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Suicidal Thoughts and Behaviors Among Adolescent Psychiatric Inpatients

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Abstract

Background.—Given low base rates of suicidal thoughts and behaviors (STBs) in national samples of adolescents, clarifying the sociodemographic and clinical correlates among psychiatric inpatients may afford insights into potential risk factors that predict STBs onset.

Method.—Adolescents ($N=970$; ages 12–19 years) admitted for acute, psychiatric inpatient care completed baseline clinical interviews and self-report measures assessing demographics and early life adversity. Lifetime and 12-month STBs prevalence were obtained, allowing for the estimate of STBs persistence (i.e., rates of those with both current and past STBs) and transition rates (i.e., proportion of ideators that transition to plans or attempts). Univariate and multivariate logistic regression tested sociodemographic and clinical correlates of STBs.

Results.—Age-of-onset for STBs occurred in early adolescence. Most patients reported suicide ideation with nearly half of patients making a plan and one-third a suicide attempt. Although relatively modest, the strongest correlates of lifetime attempts were depressive disorders, physical abuse, and non-suicidal self-injury. Knowing a peer that had attempted suicide also increased the likelihood of a suicide attempt, especially among attempters who transitioned from ideation to planned attempts.

Conclusion.—STBs are highly prevalent among adolescents admitted for acute psychiatric inpatient treatment. The modest effects suggest that correlates, particularly those related to suicide attempts, are widely distributed. As a history of physical abuse and knowing a peer with a suicide attempt history are related to transitioning from ideation to action, these may be critical factors to target in the deployment of future suicide prevention and treatment programs.

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Conflict of Interest Disclosures

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Keywords

Suicide; Non-Suicidal Self-Injury; Contagion; Physical Abuse; Comorbidity

Introduction

Suicide is the second leading cause of death among adolescents in the United States, and rates of youth suicide attempts have increased by over 40% in the past decade (Ivey-Stephenson et al., 2020). Known correlates of suicidal thoughts and behaviors (STBs), such as early life adversity and mental disorders, are more prevalent among adolescent inpatients (Franklin et al., 2017; Tunnard et al., 2014), and this group is at high-risk for suicide-related outcomes. Indeed, approximately 80% of adolescents in residential or inpatient settings report suicidal thinking (Venta & Sharp, 2014), and rates of lifetime suicide attempts range from 38–63% (Andover & Gibb, 2010; Groschwitz et al., 2015; Thompson et al., 2020; Venta & Sharp, 2014). Consequently, it is critical to clarify reliable correlates of STBs in adolescent psychiatric patients, as this may inform the development of intervention programs that reduce the needless loss of life.

Although the majority of adolescents with lifetime STBs satisfy diagnostic criteria for at least one mental disorder (Nock et al., 2013), most individuals with mental disorders do not attempt suicide (Sisti et al., 2020), suggesting that there may be other clinical and sociodemographic factors that increase STB risk. Prior epidemiological research among adolescents has identified promising correlates of STBs in the general population (Nock et al., 2013), however, given that suicidal behaviors occur with low base rates, it is often challenging to identify risk factors that are more central to psychiatric populations. Focusing on large samples of adolescent psychiatric inpatients among whom STBs are more common may afford a unique opportunity to clarify clinical and sociodemographic correlates related to STBs.

Depressive disorders are consistently associated with the emergence of STBs across age groups (Bernal et al., 2007; Gili et al., 2019; Im et al., 2017; Miret et al., 2013; Nock et al., 2010, 2013). Among adolescents and adults in the general population, depressive disorders are central for the development of suicidal ideation and are distally related to suicide attempts (Franklin et al., 2017; Tunnard et al., 2014). Anxiety disorders also may relate to STBs, though this relationship has not been consistent (Bentley et al., 2016; Hill et al., 2011). Patients reporting externalizing disorders characterized by diminished inhibitory control and greater impulsivity (e.g., attention deficit hyperactivity disorder [ADHD], substance use disorder, conduct disorder) also have shown elevated rates of STBs (Nock et al., 2010, 2013; Poorolajal et al., 2016). Perhaps owing to the complexity and severity of the clinical presentation, comorbidity increases risk for STBs above and beyond specific disorders (Gili et al., 2019; Hoertel et al., 2015). This highlights the importance of clarifying whether there are specific mental disorder profiles that may confer heightened risk for suicidal behaviors (Auerbach et al., 2019).

