



Published in final edited form as:

Depress Anxiety. 2015 April ; 32(4): 270–276. doi:10.1002/da.22296.

Adolescent suicide attempts and adult adjustment

Frédéric N. Brière, PhD¹, Paul Rohde, PhD², John R. Seeley, PhD², Daniel Klein, PhD³, and Peter M. Lewinsohn, PhD²

¹École de psychoéducation, Université de Montréal, Québec, Canada

²Oregon Research Institute, Oregon, USA

³Stony Brook University, NY, USA

Abstract

Background—Adolescent suicide attempts are disproportionately prevalent and frequently of low severity, raising questions regarding their long-term prognostic implications. In this study, we examined whether adolescent attempts were associated with impairments related to suicidality, psychopathology, and psychosocial functioning in adulthood (objective 1) and whether these impairments were better accounted for by concurrent adolescent confounders (objective 2).

Method—816 adolescents were assessed using interviews and questionnaires at four time points from adolescence to adulthood. We examined whether lifetime suicide attempts in adolescence (by T2, mean age 17) predicted adult outcomes (by T4, mean age 30) using linear and logistic regressions in unadjusted models (objective 1) and adjusting for sociodemographic background, adolescent psychopathology, and family risk factors (objective 2).

Results—In unadjusted analyses, adolescent suicide attempts predicted poorer adjustment on all outcomes, except those related to social role status. After adjustment, adolescent attempts remained predictive of axis I and II psychopathology (anxiety disorder, antisocial and borderline personality disorder symptoms), global and social adjustment, risky sex, and psychiatric treatment utilization. However, adolescent attempts no longer predicted most adult outcomes, notably suicide attempts and major depressive disorder. Secondary analyses indicated that associations did not differ by sex and attempt characteristics (intent, lethality, recurrence).

Conclusions—Adolescent suicide attempters are at high risk of protracted and wide-ranging impairments, regardless of the characteristics of their attempt. Although attempts specifically predict (and possibly influence) several outcomes, results suggest that most impairments reflect the confounding contributions of other individual and family problems or vulnerabilities in adolescent attempters.

Correspondence: Frédéric N. Brière, école de psychoéducation, Université de Montréal, C.P. 6128, succursale Centre-ville, Montréal, Québec, Canada, H3C 3J7. Telephone: 514-452-0332. frederic.nault-briere@umontreal.ca.

Disclosures:

Dr. Seeley has nothing to disclose.

Dr. Klein has nothing to disclose.

Dr. Lewinsohn has nothing to disclose.

Keywords

Suicide attempt; adolescence; psychosocial functioning; psychopathology; longitudinal

Introduction

Adolescent suicidal behaviors constitute a major public health concern,[1] with approximately one adolescent out of ten (8–10%) reporting having attempted suicide.[2–4] These rates are disproportionately elevated compared to childhood and adulthood.[5] However, although suicide remains one of the leading causes of early death,[6] rates of completed suicides in adolescents are rare and are lower than rates in adults.[7] Furthermore, adolescent attempts are typically of low severity.[4; 8] The strikingly elevated rates of suicide attempts in adolescents raise intriguing and important questions regarding the prognostic significance of these behaviors: do adolescent attempts have long-term negative implications or do they reflect a state of temporary crisis in young people who are still developing?

Research examining the consequences of suicide attempts has focused almost exclusively on recurrence and escalation in suicidality. Robust evidence indicates that suicide attempts in adolescents and adults represent the strongest predictor of both future attempts and completed suicide.[9–13] However, long-term impairments in adolescent attempters are likely to extend beyond subsequent suicide risk. Although pervasive adjustment problems have been reported *concurrently* in adolescent suicide attempters (e.g., psychopathology, poor interpersonal functioning),[8] there is a surprising paucity of information available to document the long-term psychosocial adjustment outcomes of adolescent attempters.

To our knowledge, only three prospective studies have examined long-term psychosocial outcomes of youth suicide attempts. These studies suggest that suicide attempts forecast a wide range of problems, including mental disorders, physical health problems, interpersonal difficulties, harm to others, occupational difficulties, and greater treatment service utilization.[14–16] Furthermore, previous studies suggest that suicide attempts are independently predictive of future problems even after accounting for the marked pre-existing mental health and psychosocial problems (e.g., major depressive disorder, impaired interpersonal functioning) in adolescent attempters. However, existing studies have either considered a limited range of outcomes or potential confounders. For instance, although most have ruled out confounding effects of concurrent psychopathology, not all have accounted for important family risk factors associated with suicide attempts,[15; 16] such as family history of suicidality and child maltreatment.[4; 17]

