryan & Redding, 2004). Recurrent infractions can reflect unmet mental health needs and have more serious legal consequences than offending in the community. To the extent that psychological distress drives juvenile violence within institutions, viable treatment targets are thereby presented for intervention programs. The present study, conducted in a large juvenile justice facility with male adolescent offenders, focuses on anger and depression as mental health needs and as prospective predictors of violent and non-violent offending behavior.

Adolescent Offenders: Mental Health Problems and Institutional Misconduct

The prevalence of psychological disorders among youth in the justice system is known to be high. The landmark study by Teplin, Abram, McClelland, Dulcan, & Mericle (2002) in the Cook County, Illinois, detention center found six-month prevalence rates for males of 18.7% for any affective disorder (depression, dysthymia, mania) and 21.3% for anxiety disorders – the female rates were higher (27.6% and 30.8%, respectively). The rate for Major Depressive Episode was 13.0% for males and 21.6% for females. Fazel, Doll, & Langstrom's (2008) review of 18 studies found a rate of 10.6% for Major Depression among male youth in detention. Community rates, in contrast, for the 12-month prevalence of Major Depressive Disorder among adolescents in the National Comorbidity Survey were 4.6% for males and 10.7% for females (Avenevoli, Swendsen, He, Burstein, & Merikangas, 2015). The PTSD rate among detained youth in the Kerig & Bennett (2013) study was 25.5% for girls and 16.4% for boys. The high prevalence for multiple psychiatric disorders among incarcerated youth extends after their initial detainment. In the Abram et al. (2015) prospective study with Cook County juveniles, there was a 27% comorbidity rate for males 5 years later.

While the rates of psychological disorder are high among justice-involved youth, disciplinary misconduct and violence are as well. For example, juvenile inmates (under 18) in Florida prisons had higher rates of misconduct across six violent behavior categories than did 18–20 years-old adult inmates (Kuanliang, Sorensen, & Cunningham, 2008). Within the context of incarceration, mental health problems can lead to offending behaviors, such as theft, destroying property, or attacking or threatening someone. Cesaroni and Peterson-Badali (2005; 2010) have shown that pre-existing emotional and psychosocial adjustment

problems contribute to institutional infractions, beyond the stress and vulnerabilities experienced within institutions in Canada. Violent behavior within California youth facilities, similar to the present study's, was found to be of concern, as MacDonald (1999) reported that there were 502 violent conduct charges among 3,995 youth.

Depressed mood is associated with institutional misconduct and externalizing behaviors and delinquency more generally (e.g., Beyers & Loeber, 2003; McDougal, Campbell, & Santer, 2013; Ryan & Redding, 2004). Yet, anger has particular relevance for juveniles' offending in institutions. DeLisi et al. (2010), in a study with 813 California Youth Authority wards, found that, after controlling for 14 background and mental health variables, anger upon intake was related to assaults on staff, on youth wards, and other aggressive misconduct. Cornell et al. (1999), using two anger instruments, found convergence in their predicting institutional physical aggression. Similarly, Kimonis, Ray, Branch and Cauffman (2011) found that anger was a robust predictor of lifetime and institutional violence among incarcerated juvenile offenders.

Contextual Relevance of Anger and Depression

Research with adolescents commonly finds anger to co-occur with depression (e.g., Asgeirsdottir & Sigfusdottir, 2015; Kaltiala-Heinoa, Markku Eronenb, & Putkonen, 2015). The conjunction of anger and depression was examined in studies by Gresham, Melvin, and Gullone (2016) and Sigfusdottir, Farkas, and Silver (2004), uncovering partial or full mediational effects for anger in accounting for the relationship between depression and aggression/delinquency.

Pertinent to institutionalized adolescents, Butler, Loney, & Kistner (2007) found that the angry-irritable scale of the MassachusettsYouth Screening Instrument – Version 2 (MAYSI-2; Grisso & Barnum, 2000) predicted severe rule violations and intensive supervision placement for agressive behaviors; whereas the "depressed-anxious" scale was predictive of suicide watch (less so than angry-irritable) but was not predictive of institutional incidents. Gammelgard, Koivisto, Eronen, & Kaltiala-Heino (2010), in youth detainment facilities in Finland, found that anger (BPRS "hostility") was associated with clinically-assessed high risk for violence, whereas depressed mood, hopelessness, or suicidal ideation were not.

General Strain Theory (GST)

Strongly bearing on the relevance of both anger and depression to delinquency is the general strain theory of Agnew (Agnew, 1985; 1989; 1992; Agnew & White, 1992), which states that adolescents are pressured into delinquency by "negative affect" (disappointment, depression, fear, and anger) occurring in conjunction with interpersonal relationships. Strain occurs in three categories of negative relations: prevention from achieving goals, removal of valued stimuli (possessions), and exposure to noxious stimuli. Strain results in negative affect, which creates pressure for corrective action, but anger has superordinate value. Anger is the crucial emotion, as it is produced by strain when others are blamed for personal adversity, increases the sense of being injured or wronged, creates a motivation for

retaliation or revenge, energizes action, and lowers inhibitory control (Agnew, 1992; Agnew & White, 1992). The inability to escape from adversity is frustrating, which then motivates escape attempts (e.g., illegal drug use) or angerbased delinquency. Regarding depression, Agnew (1992) asserted that when individuals blame themselves rather than others or feel responsible for their adversity, depression, despair, or disappointment would result, and thereby produce delinquency; but in the absence of anger there is less "pressure" and vengeful behavior is less likely. Agnew (1985), in a large sample of 10^{th} grade boys, found anger to mediate the relationship between strain and delinquency, especially aggressive behavior (self-reported). Aseltine, Gore, and Gordon (2000) replicated the anger mediational effect between adolescents' life stress and aggressive behavior, but not other forms of delinquency. Brezina (1996) found strain to be associated cross-sectionally and longitudinally with anger, resentment, anxiety, and depression, controlling for many other variables including self-esteem, self-blame, and deviant beliefs. Thus, while GST and its studies view anger as prime, depression is still relevant in this perspective.

Focus of the Present Study

Current views on juvenile adjustment to institutionalization synthesize deprivation and importation theories (e.g., Gover, MacKenzie, & Armstrong, 2000; Trulson, 2007). Deprivation concerns the depriving, frustrating prison environment, whereas importation concerns personal characteristics (e.g., behavioral tendencies, emotional dispositions) that inmates bring with them. The stress of incarceration due to deprivation of liberty, goods, services, autonomy, and security (Sykes, 1958), however, could lead to changes in emotional dispositions during imprisonment. We conjecture that although mood could change over time, the imported emotional dispositions (in particular anger and depression) will be major influences on institutional adjustment. Therefore, the current study follows the importation perspective in predicting offending.