The current report includes data from adolescent patients ($N=970$) admitted to an inpatient treatment program. In our prior research with subsamples of this larger dataset, we

demonstrated that, relative to ideators, attempters reported increased interpersonal stress exposure (Stewart et al., 2019), greater peer victimization (Stewart et al., 2018), increased anhedonia severity and associated reward learning impairments (Auerbach et al., 2015), increased impulsivity (i.e., negative urgency [Auerbach et al., 2017]) and risky behavior engagement (Stewart, Esposito, et al., 2017; Stewart et al., 2018), and diminished attentional control (Stewart, Glenn, et al., 2017). Building on this research, we aimed to clarify the lifetime and 12-month prevalence of STBs, and then, test sociodemographic and clinical correlates of STBs that may contribute to the transition from ideation to action among these high-risk adolescents.

Methods

Participants

The initial sample consisted of 980 adolescents recruited from an acute, insurance-based inpatient treatment program in the greater Boston area from July 2012 to April 2017. Participants were admitted for acute inpatient care given a range of clinical issues including safety concerns (e.g., presence of STBs and/or non-suicidal self-injury [NSSI]), elevated psychiatric symptoms, and/or non-response following outpatient treatment (Zambrowicz et al., 2019). Ten participants did not complete the Self-Injurious Thoughts and Behaviors Interview (SITBI), and thus, our final sample included 970 adolescents (71.06% female) ages 12 to 19 years ($M=15.58$, $SD=1.42$). Table 1 summarizes the sociodemographic and clinical history of the participants.

Procedure

All study procedures were approved by the Institutional Review Board. Legal guardians and participants ages 18 to 19 years provided informed consent, while participants ages 13 to 17 years provided informed assent. Within 48 hours of admission to the inpatient treatment program, participants were administered clinical interviews assessing mental disorders and STBs. All study staff received a minimum of 25 hours of training prior to interview administration. Participants also reported demographic information and completed self-report questionnaires.

Clinical Instruments

Mini International Neuropsychiatric Interview for Children and Adolescents 6.0 (MINI-KID).—The MINI-KID is a structured diagnostic interview used to assess the prevalence of mental disorders that probed DSM-IV-TR criteria. The MINI-KID has been shown to have strong validity and reliability among youth (Sheehan et al., 2010).

Self-Injurious Thoughts and Behaviors Interview Short-Form (SITBI).—The SITBI is a structured clinical interview used to assess suicidal thoughts and behaviors. Participants reported on lifetime and 12-month prevalence and frequency of suicidal ideation, plans, attempts, and NSSI. Participants provided information related to STB age-of-onset (AOO), as well as whether anyone in their life had made a suicide attempt and, if so, the nature of that relationship. In the present paper, we focused on peer attempt history, which included both personal friends and romantic partners. The SITBI shows

strong psychometric properties among adolescents in outpatient (Nock et al., 2007) and inpatient settings (Venta & Sharp, 2014).

Childhood Trauma Questionnaire (CTQ).—The CTQ is a 25-item self-report measure that assesses childhood traumatic experiences. Items are rated on a 5-point scale ranging from 1 (*never true*) to 5 (*very often true*), with higher scores indicating more severe abuse and/or neglect. Following published guidelines (Bernstein & Fink, 1998), we dichotomized the 5-item subscales to index the presence/absence of physical (scores ≥ 8) and sexual (scores ≥ 6) abuse. Dichotomized scores are preferred, as continuous abuse severity is typically highly positively skewed, and the presence/absence scores are associated with superior criterion-related validity in clinical samples (Bernstein et al., 2003). The present study focused on physical and sexual abuse. The reliability of items in the physical ($\alpha=0.81$) and sexual abuse ($\alpha=0.94$) subscales was good and excellent, respectively.