In this study, we extend the examination of the long-term outcomes of adolescent suicide attempts using prospective and representative data from the Oregon Adolescent Depression Project (OADP; [18]). Our first objective is to investigate whether adolescent suicide attempts are prospectively associated with a wide range of outcomes in adulthood (by age 30) related to suicidality, psychopathology, and psychosocial functioning. Our second objective is to assess whether associations between adolescent attempts and subsequent adult outcomes are better explained by a comprehensive set of potential confounders, including

sociodemographic background, adolescent psychopathology, and family risk factors. In secondary analyses, we test whether the outcomes of adolescent suicide attempts differ by gender and three attempt characteristics (intent, lethality, recurrence) that have been discussed as among the most prognostic factors.[8; 17]

Method

Participants

The OADP sample began with adolescents randomly selected from nine high schools representative of western Oregon. Participants were assessed at four time points using diagnostic interviews and questionnaires. Informed consent was obtained before each assessment. Study procedures were approved by the Oregon Research Institute Institutional Review Board. The original sample (T1) included 1709 adolescents (M age=16.6 years; $SD=1.2$) who were equally divided by gender (53% women) and mostly White (91%). A total of 1507 participants (88% of T1) completed the T2 assessment approximately one year later. All participants with a history of psychopathology ($n=555$) and a randomly selected subset of participants with no history of mental disorder ($n=386$) were invited to complete T3 (M age=24.6; $SD=0.6$). Of those invited, 941 participants (85%) completed the assessments. All T3 participants were invited for the T4 assessment (M age=30.5; $SD=0.7$), of which, 816 (87% of T3) completed the assessment. In this study, we included participants who completed the T4 assessment. This sample contained a majority of women (59%) and White (89%) participants. Differences between individuals who continued and discontinued study participation were relatively modest.[19] Attrition at T2 was associated with male gender, cigarette use, disruptive behavior disorder or substance use disorder (males only), lower socioeconomic status, and smaller household number. Attrition at T3 and T4 was more frequent in males (T3 and T4) and participants with lifetime substance use disorder (T4). Family history data were collected from the first-degree relatives of OADP participants, with the goal of obtaining direct report from family members and informant report from OADP participants at T3. When a family member could not be interviewed, information was obtained from a second informant. Direct reports were collected from at least one parent in 801 participants (73% of T3).

Diagnostic interviews

Participants were assessed using semi-structured diagnostic interviews. The Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS)[20] was administered at T1–T3 interviews. The Structured Clinical Interview for DSM-IV (SCID) [21] was used at T4. Diagnoses were based on DSM-III-R at T1 and T2 and on DSM-IV at T3 and T4. The Epidemiologic version of the K-SADS was used to record lifetime disorders from age 5 at T1. We used the Longitudinal Interval Follow-Up Evaluation[22] to assess psychopathology in the period since the previous interview at T2–T4. Biological parents and adult siblings of OADP participants were assessed using the Structured Clinical Interview for DSM-IV, non-patient version[23]. Non-adult siblings were assessed using the K-SADS. Family history informant data were obtained using a modified version of the Family Informant Schedule and Criteria[24] complemented with items necessary to derive DSM-IV

diagnoses. Two diagnosticians used all information to derive lifetime best-estimate consensus DSM–IV diagnoses [25] for each family member.

Measures

Assessment of Suicide Attempts in Adolescence—Information on adolescent suicide attempts were derived from the K–SADS (T1–T2). Suicide attempt were defined as a positive response to the question: “Have you ever (or “since the last interview”) tried to kill yourself or done anything that could have killed you?” followed by probes to eliminate purely thrill-seeking behaviors. Excellent interrater reliability was obtained for suicide attempts at T1 ($k = 0.95$, $n = 213$). Interrater reliability was not available at T2–T4 given the low attempt rates in reliability interviews. Adolescent attempts were coded as any lifetime attempt by T2. When a suicide attempt was reported, participants were asked to describe their most serious attempt in terms of suicidal intent and medical lethality. Intent scores were classified in six categories (1=no intent to 6=extreme intent, every expectation of death).[8] In this study, we divided attempts in low (<3) and high intent (>=3) attempts. Medical lethality was assessed using the 11-point Lethality of Suicide Attempts Rating scale[26] which assesses the objective lethality of attempts (0=death is an impossible result of the suicidal behavior to 10=death is almost a certainty regardless of the circumstances or interventions by an outside agent). We divided attempts in low (<3) and high lethality (>=3) attempts. We divided attempts in nonrecurrent (1) and recurrent (>=2) categories based on the number of attempts by T2.