Few studies have assessed how emotional distress changes during incarceration and may relate to youths' institutional adjustment. Cesaroni and Peterson-Badali (2010) examined internalizing symptoms, but not anger, finding fear to be associated with maladjustment. Aseltine et al. (2000) found anxiety unrelated to adolescent aggression, whereas anger had a significant path coefficient. Given the predictive value found for anger in studies with incarcerated youth, our study has an anger focus that incorporates the potentially additive effect of depression. We examine whether there are additive effects for depression with anger, as depression can intensify anger through negativity bias in perception, brooding or rumination, irritable mood, and "anger attacks" observed in disorders of depression (cf. Novaco, 2010). We examine how anger and depression might change during incarceration and bear on institutional offending, both violent and non-violent. We view institutional offending as reflective of maladjustment during incarceration and as presaging post-institutional offending. As anger has cognitive, somatic arousal, and behavioral components (Novaco, 1994), we examine whether these facets of anger differentially relate to offending, being mindful that each is a viable domain for intervention.

Study Aims

This short-term longitudinal investigation examines high anger disposition and depressed mood as risk factors for institutional offending as youth make their initial transition to a correctional facility. Specifically, the study addresses two main questions: 1) How do youth adjust, emotionally (i.e., anger and depression symptoms) and behaviorally (i.e., non-violent and violent offending), to their initial incarceration?; and 2) Does anger or particular facets of anger (cognitive, somatic arousal, and behavioral) interact with depressed mood to predict offending?

Method

Setting

Data were collected at the California Youth Authority (CYA) in Norwalk, California. This is a high-security juvenile facility designed to accommodate males (ages 12–25) committed from southern California counties. In the California juvenile justice system, 60% of wards have been committed for violent offenses, such as murder, rape, robbery, or kidnapping.

Sample

Study data are drawn from assessments of 373 14 to 17 year-old (M = 16.42, SD = .79) males incarcerated by the California Department of Corrections and Rehabilitation (CDCR) Division of Juvenile Justice (DJJ) from May 2005 to May 2007. Table 1 provides demographic and offense data; 271 (73%) were sentenced for violent crimes against persons (murder, rape, robbery, assault). For 92% of the sample, this was their first time at the DJJ facility.

Procedures

Within 48 hours of arrival to the facility, all those between the ages of 14 and 17 years admitted on a new offense were eligible for study enrollment. The study contacted the DJJ daily to identify new arrivals. Potential participants were informed of the nature of the study, that participation was voluntary, and that there was no penalty for declining. After obtaining youths' verbal assent, informed consent was obtained by telephone from a parent/guardian (all were informed that the call was audiotaped prior to recording). Study information sheets (English or Spanish) were also mailed to the youths' parents/guardians. Of the parents contacted, we had a 97% successful consent rate.

After consents were obtained, participants were given a two-hour baseline interview that consisted of a diagnostic assessment and various environmental, behavioral, emotional, and attitudinal measures. A research assistant read all study measures to the participant and answered any questions. After the baseline assessment, the youths participated in three weekly 1½ hour follow-up interviews and an additional 1½ hour follow-up interview two months after baseline. For the purposes of the present study, we use the baseline, one-month, and two-month assessments. The Institutional Review Board at the University of California, Irvine and the CDCR approved the above procedures and a Certificate of Confidentiality was secured from the Department of Health and Human Services.

Measures

Demographic and Control Variables.—Participants self-reported their age, race/ethnicity, and committing offense (Table 1). Because prior experiences at the facility might affect rates of offending, analyses controlled for whether they previously had been to the facility (0 = *not in facility before*, 1 = *in facility before*). To account for varying lengths of stay, number of days in the facility was also used as a control variable (M = 52.55 days, SD = 22.35).

Mental Health Services.—Participants were asked to report any medications prescribed and attendance of individual therapy or group therapy sessions (henceforth termed "therapy"). At the baseline interview, the prompt was since their arrival. In subsequent interviews, participants reported attendance of those therapies in the last week during assessments in the 1st month or in the last month during the 2nd month of their incarceration. Participants who reported taking any antidepressant, anxiolytic, or antipsychotic medications were coded as being on a psychiatric medication (0 = *no psychiatric medication*; 1 = *taking psychiatric medication*) during the 1st month, 2nd month, or across the 1st and 2nd months. Due to high levels of skewness and kurtosis of the frequency of therapy, participation in therapy was dummy coded, 0 = *no therapy*, 1 = *completed individual or group therapy*, in the 1st month, 2nd month, or across both months.

Depression.—The 20-item Center for Epidemiological Studies-Depression Inventory (CES-D; Radloff, 1977) was used to assess depressed mood. Items are rated from 0 = *never* to 3 = *almost every day*. At baseline, item ratings pertained to the past 6 months. For the month 1 follow-up interview, the time frame was in the last week, and at the month 2 assessment, the prompt referenced the last month. Their scores were summed at each time point (see Table 2).

The CES-D is highly reliable across general populations and patient samples (α = .85 and .90 respectively) and over a 6-month period (α = .54) (Radloff, 1977). Studies conducted with clinical populations suggest that individuals scoring 16 or higher on the scale are considered to be "depressed" (Radloff, 1977), but some subsequent studies have used a higher cut-off of 21 (e.g., Ghubash et al., 2000) due to concerns about false positives among adolescents. We use the more conservative cut-off of 21. Previous research has shown that the CES-D is moderately stable over several weeks (r = 0.57) (Radloff, 1977).

Anger.—The Novaco Anger Scale (NAS; Novaco, 1994, 2003) is a self-report instrument designed to measure anger disposition, having 48 items on Cognitive, Arousal, and Behavioral subscales, which are summed to comprise the NAS Total score. The separate Anger Regulation scale of the NAS was not used. Items are rated on a 3-point scale: 1 = *never true*, 2 = *sometimes true*, 3 = *always true*. The NAS has been extensively validated with clinical samples, including its predictive association with the violent behavior of patients before, during, and after hospitalization (e.g., Novaco & Taylor, 2005; Ullrich, Keers, & Coid, 2013) as well as with adolescent and adult incarcerated offenders (e.g., Baker, Van Hasselt, & Sellers, 2008; Cornell et al., 1999). For the present study, the reference periods for the respondents were *in the past 6 months* for the baseline assessment,

in the past week for the Month 1 interview, and *in the past month* at the Month 2 assessment. Baseline NAS Total and the facility staff's baseline assessments of anger (MAYSI-2 Angry-Irritable) were highly correlated, $r = .54$.

The Cognitive (COG), Arousal (ARO), and Behavioral (BEH) subscales of the NAS each consist of 16 items. NAS COG is composed of items indexing justification, rumination, hostile attitude, and suspiciousness (e.g., "*I get angry because I have a good reason to be angry*"; "*Once something makes me angry, I keep thinking about it").* NAS ARO items index intensity, duration, somatic activation/tension, and irritability (e.g., "*When I get angry, I get really angry"; When I get angry, I stay angry for hours").* NAS BEH items index impulsive reaction, verbal aggression, physical confrontation, and indirect expression (e.g., "*If someone bothers me, I react first and think later*"; *I have had to be rough with people who bothered me."*). In general, anger disposition is fairly stable; yet, the reactive nature of anger is sensitive to situational and contextual conditions; thus, anger is best assessed at different points in time (Novaco, 2003).