Data Analysis

All analyses were conducted in R version 4.0.2 (R Core Team, 2017), and data that support the findings of this study are available from the corresponding author upon reasonable request. Prevalence estimates, transition rates, persistence, and their associated 95% confidence intervals (CI) were obtained using the *propCI* function from the *prevalence* v0.4.0 package (Devleeschauwer et al., 2014). Following prior guidelines (Mortier et al., 2018), transition rates reflected the proportion of: (a) suicide planners among ideators (i.e., transition rate = N lifetime (or past 12-month) plans / N lifetime ideation), (b) attempters among lifetime ideators who do not report lifetime plans (i.e., transition rate = N lifetime (or past 12-month) attempt not preceded by plan / N lifetime ideation without lifetime plan (or plan with age of onset not preceding first attempt)), and (c) attempters among lifetime ideators who report prior plans (i.e., transition rate = N lifetime (or past 12-month) attempt preceded by plan / N lifetime ideation with lifetime plan (unless age of onset of first attempt preceded first plan)). Eleven participants had a first attempt that was not preceded by plans but later made attempts preceded by plans; we used the information from the first attempt to classify these participants. For 12-month prevalence estimates, participants with plans preceding the most recent attempt in the past year were considered planned attempters, regardless of initial attempt status. We defined persistence as the number of individuals with an STB (i.e., ideation, plan, attempt) both within and prior to the past 12 months, divided by the total number of individuals with that STB at any point (i.e., recent, lifetime, or both). Seven participants were missing data regarding ideation persistence, and twelve were missing data regarding plan and attempt persistence. Seven participants were missing AOO data for ideation, two were missing data for plans, and three were missing data for attempts.

Logistic regressions were used to test correlates of lifetime STBs. All logistic regression analyses were conducted using the *glm* function from the *stats* v3.6.2 package in R. First, sociodemographic and clinical correlates of interest were entered into separate univariate logistic regression models with absence/presence of ideation, plans, attempts, plans among ideators, unplanned attempts, or planned attempts as the outcome variable. All significant ($p < .05$) correlates were then entered into multivariate logistic regression models for each STB. Results are reported as odds ratios (OR; univariate regression) or adjusted odds

ratios (aOR; multivariate regression) with associated 95% CIs. The sociodemographic correlates included: sex (female vs. male), age (17+, 15–16, vs. 12–14), race (non-White vs. White), annual household income (>\$100,000, \$50,000–\$100,000, vs. <\$50,000), and parental education level (did not complete a 4-year degree vs. did complete a 4-year degree). Age categories (17+, 15–16, 12–14) were based on the Centers for Disease Control and Prevention (CDC) developmental milestone guidelines that define “Young Teens” as ages 12–14 years and “Teenagers” as 15–17 years (CDC, 2021). Given the small number of participants 18 years or older ($N = 87$), we grouped these participants in the 17+ years category to provide more balanced cell sizes. Clinical correlates included: any lifetime depressive disorder (MINI-KID), any current anxiety disorder (MINI-KID), current ADHD (MINI-KID), number of current psychiatric disorders (4+, 3, 2, vs. 0–1; MINI-KID), lifetime sexual abuse (CTQ), lifetime physical abuse (CTQ), lifetime NSSI history (SITBI), and knowing a peer with suicide attempt history (SITBI). As the MINI-KID is only designed to assess current episodes for anxiety disorders and ADHD, we could not test associations with these as lifetime diagnoses.

Results

STB Prevalence, Age of Onset, and Persistence Rates

The lifetime and 12-month prevalence of suicide ideation, plans, and attempts are summarized in Table 2. Lifetime and 12-month suicide ideation were common in the vast majority of patients. Approximately half of patients made a plan to end their life, and nearly one-third of patients made a suicide attempt in the 12 months prior to admission. AOO for STBs began in early- to mid-adolescence with the majority reporting a persistence of ideation and, to a lesser extent, plans and attempts (Figures 1A–1C). Over one-fifth of ideators made an initial lifetime suicide attempt without a plan, while nearly half of lifetime ideators reported an initial planned attempt. The majority of adolescents who transitioned from ideation to plans did so within one year of ideation of onset, whereas transitioning from ideation to both planned and unplanned attempts were more evenly distributed over time (Figure 1D).

