Screening Juveniles Under Community Supervision

The Prevalence of Mental Disorders

By Warren A. Reich

May 2013

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Research has documented an elevated rate of mental disorders among young people who are detained in juvenile justice centers and correctional facilities. Far less is known about the mental health status of justice-involved young people under community supervision. The present study provides a descriptive analysis of prevalence and nature of diagnostic flags on a mental health screen for young people who have been placed on pre-adjudication community supervision at three sites in New York City.

Data were collected from 812 participants between the ages of 10 and 19 who had been arraigned on juvenile delinquency charges and mandated to an Alternative to Detention (ATD) program in Brooklyn, Queens, or Staten Island (New York). Most were judged to be at low to moderate risk for re-offending or failure to appear in court on the basis of a Risk Assessment Instrument administered by probation following arrest. Data collection began January 2008 and continued through June 2011.

Participants were screened for mental disorders with the Diagnostic Predictive Scales (DPS; Lucas et al., 2001) at or near ATD program intake (which typically follows within days of the initial court arraignment). The DPS is a brief computerized interview that screens for psychiatric disorders in order to identify those who should receive a comprehensive clinical assessment.

The DPS assesses symptoms associated with 18 specific disorders: suicidal ideation or attempt; attention deficit hyperactivity disorder; agoraphobia; conduct disorder; eating disorder; generalized anxiety; mania; major depression; obsessive compulsive disorder; oppositional defiant disorder; panic disorder; post-traumatic stress disorder; separation anxiety; social phobia; specific phobia; and three substance-related disorders (alcohol abuse, marijuana abuse, and other substance abuse). The DPS also includes a global impairment scale that assesses the degree to which behavioral or emotional symptoms have led to difficulties in everyday functioning.

- Overall Prevalence of Mental Disorders: The DPS flagged approximately half of the youths (50.9%) for possible mental disorders requiring further assessment. Even when excluding the three substance abuse symptoms, the DPS still flagged 45.3% of participating young people. The three sites (Queens, Brooklyn, and Staten Island) produced statistically identical results.

- Prevalence of Specific Disorders: Mania (21.3%), post-traumatic stress disorder (17.1%), marijuana abuse (16.9%), and oppositional defiant disorder (16.1%) received the most frequent positive diagnostic screens of the 18 total disorders.

- Comorbidity: More than one-third of participants (36.5%) flagged on more than one mental disorder, with comorbidity significantly higher in girls (43.0%) than boys (34.5%).

- Correlates of Diagnostic Flags: Female sex, younger age, higher risk for failure to appear in court, and African-American race were each significantly correlated with a higher total number of DPS diagnostic flags or a higher DPS impairment score. Girls were significantly more likely than boys to flag overall (61.7% v. 47.6%) and for most individual disorders.

- Distinct Groups of Co-Occurring Flags: Advanced statistical methods produced five distinct groups of symptoms that tend to co-occur in the same individuals:
    1. *Disruptive Behavior:* Includes oppositional defiant disorder and conduct disorder;
    2. *Relational Distress:* Includes suicidal ideation or attempt and separation anxiety;
    3. *Emotional Dysregulation:* Includes major depression, generalized anxiety, social phobia, eating disorder, attention deficit hyperactivity disorder;
    4. *Specific Phobia:* Statistically appeared as the sole flag in its cluster; and
    5. *Marijuana Abuse:* Emerged as the most discrete and sharply bounded subset of participants, without a pattern of comorbidity with any other disorder.

- Relationship between Mental Disorders and Juvenile Justice Outcomes: Those linked to the Emotional Dysregulation or Marijuana clusters were more likely than others to be re-arrested, to fail to appear in court, and to receive a final disposition of placement rather than probation Conversely, those linked to Relational Distress—although at high need for treatment given their potential suicide risk—were at lower risk for re-arrest.

1. Introduction

Research has documented an elevated rate of mental health symptomatology and diagnoses among youths who are detained in juvenile justice centers and correctional facilities compared to youths in the general population. Although estimates vary widely due to methodological differences, recent meta-analyses confirm that adolescent psychiatric disorders are particularly prevalent among those in detention (Colins et al., 2010; Vermeiren, Jespers, & Moffitt, 2006). For example, according to one estimate, nearly two-thirds of detained youths have one or more mental disorders (Shufelt & Cocozza, 2006). Another study found that detained youths are up to 10 times more likely than youths in general community samples to suffer from psychosis (Fazel, Doll, & Langstrom, 2008).

Far less is known about the mental health status of juveniles under community supervision. The few studies on non-detained but justice-involved youths suggest a higher prevalence of mental disorders compared to the *general* youth population, though a lower prevalence than that of detained youths (McReynolds et al., 2008; Wasserman et al., 2005; Wasserman et al., 2010).

The present study aims to provide a descriptive analysis of the diagnostic flags indicated on a mental health screen for youths who have been placed on pre-adjudication community supervision at three sites in New York City. These sites house programs that were developed in an effort to provide mental health services to justice-involved youths who might otherwise be confined (King, 2009; Vera Institute of Justice, 2009).

Specifically, the present study examines the prevalence of flags for 18 distinct disorders based on a comprehensive mental health screen administered to youths who were mandated to community-based Alternative to Detention (ATD) programs in three boroughs of New York City: Brooklyn, Queens, and Staten Island. The analysis then empirically models patterns or clusters of flags in a comorbidity analysis: Does a positive screen for one disorder signal a heightened risk of a flag on any others, and if so, for which diagnoses? Examining comorbidity in this population is an important first step toward a deeper understanding of the clinical complexity often observed in juvenile justice populations (Hussey et al., 2008; Shufelt & Cocozza, 2006; Vermeiren et al., 2006). Finally, the present analysis explores demographic correlates of mental disorders as well as the relationship between different disorders and future juvenile justice outcomes, including recidivism.