Assessment of Outcomes in Adulthood—Suicide attempts in adulthood were derived using a similar procedure based on T3 and T4 interviews. Adult attempts were coded as any attempt from T2 (excluded) to T4 (included). Axis I psychopathology was assessed using K-SADS (T3) and SCID (T4) interviews, and included the following diagnostic categories: major depressive disorder, anxiety disorder (panic disorder, agoraphobia, specific phobia, social phobia, obsessive-compulsive disorder, post-traumatic stress disorder, generalized anxiety disorder), and alcohol/drug dependence (excluding tobacco). Adult disorders were coded as any episode from T2 (excluded) to T4 (included). Axis II psychopathology was assessed using the Personality Disorder Examination[27] at T3. We focused on borderline and antisocial personality disorders, both of which involve impulse-control deficits and have been robustly associated with suicide attempts.[17] We examined dimensional scores rather than diagnoses given the low disorder rates in the sample.

Psychosocial functioning was assessed using self-reported scales at T3–T4. The following indicators of social role status were examined by T4: marital status (1=never married), parental status (1=never parent), years of schooling completed, weeks of unemployment in the past year (sum at T3 and T4), and annual household income (mean income at T3 and T4). We examined global functioning using the Global Assessment of Functioning scale (DSM-III-R/-IV), self-rated physical health (4-item scale; $\alpha = 0.50$), life dissatisfaction (15-item adapted scale ([28]; $\alpha = 0.89$) using mean scores at T3 and T4. We assessed social adjustment over the past two weeks (54-item scale[29], 1976); $\alpha = .70$) and risky sexual behavior in the past 12 months (9-item adapted scale[30]; $\alpha = .61$) at T4. Mental health

treatment was derived from diagnostic interviews and coded as any utilization from T2 (excluded) to T4 (included).

Assessment of Potential Confounders in Adolescence—The following measures were used to adjust for sociodemographic background: age, sex, parental education, family structure at T2 (1=lives with one or neither biological parent), ethnicity (1=non-Caucasian). Diagnoses of concurrent psychopathology in adolescence were derived from interviews at T1 and T2. We adjusted for major depressive disorder, alcohol/drug dependence, anxiety disorder, and disruptive behavior disorder (oppositional-defiant disorder, conduct disorder, attention deficit with or without hyperactivity disorder) occurring by T2. Finally, we adjusted for three potential confounders related to family pathology. Family history of suicide attempts was scored as the proportion of first-degree family members who made at least one suicide attempt. Family history of psychopathology was coded as the proportion of family members who met criteria for at least one lifetime mental disorder (affective, non-affective, schizophrenic, or adjustment disorders). Child maltreatment was assessed at T3. OADP participants reported on physical punishment and sexual abuse through age 18 (or when the participant left their parent's home) using items from the Assessing Environment-III[31] and the Childhood Trauma Questionnaire.[32] We used a single aggregate score (17 items; $\alpha=.83$).

Statistical Analyses

We examined unadjusted and adjusted associations between adolescent suicide attempts and subsequent adjustment outcomes in adulthood using linear regressions (continuous outcomes) and logistic regressions (dichotomous outcomes). We report standardized regression coefficients (β) and odds ratios (OR) respectively and interpret effect sizes as small ($\beta=0.1$; OR=1.5), medium ($\beta=0.3$; OR=2.5), and large ($\beta=0.5$; OR=4.5).[33; 34] In secondary analyses, we examined whether gender moderated the association between adolescent suicide attempt and outcomes by testing the significance of a gender by suicide attempt interaction term. We used Wald tests of parameter equality to test whether the outcomes of adolescent attempts differed across each characteristic of attempts (intent, lethality, recurrence) divided in dummy variables (e.g., high vs. low intent). We used the OADP T3 sampling weights in all analyses. We estimated models using (full information) maximum likelihood with robust standard errors to correct for normality violations in continuous outcomes and to account for the occasional missing data on psychosocial functioning at T4.[35] All analyses were conducted in Mplus 6.1.[36]

Results

Description of Suicide Attempts and Outcomes

Nearly one participant out of ten (8.9%) reported making a suicide attempt during adolescence, with higher prevalence in young women (11.4%) than young men (3.6%) (OR=3.4, 95% CI=1.4–6.8; $p<.001$). The rate of suicide attempts in adulthood (from age 18 to 30) declined to 4.6%. Consistent with a previous study,[18] we found a nonsignificant difference in rates of adult suicide attempts for men (3.1%) and women (5.7%) (OR=1.9,

95% CI=0.9–3.8, $p=0.08$). Table 1 describes the long-term adult adjustment of adolescent suicide attempters and non-attempters.

Outcomes of Adolescent Suicide Attempts

Table 2 shows the unadjusted and adjusted associations between adolescent suicide attempts and measures of adult suicidality, psychopathology, and psychosocial functioning. In unadjusted analyses (column 1), adolescent attempts were predictive of adult suicide attempts, as well as all examined axis I disorders and axis II dimensional scores in adulthood. Results for psychosocial functioning were slightly less uniform. Adolescent attempts predicted most outcomes, but not marital, parenting, employment status or income levels.