Sociodemographic and Clinical Correlates of Lifetime Suicidal Thoughts and Behaviors

Suicide Ideation.—Univariate analyses indicated that identifying as female, relative to male, was associated with higher odds of lifetime suicide ideation. Clinical correlates were similar to those identified in prior research (Andover & Gibb, 2010; Brown et al., 2012; Maniglio, 2011; Nock et al., 2013; Tunnard et al., 2014), including lifetime depressive disorders, current anxiety disorders, number of current disorders, lifetime NSSI, and prior sexual abuse all relating to increased odds of lifetime ideation. Knowing a peer that previously attempted suicide also significantly increased the odds of reporting ideation (Table 1S). However, in the multivariate model, only lifetime depressive disorders and NSSI history were significant related to suicidal ideation above and beyond the other correlates (Table 3), showing that prior depressive disorders and NSSI engagement were associated with a 6- and 7-fold higher odds of reporting lifetime ideation, respectively.

Suicide Plans.—Although univariate models showed a number of correlates of suicide plans (Table 1S), only lifetime depressive disorders, number of current disorders, and lifetime NSSI were significant in the multivariate model (Table 3). Furthermore, multivariate analyses show that number of current disorders and lifetime NSSI are strong indicators of adolescents transitioning from suicidal thinking to planning—showing a 2- to 3-fold greater odds (Table 3).

Suicide Attempts.—Univariate models showed significant associations with a wide range of sociodemographic and clinical correlates (Table 1S). By comparison, fewer significant correlates emerged in the multivariate analyses, and these effects were modest. Lifetime depressive disorder history and physical abuse were associated with a near 2-fold greater odds of making a suicide attempt, and lifetime NSSI history was related to a 2-fold greater likelihood of making an attempt as well as transitioning from ideation to an unplanned attempt. Knowing a peer who made a suicide attempt was associated with significantly greater odds of a suicide attempt, as well as with transitioning from ideation to an attempt preceded by a suicide plan. Lifetime physical abuse also increased the odds of a later attempt, whether or not the attempt was preceded by a suicide plan (Table 3).

Discussion

The increased rates of STBs among adolescents over the past decade is a major public health concern. Identifying predictors of STBs is necessary to prevent suicide, yet common correlates, such as MDD, lack sensitivity and often fail to predict changes in STBs over time (Franklin et al., 2017). In an effort to address this gap, the present study leveraged data from a large sample of adolescents receiving acute psychiatric inpatient treatment. Lifetime and 12-month prevalence of STBs were strikingly high and persistent, with AOO often occurring in early adolescence. Additionally, a number of promising correlates related to STBs offer new insights regarding potential sociodemographic and clinical risk factors that warrant investigation in future longitudinal studies.

As expected, lifetime rates of STBs in our sample were markedly higher than in the general adolescent population (Nock et al., 2013), but they aligned with prevalence estimates reported in studies of inpatient youth (Andover & Gibb, 2010; Groschwitz et al., 2015; Thompson et al., 2020; Venta & Sharp, 2014). Approximately one-third of participants reported making at least one lifetime suicide attempt. This high prevalence rate is concerning as it reflects adolescents' current psychological distress and may portend future impairment in adulthood. Indeed, prior work has demonstrated that youth attempts are associated with later life mental disorders as well as poorer physical health, social dysfunction, and engagement in risky behaviors (e.g., violence, precocious sexual behaviors (Brière et al., 2015; Goldman-Mellor et al., 2014). We also found that STBs are recurrent, as 20% of adolescents who reported an attempt in the past year also reported having made at least one prior attempt. Coupled with extant research demonstrating that prior attempts are strong predictors of later death by suicide (Bostwick et al., 2016), the high rate of recurrence of suicidal behaviors underscores the urgent need for improved acute risk management and longer-term follow-up care. Unfortunately, adolescents' compliance with follow-up outpatient care is generally low (Gould et al., 2003), and thus, improving

treatment engagement remains a critical barrier to reduce suicidal behaviors (Lizardi & Stanley, 2010).