Self-Report of Non-Violent and Violent Offending.—A modified version of the SelfReport of Offending (SRO) (Huizinga, Esbensen, & Weihar, 1991) measure was used to assess incarcerated youths' account of their antisocial and illegal activities prior to incarceration and while in the facility. CFAs indicate that its items assess the same underlying construct (CFI = .88; RMSEA= .04) (Huizinga, et al., 1991). The modified SRO entails 8 items that assess the variety and frequency of involvement in antisocial and illegal activities in the past 6 months and since arriving at the facility. For the present study, frequency of offending within the facility was used as a criterion variable, rated along a 9 point scale (0 = *not at all* to 8 = *everyday*), and computed for violent (e.g., *attacked a staff member*; *chased, mugged, or seriously threatened another person?)* and nonviolent offenses (e.g., *stolen other peoples things?; damaged property?*) in the first and second months of incarceration. Variety of offending in the 6 months prior to incarceration was used as a control in our regression analysis ($M = 4.00$, $SD = 1.86$).

Institutional Report of General and Violent Offending.—The DJJ provided records for institutional infractions that occurred within the facility, from which, four variables were created: total number of nonviolent allegations and total number of violent allegations during the first and second month of incarceration. Violent offenses were physical attacks or altercations regardless of injuries (e.g., assault on staff with or without a weapon; assault on a youth with a weapon/vile substance). Nonviolent offending involved verbal or written threats, harassment, abuse of staff, wards or persons not in custody; damaging, defacing or destroying property; possession of any controlled substance; and possession, control or manufacture of a weapon or explosive device.

Statistical Approach

Prior to conducting analyses, a review of the data revealed no significant age or ethnic differences in main effect or outcome variables. Using independent sample t-tests to assess possible differences in key variables (depression, anger, and offending), no differences were observed between those who left the facility prior to their month 2 interview and those who

remained in the facility for the duration of the study. As official reports of non-violent and violent offenses within the institution are count variables and all dependent variables are overdispersed (i.e., the variance is larger than the mean), we utilized negative binomial regressions. For interpretation, we report the incident rate ratios (IRRs) instead of the coefficients. IRRs reflect the multiplicative rate that each one unit increase in the predictor variable changes the rate of the outcome variable by the factor of the IRR, holding all other variables in the model constant (UCLA: Academic Technology Services, 2011). For example, if anger had an IRR of 1.05 for offending, a one-unit increase in anger would indicate a 5% increase in offending.

Our analyses tested anger and depression (and their interaction) upon entry to the facility in relation to self-reports and institutional-reports of non-violent offending and violent offending during the first and second months of incarceration. We also tested those predictors assessed at the end of first month to predict offending during the 2nd month of incarceration. Control variables included history of offending (6 months prior to incarceration), prior incarceration in the facility, length of stay within the facility (number of days), receipt of psychiatric medication, and participation in therapy. In order to ascertain if the facility's mental health services affected the results for our offending behavior criteria, we tested all models with the treatment variables (medication or therapy) excluded, and none of the main results were altered.

Results

Adjustment to Incarceration

Depressed Mood and Anger.—Of the 373 participants in the study, 33% ($n = 124$) scored above the clinical cutoff (sum score of 21 or greater) for the CES-D upon entry to the facility (baseline). Also at baseline, 48% ($n = 184$) scored either "high" or "very high" on NAS Total anger (score $_{\geq 90}$, per NAS manual; Novaco, 2003). Table 2 provides the Means and Standard Deviations at baseline and at months 1 and 2. Over the course of the 1st month, using paired t-test comparisons, depression symptoms, $t(311) = 11.42$, $p < .001$, and anger, $t(316) = 8.43$, $p < .001$, decreased. However, at month 2, there is a steady increase in both depression, $t(228) = -3.81$, $p < .001$, and anger, $t(231) = -3.02$, $p = .003$. Pearson correlations between depressed mood and anger indices over time are given in Table 3. Nearly all are significant ($p < .01$), with the lowest coefficients occurring for the NAS Behavioral subscale and the highest with the NAS Arousal subscale. The average correlation between the CES-D and NAS Total scores is $r = .31$.

Mental Health Services.—Twenty-two percent of participants self-reported taking a psychiatric medication during the study period (month 1: 20%; $N = 76$ of 373; month 2: 17%; $N = 43$ of 248 with data)]. Of the 83 youth who took medication at any point, 43% took medication across both months. Forty-eight percent ($N = 179$) completed a therapy session (individual or group) in the first two months (month 1: 42%; $N = 155$ of 372 with data; month 2: 31%; $N = 70$ of 257 with data). Only 31% of those who received therapy had them across both months. Receipt of medication and therapy was uncommon. In the 1st month, 13% ($N = 48$) received medication and therapy, 29% ($N = 107$) received only

therapy, and 8% (N = 28) received medication only. In the 2nd month of the 257 with data on either variable, 8% (N = 20) received medication and therapy, 9% (N = 23) received medication only, and 21% (N = 54) therapy only.

Correlations between psychiatric medication and anger across time-points ranged from .04 to .14 and ranged from −.03 to .09 for therapy and anger. None were significantly related at our set alpha level of p <.01. Correlations between mental health services variables, depressed mood, and offending are presented in Table 3. There were some positive associations between participation in therapy at Month 1 and Month 2 with baseline depressed mood (2 of 6 coefficients), but none with offending. For psychiatric medications, there were no significant correlations with depression and a few with offending (3 of 16 coefficients) in Month 1 and Month 2 (medication being associated with higher offending).

Offending.—On youths' self-report, committing at least one non-violent offense was common (month 1: 41.6%; month 2: 51.3%; total: 58% any offense); violent offending was less common (month 1: 26.5%; month 2: 32.4%; total: 47%). Table 2 provides Means and SDs. The average rate of self-reported offending was higher in month 2 for both violent (t(257) = −2.36, p = .02), and non-violent offending (t(257) = −2.44; p = .02).

Institutional records for non-violent offending approximate the self-report rate (month 1: 39.6%; month 2: 52%; total: 66% any offense). For violent offending, the records rates are lower than the self-report rates (16.7% at month 1, 17.2% at month 2, and 30% total). Self-reported non-violent offending was correlated with concurrent institutional records of non-violent allegations during month 2 (r = .17, p =.006), but not during month 1 (r = .06, p =.28). Self-reported violent offenses were related to concurrent institutional records of violence for both months ($r_{\text{Month 1}}$ = .24, p < .001; $r_{\text{Month 2}}$ = .35, p < .001). Thus, the cross-method correspondence is higher for violent offending.