2. Sample and Methods

Data were collected from 812 youths between the ages of 10 and 19 ($M = 14.5$, $SD = 1.0$) who had been arraigned and mandated to an ATD program in Brooklyn, Queens, or Staten Island. All were at risk for being detained, and most (92.6%) were judged to be at low to moderate risk for re-offending or failure to appear in court on the basis of the Risk Assessment Instrument (RAI; Fratello, Salsich, & Mogulescu, 2011) administered by probation following arrest. The RAI is a summary of two component scores: risk for rearrest and risk for failure to appear. Charge severity was also recorded (from most to least serious): B felony, C felony, D felony, E felony, and misdemeanor. One hundred fifteen (13.0%) and 142 (16.0%) participants had missing data on risk and charge severity, respectively. Youths agreed to participate in the mental health screening as part of a larger research project involving a process and impact evaluation of the Queens program (see Hahn & Henry, 2013). Data collection began in Queens in January 2008, in Brooklyn in January 2009, and in Staten Island in May 2009, and continued through June 2011. The majority of the participants were male (76.8%) and either African-American (61.0%) or Latino (16.7%). About one in four (23.8%) were cared for by both parents, another 62.7% were cared for by a single parent, and an additional 10.1% were cared for by other family members (e.g., grandparents).

The Diagnostic Predictive Scales (DPS)
Participants were screened for mental health concerns with the Diagnostic Predictive Scales (DPS; Lucas et al., 2001) at or soon after ATD program intake, which generally takes place within days after the arraignment of the juvenile delinquency case in family court. The DPS is a brief audio administered, computerized interview that allows counselors to screen for psychiatric disorders and help identify children and adolescents who should receive a comprehensive clinical assessment to determine appropriateness for mental health services. It is derived from the more comprehensive Diagnostic Interview Schedule for Children (DISC) and includes only those items found to be most predictive of the presence of a mental disorder (including substance abuse). The DPS has demonstrated good reliability and diagnostic accuracy in community youth samples (Lucas et al., 2001) and also in youths sentenced to a secure juvenile facility (McReynolds, Wasserman, Fisher, & Lucas, 2007). The screening interview first assessed symptoms associated with 18 mental disorders, as follows.

Mental Disorders Screened by the Diagnostic Predictive Scales

Attention Deficit Hyperactivity Disorder	Obsessive Compulsive Disorder
Agoraphobia	Oppositional Defiant Disorder
Alcohol abuse	Other substance abuse
Conduct Disorder	Panic Disorder
Eating Disorder	Separation Anxiety
Generalized Anxiety Disorder	Social Phobia
Mania	Post-Traumatic Stress Disorder
Marijuana abuse	Specific Phobia
Major Depressive Disorder	Suicide ideation or attempt

An aggregate symptom score was recorded across all disorders as well. Next, a general impairment score was calculated to assess the degree to which behavioral or emotional symptoms have led to difficulties in everyday functioning (see Appendix).

A youth screened positive ("flagged") on a disorder—and was then referred for further assessment—if both the symptom score associated with that disorder exceeded an established criterion and the impairment score was 6 or above, with the exception of suicide or substance abuse, which do not require a minimum impairment score. According to the DPS, further evaluation is also indicated for a youth if the total symptom score is 9 or above whether or not any symptom score exceeds the cutoff for a diagnostic flag, or if any of the following are present: alcohol, marijuana, other substance abuse, suicidal ideation, or suicide attempt.

The present analysis reports the prevalence of positive screens (flags) for individual mental disorders according to these criteria. As the DPS is a screen and not a diagnostic tool, this analysis estimates the prevalence of youth whose DPS flags indicate an increased likelihood of being formally diagnosed with a mental disorder. An analysis by Lucas et al. (unpublished manuscript) found that in a community sample in New York City—i.e., not a justice-involved population—the prevalence of positive DPS screens was 11.8%. Based on prior literature, a higher prevalence rate was expected in this justice-involved ATD population.

Comorbidity Analysis
To identify complex patterns of diagnostic flags in the data used Hierarchical Classes analysis (HICLAS, De Boeck & Rosenberg, 1988) was used. HICLAS is unique among clustering algorithms in that it simultaneously performs two clustering operations: one for DPS diagnostic flags and one for participants. HICLAS then links the two structures so that one can see which cluster(s) of flags are shared (or not shared) by any two clusters of participants. These higher-order patterns would likely be overlooked if one were to examine comorbidity by conducting a series of analyses, each involving only two flags at a time.

3. Study Findings

This section provides the findings for prevalence of mental disorders overall; prevalence of each of the 18 specific mental disorders included in the DPS; prevalence and nature of comorbidity among diagnoses; and role of mental disorders in predicting juvenile justice outcomes, such as recidivism and case dispositions (e.g., placement v. probation).

General and Diagnosis-Specific Prevalence
Table 1 shows that slightly more than half the sample (50.9%) screened positive for further evaluation. Girls were significantly more likely than boys to receive a positive DPS screen (61.7% vs. 47.6%), to screen for more than one disorder (43.0% vs. 34.5%), and to have a higher impairment score ($p < .01$).

Table 1 also shows the frequency of positive screens for each disorder by the DPS (in which symptoms were present at clinical levels and the total impairment score was 6 or more). The most common flags were for mania, post-traumatic stress disorder, marijuana abuse, oppositional defiant disorder, and conduct disorder. Girls were more likely than boys to screen positive for all but five of the disorders, with mania, specific phobia, post-traumatic stress disorder, and oppositional-defiant disorder showing the most pronounced gender differences.

Table 2 shows that the three boroughs were highly comparable on all DPS flags (specific phobia being the only flag on which there was a statistical difference). There was a small between-borough difference in the DPS impairment score, with Queens participants scoring lowest.