The high transition rates from suicide ideation to plans and planned attempts also highlight a need for improved short- and long-term mental health care among youth with early onset STBs. Towards this goal, it is important to understand what characteristics increase the likelihood that suicidal ideation will escalate to suicidal behavior. Consistent with prior research (Nock et al., 2013), we found that lifetime depressive disorders were strongly associated with lifetime ideation; however, they were not associated with the occurrence of suicide plans or attempts among lifetime ideators. Similarly, the number of current mental disorders was not associated with the presence of attempts among ideators. These findings suggest that the distress linked to psychopathology (e.g., depression symptoms, comorbid diagnoses) may be associated with suicidal thoughts, but is not uniquely implicated in the transition from suicide ideation to behaviors. Lifetime physical abuse, however, may be a risk factor of interest as it related to increased odds of transitioning to attempts. This finding aligns with prior work (Joiner et al., 2007; Zatti et al., 2017) and with the interpersonal theory of suicide (ITS; Van Orden et al., 2010). Specifically, the ITS posits that painful and aversive experiences like physical abuse increase a person's capability to engage in suicidal behavior by reducing fear of death and increasing pain tolerance over time (Van Orden et al., 2010). Physical abuse may contribute to suicide capability directly (i.e., exposure to pain during abuse episodes) or indirectly via its associations with general risky behavior engagement (Stewart et al., 2018). Similarly, NSSI may serve as another key source of pain habituation (Hamza et al., 2012; Joiner et al., 2012). Prior research among adolescent inpatients generally supports an association between NSSI and suicide attempts (Andover & Gibb, 2010; Groschwitz et al., 2015), which facilitated the transition from ideation to both planned and unplanned attempts in the present study.

An important correlate of transitioning to planned attempts was knowing a peer who had made at least one suicide attempt themselves. This finding adds to the existing literature on suicide contagion, the phenomenon by which exposure to suicide facilitates the emergence of STBs in others (Mueller & Abrutyn, 2015; Swanson & Colman, 2013). Adolescents may be more susceptible to contagion than adults (Hawton et al., 2020), and this vulnerability is heightened when the exposure to suicide is from a same-aged peer (Swanson & Colman, 2013). However, the mechanisms through which contagion occurs are currently unclear. It may be, for example, that what appears to be suicide contagion is instead the result of assortative relating, or rather, individuals at high-risk for suicide are more likely to befriend those who are similarly high-risk. In this view, suicide clusters are the result of underlying shared risk factors rather than contagion (Hawton et al., 2020; Joiner Jr, 2003). This perspective, however, may not fully account for the increase in suicidal behaviors that occurs after exposure to a peer's suicide attempt (Randall et al., 2015). Among adolescents in the general population, heightened STBs are associated with disclosed, but not undisclosed, peer attempts (Mueller & Abrutyn, 2015). These disclosed attempts may provide a model for adolescents' distress response and present suicide as a more salient option, while undisclosed attempts do not (Mueller & Abrutyn, 2015). Related work likewise demonstrates that the relationship between knowing someone who has attempted suicide and one's own suicide planning behaviors is partially mediated by one's belief

that suicide is acceptable, indicating that increased suicide acceptability may be a key mechanism of contagion (Kleiman, 2015). Clarifying the role of social contagion in the transition from ideation to attempts, particularly within inpatient settings where adolescents form lasting friendships with youth with a suicide attempt history, may offer a key inroad for future suicide prevention efforts.

There are several limitations that should be considered for future research. First, the sample was recruited from an insurance-based treatment program in the greater Boston area and is not nationally representative. The generalizability of findings is limited to ethnically and socio-demographically similar populations. Second, although sex assigned at birth was assessed, data on gender identity and expression were not available. Transgender adolescents report higher rates of STBs than cisgender youth (Perez-Brumer et al., 2017; Toomey et al., 2018); thus, we may have missed important STB correlates for relevant to diverse gender locations. Likewise, we have not assessed sexual orientation and, notably, non-heterosexual orientation has been linked to STBs in adolescent community samples (Stone et al., 2014). Third, the retrospective study design precludes the ability to definitively disambiguate correlation from causation. Last, although youth were in treatment when they participated, we did not assess their full treatment history. Treatment response may improve symptom trajectories, and accordingly, future research should clarify the role that timing, type, and intensity of treatment may play in the emergence and persistence of STBs.

