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## Suicidal Ideation and Behavior in Youth in the Juvenile Justice System: A Review of the Literature

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### Abstract

Suicide is prevalent among youth, especially those involved in the juvenile justice system. Although many studies have examined suicidal ideation and behavior in delinquent youth, prevalence rates vary widely. This paper reviews studies of suicidal ideation and behavior in youth in the juvenile justice system, focusing on the point of contact: incarceration status and stage of judicial processing. Suicidal ideation and behavior are prevalent, and increase with greater involvement in the juvenile justice system. Depression, sexual abuse, and trauma were the most commonly identified predictors of suicidal ideation and behavior. Prevalence rates of suicidal ideation and behavior vary by gender and race/ethnicity, indicating the need for gender-specific and culturally relevant interventions.

### Keywords

suicidal ideation; suicidal behavior; suicide attempts; juvenile justice; detainees

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Many youth today are at risk for suicide. Suicide is the third leading cause of death among individuals aged 15 to 24 years (Centers for Disease Control and Prevention, 2012). Suicides are associated with previous suicidal ideation and attempts (Brent, 1995; Kessler, 1999;

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Lewinsohn, 1994, 1996; Shaffer, Gould, & Hicks, 1994). The 2011 Youth Risk Behavior Survey estimated that 15.8% of youth in the general population, aged 15 to 19 years, had seriously contemplated suicide in the past year, and 7.8% made at least one attempt (Centers for Disease Control and Prevention, 2012). The National Comorbidity Survey estimates lifetime rates of 12.1% for suicidal ideation and 4.1% for attempts among youth aged 13 to 18 years (Nock et al., 2013).

Suicides are more common among youth in the juvenile justice system than in the general population (Gray et al., 2002; Hayes, 2009). The first published national survey of suicide among incarcerated juveniles reported that approximately 57 per 100,000 detainees completed suicide, a rate 4.6 times greater than general population rates (Memory, 1989). More recently, the suicide rate was estimated at 21.9 per 100,000 youth in juvenile justice facilities (Gallagher & Dobrin, 2006) compared with approximately 7 per 100,000 adolescents aged 15 to 19 years in the general population.

These prevalence rates may be higher because risk factors for suicide are far more common in youth in the juvenile justice system than in the general population (Brown, Cohen, Johnson, & Smailes, 1999; Dube et al., 2001). For example, more than two-thirds of detained youth have one or more mental or substance use disorders (Teplin, Abram, McClelland, Dulcan, & Mericle, 2002; Wasserman, McReynolds, Lucas, Fisher, & Santos, 2002). One study of detained youth found that 41% of females and 11% of males had a history of sexual abuse (King et al., 2011).

Prevalence rates of suicidal behavior likely differ at various points in the juvenile justice process. Yet the only review of suicidal ideation and behavior among youth in the juvenile justice system examined only youth in confinement (Casiano, Katz, Globerman, & Sareen, 2013). To improve preventive interventions, it is critical to identify risk at each point of contact in the juvenile justice system.

In this literature review, we: (1) examine the prevalence of suicidal ideation and behavior in youth at specific points of contact in the juvenile justice system, highlighting gender and racial/ethnic differences; (2) determine variables associated with suicidal ideation and attempts; and (3) suggest future directions for research.

## Methods

### Criteria for Inclusion

We searched MEDLINE/PubMed, PsycINFO, and PsycARTICLES databases for epidemiologic studies using the following words and phrases: “suicidal ideation and juvenile justice,” “suicide attempts and juvenile justice,” “suicidal behavior and juvenile justice,” “suicide and juvenile justice,” “suicide and youth incarceration,” “suicidality and juvenile justice.” We reviewed empirical studies that examined prevalence rates of suicidal ideation or behavior, were conducted in the United States, and were published since 1990. Studies were excluded if they: (1) assessed only nonsuicidal self-injury (e.g., cutting) or suicidal threats (Voisin et al., 2007) and (2) reported scale means instead of prevalence rates (Butler, Loney, & Kistner, 2007; Sanislow, Grilo, Fehon, Axelrod, & McGlashan, 2003; Timmons-

Mitchell et al., 1997). For one study with multiple publications examining the same sample (Esposito & Clum, 1999, 2002), we included only the most recent estimate (Esposito & Clum, 2002).

### Definitions of Terms and Procedures

We use terminology developed by the Centers for Disease Control and Prevention (Crosby, Ortega, & Melanson, 2011). *Suicidal ideation* is defined as thoughts of engaging in behavior intended to end one's life. *Suicide attempt* refers to a nonfatal, self-directed, potentially injurious behavior with intent to die as a result of the behavior. A suicide attempt may or may not result in injury. The terms *suicide attempts* and *suicidal behavior* are used interchangeably in this paper.

We define “point of contact” in the juvenile justice system on two dimensions:

1. Incarceration status. Because incarceration is a risk factor for suicide (Gallagher & Dobrin, 2006), studies of incarcerated and nonincarcerated youth were examined separately.
2. Stage of judicial processing. Risk for suicide varies for youth depending on how far their case has progressed through the judicial system (Wasserman, McReynolds, Schwalbe, Keating, & Jones, 2010). Therefore, studies of youth assessed pre- and post-adjudication were examined separately. Studies of incarcerated youth were grouped according to where (in detention or in a secure post-sentencing facility) and when (at intake to the facility or at some point during their incarceration) they were assessed.