Depressed Mood and Anger Predicting Month 1 and Month 2 Offending

To determine whether anger and depression were associated with institutional offending, antecedent variables were entered into regression models in two steps. Step 1 controlled for length of time in the facility, having previously been in the facility, lifetime variety of offending (i.e., prior to intake), use of psychiatric medication, and receipt of therapy (individual or group). Depression and anger (NAS Total) were also entered to examine main effects. Step 2 tested the interaction between depression and anger on self-report and institutional records of offending, alternatively. In addition, to evaluate facets of anger in relationship to offending, we repeated regressions with each NAS subscale separately.

Self-report of Offending.—NAS Total at baseline and its interaction with CES-D (see Table 4) was associated with both non-violent and violent offending in month 1. Significant interactions were also observed for CES-D with NAS Behavioral (non-violent IRR = 1.006, p=.004) and NAS Arousal (non-violent IRR = 1.006, p=.011; violent: IRR = 1.005, p =.023). NAS Cognitive scores were unrelated to non-violent offending (IRR = 1.039, p =.083). Baseline NAS Behavioral scores and (IRR = 1.056, p = .010) and baseline NAS Cognitive scores positively predicted violent offending (IRR = 1.071, p =.007). Youth with high depression and low anger scores at baseline were the least likely to report either non-violent

or violent offending in month 1. In contrast, those who reported the highest levels of anger and depression were the most likely to offend. Low depression symptoms, regardless of anger scores, were associated with a moderate level of offending (see Figure 1).

Regarding month 2 offending, baseline anger, but not depression, was related to nonviolent offending in month 2. However, NAS Total (see Table 5), Behavioral (*IRR* = 1.004, *p* = .042), and Arousal (*IRR* = 1.006, *p* = .010) each interacted with the CES-D in association with non-violent offending. These interactions for non-violent offending had the same pattern as found for month 1. Youth having scores of low anger and high depression had the lowest levels of non-violent offending. In contrast to the month 1 results, NAS Cognitive scores did predict non-violent offending in month 2 (*IRR* = 1.054, *p* = .036).

For violent offending in month 2, a different pattern emerged for the baseline predictors, which was a main effect for anger, regardless of level of depression (Table 5; Figure 1b). As NAS Total scores increased, so did violent offending. For the NAS subscales, there were significant main effects for Arousal (*IRR* = 1.068, *p* =.022) and Behavioral (*IRR* = 1.059, *p* = .019), but not for Cognitive (*IRR* = 1.049, *p*= .094).

The third set of relationships tested concerned month 1 depression and anger scores in association with offending in month 2. CES-D scores were not related to self-reported non-violent offending as a main effect or in interaction with anger but did have a main effect for violent offending (IRR = .958), *p* = .038), with higher depression being associated with less reported violent offending. NAS Total at month 1 (see Table 6), and each of its subscales, prospectively related to non-violent and violent offending during the 2nd month. NAS Behavioral had the strongest association with non-violent offending (*IRR* = 1.141, *p* < .001), followed by the Arousal (*IRR*= 1.116, *p* < .001) and Cognitive (*IRR* = 1.100, *p* < .001) subscales. For violent offending, NAS Arousal had the strongest relationship with self-reported violent offending (*IRR* = 1.123, *p*< .001), followed by the Behavioral (*IRR*= 1.118, *p* < .001) and Cognitive (*IRR* = 1.102, *p* = .002) subscales. Interestingly, participation in therapy in the 2nd month was positively associated with offending during the 2nd month.

Institutional Reports of Offending.—There were no significant interactions of CES-D and NAS scores for institutional offending (non-violent or violent) in any prospective test (baseline to month 1, baseline to month 2, and month 1 to month 2). The only significant CES-D result was a main effect for non-violent offending from baseline to month 1 (Table 4). Regarding anger, non-violent offending in month 1 was predicted by baseline NAS Total, NAS Arousal (*IRR* = 1.034, *p* =.050) and NAS Behavioral (*IRR* = 1.032, *p* =.040), but not by NAS Cognitive (*IRR* = 1.026, *p* = .172). However, for violent offending, neither baseline NAS Total, nor any of its subscales, were predictive in the 1st month.

For month 2 records data, non-violent offending was related to baseline NAS Total (Table 5) and NAS Behavioral scores (*IRR* = 1.037, *p* =.006), and also by month 1 NAS Total (Table 6) and NAS Behavioral (*IRR* = 1.035, *p* =.046*)*. Violent offending in month 2 was related to baseline NAS Total (Table 5) and NAS Behavioral (*IRR* = 1.057, *p* =.012), and was also associated with month 1 NAS Total (Table 6) and Behavioral (*IRR* = 1.102, *p* <.001). Thus,

NAS Total predicted institutional records of both non-violent and violent offending and its Behavioral subscale assessed at baseline and at month 1.

Results for the NAS Cognitive and Arousal subscales with month 2 offending were less straightforward. Baseline NAS Cognitive scores were associated with non-violent (*IRR* = 1.039, *p* =.017) and violent offending (*IRR* = 1.072, *p*=.013), and its month 1 assessments related to violent, but not non-violent offending (non-violent: *IRR* =1.020, *p* =.302; violent: (*IRR* = 1.085, *p*=.011). Baseline NAS Arousal was not predictive of month 2 non-violent or violent offending, but its month 1 scores were related to violent offending (*IRR* = 1.084, *p* = .010).

Discussion

Among youth who are incarcerated, the prevalence of mental health problems and the prevalence of violence are intersecting concerns that provided impetus for the current study, particularly as both increase the likelihood of poor adjustment to the facility and thereafter. Convergent with previous studies on adolescent offenders in the U.S. and Europe (Cauffman, 2004; Chitsabesan et al., 2006; Fazel et al., 2008; Teplin et al., 2002), our participants reported high levels of depression and anger (33% and 48%, respectively) upon arrival to the facility. These rates are comparable to those reported in Vincent, Grisso, Terry, and Banks (2008) (30% depressed-anxious, 33% angry-irritable) in facility-administered MAYSI-2 screenings of males, aggregated across 283 programs. Given that the juvenile justice system has become the *de facto* mental health system for many juveniles, these psycho-emotional needs are particularly important to address (Grisso, 2007), especially if they are associated with violence.

Violent offending within the facility was common across the two months (institutional-report: 30%; self-report: 47%). The self-reported rate suggests that violent offending was more prevalent than the facility recorded, which may reflect lower detection or staff discretion regarding formal sanctions of behavior. Self-reported offending increased over time. The high depression and anger at arrival declined at the one-month assessment, but rose again at the two-month point, suggesting that adjustment was strained. The rate of offending within the facility, combined with the level of psychological distress, suggests that these youth are at high risk for adversities during incarceration.