Predictors of Mental Disorders
A preliminary analysis showed that female sex, younger age, high risk for failure to appear, African-American race, and program location were each significantly correlated with either a greater number of DPS diagnostic flags, a higher DPS impairment score, or both outcomes. Specifically, multiple regression analyses using these variables (see Table 3) indicated that younger participants, and participants at higher risk for failure to appear, flagged on a significantly larger number of diagnoses. African-American participants scored higher on impairment. There was also a trend for those in Brooklyn to score higher on impairment than Queens (this effect meeting only a suggestive .10 significance threshold). Being female was predictive both of higher impairment and a larger number of flags.

Table 1. Positive Screens on Individual Disorders by Official DPS Criteria

	Boys (n = 624)	Girls (n = 188)	Full Sample (n = 812)
Any flag DPS official criteria***	47.6%	61.7%	50.9%
Any flag DPS official criteria excluding substance abuse***	41.1%	59.0%	45.3%
More than one flag*	34.5%	43.0%	36.5%
Mean impairment score (*SD*)**	4.4 (3.0)	5.1 (3.2)	4.6 (3.1)
Specific DPS flags			
Mania***	18.1%	32.3%	21.3%
Post-Traumatic Stress Disorder***	14.4%	26.3%	17.1%
Marijuana Abuse	17.3%	15.5%	16.9%
Oppositional Defiant Disorder***	13.5%	24.7%	16.1%
Conduct Disorder	12.6%	16.7%	13.5%
Specific Phobia***	6.5%	20.9%	10.0%
Attention Deficit Hyperactivity Disorder***	8.1%	16.1%	9.9%
Social Phobia*	7.7%	13.4%	9.0%
Separation Anxiety**	6.8%	13.9%	8.4%
Eating Disorder***	5.2%	18.3%	8.2%
Suicide***	5.3%	13.9%	7.3%
Generalized Anxiety Disorder***	5.0%	12.3%	6.7%
Alcohol abuse*	5.8%	11.2%	7.0%
Major Depressive Disorder***	3.7%	13.4%	6.0%
Agoraphobia*	3.5%	7.0%	4.3%
Panic Disorder***	2.3%	10.7%	4.2%
Other substance abuse	4.0%	4.8%	4.2%
Obsessive Compulsive Disorder	2.7%	3.8%	3.0%

Note. Official DPS criteria: at least one symptom present and DPS impairment score equal to or greater than 6 OR total symptom score equal to or greater than 9 OR suicide attempt/ideation present OR any substance abuse present.

Note. Positive screen: Symptoms present and DPS impairment score equal to or above 6.

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2. Positive Screens by Disorder and Borough

	Queens (n = 323)	Brooklyn (n = 363)	Staten Island (n = 126)
Any flag DPS official criteria	50.3%	51.2%	51.2%
Any flag DPS official criteria excluding substance abuse	41.7%	47.4%	45.2%
More than one flag	36.6%	35.8%	41.2%
Mean impairment score (SD)*	4.2 (3.0)	4.8 (3.1)	4.7 (3.2)
Specific DPS flags			
Mania	18.9%	22.9%	22.2%
Marijuana Abuse	17.1%	16.3%	18.3%
Post-Traumatic Stress Disorder	14.9%	19.6%	15.1%
Oppositional Defiant Disorder	12.4%	18.2%	19.0%
Conduct	11.1%	14.6%	15.9%
Specific Phobia+	6.8%	11.0%	15.1%
Attention Deficit Hyperactivity Disorder	8.4%	11.8%	7.9%
Social Phobia	8.4%	9.6%	8.7%
Alcohol abuse	8.1%	6.1%	7.1%
Separation Anxiety	7.4%	8.8%	9.5%
Eating Disorder	7.4%	7.4%	11.9%
Suicide	8.0%	7.4%	4.8%
Generalized Anxiety Disorder	6.2%	7.7%	4.8%
Major Depressive Disorder	5.0%	6.3%	7.1%
Other substance abuse	5.0%	3.0%	5.6%
Agoraphobia	3.4%	4.4%	6.3%
Panic Disorder	3.4%	5.2%	3.2%
Obsessive Compulsive Disorder	1.9%	3.0%	5.6%

Note. * F test indicates a difference between boroughs is significant at $p < .05$.

Note. + χ^2 test indicates a difference between boroughs is significant at $p < .05$.

Table 3. OLS Regression Coefficients Predicting Number of DPS Flags and Impairment Score

Predictor	Outcome			
	Number of DPS flags[a]		DPS impairment Score[b]	
	β	t	β	t
Male	-.18	-5.02***	-.11	-3.81**
Age	-.07	-1.99*	-.04	-1.01
Risk: Failure to appear	.09	2.61**	.06	1.63
African-American race	.05	1.31	.08	2.07*
Borough = Brooklyn	.05	1.26	.07	1.79+
Borough = Staten Island	.03	0.64	.03	.86