## Results

### Characteristics of Studies

Table 1 lists 25 studies that met inclusion criteria. These studies represent 29 samples of delinquent youth; two studies (Corcoran & Graham, 2002; Wasserman et al., 2010) are listed more than once because they presented prevalence rates separately for youth at different points of contact. Table 1 reports prevalence rates of suicidal ideation and attempts separately by recall period (1 month, 6 months, 1 year, and lifetime); gender and racial/ethnic differences are noted. Of note, attempts may or may not have occurred in a correctional setting.

More studies assessed youth living in correctional facilities (n=16 samples) than youth being processed while living the community (n=7 samples); seven studies combined samples at different points of contact. Studies most commonly assessed youth at intake to detention (n=8 samples) and least frequently at intake to secure post-sentencing facilities (n=2 samples).

Sample sizes ranged from 51 (males in juvenile prisons in Georgia) (Kempton & Forehand, 1992) to 70,423 (a national sample from 283 facilities across 19 states) (Vincent, Grisso, Terry, & Banks, 2008); most studies had sample sizes between 200 and 1000. Among

studies that provided information on age, the mean age of participants was approximately 15 years.

Three studies included only males (Butler et al., 2007; Kempton & Forehand, 1992; Wasserman et al., 2002), and one study included only females (Goldstein et al., 2003). Many studies included few females (Abrantes, Hoffmann, & Anton, 2005; Battle, Battle, & Tolley, 1993; Cauffman, 2004; Evans, Albers, Macari, & Mason, 1996; Freedenthal, Vaughn, Jenson, & Howard, 2007; Morris, Harrison, Knox, & Tromanhauser, 1995; Penn, Esposito, Schaeffer, Fritz, & Spirito, 2003; Rohde, Seeley, & Mace, 1997; Shelton, 2000). Among the 25 samples that included both males and females, 17 examined gender differences in prevalence rates of suicidal ideation and/or attempts.

Racial/ethnic minorities comprised between 12% (Abrantes et al., 2005) and 84% (Abram et al., 2008) of the juvenile justice samples, reflecting the geographical diversity of studies. Racial/ethnic differences in prevalence rates were reported for 16 samples. Eleven of these studies included Hispanics.

### Prevalence Rates of Suicidal Ideation and Behavior

**Delinquent Youth Living in the Community**—Past-month suicidal ideation was higher in post-adjudicated youth (29.5%) (Evans et al., 1996) than in pre-adjudicated youth (8% and 12.7%) (Nolen et al., 2008; Wasserman & McReynolds, 2006). One study of pre-adjudicated youth found that lifetime ideation was 11.8% (Battle et al., 1993).

Studies of pre-adjudicated youth found that the prevalence of past-month suicide attempts ranged from 1.4% to 2.9% (Nolen et al., 2008; Wasserman & McReynolds, 2006; Wasserman et al., 2010), while lifetime attempts ranged from 9.9% to 13.2% (Nolen et al., 2008; Wasserman & McReynolds, 2006; Wasserman et al., 2010). One study of post-adjudicated youth found that 12.2% had lifetime attempts (Mallett, DeRigne, Quinn, & Stoddard-Dare, 2012).

#### **Incarcerated Youth**

**Detention:** Among youth at intake to detention, prevalence rates of suicidal ideation ranged from 3.0% (current) (Archer, Stredny, Mason, & Arnau, 2004) to 14.2% (past week) (Rohde et al., 1997) to 10.3% to 20.7% (past 6 months) (Abram et al., 2008; Cauffman, 2004). Lifetime suicidal ideation ranged from 13.9% to 36.4% (Abrantes et al., 2005; Archer et al., 2004; Bhatta, Jefferis, Kavadas, Alemagno, & Shaffer-King, 2014; Rohde et al., 1997). Prevalence rates were higher in two studies of youth assessed *during* detention – 52.0% (past 2 weeks) (Esposito & Clum, 2002) and 36.2% (past 6 months) (Goldstein et al., 2003).

In two studies of youth at intake to detention, the prevalence rates of recent suicide attempts were 3.7% (past month) (Wasserman et al., 2010) and 3.0% (past 6 months) (Abram et al., 2008). Prevalence rates were higher (8.5% past month) in one study of youth assessed during detention (Esposito & Clum, 2002). Lifetime suicide attempts were the most commonly assessed suicidal behavior. Among youth assessed at intake, lifetime prevalence rates ranged from 11.0% to 26.8% (Abram et al., 2008; Abrantes et al., 2005; Archer et al., 2004; Rohde et al., 1997; Wasserman et al., 2010) compared with 15.5% and 29.4% in two

small studies of youth assessed during detention (Esposito & Clum, 2002; Kempton & Forehand, 1992).

**Post-Disposition Secure Facility:** Only one study assessed youth at intake to a post-disposition secure facility; the prevalence rate of suicidal ideation was 9.6% (past month) (Wasserman et al., 2002). Among youth assessed during their stay, suicidal ideation ranged from 7.7% (past 6 months) (Butler et al., 2007) to 51% (past-year) (Corcoran & Graham, 2002) and 58.3% (lifetime) (Freedenthal et al., 2007).

In two studies of youth assessed at intake to a post-disposition secure facility, the prevalence rates of past-month suicide attempts were 2.5% and 3.1%, while lifetime attempts were 12.3% and 16.3% (Wasserman et al., 2002; Wasserman et al., 2010). One study of youth assessed during their stay found that one-quarter (25.5%) reported a lifetime attempt (Freedenthal et al., 2007).