In summary, the present study highlights several promising correlates, including physical abuse, NSSI, and knowing a peer who attempted suicide, that may be critical to understanding the onset and progression of STBs in adolescent inpatients. Focusing on these characteristics may enhance our recognition of youth at risk for transitioning from ideation to action, and relatedly, may serve as promising targets for the deployment of future prevention and intervention efforts.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Highlights

- One-third of adolescent inpatients report a lifetime history of suicide attempts.
- Approximately 65% of adolescent inpatients with a lifetime plan attempt suicide.
- Knowing peers who attempt suicide may facilitate the transition from ideation to action.

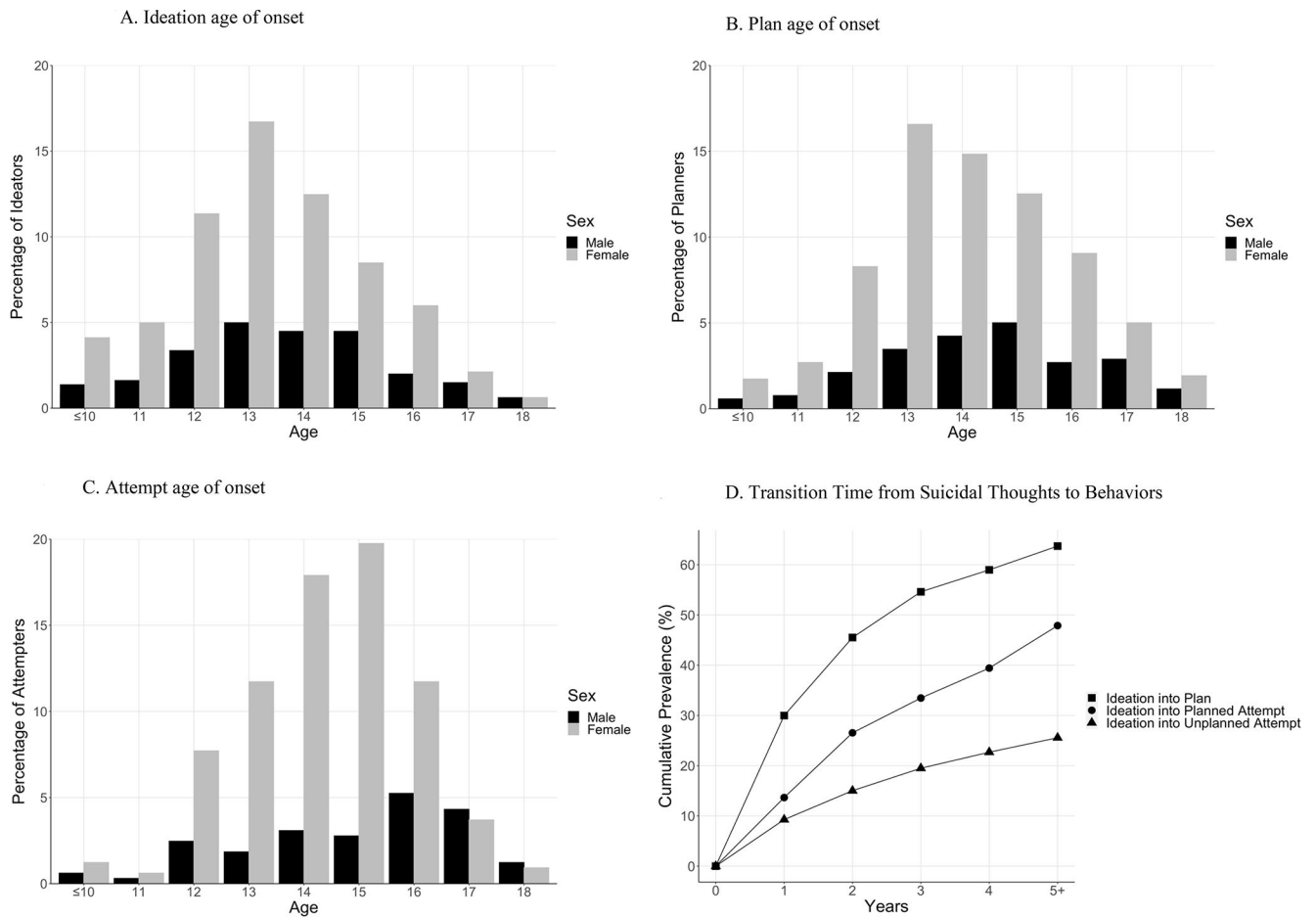


Figure 1A.