Our hypothesis that depression and anger evidenced at arrival (importation) would be associated with institutional infractions during adjustment to the facility was confirmed, although more so for anger than for depression. This is convergent with research evolving from Agnew's general strain theory, as well as with Novaco's (1994, 2011) conception of anger as a risk factor for violence. Baseline assessments of anger (NAS Total) (controlling for depression and other background covariates) was prospectively related to infractions across both months of this study; and for month 2, it was associated with violent and non-violent offending in both self-reports and institutional records. That same hypothesis-confirming set of findings for anger also occurred for NAS Total at month 1 in association with month 2 offending. With NAS Total in the equation, depression (CES-D) was generally unrelated to offending behavior, except for baseline depression being associated with month

1 non-violent offending. Differences in the variability of anger and depression over time may explain their differential relationships with offending over time. Both anger and depression were high upon arrival, but each score lowered during month 1 and then rose slightly in month 2; however, the proportions of these changes were much smaller for anger than for depression. The month 1 and the month 2 CES-D scores were below the clinical threshold. The reduction in depression over time may have weakened its association with offending, while the persistently high level of anger continued to bear on offending.

In our examination of the conjunction of anger and depression, for which heightened violence would be expected from the standpoint of Agnew's general strain theory and from other "negative affect" formulations for understanding aggression (e.g., Berkowitz, 1990), we found few significant interaction effects -- indeed only for the association of baseline measures with self-reported offending (violent and non-violent) in month 1. However, these results do suggest that facilities could prevent significant harm by targeting for intervention those youth who reported high levels of anger and depression upon intake. The results for anger by itself were much more consistent. Across the 12 analyses of offending criterion measures, with the interaction term in the equation, anger remained significant in 8 of the analyses. This suggests that, whatever effect depression has on offending behavior, it is accounted for by its overlap with anger. While a previous study by Kimonis et al. (2011) with this sample found anger to be predictive of violent offending in the institution, they did not assess depression, had anger assessed only at facility arrival, and did not examine non-violent offending. Our fuller approach of prospectively examining anger and depression at each month of incarceration allowed us to parse these affective states and their interaction pertinent to offending behavior.

Implementation of interventions to address problematic anger requires an understanding of the components and dimensions of anger reactions. The NAS has three facets or domains (Cognitive, Arousal, and Behavioral), which are designed to guide clinical formulation, as well as gauge the disposition for anger in these three domains that interface with treatment (Novaco, 2013). The general finding for institutional records and self-reported offending, was that NAS Behavioral was the strongest predictor, which is consistent with that subscale's purpose, and NAS Arousal had stronger statistical effects than did NAS Cognitive. These findings suggest that the anger-related offending was characterized more by a hot-responding antagonistic disposition, rather than being ruminative and suspicion pre-occupied. Individual case formulations would of course vary, and cognitive elements of justification and a hostile attitude would certainly come into play for many detainees. Therapist guided development of arousal reduction skills (deep breathing, muscle relaxation, calming imagery, mindfulness) can be frontloaded into an intervention program, along with the development of behavioral coping, mastery-based skills for managing anger (verbal proficiency, diplomacy, strategic withdrawal, problem resolution focus).

Implications for Facilities and Treatment

A 4-year statewide study of mental health screening in juvenile justice facilities in Indiana involving MAYSI-2 assessments of 8,363 youth found that 37% scored in the "caution" or "warning" ranges on the anger/irritable scale. High scores on that subscale were predictive

of shorter time to recidivism, whereas the depressed/anxious subscale was unrelated to recidivism (Aaisma, et al., 2015). Those findings also point to anger, rather than to "negative affect" as a leverage point. The adoption of evidence-based psychological treatment in juvenile correctional facilities has been slow to develop, but there are grounds for optimism, as the review and riskneeds-responsivity formulation by Oudekerk and Reppucci (2012) presents.

Cognitive-behavioral therapy (CBT) interventions for problematic anger in adolescence have efficacy, producing medium to strong effect sizes (Sukhodolsky, Kassinove, & Gorman, 2004). Feindler et al. (1986) did pioneering work with institutionalized adolescents; however, since then, few studies have involved justice involved youth and controlled trials. A brief (four sessions) anger management intervention by Snyder, Kymissis, and Kessler (1999) reduced anger symptoms and antisocial behaviors in a randomized controlled study with adolescents in an inpatient psychiatric facility. Anger control CBT has also shown effectiveness in reducing anger and aggressive behavior among adolescents having chronic behavior problems in controlled studies by Robinson, Smith, and Miller (2002) and by Sukhodolsky et al. (2009). Treatment for anger is only one part of efficacious treatment for incarcerated youth and must be addressed in conjunction with other social, legal, and emotional issues.

The assessment of anger within a correctional setting is challenging, because accurate disclosure of anger could lead to adverse consequences, such as stigma and additional monitoring by staff. In this study, anger symptoms were reported to a research team, which may have led to more accurate reports of anger than would a routine facility assessment. As noted in the Method, we did find that baseline assessments of NAS Total and the facility-administered Angry-Irritable MAYSI-2 scale were substantially correlated ($r = .54$). Nevertheless, incarcerated youth may be motivated to conceal their anger or fake responses to treatment in order to hasten release. In this regard, Abrams, Kim, and Anderson-Nathe (2005) have written about the "paradox of emotional expression", as while treatment philosophies encourage acknowledgement and openness of expression, staff also exert control over expressions of emotion, which can become grounds for punitive action.

Another important consideration is that the juvenile justice system was not designed to be a mental health system, and yet, an overwhelming proportion of youth in their care require mental health treatment. Youth correctional facilities largely focus on mental health screening, case management, psychiatric medication, and substance use treatment (Desai et al., 2006). Facilities may only have time to prepare youth to be receptive to brief therapy, using motivational techniques, rather than providing comprehensive services for complex mental health needs. Participation in therapy during this study was associated with reduced offending in the first month but with increased self-reported violent offending in the second month. Receipt of psychiatric medication was also associated with increased offending in the 2nd month. This is not inconsistent with the review of 11 studies by Kumm, Maggin, Brown, and Talbott (2019) that found marginal effectiveness of mental health services for internalizing disorders in juvenile justice facilities. These mixed findings about the efficacy of psychological and pharmacological treatment merit investigation in future studies.

Limitations

Our findings regarding anger and depression as predictors of violent behavior are based on a sample of youth who have committed a serious offense and are incarcerated in a secure institution. As such, these findings may not generalize to other populations or contexts. In addition, our assessments were restricted to the initial adjustment period of incarceration and cannot be generalized across the entire institutional experience. Our use of the baseline, onemonth, and two-month timeframes reflected our overall investigatory goals of studying initial and longer-term adjustment, although the two-month period may only offer a truncated picture. Previous research provides support for our timeframe and highlights the significance of the early period of incarceration, as well as the need to understand the evolution of emotional states during these first critical weeks (Cesaroni & Peterson-Badali, 2005; DeLisi et al., 2010).

Self-reports of psychological distress can be subject to response biases. In characterizing depression, we chose a more conservative clinical cutoff due to these concerns. Our evaluation of the impact of treatments were limited to self-reports and lacked information about therapeutic targets. We examined the correlations of receipt of mental health services with official records of offending, not just what was self-reported. The small correlations of treatment with depression and with offending, combined with the absence of associations with anger, suggests that neither depression nor anger were treatment foci and thus highlights the need for services for them. Lastly, the present study focused solely on male offenders, yet female offenders in comparable institutions have reported higher levels of anger, depression, and PTSD symptoms than have male offenders (Asgeirsdottir & Sigfusdottir, 2015; Kerig & Bennett, 2013). If our findings were to be replicated with female offenders, then the importance of addressing these issues would be more pronounced.