**Studies of Youth Sampled at Multiple Points of Contact—**Seven studies sampled youth from various stages of the justice system such as intake or detention. One study found that 5.5% of participants had reported current suicidal ideation (Penn et al., 2003) while four studies reported past-year ideation at 19% to 32% (Chavira, Accurso, Garland, & Hough, 2010; Corcoran & Graham, 2002; Morris et al., 1995; Shelton, 2000). One study found that past-month suicide attempts were reported by 2.4% of the sample (Wasserman et al., 2010). Several studies reported similar ranges for past-year (12% and 15.5%) (Corcoran & Graham, 2002; Morris et al., 1995) and lifetime suicide attempts (12.4%–14.4%) (Chavira et al., 2010; Penn et al., 2003; Wasserman et al., 2010).

### Gender Differences in Suicidal Ideation and Behavior

Most studies that examined gender differences found that females had higher recent and lifetime suicidal ideation than males (Abram et al., 2008; Abrantes et al., 2005; Bhatta et al., 2014; Cauffman, 2004; Chapman & Ford, 2008; Freedenthal et al., 2007; Morris et al., 1995; Rohde et al., 1997; Vincent et al., 2008). These studies examined only incarcerated youth. In contrast, neither Battle et al. nor Evans et al.—the only studies of youth in the community that examined gender differences in ideation—found gender differences (Battle et al., 1993; Evans et al., 1996). Most studies of youth living in the community and in correctional facilities found that females had higher prevalence rates of suicide attempts than males (Abram et al., 2008; Abrantes et al., 2005; Bhatta et al., 2014; Esposito & Clum, 2002; Evans et al., 1996; Freedenthal et al., 2007; Morris et al., 1995; Nolen et al., 2008; Rohde et al., 1997; Wasserman & McReynolds, 2006; Wasserman et al., 2010) (in contrast, see (Mallett et al., 2012; Penn et al., 2003)).

### Racial/Ethnic Disparities in Suicidal Ideation and Behavior

Among studies that examined racial/ethnic differences in suicidal ideation, several found that non-Hispanic whites had higher prevalence rates of suicidal ideation than African Americans (Cauffman, 2004; Freedenthal et al., 2007; Morris et al., 1995; Vincent et al., 2008) and Hispanics (Cauffman, 2004; Morris et al., 1995; Vincent et al., 2008). One study found that Hispanics had higher rates than African Americans (Cauffman, 2004). Several

studies found no racial/ethnic differences in suicidal ideation (Battle et al., 1993; Chapman & Ford, 2008; Esposito & Clum, 2002; Rohde et al., 1997), although sample sizes may have been too small to detect differences.

Among studies that examined racial/ethnic differences in suicide attempts, most found that non-Hispanic whites had higher prevalence rates than African Americans (Freedenthal et al., 2007; Kempton & Forehand, 1992; Morris et al., 1995; Nolen et al., 2008; Penn et al., 2003; Wasserman et al., 2010) and Hispanics (Freedenthal et al., 2007; Morris et al., 1995; Penn et al., 2003; Wasserman & McReynolds, 2006). However, four studies, most with smaller samples, found no racial/ethnic differences in suicide attempts (Esposito & Clum, 2002; Mallett et al., 2012; Rohde et al., 1997; Wasserman & McReynolds, 2006). Findings on racial/ethnic differences did not appear to vary by point of contact in the juvenile justice system.

One study of youth assessed at intake to detention (Abram et al., 2008) found that racial/ethnic differences in suicidal ideation and attempts varied by gender. Among males, non-Hispanic whites had higher rates of recent suicidal ideation than African Americans; non-Hispanic whites also had higher prevalence rates of lifetime suicide attempts than Hispanics or African Americans. Among females, Hispanics had higher rates of recent suicidal ideation than African Americans; non-Hispanic whites and Hispanics had higher prevalence rates of lifetime suicide attempts than African Americans.

### **Variables Associated With Suicidal Ideation and Behavior**

Table 2 lists variables associated with suicidal ideation and behavior in studies of youth in the juvenile justice system; we listed only variables that were significant in the final predictive models.

Mental disorder, particularly depression, was the most commonly identified predictor for both suicidal ideation and attempts. Of the 12 studies that examined depression, 10 found an association (Abram et al., 2008; Battle et al., 1993; Bhatta et al., 2014; Corcoran & Graham, 2002; Freedenthal et al., 2007; Goldstein et al., 2003; Kempton & Forehand, 1992; Nolen et al., 2008; Rohde et al., 1997; Wasserman & McReynolds, 2006) and 2 did not (Chapman & Ford, 2008; Mallett et al., 2012). Although a few studies found an association between externalizing problems or disorders (Bhatta et al., 2014; Corcoran & Graham, 2002; Nolen et al., 2008), most did not (Abram et al., 2008; Chavira et al., 2010; Goldstein et al., 2003; Kempton & Forehand, 1992; Mallett et al., 2012; Rohde et al., 1997).

Substance use predicted suicidal ideation in some studies (Battle et al., 1993; Bhatta et al., 2014; Chapman & Ford, 2008; Freedenthal et al., 2007; Morris et al., 1995). However, an equal number of studies found no association between use of some substances (Battle et al., 1993; Bhatta et al., 2014; Rohde et al., 1997) or substance use disorders (Kempton & Forehand, 1992; Mallett et al., 2012) and suicidal ideation.