Note. All age of onset (AOO) percentages reflect sex (male [black] or female [gray]) relative to the total sample size per group; **(A)** AOO by sex for suicidal ideation ($n=802$; 27.18% male, 72.82% female); **(B)** AOO by sex for suicide plans ($n=519$; 24.28% male, 75.72% female), **(C)** AOO by sex for suicide attempts ($n=324$; 22.53% male, 77.47% female); **(D)** The transition time from ideation to plans (black square), planned attempts (black circle), and unplanned attempts (black triangle).

Table 1. Sociodemographic and Clinical Correlates Among Adolescents Admitted for Acute Psychiatric Treatment

Category	Mean (SD) / n (%)
Sex, n (%)	
Female	658 (71.06)
Male	268 (28.94)
Age, mean (SD)	15.58 (1.42)
Race, n (%)	
White	772 (81.09)
Black	19 (2.00)
Asian	53 (5.57)
Pacific Islander	3 (0.32)
Native American	7 (0.74)
2 or more races	98 (10.29)
Annual household income, n (%)	
< \$50,000	139 (22.64)
\$50,000 – \$100,000	262 (42.67)
> \$100,000	213 (34.69)
Parental education, n (%)	
Did not complete 4-year degree	156 (16.97)
Did complete 4-year degree	763 (83.02)
Lifetime depressive disorder, n (%)	
Present	835 (86.17)
Not present	134 (13.83)
Lifetime bipolar disorder, n (%)	
Present	44 (4.54)
Not Present	925 (95.46)
Any current anxiety disorder, n (%)	
Present	504 (52.01)
Not present	465 (47.99)

Category	Mean (SD) / n (%)
Current ADHD, n (%)	
Present	172 (17.75)
Not Present	797 (82.25)
Substance or Alcohol Use Disorder (Past 6 months), n (%)	
Present	49 (5.06)
Not Present	920 (94.94)
Number of current psychiatric disorders, mean (SD)	2.25 (1.44)
Lifetime sexual abuse, n (%)	
Present	224 (23.55)
Not present	727 (76.45)
Lifetime physical abuse, n (%)	
Present	156 (16.39)
Not present	796 (83.61)
Lifetime NSSI, n (%)	
Present	693 (71.52)
Not present	276 (28.48)
Peer with SA history, n (%)	
Present	346 (35.93)
Not present	617 (64.07)

Note. The following disorders were included in the number of current psychiatric disorders variable: Any Depressive Disorder (Major Depressive Disorder, Dysthymia), Any Bipolar Disorder (I, II, Not Otherwise Specified), All Anxiety Disorders (Panic, Agoraphobia, Separation, Social, Specific Phobia, Generalized), Obsessive Compulsive Disorder, Posttraumatic Stress Disorder, Substance or Alcohol Use Disorder, Attention Deficit Hyperactivity Disorder, Conduct Disorder, Oppositional Defiant Disorder, any Psychotic Disorder, Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorder, and any Adjustment Disorder. ADHD = Attention Deficit Hyperactivity Disorder, SD = Standard Deviation, NSSI = Non-Suicidal Self-Injury, SA = Suicide Attempt.

Table 2.

Prevalence, age of onset, and persistence of suicidal thoughts and behaviors

	Lifetime % (95% CI)	12-Month % (95% CI)	Age of Onset Mean (SD)	Persistence ^a % (95% CI)
STB prevalence				
Ideation	86.80 (84.51 – 88.87)	83.40 (80.91 – 85.69)	13.02 (2.38)	66.59 (63.27 – 68.78)
Plan	56.08 (52.89 – 59.23)	50.93 (47.73 – 54.12)	13.89 (2.20)	41.17 (36.95 – 45.48)
Attempt	35.26 (32.25 – 38.36)	30.31 (27.34 – 33.31)	14.43 (1.93)	17.89 (13.90 – 22.45)
STB transition rates				
Plan among lifetime ideators	64.49 (61.12 – 67.73)	58.67 (55.26 – 62.02)	13.90 (2.20)	41.62 (37.39 – 45.94)
Attempt among lifetime ideators without prior plan	26.03 (21.27 – 31.25)	23.86 (19.19 – 29.04)	14.47 (1.97)	20.25 (12.04 – 30.80)
Attempt among lifetime ideators with prior plan	48.58 (44.23 – 52.94)	50.75 (46.52 – 54.96)	14.28 (1.93)	17.41 (12.89 – 22.72)

Note.