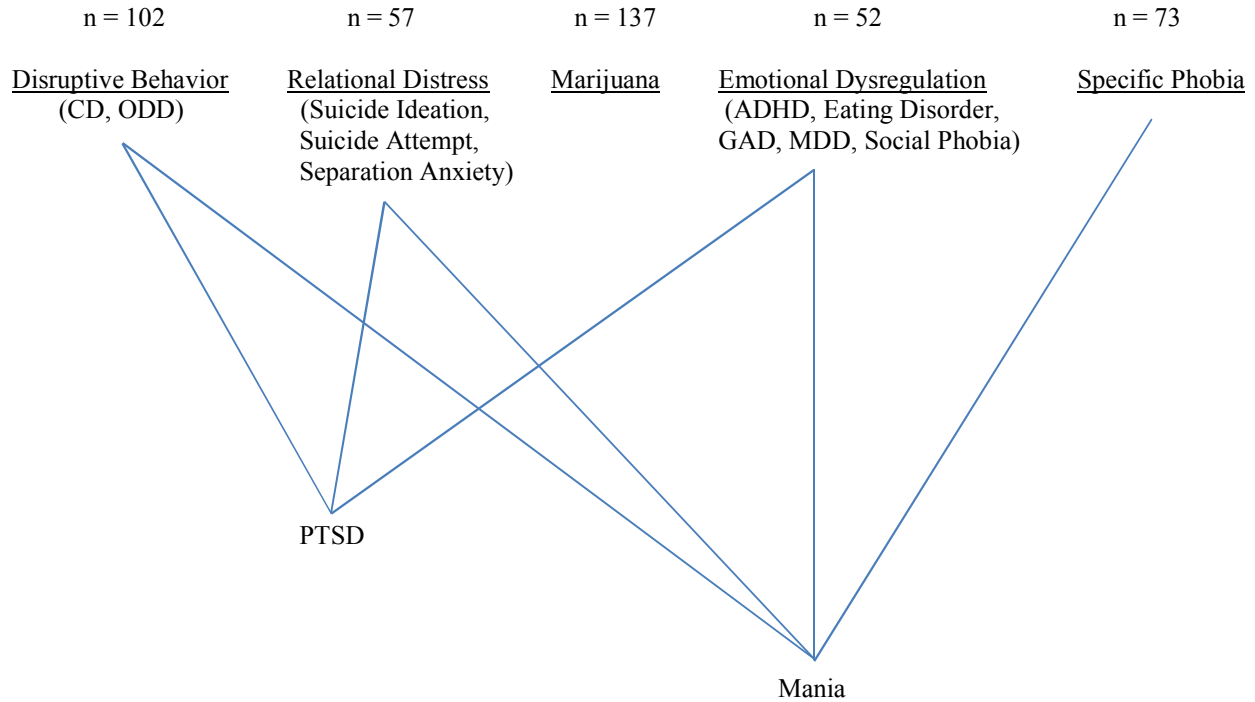[a]N = 767. [b]N = 770.
Note. ** *p* < .01. + *p* < .10.

Comorbidity among Diagnoses and Participants

Approximately one in three participants (36.5%) flagged on more than one diagnostic screen (see Table 1). To further explore this comorbidity, an analysis was conducted to search for patterns of co-occurrence among positive DPS screens utilizing HICLAS modeling techniques, as described above.

Figure 1 shows the five distinct clusters of flags for mental disorders that were identified by HICLAS. First, conduct disorder and oppositional-defiant disorder were located in the same cluster, which was named *Disruptive Behavior*. The second cluster was labeled *Relational Distress*, which included suicidal ideation, suicide attempt, and separation anxiety. Third, *Marijuana* appeared its own cluster. The fourth cluster, *Emotional Dysregulation*, consisted of attention deficit-hyperactivity disorder, eating disorder, generalized anxiety disorder, major depressive disorder, and social phobia. *Specific Phobia* emerged as a fifth distinct diagnostic flag.

The two most frequently endorsed flags, post-traumatic stress disorder and mania, cross-cut several clusters. That is, participants who flagged for Disruptive Behavior, Relational Distress, Emotional Dysregulation, or Specific Phobia also screened positive for mania and/or post-traumatic stress. The remaining diagnostic flags (obsessive-compulsive disorder, other substance use, panic disorder, agoraphobia, and alcohol) were located in a residual class (i.e., not classified by HICLAS) because they did not appear with sufficient frequency in a detectable pattern.

Figure 1. HICLAS-Derived Clusters of DPS Flags

n = 102   n = 57   n = 137   n = 52   n = 73

Disruptive Behavior   Relational Distress   Marijuana   Emotional Dysregulation   Specific Phobia
(CD, ODD)   (Suicide Ideation,   (ADHD, Eating Disorder,
                        Suicide Attempt,   GAD, MDD, Social Phobia)
                        Separation Anxiety)

PTSD

Mania

Note. CD: Conduct Disorder. ODD: Oppositional Defiant Disorder. ADHD: Attention Deficit- Hyperactivity Disorder. GAD: Generalized Anxiety Disorder. MDD: Major Depressive Disorder.
Note. 107 participants (13.1%) were linked to more than one symptom cluster.

The most highly prevalent flag, Mania, co-occurred (i.e., was comorbid) with all clusters except Marijuana. PTSD, the second most frequent flag, was comorbid with all but Marijuana and Specific Phobia. Marijuana, the third most prevalent flag, emerged as a relatively discrete and bounded subset of participants.

Of the 812 youths in the sample, 144 were linked to only one cluster and 117 were linked to multiple clusters. More than half (n = 555) were not linked to any cluster; of these, 105 flagged on at least one DPS indicator. Because their flags did not match any of the five prototypical patterns identified by the HICLAS model, these participants were assigned to a "residual" class.

The HICLAS approach distinguishes two kinds of comorbidity. A participant demonstrates comorbidity if he or she is linked to a cluster containing more than one diagnostic flag (i.e., any except Marijuana). Participants linked to multiple clusters present a higher level of comorbidity in that they are symptomatic on more than one *type* of diagnostic flag (analogous to heterotypic vs. homotypic comorbidity; Angold, Costello, & Erkanli, 1999).[1] Among those linked to at least one cluster, girls were significantly more likely than boys to be linked to multiple clusters (58.9% vs. 35.8%, $p < .001$). This finding adds to the sex differences cited in Table 1 in that it indicates girls were more likely to screen positive for more than one *type* of disorder.

The pattern of comorbidity across clusters is further explicated in Table 4, which indicates the number of participants linked to each cluster *alone* vs. *comorbid* with other clusters. For example, a participant linked to both Disruptive Behavior and Emotional Dysregulation would be counted in the second column (comorbid) in rows 1 and 4. The third column lists for each cluster the ratio of the number of cluster alone to cluster comorbid participants.[1]

The results in Table 4 clearly show that the Marijuana cluster was unique in that the majority (59.1%) of those who screened positive were not linked to any other cluster. (In other words, marijuana had a high alone-to-comorbid ratio). Thus marijuana abuse stood out as a relatively distinct and bounded subset of those with a DPS indication. In contrast, the ratio column shows that participants who flagged for Specific Phobia were most likely to be linked to at least one other diagnostic cluster. (Only 13.7% of those who flagged for Specific Phobia had Specific Phobia alone, leading to an extremely low alone-to-comorbid ratio of 0.16.)