Similarly, substance use (Bhatta et al., 2014; Freedenthal et al., 2007; Morris et al., 1995) or substance use disorders (Mallett et al., 2012; Nolen et al., 2008; Wasserman & McReynolds, 2006) were commonly identified as predicting suicidal attempts. However, nearly as many

studies found no association between some substances (Bhatta et al., 2014; Rohde et al., 1997) or disorders (Abram et al., 2008; Kempton & Forehand, 1992; Mallett et al., 2012) and suicide attempts.

Many studies found that adverse childhood experiences, particularly history of sexual abuse (Battle et al., 1993; Bhatta et al., 2014; Esposito & Clum, 2002; Evans et al., 1996; Morris et al., 1995) and trauma, were associated with suicidal ideation and behavior (Chapman & Ford, 2008; Freedenthal et al., 2007; Penn et al., 2003). However, no studies found an association between physical abuse and suicidal ideation (Battle et al., 1993; Esposito & Clum, 2002; Evans et al., 1996). Several other studies found that lack of parental support (Battle et al., 1993; Nolen et al., 2008; Penn et al., 2003; Rohde et al., 1997) or other social support (Esposito & Clum, 2002; Rohde et al., 1997) were associated with suicidal ideation and behavior.

All four studies that examined prior mental health referrals and service utilization found that they were associated with either suicidal ideation and attempts (Bhatta et al., 2014; Corcoran & Graham, 2002; Mallett et al., 2012; Penn et al., 2003); one study that examined prior substance use treatment found no association with suicidal ideation or behavior (Bhatta et al., 2014).

Several studies found that aspects of crime and criminal justice involvement were associated with suicidal ideation or attempts, including repeat offending or prior contact with the justice system (Wasserman & McReynolds, 2006; Wasserman et al., 2010), gang membership (Evans, Hawton, & Rodham, 2004; Morris et al., 1995), detention or secure placement (Mallett et al., 2012; Wasserman et al., 2010), and current arrest for violence (Nolen et al., 2008; Wasserman & McReynolds, 2006) (in contrast see (Battle et al., 1993; Nolen et al., 2008)).

## Discussion

Our review shows that suicidal ideation and behavior are prevalent in juvenile justice youth, and are generally higher than the highest rates reported in the general population. Findings from the seven combined samples may best represent the average across all juvenile justice youth (19%–32% for past-year ideation and 12%–15.5% for past-year attempts) (Chavira et al., 2010; Corcoran & Graham, 2002; Morris et al., 1995; Penn et al., 2003; Shelton, 2000; Vincent et al., 2008; Wasserman et al., 2010). In contrast, 15.8% of youth attending high school reported suicidal ideation in the past year, and 7.8% made at least one attempt (Centers for Disease Control and Prevention, 2012).

However, combining prevalence rates from different points in the juvenile justice system obfuscates important differences. Although data are limited for some points of contact, our review indicates that youth who are more deeply involved in the juvenile justice system have higher prevalence rates of suicidal ideation and behavior: Suicidal ideation and attempts are generally more prevalent among post-adjudicated youth than pre-adjudicated youth. Similarly, suicidal ideation and attempts are generally more prevalent among youth assessed during correctional stays than those assessed at intake. Youth sampled during stays in post-

disposition secure facilities appear to have the highest prevalence rates of suicidal ideation and attempts.

Consistent with findings from the general population (Beautrais, 2002; Canetto & Sakinofsky, 1998; D'Eramo, Prinstein, Freeman, Grapentine, & Spirito, 2004; Greenhill & Waslick, 1997), prevalence rates of suicidal ideation and behavior were higher among females in the juvenile justice system than males. The higher prevalence of suicidal ideation and behavior among females is not well understood, but is likely due, in part, to females' higher rates of depression, beginning in early adolescence (Kessler, McGonagle, Swartz, Blazer, & Nelson, 1993; Lewinsohn, Rohde, Seeley, & Baldwin, 2001). Notably, completed suicides are more prevalent among males, possibly because they use more lethal methods (Lewinsohn et al., 2001).

Most studies that examined racial/ethnic differences found that non-Hispanic whites had a higher prevalence of suicidal ideation and behavior than African Americans and Hispanics. Large-scale studies of youth in the general population have also found that non-Hispanic whites have higher rates of suicidal ideation (Nock et al., 2013) and behavior (Centers for Disease Control and Prevention, 2012; Nock et al., 2013) than African Americans. However, findings are inconsistent on whether prevalence rates differ between non-Hispanic whites and Hispanics in the general population (Centers for Disease Control and Prevention, 2012; Nock et al., 2013).

Youth in the juvenile justice system with a history of depression, sexual abuse, and trauma have higher prevalence of suicidal ideation and behavior, findings similar to the general population (Bridge, Goldstein, & Brent, 2006; Miller, Esposito-Smythers, Weismore, & Renshaw, 2013; Nock et al., 2013; Verona & Javdani, 2011; Wong, Zhou, Goebert, & Hishinuma, 2013). In contrast to general population studies (Miller et al., 2013; Nock et al., 2013; Verona & Javdani, 2011), however, we found no consistent association between suicidal ideation or behavior with externalizing disorders, physical abuse, or substance use and disorder. These characteristics may be so prevalent among delinquent youth (e.g., (Fazel, Doll, & Langstrom, 2008; King et al., 2011; Mason, Zimmerman, & Evans, 1998; Teplin et al., 2002)) that they have limited predictive value, while still contributing to higher rates of suicidal ideation and behavior among youth involved in the juvenile justice system.