^aPersistence is defined as the number of individuals with an STB both within and prior to the past 12 months divided by the total number of individuals with that STB; Age of Onset and Persistence items were missing from the following: Age of Onset (Ideation = 7, Plan = 2, Attempt = 3) and Persistence (Ideation = 7, Plan = 12, Attempt = 12); CI = Confidence Interval.

Table 3. Multivariate sociodemographic and clinical correlates of lifetime suicidal thoughts and behavior

	Ideation aOR (95% CI)	Plan aOR (95% CI)	Attempt aOR (95% CI)	Plans Among Ideators aOR (95% CI)	Attempt Among Ideators Without Plan aOR (95% CI)	Attempt Among Ideators With Plan aOR (95% CI)
Sex (Female > Male)	0.73 (0.45 – 1.18)	0.92 (0.65 – 1.30)	1.05 (0.74 – 1.50)	1.01 (0.70 – 1.45)	1.90 (0.97 – 3.74)	--
Age (years)						
17+	--	--	--	--	3.15 (1.40 – 7.09)**	--
15–16	--	--	--	--	2.25 (1.06 – 4.80)*	--
12–14	--	--	--	--	(Reference)	--
Any lifetime depressive disorder	5.88 (3.54 – 9.77)***	1.89 (1.22 – 2.94)**	1.86 (1.14 – 3.03)*	--	--	--
Any current anxiety disorder	1.25 (0.67 – 2.34)	0.98 (0.65 – 1.48)	1.03 (0.69 – 1.56)	0.95 (0.62 – 1.47)	--	--
Number of current psychiatric disorders						
4+	1.83 (0.68 – 4.90)	2.61 (1.46 – 4.68)**	1.15 (0.64 – 2.04)	2.37 (1.29 – 4.36)**	--	--
3	1.51 (0.65 – 3.53)	2.01 (1.90 – 3.41)**	1.10 (0.65 – 1.86)	1.89 (1.08 – 3.29)*	--	--
2	1.31 (0.68 – 2.52)	1.62 (1.05 – 2.48)*	0.94 (0.61 – 1.47)	1.55 (0.99 – 2.42)	--	--
0 – 1	(Reference)	(Reference)	(Reference)	(Reference)	--	--
Lifetime sexual abuse	1.63 (0.81 – 3.30)	1.04 (0.72 – 1.51)	1.35 (0.95 – 1.91)	1.06 (0.73 – 1.54)	1.17 (0.61 – 2.25)	1.23 (0.81 – 1.86)
Lifetime physical abuse	--	1.24 (0.82 – 1.88)	1.92 (1.30 – 2.84)**	--	2.67 (1.31 – 5.42)**	1.82 (1.13 – 2.95)*
Lifetime NSSI	6.98 (4.25 – 11.49)***	4.11 (2.88 – 5.86)***	2.76 (1.85 – 4.13)***	2.83 (1.94 – 4.13)***	2.11 (1.06 – 4.18)*	1.57 (0.92 – 2.67)
Peer with SA history	1.10 (0.66 – 1.82)	1.04 (0.76 – 1.42)	1.48 (1.09 – 2.01)*	--	--	1.93 (1.33 – 2.80)***
Overall Model χ^2	178.69***	147.94***	92.79***	59.23***	29.13***	29.57***

Note. Adjusted odds ratios and 95% confidence intervals were calculated using multiple logistic regression; aOR = odds ratio; CI = confidence interval; NSSI = non-suicidal self-injury; SA = suicide attempt; χ^2 = Chi-square test to evaluate overall model fit

p < 0.0001

**
p < 0.01

*
p < 0.05