Conclusion

Juvenile facilities are intended to have the dual goals of punishment and rehabilitation. Youth should receive meaningful treatment in these facilities for their safety, for the safety of staff, and for the communities to which these youth will return. Better understanding of violence risk factors can improve safety, facilitate psychological adjustment, and serve to identify treatment needs. The treatment of anger, as well as depression, among juvenile justice populations may be critical to preventing violence. Facility resources should be directed toward high-risk youth who may benefit the most from appropriately tailored interventions.

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Figure 1a.

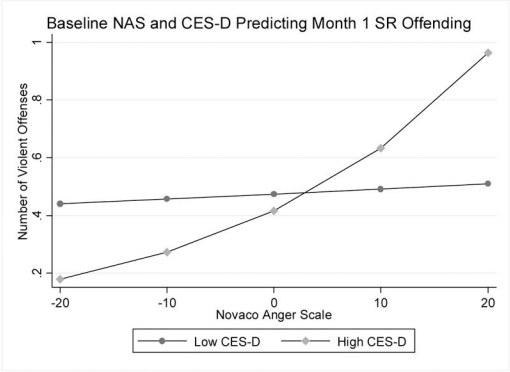


Figure 1b

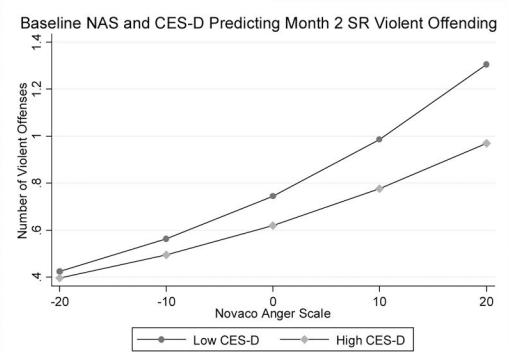
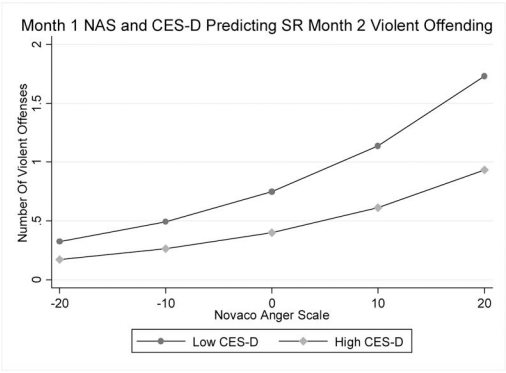


Figure 1c.



Figures 1a-1c.

NAS Scores Moderated by CES-D Predicting Self-Reported Offending During the First and Second Months

Note: Control variables included number of days incarcerated within the study period, variety of offenses prior to incarceration, if the youth had been in the facility before, if they had received psychiatric medication, and if they had participated in therapy. CES-D = Center for Epidemiological Studies-Depression; NAS = Novaco Anger scale. The NAS and CES-D were centered and graphed along increments of 10 above and below the mean of each scale. All figures are graphed using predictive margins.

Table 1

Demographics of Incarcerated Adolescent Sample

Variable	*M*	*SD*
Age	16.42	.79
Education		
Years of Schooling	10.81	1.35
	%	***N***
Special Education Classes	18%	60
Held Back a Grade Ever	26%	91
Race		
Latino	53%	198
Black	29%	108
Other	12%	44
White	6%	23
Total	100%	373
Committing Offense		
Person	73%	271
Public Order	13%	49
Property	6%	22
Drug	4%	15
Technical	3%	12
Other	1%	4
Total	100%	373

Table 2

Means and Standard Deviations Over the Two Month Study Period

Measure	Baseline		Month 1		Month 2	
	M	α	*M*	α	*M*	α
Depression (CES-D)	17.20 (8.84)	.83	12.27 (7.32)	.83	13.87 (7.26)	.81
Anger (NAS)						
Cognitive	31.45 (5.56)	.81	29.87 (5.55)	.83	30.75 (5.46)	.82
Arousal	28.02 (6.12)	.85	25.67 (5.58)	.84	26.93 (5.87)	.86
Behavioral	29.78 (6.42)	.88	28.25 (5.94)	.87	29.37 (6.07)	.87
Total	89.25 (16.59)	.94	83.78 (15.72)	.94	87.05 (16.00)	.94
Self-Report						
Non-Violent Offending			1.33 (2.89)		1.95 (4.03)	
Violent Offending			.55 (1.19)		.81 (1.75)	
Official Report						
Non-Violent Offending			.75 (1.26)		1.10 (1.50)	
Violent Offending			.18 (.43)		.20 (.49)	

Note: CES-D = Center for Epidemiological Studies-Depression; NAS = Novaco Anger Scale; Self Reported Offending; Official Reports are drawn from institutional records. All offending variables are frequencies. Standard deviations are presented in parentheses below means. The *N*'s of the offending variables vary according to source and time point. All baseline $N = 372$. Self-reported offending month 1, $N = 365$. Self-reported offending month 2, $N = 261$. Official offending month 1, $N = 372$. Official offending month 2, $N = 372$.

Table 3

Correlations of Main Study Variables

				Self-Report Offending				Official Offending			
	CES-D			Non-Violent		Violent		Non-Violent		Violent	
Measure	**Baseline**	**Month 1**	**Month 2**	**Month 1**	**Month 2**	**Month 1**	**Month 2**	**Month 1**	**Month 2**	**Month 1**	**Month 2**
Possible Controls											
Length of Stay	.07	.12	.11	.02	−.06	−.05	−.08	−.06	−.07	−.01	.02
Prior Offending	.09	.03	.10	.02	.21**	.17**	.17*	.03	.15*	.03	.09
Facility Before[a]	.02	−.04	−.01	.02	.03	.04	.08	.00	.08	−.01	.15*
Age	.08	.01	.07	−.03	−.04	−.11	−.11	−.08	−.10	−.02	−.09
Month 1 Psych Meds	.04	.05	.00	.07	.09	.09	.15	.03	.13	−.01	.02
Month 2 Psych Meds	.15	.10	.14	.11	.19*	.12	.17*	.04	.19*	−.01	.13
Month 1 MH Therapy	.19*	.16	.15	−.07	.03	−.08	.00	.03	.09	−.11	.02
Month 2 MH Therapy	.10	.17*	.15	−.02	.07	−.04	.10	−.03	.03	−.02	.00
Baseline											
CES-D		.56**	.54**	.02	.10	.11	.13	−.07	−.01	.00	.02
NAS COG	.37**	.22**	.25**	.18**	.13	.20**	.19*	.15*	.15*	.04	.14
NAS ARO	.46**	.32**	.32**	.16*	.12	.16**	.22**	.10	.12	.05	.07
NAS BEH	.17**	.13	.15*	.23**	.21**	.20**	.21**	.15*	.19**	.04	.17*
NAS TOT	.36**	.24**	.26**	.21**	.17*	.18**	.31**	.12	.17**	.04	.14
Month 1											
CES-D			.73**	.10	.01	.06	.08	.04	.02	.07	.01
NAS COG	.26**	.38**	.30**	.27**	.23**	.25**	.22**	.08	.14	.10	.14
NAS ARO	.39**	.49**	.40**	.22*	.21**	.21**	.26**	.09	.10	.14	.14
NAS BEH	.18**	.24**	.19*	.29**	.35**	.31**	.38**	.05	.19**	.12	.21**
NAS TOT	.30**	.40**	.32**	.28**	.30**	.28**	.31**	.08	.16*	.13	.18