## Recommendations for Future Research

We suggest the following directions for future research:

1. *Improve how suicide is reported among youth in corrections.* The most widely cited study of youth in confinement used data collected in 1978–1979 (Memory, 1989). A more recent study (Gallagher & Dobrin, 2006) used data collected in 2002. Rates varied widely between these two studies (21.9 per 100,000 – 57 per 100,000), possibly due to the shifting demographics of juvenile justice populations, such as the rising proportion of females (Puzzanchera & Adams, 2011). Annual surveys of correctional facilities would provide reliable estimates of suicide.



2. *Examine risk and protective factors related to juvenile justice involvement.* Research has focused largely on risk factors associated with suicide in the general population, such as adverse childhood experiences and mental disorders. Future studies should examine risk and protective factors that may be unique to youth involved with the juvenile justice system, such as patterns of incarceration: e.g., length of incarceration, number of incarcerations, experiences of isolation, releases from correctional settings, and quality of contacts with correctional agencies in the community such as probation or parole (Hayes, 2009). Identifying risk and protective factors will help juvenile justice staff detect youth at risk and guide the development of effective suicide intervention programs.
3. *Evaluate screening tools and procedures used to identify suicidal ideation and attempts.* Few tools used to screen for suicide risk have been validated in juvenile justice populations. Moreover, standard cut-off points for measures designed for youth in the general population should be empirically tested for use with delinquent youth. We must also determine the best way to administer screens. For example, some detention centers use qualified mental health professionals to screen for suicide, while others use staff who have no mental health background (Hayes, 2009).
4. *Evaluate the effectiveness of preventive interventions to reduce suicide.* Preventive interventions have been used with juvenile justice youth, such as: Question, Persuade, Refer (QPR) (Keller et al., 2009), Applied Suicide Intervention Skills Training (ASIST) (Rodgers, 2010) and safeTALK (Mental Health Association in Delaware, 2013). Yet, none have been empirically tested to examine whether they reduce risk among juvenile justice youth. Randomized controlled trials are needed. We also need studies that examine the effectiveness of guidelines designed to reduce suicide (e.g., staff training, ongoing identification of risk, communication, housing) issued by the National Commission of Correctional Health Care for incarcerated youth (National Commission on Correctional Health Care, 2009). These guidelines were recently adapted by the National Action Alliance for Suicide Prevention Task Force for youth at different points of contact in juvenile justice (National Action Alliance for Suicide Prevention: Youth in Contact With the Juvenile Justice System Task Force, 2013). Determining the effectiveness of these guidelines will help to improve programs and practices that create safer environments for delinquent youth.

Youth involved in the juvenile justice system are at higher risk than the general population for suicidal ideation and attempts. Each year more than 1.9 million youth are arrested (Puzzanchera & Adams, 2011). On an average day, approximately 61,000 youth are in custody in detention centers (OJJDP, 2013). Based on this review, we estimate that as many as 22,000 detainees have considered suicide, 17,900 have attempted suicide at least once, and 5,200 have made a recent attempt. Juvenile justice professionals and researchers must collaborate to increase the safety and improve the mental health of delinquent youth. The competent and comprehensive assessment of suicide risk and timely interventions will prevent untimely deaths.

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## Abbreviations Used

<b>CDC</b>	Centers for Disease Control and Prevention
<b>MAYSI-2</b>	Massachusetts Youth Screening Instrument-Version 2
<b>DISC</b>	Diagnostic Interview Schedule for Children
<b>WHO</b>	World Health Organization
<b>OJJDP</b>	Office of Juvenile Justice and Delinquency Prevention

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**Table 1**

Prevalence of suicidal ideation and behavior among juvenile justice youth (U.S.)<sup>a</sup>

	Sample <sup>b</sup>	Suicide Variables <sup>b</sup>												
		Size/Type	Female %	Race/Ethnicity <sup>c</sup>	Age <sup>d</sup>	Suicide Measure <sup>e</sup>	Ideation			Attempts				
							1-month	6-month	Year	Lifetime	1-month	6-month	Year	Lifetime
<b>Youth Living in the Community</b>														
<b>Pre-Adjudication (n=4)</b>														
Battle, Battle, & Tolley, 1993	n=263 juvenile court offenders in southern city	13	AA=82 W=18	x=16	Semi-structured interview (11 items)	-	-	-	-	-	-	-	-	-
Nolen et al., 2008	n=1,012 at intake to Juvenile Assessment Center in Orange County, Florida	24.5	AA=54 W=31 H=15	x=15	V-DISC	8%	-	-	-	1.4%	-	-	-	9.9% F>M
Wasserman & McReynolds, 2006	n=991 referred youth at intake to probation in 8 counties in Texas	20	AA=29 W=20 H=52	x=15	DISC-IV	12.7%	-	-	-	2.9% F>M	-	-	-	13.2% W, H>AA F>M
Wasserman, McReynolds, Schwalbe, Keating, & Jones, 2010 <sup>g</sup>	n=3,803 youth from system intake, part of larger study of 9,819 youth from in 57 juvenile justice sites	27.5	AA=37 W=43 H=18 O=2	x=15	V-DISC	-	-	-	-	1.9% Race: NS	-	-	-	10.8%
<b>Post-Adjudication (n=3)</b>														
Corcoran & Graham, 2002 <sup>g</sup>	n=144 youth serving community sentences, part of a larger study of 227 post-adjudication volunteers, recruited by probation officer or court counselor in 3 counties in Oregon	22 (Community)	NR	x=15	Self-report questionnaire (3 items)	-	-	-	-	22%	-	-	-	7.6% <sup>h</sup>
Evans, Albers, Macari, & Mason, 1996	n=395 in Nevada youth corrections	15.5	AA=28 W=42 H=17 O=11	12-18	Self-report questionnaire (2 items)	29.5%	-	-	-	-	-	-	-	24.4% F>M