Table 4. Frequency of Co-Occurrence of HICLAS-Derived Diagnostic Clusters

	Number of participants linked to cluster alone vs. comorbid with other clusters		
	Alone	Comorbid	Alone:Comorbid Ratio
Disruptive Behavior	27 (26.4%)	75 (73.6%)	.74
Relational Distress	17 (29.8%)	40 (70.1%)	.43
Marijuana	81 (59.1%)	56 (40.9%)	1.45
Emotional Dysregulation	10 (19.2%)	42 (80.8%)	.24
Specific Phobia	10 (13.7%)	63 (86.3%)	.16

Note. $\chi^2(4) = 57.86$, $p < .001$.

[1] As a hierarchical analysis, HICLAS identifies participants who are linked to no cluster (residual), to one cluster only, and to more than one cluster. A majority of participants (69.0%) were identified as residuals because they flagged on few or no diagnoses. While 17.4% of participants were linked to only one diagnostic cluster, a slightly smaller proportion screened positive on more than one cluster (13.1%, about one-third the proportion of those with more than one DPS diagnostic flag).

Correlates of Diagnostic Clusters
Table 5 further explores the demographic correlates of the diagnostic clusters—i.e., which types of individuals are particularly likely to fall into one as opposed to another cluster. Logistic regression analyses revealed several predictors of cluster membership. Specifically, girls were more likely than boys to be linked to all clusters except Marijuana; younger participants were more likely to appear in the Relational Distress, Disruptive Behavior, and Specific Phobia clusters; those at higher risk for failure to appear were more likely to be in the Disruptive Behavior and Marijuana clusters; African-American participants were more likely to be in the Specific Phobia cluster; those *not* cared for by parents were more likely to be linked to the Relational Distress and to Emotional Dysregulation clusters ($p < .10$); and those in the Specific Phobia cluster tended to be charged with less severe crimes ($p < .10$).

Table 5. Logistic Regression Coefficients Predicting Cluster Membership

Predictor	Diagnostic Cluster				
	DB	RD	MJ	ED	SP
Male	-.87**	-.91**	.16	-1.05**	-1.36**
Age	-.21+	-.35*	-.06	-.14	-.21+
Risk: Failure to appear	.41*	.07	.39*	.31	.13
African-American race	.19	.09	-.31	.55	.60*
Parent caretaker	-.13	-.66+	-.35	-.65+	-.08
Charge severity	.01	.12	-.02	-.09	-.17+

Note. DB: Disruptive Behavior. RD: Relational Distress. MJ: Marijuana. ED: Emotional Dysregulation. SP: Specific Phobia.
Note. N = 746 for all models.
Note. * $p < .05$ ** $p < .01$. + $p < .10$.

Table 6 reports on the DPS impairment score as a function of being linked to one vs. multiple (i.e., comorbid) diagnostic clusters. The Relational Distress and Marijuana clusters stand out in that being linked to either cluster alone (vs. comorbid) was associated with lower impairment scores. That is, Relational Distress or Marijuana in itself did not appear to be greatly associated with low functioning; instead, it was only when other disorders were present in addition to Relational Distress or Marijuana respectively that impairment scores (i.e., functioning problems) grew significantly higher. By comparison, Disruptive Behavior, Emotional Dysregulation, and Specific Phobia were all associated with relatively high impairment scores whether or not there was comorbidity with some other cluster.

Table 6. Cluster-Wise Comparisons of the DPS Impairment Score

	Diagnostic Cluster				
Group	DB	RD	MJ	ED	SP
Linked to cluster without comorbidity	7.59 (27)$_b$	5.71 (17)$_a$	4.70 (80)$_a$	8.00 (10)$_{ab}$	7.30 (10)
Linked to cluster with comorbidity	8.15 (75)$_b$	7.93 (40)$_b$	8.68 (56)$_c$	8.29 (42)$_b$	7.98 (63)
Flagged but not linked to target cluster	6.38 (254)$_a$	6.76(299)$_{ab}$	7.15 (220)$_b$	6.61 (304)$_a$	6.57 (283)

Note. DPS: Diagnostic Predictive Scales. DB: Disruptive Behavior. RD: Relational Distress. MJ: Marijuana. ED: Emotional Dysregulation. SP: Specific Phobia.
Note. Cell n's are in parentheses.
Note. Column-wise cells within each cluster not sharing a subscript are different at $p < .05$ by Tukey's HSD test.

Were the diagnostic clusters predictive of juvenile justice outcomes? A series of logistic regressions was performed for four such outcomes: rearrest (any offense) at one year after arrest, felony rearrest at one year after arrest, failure to appear in court (yes = three missed appearances), and placement in a correctional facility (see Table 7). A preliminary analysis revealed that sex, age, risk for failure to appear, having a parent as a caretaker, and ATD program were significantly correlated with at least one of these four outcomes; these were therefore retained in Step 1 as control variables for each outcome. In Step 2, the five diagnostic clusters were entered in a stepwise procedure with an entry criterion of $p < .10$. Results point to three of the five clusters as predictive of juvenile justice outcomes. Specifically, participants linked to Emotional Dysregulation were marginally more likely to be rearrested within one year, and those linked to the Relational Distress cluster appeared to be at *lower* risk for felony rearrest at one year. In addition, those linked to Marijuana were (marginally, but significantly) more likely to fail to appear in court and to have a final disposition of placement (as opposed to less serious dispositions, including probation, a conditional discharge, or a case dismissal). A focused test (n = 379) further revealed that a significantly higher proportion of those in the Marijuana cluster received a final disposition of placement than probation, 33.3% vs. 17.2%, $\chi^2(1) = 9.0$, $p < .01$. A similar trend was found for those in the Disruptive Behavior cluster with 30.2% receiving placement vs. 18.6% probation (p < .10). Interestingly, the number of DPS flags was *not* a significant predictor of any outcome.