Note:

[a]Coded (0 = not in facility before, 1 = in facility before); CES-D = Center for Epidemiological Studies-Depression; NAS = Novaco Anger Scale: TOT = Total score. COG = Cognitive, ARO = Arousal, BEH = Behavioral. The *N*'s of the offending variables vary according to source and time point. All baseline *N* = 372. Self-reported offending month 1, *N* = 365. Self-reported offending month 2, *N* = 261. Official offending month 1, *N* = 372. Official offending month 2, *N* = 372.

[*]$p < .01$

[**]$p < .001$.

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Table 4

Baseline Depression and Anger Predicting Offending During The First Month of Incarceration

	Self-Report						Official Records					
	Non-Violent Offending			Violent Offending			Non-Violent Offending			Violent Offending		
Model Variables	**IRR**	***p***	**95% CI**	**IRR**	***P***	**95% CI**	**IRR**	***p***	**95% CI**	**IRR**	***p***	**95% CI**
Step 1 Facility Before[a]	1.169	.728	(.485, 2.820)	1.378	.518	(.521, 3.642)	.895	.768	(.427, 1.873)	.839	.770	(.260, 2.711)
Length of Stay	.997	.586	(.989, 1.007)	.991	.110	(.981, 1.002)	.997	.488	(.990, 1.005)	.998	.787	(.988, 1.009)
Prior Offending	**1.240**	**.001**	**(1.089, 1.413)**	1.085	.258	(.942, 1.250)	.985	.780	(.889, 1.092)	1.045	.582	(.894, 1.221)
Medication	1.448	.125	(.902, 2.324)	1.426	.192	(.836, 2.433)	1.338	.157	(.893, 2.005)	1.093	.782	(.582, 2.051)
Therapy	**.607**	**.019**	**(.400, .920)**	.666	.092	(.415, 1.069)	1.038	.831	(.739, 1.456)	**.579**	**.049**	**(.336, .998)**
CES-D	.991	.463	(.967, 1.015)	1.007	.606	(.981, 1.038)	.981	.078	(.961, 1.002)	1.005	.751	(.975, 1.036)
NAS	**1.018**	**.019**	**(1.003, 1.033)**	**1.021**	**.017**	**(1.004, 1.039)**	**1.013**	**.043**	**(1.000, 1.025)**	1.003	.778	(.985, 1.021)
Step 2 Facility Before[a]	1.342	.506	(.563, 3.199)	1.478	.426	(.565, 3.867)	.902	.784	(.432, 1.885)	.846	.779	(.262, 2.733)
Length of Stay	.998	.640	(.989, 1.007)	.991	.103	(.981, 1.002)	.998	.566	(.991, 1.005)	.998	.774	(.988, 1.009)
Prior Offending	**1.238**	**.001**	**(1.088, 1.409)**	1.094	.212	(.950, 1.259)	.991	.864	(.894, 1.097)	1.044	.591	(.893, 1.220)
Medication	1.358	.205	(.846, 2.179)	1.392	.224	(.817, 2.371)	1.340	.155	(.895, 2.006)	1.096	.776	(.584, 2.057)
Therapy	.666	.056	(.438, 1.011)	.726	.188	(.450, 1.170)	1.077	.670	(.765, 1.518)	**.574**	**.047**	**(.332, .992)**
CES-D	.979	.104	(.954, 1.004)	.998	.864	(.970, 1.026)	**.978**	**.043**	**(.957, .999)**	1.006	716	(.975, 1.037)
NAS	1.021	.005	(1.006, 1.037)	1.022	.011	(1.005, 1.040)	**1.013**	**.036**	**(1.001, 1.026)**	1.003	.781	(.985, 1.021)
NAS * CES-D	**1.045**	**.006**	**(1.001, 1.004)**	**1.002**	**.045**	**(1.000, 1.003)**	1.001	.187	(1.000, 1.002)	1.000	.748	(.998, 1.001)

Note: Significant variables are highlighted in bold and coefficients are presented as Incident Rate Ratios. Control variables included number of days incarcerated within the study period, variety of offenses prior to incarceration, and if the youth had been in the facility before:

[a]Coded (0 = not in facility before, 1 = in facility before). Medication = Self-reported psychiatric medication in 1st month (0 = no medication; 1 = medication taken). Therapy = Self-reported individual or group therapy in 1st month (0 = no therapy; 1 = individual or group therapy). CES-D = Center for Epidemiological Studies-Depression; NAS = Novaco Anger Scale Total score. The *N*'s of the offending variables vary according to source and time point. All baseline *N* = 372. Self-reported offending month 1, *N* = 365. Self-reported offending month 2, *N* = 261. Official offending month 1, *N* = 372. Official offending month 2, *N* = 372.

Table 5

Baseline Depression and Anger Predicting Offending During The Second Month of Incarceration