		Suicide Variables <sup>b</sup>										
		Ideation			Suicide Measure <sup>e</sup>			Attempts				
	Sample <sup>b</sup>	Female %	Race/ Ethnicity <sup>c</sup>	Age <sup>d</sup>	1-month	6-month	Year	Lifetime	1-month	6-month	Year	Lifetime
Mallett, DeKigne, Quinn, & Stoddard-Dare, 2012	n=433 probation-supervised youth in 1 urban and 1 rural county in U.S. Midwest state	30	W=36 O=64	x=15	-	-	-	-	-	-	-	12.2%
<b>Youth Living in Secure Justice Facilities</b>												
<b>Detention</b>												
<b>Intake to Detention (n=8)</b>												
Abram et al., 2008	n=1,829 youth at intake to detention center in Cook County, Illinois	35.9	AA=55 W=16 H=29 O=0.2	x=15	-	10.3%	-	-	-	3.0%	-	11.0%
Abrantes, Hoffmann, & Anton, 2005	n=252 consecutive admissions at 2 detention centers in Maine	13.5	W=88 O=12	x=16	-	M: W>AA; F: H>AA	-	36.4% <sup>h,i</sup>	-	-	-	26.8% <sup>h</sup>
Archer, Sredny, Mason, & Arnau, 2004	n=704 detention center records in Hampton & Newport News, Virginia	22	AA=74 W=25	x=16	3.0% (current)	-	-	13.9%	-	-	-	12.4%
Bhatta, Jeffers, Kavadas, et al., 2014	n=3,156 youth at intake to detention in urban Ohio	22	H=1 AA=75 W=21 H=4	12-17	-	-	-	19.0%	-	-	-	11.9%
Cauuffman, 2004	n=18,607 youth at 15 detention centers in Pennsylvania	18	AA=46 W=41 H=11 O=3	x=15	-	20.7% <sup>h</sup>	-	-	-	-	-	-
Chapman & Ford, 2008	n=405 consecutive admissions to detention centers in Connecticut <sup>f</sup>	31	AA=39 W=36 H=24	x=14	-	-	-	-	-	10%	-	-



		Suicide Variables <sup>b</sup>											
		Ideation					Attempts						
	Sample <sup>b</sup>	Female %	Race/ Ethnicity <sup>c</sup>	Age <sup>d</sup>	Suicide Measure <sup>e</sup>	1-month	6-month	Year	Lifetime	1-month	6-month	Year	Lifetime
Rohde, Seeley, & Mace, 1997	n=555 youth in detention center (unspecified location) <sup>f</sup>	17.5	AA=4 W=77 H=7 O=14	x=15	Self-report questionnaire (188 items)	14.2% (past week)	-	-	33.7%	-	-	-	19.4% F>M Race: NS
Wasserman, McReynolds, Schwalbe, Keating, & Jones, 2010 <sup>g</sup>	n=1,055 youth from intake to detention, part of larger study of 9,819 youth from in 57 juvenile justice sites	21	AA=38 W=41 H=12 O=8	x=16	V-DISC	-	-	-	-	3.7%	-	-	17.7%
<b>During Stay in Detention Facility (n=3)</b>													
Esposito & Clum, 2002	n=200 youth at 3 detention centers (unspecified location)	29.5	AA=27 W=65 O=7	x=16	MSSI (ideation); SSB (attempts)	52.0% (2 weeks)	-	-	-	8.5% <sup>h</sup>	-	-	15.5% <sup>h</sup> F>M Race: NS
Goldstein et al., 2003	n=232 youth at 2 detention centers in Massachusetts	100	AA=15 W=58 H=18 O=9	12-14: 27% 15-18: 73%	MAYSI, MACI	-	-	-	-	-	36.2% <sup>n</sup>	-	-
Kempton & Forehand, 1992	n=51 youth at detention center in Georgia	0	AA=71 W=29	x=16	DISC	-	-	-	-	-	-	-	29.4% <sup>h</sup> W>AA
<b>Post-Disposition</b>													
<b>Intake to Post-Disposition Secure Facility (n=2)</b>													
Wasserman, McReynolds, Lucas, Fisher, & Santos, 2002	n=292 incarcerated males in secure facilities in New Jersey & Illinois <sup>m</sup>	0	AA=54 W=28 H=16 O=2	x=17	V-DISC IV	9.6%	-	-	-	3.1%	-	-	12.3%