Table 7. Logistic Regression Coefficients Predicting Juvenile Justice Outcomes

Predictor	Outcome			
	Rearrest: any	Rearrest: felony	Fail to appear	Placement
Step 1: Controls				
Male	.04	-.15	-.34	-.09
Age	.06	-.04	.31*	-.21+
Risk: Failure to reappear	.19	.09	.54*	.32
Parent caretaker	-.03	-.33	.02	-.39
Borough = Brooklyn	.02	-.14	-.20	.44
Borough = Staten Island	.52*	.20	.09	.90*
Step 2: Diagnostic Clusters				
DB				
RD		-.82*		
MJ			.58+	.76**
ED	.53+			
SP				

Note. DB: Disruptive Behavior. RD: Relational Distress. MJ: Marijuana. ED: Emotional Dysregulation. SP: Specific Phobia.
Note. Step 1 variables were entered simultaneously. Step 2 variables were entered in a forward stepwise procedure with an entry criterion of $p = .10$.
Note. Rearrest indicators at 1 year from program intake. Fail to appear: three or more missed court appearances.
Note. * $p < .05$ ** $p < .01$. + $p < .08$.
Note. All n = 773 except for Placement (n = 638)

4. Discussion and Conclusion

Slightly more than half of the sample of low-to-moderate-risk youth under community supervision was flagged for further assessment on a validated screening instrument. Mania, post-traumatic stress disorder, marijuana abuse, and oppositional-defiant disorder were the most frequently flagged of 18 mental disorders. Girls were significantly more likely than boys to flag on most disorders and, in fact, sex was by far the most powerful predictor of differential prevalence of any background characteristic examined (including age, race, borough of New York City, risk score for likelihood of failing to appear, risk score for likelihood of rearrest, educational status, and living situation).

Further analysis found five distinct clusters of flags—i.e., mental disorders that statistically tend to co-occur (see Figure 1, above). Interestingly, post-traumatic stress disorder and mania—the two most frequently flagged disorders in general—were also highly comorbid with three of the five additional clusters, containing a total of 10 other disorders. On the other hand, marijuana abuse, although formally named as "cluster," in fact stood on its own; was *not* comorbid with any other cluster and thus comprised a discrete and sharply bounded subset of participants.

Of final interest, those linked to the Emotional Dysregulation or Marijuana clusters were respectively more likely to be rearrested or to fail to appear in court, and those linked to Relational Distress were at lower risk for felony re-arrest.

Prevalence Estimates
Despite the fact that the DPS screening results should, if anything, overestimate the true prevalence of disorders in the sample—since the DPS only screens for disorders but does not confirm those screens through in-depth assessment—the present estimates tended to be lower than those drawn from samples of detained youth and adolescents (overall estimates ranging from 56% to 98%, Cauffman, 2004; Colins et al., 2010; Fazel et al., 2008; Harzke et al., 2012; Stoddard-Dare, Mallett, & Boitel, 2011; Teplin et al., 2012; Vermeiren et al., 2006). The present estimate is more in line with the Wasserman et al. (2005) study of youths at probation intake, which found that 45.7% screened positive for at least one disorder on the DISC. The reasons for this discrepancy cannot be determined, but because the present sample was a *community supervision* sample, and not a detained sample, these findings suggest that these may comprise two somewhat different justice involved sub-populations. On one hand, those with more serious justice outcomes (i.e., detention in lieu of community supervision) may have more serious mental health problems from the outset. On the other hand, it is also possible that the experience of detention or juvenile placement itself—exacerbates preclinical symptoms (Wasserman et al., 2010), especially that which includes exposure to violence (Boxer, Middlemass, & Delorenzo, 2009). In other words, it remains plausible that detention itself exacerbates psychiatric symptomotology, rather than that detained youths more often experience such symptoms prior to detention.

The present estimates of positive screens for certain disorders—post-traumatic stress disorder, generalized anxiety disorder, mania, and (for girls) oppositional defiant disorder—were substantially higher than the diagnostic rates reported in the above-cited studies. In fact the rate

of post-traumatic stress disorder flags in the present sample (especially for girls) approached the high end of estimates found in the literature for *detained* youths (Ruchkin, Schwab-Stone, & Koposov, 2003; Steiner, Garcia, & Matthews, 1997; Vermeiren et al., 2006; Wasserman & McReynolds, 2011). This finding supports the clinical intuition that youths under community supervision carry significant personal histories of trauma, and is in line with recent work advocating for trauma-informed service provision for justice-involved young people (Abram et al., 2004; Hennessey et al., 2004). In light of the present findings, trauma-informed practice suggests that ATD staff be sensitized to the possibility that a youth's presenting problems (and diagnostic flags) are possible manifestations of prior victimization or living in communities plagued by violence.

Comorbidity of Diagnoses
The present estimate of about one in three youths with multiple diagnostic flags is roughly in line with reports of high rates of comorbidity in juvenile justice-involved populations (Abram et al., 2003; Abram et al., 2007; Angold & Costello, 1993; Vermerien et al., 2006). While research has generally failed to demonstrate a strong link between mental health diagnoses and recidivism (Stoddard-Dare & Mallett, 2011; Wareham et al., 2009; Welch-Brewer, Stoddard-Dare, Mallett, & Boitel, 2011), diagnostic comorbidity has been shown to predict recidivism (Clingempeel, Britt, & Henggeler, 2008; Colins et al., 2011), and is known to complicate treatment protocols and adversely affect clinical outcomes (Angold, Costello, & Erkanli, 1999).