	Self-Report						Official Records					
	Non-Violent Offending			Violent Offending			Non-Violent Offending			Violent Offending		
Model Variables	**IRR**	***p***	**95% CI**	**IRR**	***P***	**95% CI**	**IRR**	***p***	**95% CI**	**IRR**	***p***	**95% CI**
Step 1 Facility Before[a]	.927	.885	(.334, 2.573)	1.702	.354	(.552, 5.246)	1.253	.440	(.707, 2.219)	**2.269**	**.039**	**(1.041, 4.946)**
Length of Stay	1.001	.877	(.986, 1.017)	**.978**	**.013**	**(.962, .995)**	.994	.081	(.988, 1.001)	1.001	.914	(.990, 1.012)
Prior Offending	.946	.469	(.813, 1.103)	1.046	.596	(.886, 1.233)	1.049	.280	(.962, 1.143)	1.007	.926	(.863, 1.177)
Medication	1.538	.105	(.913, 2.590)	1.363	.297	(.761, 2.442)	**1.417**	**.038**	**(1.020, 1.967)**	1.558	.111	(.903, 2.686)
Therapy	1.091	.709	(.691, 1.723)	1.64	.574	(.685, 1.977)	1.212	.176	(.917, 1.603)	.963	.881	(.586, 15833)
CES-D	.987	.355	(.963, 1.014)	.988	.432	(.959, 1.018)	.988	.171	(.972, 1.005)	.999	.497	(.960, 1.020)
NAS	**1.024**	**.009**	**(1.038, 1.043)**	**1.025**	**.017**	**(1.004, 1.058)**	**1.014**	**.010**	**(1.003, 1.025)**	**1.019**	**.035**	**(1.001, 1.038)**
Step 2 Facility Before[a]	1.155	.782	(.417, 3.201)	1.681	.367	(.544, 5.189)	1.254	.436	(.710, 2.215)	**2.273**	**.039**	**(1.214, 5.786)**
Length of Stay	1.000	.998	(.985, 1.016)	**.978**	**.012**	**(.961, .995)**	.994	.066	(.988, 1.000)	1.000	.936	(.990, 1.012)
Prior Offending	.997	.970	(.856, 1.161)	1.041	.638	(.881, 1.229)	1.048	.285	(.962, 1.142)	1.006	.940	(.853, 1.167)
Medication	1.357	.254	(.803, 2.292)	1.376	.283	(.768, 2.466)	**1.410**	**.039**	**(1.017, 1.955)**	1.562	.109	(.564, 1.869)
Therapy	1.113	.646	(.706, 1.755)	1.167	.567	(.688, 1.981)	1.205	.189	(.912, 1.591)	.958	.867	(.608, 1.681)
CES-D	.981	.141	(.956, 1.006)	.999	.471	(.959, 1.019)	.991	.300	(.974, 1.008)	.991	.594	(.960, 1.024)
NAS	1.026	.004	(1.008, 1.044)	**1.024**	**.017**	**(1.004, 1.045)**	**1.014**	**.014**	**(1.003, 1.024)**	**1.019**	**.035**	**(1.002, 1.039)**
NAS * CES-D	**1.002**	**.015**	**(1.000, 1.003)**	1.000	.673	(.998, 1.001)	.999	.178	(.998, 1.000)	1.000	.747	(.998, 1.002)

Note: Significant variables are highlighted in bold. Control variables included number of days incarcerated within the study period, variety of offenses prior to incarceration, and if the youth had been in the facility before:

[a]Coded (0 = not in facility before, 1 = in facility before). Medication = Self-reported psychiatric medication in 1st and 2nd months (0 = no medication; 1 = medication taken). Therapy = Self-reported individual or group therapy in 1st and 2nd months (0 = no therapy; 1 = individual or group therapy). CES-D = Center for Epidemiological Studies-Depression; NAS = Novaco Anger Scale Total score. The *N*'s of the offending variables vary according to source and time point. All baseline *N* = 372. Self-reported offending month 1, *N* = 365. Self-reported offending month 2, *N* = 261. Official offending month 1, *N* = 372. Official offending month 2, *N* = 372.

Table 6

Month 1 Depression and Anger Predicting Offending During The Second Month of Incarceration

	Self-Report						Official Records					
	Non-Violent Offending			Violent Offending			Non-Violent Offending			Violent Offending		
Model Variables	**IRR**	***p***	**95% CI**	**IRR**	***P***	**95% CI**	**IRR**	***p***	**95% CI**	**IRR**	***p***	**95% CI**
Step 1 Facility Before[a]	1.836	.211	(.708, 4.759)	2.467	.122	(.784, 7.761)	1.464	.252	(.762, 2.810)	2.108	.156	(.752, 5.916)
Length of Stay	.986	.075	(.971, 1.001)	**.973**	**.005**	**(.955, .992)**	.994	.169	(.987, 1.002)	.998	.871	(.978, 1.019)
Prior Offending	1.112	.143	(.965, 1.283)	1.036	.704	(.864, 1.242)	1.056	.253	(.962, 1.160)	.948	.577	(.786, 1.44)
Medication	**1.780**	**.047**	**(1.008, 3.143)**	1.754	.106	(.888, 3.464)	1.413	.059	(.987, 2.025)	**2.054**	**.032**	**(1.062, 3.971)**
Therapy	1.578	.062	(1.008, 3.143)	**1.815**	**.049**	**(1.003, 3.283)**	1.171	.321	(.857, 1.598)	.747	.378	(.390, 1.429)
CES-D	.975	.092	(.946, 1.004)	**.958**	**.038**	**(.921, .998)**	.994	.636	(.971, 1.018)	.986	.463	(.948, 1.025)
NAS	**1.047**	**.000**	**(1.030, 1.064)**	**1.047**	**.000**	**(1.025, 1.071)**	**1.015**	**.020**	**(1.002, 1.027)**	**1.037**	**.000**	**(1.015, 1.060)**
Step 2 Facility Before[a]	1.780	.231	(.692, 4.574)	2.484	.121	(.787, 7.844)	1.488	.234	(.773, 2.864)	2.180	.137	(.780, 6.095)
Length of Stay	.986	.076	(.971, 1.001)	**.973**	**.005**	**(.955, .992)**	.995	173	(.987, 1.002)	.999	.889	(.979, 1.019)
Prior Offending	1.128	.102	(.976, 1.303)	1.033	.726	(.861, 1.241)	1.055	.266	(.960, 1.158)	.943	.541	(.781, 1.138)
Medication	**1.805**	**.041**	**(1.025, 3.178)**	1.756	.106	(.888, 3.471)	1.397	.070	(.973, 2.005)	**2.030**	**.034**	**(1.053, 3.912)**
Therapy	1.591	.057	(.987, 2.565)	**1.822**	**.048**	**(1.006, 3.299)**	1.166	.333	(.854, 1.592)	.737	.385	(.385, 1.412)
CES-D	.968	.051	(.937, 1.000)	.961	.082	(.919, 1.005)	.996	.756	(.972, 1.021)	.994	.779	(.949, 1.040)
NAS	**1.046**	**.000**	**(1.029, 1.063)**	**1.047**	**.000**	**(1.024, 1.071)**	**1.015**	**.019**	**(1.002, 1.028)**	**1.038**	**.001**	**(1.015, 1.061)**
NAS * CES-D	1.001	.330	(.999, 1.002)	1.000	.812	(.997, 1.002)	1.000	.585	(.998, 1.001)	.999	.543	(.997, 1.001)

Note: Significant variables are highlighted in bold. Control variables included number of days incarcerated within the study period, variety of offenses prior to incarceration, and if the youth had been in the facility before:

[a]Coded (0 = not in facility before, 1 = in facility before). Medication = Self-reported psychiatric medication in the 2nd month (0 = no medication; 1 = medication taken). Therapy = Self- reported individual or group therapy in the 2nd month (0 = no therapy; 1 = individual or group therapy). CES-D = Center for Epidemiological Studies-Depression; NAS = Novaco Anger Scale Total score. The *N*'s of the offending variables vary according to source and time point. All baseline *N* = 372. Self-reported offending month 1, *N* = 365. Self-reported offending month 2, *N* = 261. Official offending month 1, *N* = 372. Official offending month 2, *N* = 372.