		Suicide Variables <sup>b</sup>											
		Ideation					Attempts						
Sample <sup>b</sup>	Size/Type	Female %	Race/Ethnicity <sup>c</sup>	Age <sup>d</sup>	Suicide Measure <sup>e</sup>	1-month	6-month	Year	Lifetime	1-month	6-month	Year	Lifetime
Wasserman, McReynolds, Schwalbe, Keating, & Jones, 2010 <sup>g</sup>	n=4,961 youth from intake to secure post-adjudication facilities, part of larger study of 9,819 youth from in 57 juvenile justice sites	21	AA=33 W=39 H=21 O=7	x=16	V-DISC	-	-	-	-	2.5%	-	-	16.3%
<b>During Stay in Post-Disposition Secure Facility (n=3)</b>													
Butler, Loney, & Kistner, 2007	n=127 adjudicated juvenile offenders in a residential treatment facility <sup>o</sup>	0	AA=51 W=45 O=4	x=16	MAYSI-2	-	7.7% <sup>h,p</sup>	-	-	-	-	-	-
Corcoran & Graham, 2002	n=83 youth in post-adjudication secure facilities, part of a larger study of 227 post-adjudication volunteers, recruited by probation officer or court counselor in 3 counties in Oregon	NR (Incarcerated)	NR	NR	Self-report questionnaire (3 items)	-	-	51%	-	-	-	19.3% <sup>h</sup>	-
Freedenthal, Vaughn, Jenson, & Howard, 2007	n=723 youth in residential rehabilitation in Missouri Division of Youth Services <sup>o</sup>	13	AA=33 W=55 H=4 O=8	x=16	MAYSI-2; Suicide attempt item	-	-	-	58.3% <sup>q</sup>	-	-	-	25.5% F>M W>AA,H
<b>Youth at Multiple Points of Contact (n=7)</b>													
Chavira, Accurso, Garland, & Hough, 2010	n=300 youth actively involved in juvenile justice and wards of the state in San Diego County, California	32	AA=21 W=33 H=30 O=15	11-18	DISC-IV	-	-	29.2%	-	-	-	-	14.0%
Corcoran & Graham, 2002 <sup>g</sup>	n=227 post-adjudication volunteers, recruited by probation officer or court counselor, serving community sentences and incarcerated in three counties in Oregon	22 (Community)	NR	x=15	Self-report questionnaire (3 items)	-	-	32%	-	-	-	12% <sup>h</sup>	-
Morris et al., 1995	n=1,801 youth in 39 short- and long-term correctional facilities in U.S.	12	AA=46 W=27	x=15	YRBS - modified	-	-	21.8% F>M	-	-	-	15.5% F>M	-

Sample <sup>b</sup>	Size/Type	Female %	Race/Ethnicity <sup>c</sup>	Age <sup>d</sup>	Suicide Measure <sup>e</sup>	Suicide Variables <sup>b</sup>										
						Ideation		Attempts								
						1-month	6-month	Year	Lifetime	1-month	6-month	Year	Lifetime			
Penn, Esposito, Schaeffer, Fritz, & Spirito, 2003	n=289 preadjudicated and adjudicated at intake to New England correctional facility <sup>f</sup>	19	H=19	x=16	Suicide Risk Assessment	5.5% (current)	-	-	-	-	-	-	-	12.4%		
			O=8													
			AA=28													
			W=45													
			H=18													
O=9																
Shelton, 2000	n=350 youth in Maryland Department of Juvenile Justice Detention and Committed facilities	19	AA=57	12–20	CHIP-AE	-	-	-	-	-	-	-	-	-	-	
			W=26													
			O=17													
Vincent, Grisso, Terry, & Banks, 2008	n=70,423 records at probation intake, detention and secure corrections in 283 facilities across 19 U.S. states	22	AA=34	12–14; 29%	MAYSI-2	-	-	-	-	-	-	-	-	-	-	
			W=39													
			H=24													
Wasserman, McReynolds, Schwalbe, Keating, & Jones, 2010 <sup>g</sup>	n=9,819 youth from system intake, detention, and secure post-adjudication in 57 juvenile justice sites	23.5	AA=35	x=16	V-DISC	-	-	-	-	-	-	-	-	2.4%	-	
			W=41													
			H=19													
			O=5													

<sup>a</sup>Total N=21. Two additional studies (Stanislow et al., 2003; Timmons-Mitchell et al., 1997) examined suicidal behavior in juvenile justice youth; however, they presented mean suicidal ideation scores for their samples, which do not provide an indication of the prevalence of risk in the samples.

<sup>b</sup>Abbreviations (Sample; Suicide Variables): AA indicates African American; W, non-Hispanic white; H, Hispanic; O, other (Includes Asian American, Pacific Islander, American Indian or Native American, and mixed races); 'x,' mean; NR('–'), not reported; NS, not significant; Race, race/ethnicity; M, male; F, female.

<sup>c</sup>Percentages may not sum to 100% due to rounding error.

<sup>d</sup>Mean age was rounded to nearest whole number. If mean age was not provided, an age range for all participants was given.

<sup>e</sup>Abbreviations (Suicide Measures, alphabetical): CHIP-AE, Child Health and Illness Profile: Adolescent Edition; K-SADS, Schedule for Affective Disorders and Schizophrenia for School-Aged Children; MACI, Millon Adolescent Clinical Inventory; MAYSI/MAYSI-2, Massachusetts Youth Screening Instrument; MSSJ, Modified Scale for Suicidal Ideation; PADDJ, Practical Adolescent Dual Diagnostic Interview; SIQ, Suicidal Ideation Questionnaire; SSB, Scale for Suicidal Behavior; SSBS, Spectrum of Suicidal Behavior Scale; V-DISC, Voice-Diagnostic Interview Schedule for Children (DISC, DISC-IV); YRBS, United States Centers of Disease Control Youth Risk Behavior Surveillance System.

<sup>f</sup>Studies used multiple assessment measures, but we only report the measure(s) used to assess and generate the prevalence of suicidal ideation and/or attempts.