Correlates of Diagnostic Clusters
The present results are consistent with others (Abram et al., 2003; Cauffman, 2004; Teplin et al., 2012) in showing a higher prevalence of diagnostic flags among girls than boys. One exception is that the present study did not find a sex-based difference in substance use, as did Cauffman (2004) and Teplin et al. (2012). It is not clear why justice-involved girls are more likely than justice-involved boys to receive a clinical diagnosis (for an more in-depth discussion of this issue see Cauffman et al., 2007). Whatever the case, the present results do speak to the gender-specific programming advocated by many (Hennessey et al., 2004).

The analyses of correlates of the HICLAS-derived clusters suggest that those linked to the Relational Distress or Marijuana clusters were high-need youths who might especially benefit from program interventions geared toward addressing their potential danger to themselves—in the case of Relational Distress—or toward reducing recidivism or facilitating compliance with their mandate—in the case of the Marijuana cluster. Importantly, although youths linked to the Relational Distress cluster—which includes suicidal ideation and separation anxiety—are a high-need subgroup, they are *not* a high-risk subgroup, as this analysis found that membership in the Relational Distress cluster is associated with a *below-average* likelihood of felony recidivism.

References

Abram, K. M., Teplin, L. A., Charles, D. R., Longworth, S. L., McClelland, G. M., & Dulcan, M. K. (2004). Posttraumatic stress disorder and trauma in youth in juvenile detention. *Archives of General Psychiatry, 61,* 403 – 410. doi: 10.1001/archpsyc.61.4.403

Abram, K. M., Teplin, L. A., McClelland, G. M., & Dulcan, M. K. (2003). Comorbid psychiatric disorders in youth in juvenile detention. *Archives of General Psychiatry, 60,* 1097 – 1108.

Abram, K. M., Washburn, J. J., Teplin, L. A., Emenuel, K. M., Romero, E. G., & McClelland, G. M. (2007). Posttraumatic stress disorder and psychiatric comorbidity among detained youths. *Psychiatric Services, 58,* 1311 – 1316.

Angold, A., & Costello, E. J. (1993). Depressive comorbidity in children and adolescents: Empirical, theoretical, and methodological issues. *The American Journal of Psychiatry, 150,* 1779 – 1791.

Angold, A., Costello, E. J., & Erkanli, A. (1999). Comorbidity. *Journal of Child Psychology and Psychiatry, 40,* 57 – 87.

Boxer, P., Middlemass, K., & Delorenzo, T. (2009). Exposure to violent crime during incarceration: Effects of psychological adjustment following release. *Criminal Justice and Behavior, 36,* 793 – 807. doi: 10.1177/0093854809336453

Cauffman, E. (2004). A statewide screening of mental health symptoms among juvenile offenders in detention. *Journal of the American Academy of Child and Adolescent Psychiatry, 43,* 430 – 439. doi: 10.1097/01.chi.0000112481.08386.0c

Cauffman, E., Lexcen, F. J., Goldweber, A., Shulman, E. P., & Grisso, T. (2007). Gender differences in mental health symptoms among delinquent and community youth. *Youth Violence and Juvenile Justice, 5,* 287 – 307. doi: 10.1177/1541204007301292

Clingempeel, W. G., Britt, S. C., & Henggeler, S. W. (2008). Beyond treatment effects: Comorbid psychopathologies and long-term outcomes among substance-abusing delinquents. *American Journal of Orthopsychiatry, 78,* 29 – 36.

Colins, O., Vermeiren, R., Vreugdenhil, C., van den Brink, W., Doreleijers, T., & Broekaert, E. (2010). Psychiatric disorders in detained male adolescents: A systematic literature review. *The Canadian Journal of Psychiatry, 55,* 255 – 263.

Colins, O., Vermeiren, R., Vahl, P., Markus, M., Broekaert, E., & Doreleijers, T. (2011). Psychiatric disorder in detained male adolescents as a risk factor for serious recidivism. *Canadian Journal of Psychiatry, 56,* 44 – 50.

De Boeck, P., & Rosenberg, S. (1988). Hierarchical classes: Model and data analysis. *Psychometrika, 53,* 361–381.

Fazel, S., Doll, H., & Langstrom, N. (2008). Mental disorders among adolescents in juvenile detention and correctional facilities: A systematic review and metaregression analysis of 25 surveys. *Journal of the American Academy of Child and Adolescent Psychiatry, 47,*:1010-1019. doi: 10.1097/CHI.0b013e31817eecf3

Fratello, J., Salsich, A., & Mogulescu, S. (2011, April). *Juvenile detention reform in New York City: Measuring risk through research.* New York: Vera Institute of Justice. Available at http://www.vera.org/sites/default/files/resources/downloads/RAI-report-v7.pdf

Hahn, J., & Henry, K. (2013). Impact evaluation of QUEST Futures. Center for Court Innovation.

Harzke, A. J., Baillargeon, J., Baillargeon, G., Henry, J., Olvera, R. L., … Parikh, R. (2012). Prevalence of psychiatric disorders in the Texas Juvenile Correctional System. *Journal of Correctional Health Care, 18,* 143 – 157.

Hennessey, M., Ford, J. D., Mahoney, K., Ko, S. J., & Siegfried, C. B. (2004). *Trauma among girls in the juvenile justice system.* Los Angeles, CA: National Child Traumatic Stress Network.

Hussey, D. L., Drinkard, A. M., Falletta, L., & Flannery, D. J. (2008). Understanding clinical complexity in delinquent youth: Comorbidities, service utilization, cost, and outcomes. *Journal of Psychoactive Drugs, 40,* 85 – 95.

King, L. (2009, August 14). Investigation of the Lansing Residential Center, Louis Gossett, Jr.Residential Center, Tryon Residential Center, and Tryon Girls Center. Accessed May 6, 2012 from http://www.justice.gov/crt/about/spl/documents/NY_juvenile_facilities_findlet_08-14-2009.pdf

Lafosse, C., Kerckhofs, E., Vereeck, L., Troch, M., Van Hoydonck, G. … Dereymaeker, L. (2007). Postural abnormalities and contraversive pushing following right hemisphere brain damage. *Neuropsychological Rehabilitation, 17,* 374 – 396. doi: 10.1080/09602010601058854

Lucas, C. P., Greenwald, S., Matteo, Jr., A. M., Soliman, I.;, & Fisher, P. W. (no date given). Brief screening with the Diagnostic Predictive Scales (DPS) in a community sample.