- <sup>g</sup>Two studies (Wasserman et al., 2010; Corcoran & Graham, 2002) present prevalence rates separately for different points of contact. Therefore, each rate given is listed in each relevant section in the table.
- <sup>h</sup>Prevalence for sample computed from N's and % rates for each gender/subsample (Corcoran & Graham, 2002; Cauffman, 2004; Abrantes, Hoffmann, & Anton, 2005; Esposito & Clum, 2002; Kempton & Forehand, 1992; Vincent, Grisso, Terry, & Banks, 2008; Butler, Loney, & Kistner, 2007).
- <sup>i</sup>Significance testing was not completed; however, the prevalence rates by gender reflect this comparison (Abrantes, Hoffmann, & Anton, 2005).
- <sup>j</sup>The MAYSI/MAYSI-2 assess suicidal ideation "within past few months;" therefore, we included these rates in the "6-month" category.
- <sup>k</sup>Rates generated by endorsing an above-cutoff level on suicide measure (MAYSI-2, SIQ) (Cauffman, 2004; Chapman & Ford, 2008; Vincent, Grisso, Terry, & Banks, 2008).
- <sup>l</sup>Sample demographic data is based on larger overall sample (n=757). Demographic data were not reported for the subsample (n= 405) on which they assessed suicidal ideation (Chapman & Ford, 2008).
- <sup>m</sup>Authors note that samples were assessed at intake, however, participants were sampled between 4 and 23 days post-admission (Rohde, Seeley, & Mace, 1997a; Wasserman, McReynolds, Lucas, Fisher, & Santos, 2002).
- <sup>n</sup>Rate generated by endorsement of suicidal ideation on at least one suicide measure (Goldstein et al., 2003).
- <sup>o</sup>Research has suggested that youth in secure correctional facilities may differ from those in residential rehabilitation facilities (Butler, Loney, & Kistner, 2007; Freedenthal, Vaughn, Jenson, & Howard, 2007). However, both are considered "Post-Dispositional Secure" facilities, and are included in this section.
- <sup>p</sup>Defined ideation as a score of at least 2 of 5 possible items on MAYSI-2 (Butler et al, 2007).
- <sup>q</sup>Rate generated by endorsement of at least 1 of 5 MAYSI items on *suicidal ideation* scale (Freedenthal et al., 2007).
- <sup>r</sup>78 of 289 youth sample were clinically referred for additional psychiatric assessment including suicidal behavior, self-mutilation, sleep problems, maintenance of psychotropic medication, disruptive behaviors, or by the youth's request (Penn, Esposito, Schaeffer, Fritz, & Spirito, 2003).

**Table 2** Studies finding significant risk factors for suicidal ideation and behavior among youth in the juvenile justice system (U.S.)<sup>a</sup>

	Mental Health		Substance Use and Disorders		Adverse Childhood Experiences		Service Utilization		Crime and Justice Involvement		Parental Involvement/Social Support		Other	
	Ideation	Attempts	Ideation	Attempts	Ideation	Attempts	Ideation	Attempts	Ideation	Attempts	Ideation	Attempts	Ideation	Attempts
<b>Youth Living in the Community</b>														
<b>Pre-Adjudication</b>														
Battle et al., 1993	depression		alcohol abuse, cocaine use		sexual abuse						mother, grandmother support			
Nolen et al., 2008		depression disruptive behavior		substance use disorders						violent or felony offense				not living with both parents
Wasserman & McKeaynolds, 2006		depression		substance use disorders						prior justice referrals, violence				
<b>Post-Adjudication</b>														
Evans et al., 1996					sexual abuse					gang membership				
Maillet et al., 2012				alcohol dependence			mental health services			residential placement, shelter care				
<b>Youth Living in Secure Justice Facilities</b>														
<b>Detention</b>														
<b>Intake to Detention</b>														
Abram et al., 2008		depression anxiety												
Archer, Sreclny, Mason, & Arnatu, 2004														past suicide attempt
Bhatta et al., 2014		depression, problems with anger management		alcohol use	sexual abuse		mental health services						homelessness, health problems	running away from home
Caufman, 2004													delayed suicide screening	
Chapman & Ford, 2008				substance use	trauma history									
Rohde et al., 1997	depression, impulsivity	impulsiveness			major life events						loneliness, fewer close relatives		younger age	dropping out of school

	Mental Health		Substance Use and Disorders		Adverse Childhood Experiences		Service Utilization		Crime and Justice Involvement		Parental Involvement/Social Support		Other	
	Ideation	Attempts	Ideation	Attempts	Ideation	Attempts	Ideation	Attempts	Ideation	Attempts	Ideation	Attempts	Ideation	Attempts
<b>During Stay in Detention Facility</b>														
Esposito & Clum, 2002												social support		problem-solving confidence
Goldstein et al., 2003	depression													
Kempson & Forehand, 1992		depression												
<b>Post-Disposition</b>														
<b>During Stay in Post-Disposition Secure Facility</b>														
Freedenthal et al., 2007		mental disorder symptoms		inhalant use and abuse		trauma history								
<b>Youth Sampled at Multiple Points of Contact</b>														
Corcoran & Graham, 2002	depression, internalizing & externalizing problems						mental health service referral							health status
Morris et al., 1995 <sup>h</sup>			substance use		sexual abuse				gang member					younger age, history of sexually transmitted disease
Penn et al., 2003					family/friend suicide attempt			mental health service					less likely to live with relative	
Wasserman et al., 2010 <sup>i</sup>									repeat offender, detention, secure placement					suicidal ideation at admission

<sup>h</sup>Only risk factors that were significantly associated with suicidal ideation or attempts in final models were included.