Lucas, C. P., Zhang, H., Fisher, P. W., Shaffer, D., Regier, D. A., … Friman, P. (2001). The DISC Predictive Scales (DPS): Efficiently screening for diagnoses. *Journal of the American Academy of Child and Adolescent Psychiatry, 40,* 443 – 449.

McClelland, G. M., Elkington, K. S., Teplin, L. A., & Abram, K. M. (2004). Multiple substance use disorders in juvenile detainees. *Journal of the American Academy of Child and Adolescent Psychiatry, 43,* 1215 – 1224. doi: 10.1097/01.chi.0000134489.58054.9c

McReynolds, L. S., Wasserman, G. A., DeComo, R. E., John, R. Keating, J. M., & Nolen, S. (2008). Psychiatric disorder in a Juvenile Assessment Center. *Crime and Delinquency, 54,* 313 – 334.

McReynolds, L. S., Wasserman, G. A., Fisher, P., & Lucas, C. P. (2007). Diagnostic screening with incarcerated youths: Comparing the DPS and Voice DISC. *Criminal Justice and Behavior, 34,* 830 – 845. doi: 10.1177/0093854807299918

Ruchkin, V. V., Schwab-Stone, M., Koposov, R. A., Vermeiren, R., & King, R. A. (2003). Suicidal ideations and attempts in juvenile delinquents. *Journal of Child Psychology and Psychiatry, 44,* 1058 – 1066.

Shufelt, J. L., & Cocozza, J. J. (2006). *Youth with Mental Health Disorders in the Juvenile Justice System: Results from a multi-state Prevalence Study*. National Center for Mental Health and Juvenile Justice. Delmar, NY: National Center for Juvenile Justice and Mental Health, Policy Research Associates.

Steiner, H., Garcia, I. G., & Matthews, Z. (1997). Posttraumatic stress disorder in incarcerated juvenile delinquents. *Journal of the American Academy of Child and Adolescent Psychiatry, 36,* 357 – 365. doi: 10.1097/00004583-199703000-00014

Stoddard-Dare, P., Mallett, C. A., & Boitel, C. (2011). Association between mental health disorders and juveniles' detention for a personal crime. *Child and Adolescent Mental Health, 16,* 208 -–213. doi: 10.1111/j.1475-3588.2011.00599.x

Teplin, L., Welty, L., Abram, K., Dulcan, M., & Washburn, J. (2012). Prevalence and persistence of psychiatric disorders in youth after detention: a prospective longitudinal study. *Archives of General Psychiatry*, *69*, 1031-1043. doi:10.1001/archgenpsychiatry.2011.2062

Vera Institute of Justice (2009). Charting a new course: A blueprint for transforming juvenile justice in New York State. http://www.vera.org/pubs/charting-new-course-blueprint-transforming-juvenile-justice-new-york-state

Vermeiren, R., Jespers, I., & Moffitt, T. (2006). Mental health problems in juvenile justice populations. *Child and Adolescent Psychiatric Clinics of North America, 15,* 333 – 351. doi:10.1016/j.chc.2005.11.008

Wareham, J., Dembo, R., Poythress, N. G., Childs, K., & Schmeidler, J. (2009). A latent class factor approach to identifying subtypes of juvenile diversion youths based on psychopathic features. *Behavioral Sciences and the Law, 27,* 71 – 95. doi: 10.1002/bsl.844

Wasserman, G. A., McReynolds, L. S., Ko, S. J., Katz, L. M., & Carpenter, J. R. (2005). Gender differences in psychiatric disorders at juvenile probation intake. *American Journal of Public Health, 95,* 131 – 137.

Wasserman, G. A., McReynolds, L. S., Schwalbe, C. S., Keating, J. M., & Jones, S. A. (2010). Psychiatric disorder, comorbidity, and suicidal behavior in juvenile justice youth. *Criminal Justice and Behavior, 37,* 1361 – 1376. doi: 10.1177/0093854810382751

Wasserman, G. A., & McReynolds, L. S. (2011). Contributors to traumatic exposure and posttraumatic stress disorder in juvenile justice youths. *Journal of Traumatic Stress, 24,* 422 – 429. doi: 10.1002/jts.20664

Welch-Brewer, C. L., Stoddard-Dare, P., & Mallett, C. (2011). Race, substance abuse, and mental health disorders as predictors of juvenile court outcomes: Do they vary by gender? *Child and Adolescent Social Work Journal, 28,* 229 – 241. doi: 10.1007/s10560-011-0229-x

Appendix: Items Used in Calculating the DPS Impairment Score

In the first part of this interview you were asked about how you have been feeling and acting in the last three months and in the last year. It included questions about the following areas:

Feeling anxious or worried
Feeling sad or depressed
Your behavior
Alcohol or drugs
Other things you did

Now I'd like you to think about problems you may have been having at home, at school, or with other people your age because of the way you have been feeling or acting.

- How often did your parents feel worried or concerned about the way you were feeling or acting?
- How often did your parents get annoyed or upset with you because of the way you were feeling or acting?
- How often were you not able to do things or go places with your family because of the way you felt or acted?
- How often were you not able to do things or go places with other people your age because of the way you felt or acted?
- How often did the way you were feeling or acting make it difficult to do your schoolwork or cause problems with your grades?
- How often were your teachers annoyed or upset with you because of the way you were feeling or acting?
- How often did the way you were feeling or acting make you feel bad or upset?

Note. For each item the participant indicates: a lot of the time (score = 2), some of the time (score = 1), hardly ever, or not at all (score = 0). There are follow-up questions to each item, which are not included in the score, for participants who answer "a lot of the time" or "some of the time."