Adjusting for sociodemographic confounders (column 2) did not eliminate any significant associations and only slightly influenced effect sizes. Adolescent attempts also remained associated with most outcomes after further adjusting for concurrent adolescent psychopathology (column 3), although associations with adult alcohol/drug dependence, educational attainment, and self-rated physical health became nonsignificant. However, the strength of associations was considerably diminished. Adolescent major depressive disorder accounted for the largest share of the association between suicide attempts and later outcomes (5%–42%). Lastly, after adjusting for family risk factors (column 4), adolescent suicide attempts were no longer predictive of adult suicide attempts, major depressive disorder, or life dissatisfaction. Family history of psychopathology and child maltreatment were associated with all outcomes ($p<.10$), except for major depressive disorder (child maltreatment) and life satisfaction (family history of psychopathology). Family history of suicidality was not associated with any of the outcomes.

Secondary Analyses

Moderation analyses revealed no difference between men and women in the association between adolescent suicide attempts and subsequent outcomes. Similarly, subgroup analyses using Wald tests of parameter equality indicated that associations did not vary as a function of attempt characteristics (intent, lethality, recurrence), with only one exception: adult mental health treatment utilization (Wald test[$df=1$]=4.4, $p=.03$), which was predicted by adolescent attempts of low intent (OR=3.3***, 95% CI=1.6–6.6) but not high intent (OR=1.2, 95% CI=0.6–2.5). Substantively similar results were obtained when characteristics of attempts were examined as continuous, rather than dichotomous, predictors in the subgroup of attempters ($n=65$).

Discussion

Our first objective was to determine whether suicide attempts in adolescence were associated with persistent impairments in adulthood. In unadjusted analyses, we found adolescent attempts to systematically predict poorer adjustment on outcomes related to adult suicidality, psychopathology, and psychosocial functioning. This is consistent with literature on outcomes of adolescent suicide attempts[14–16] and ideation.[37] The only exceptions were outcomes pertaining to social role status (i.e., being married, being a parent, household

income, recent unemployment). Clearly, adolescent suicide attempters have protracted and wide-ranging difficulties that persist into adulthood.

Our second objective was to determine whether these difficulties were specific to adolescent suicide attempts or by-products of the considerable problems and vulnerabilities that were already present in most adolescent attempters, in particular psychopathology and family background.[8] We found adolescent attempts to uniquely predict several negative adult outcomes even after applying stringent adjustment for sociodemographic background, concurrent adolescent psychopathology, and family risk factors. These included axis I (anxiety disorder) and axis II (antisocial and borderline personality disorder symptoms) psychopathology, poorer global and social functioning, risky sexual behaviors, and mental health treatment utilization. Our findings replicate and extend those of previous studies, though we found an association between adolescent suicide attempts and anxiety disorders in adulthood which was not found in two investigations.[14;15] This difference may have been due to our use of a semi-structured rather than structured diagnostic interview or the fact that previous studies used more restrictive categories (i.e., anxiety disorders without PTSD[14]; only generalized Anxiety Disorder[15]).

How adolescent attempts exactly relate to these specific impairments is an intriguing question and is likely to vary across outcomes. Results from this and previous investigations suggest that adolescent suicide attempts may contribute to bringing about future impairments. A general mechanism would be that attempts cause or exacerbate social difficulties (e.g., stigma, isolation), which then predispose for multiple future problems. In this sense, a consequence of attempts may be a form of interpersonal stress generation, akin to the process widely discussed in the context of major depression.[38] Outcomes may also have influenced each other in cascading fashion. For instance, propensity to risky sex in attempters may have increased the subsequent likelihood of PTSD and anxiety via liability for assault. Nonetheless, associations found in observational research do not imply causation. Adolescent attempts may relate to future problems as a marker of the severity of mental health problems prodromal manifestation of future disorder (e.g., borderline personality disorder) or expression of the same underlying liability, such as high negative emotionality and/or impulsivity.

A major finding from this study, however, is that suicide attempts were unrelated to the majority of outcomes in adulthood after accounting for adolescent confounders. First, we failed to replicate the associations between adolescent suicide attempts and subsequent suicidality and major depressive disorder in adulthood found in similar prospective studies[14; 15] and in the literature on suicide recurrence.[9–13] The fact that we found associations that were comparable to the ones reported in the Dunedin study[15] after adjustment for adolescent psychopathology, but that dropped to nonsignificance after adjusting for family confounders, raises the possibility that increased risk of future attempts and depression in adolescent attempters results from a combination of pre-existing individual and family risk factors which was incompletely accounted for in that investigation. However, another study reported adolescent suicide attempts to predict adult attempts and major depressive disorder after adjusting for a wider range of individual and family risk factors,[14] suggesting that other factors, such as methodological differences

between studies, may contribute to explaining conflicting findings (e.g., low base rate of adult attempts). Given that both associations remained close to significance after full adjustment and in the expected direction, previous studies may have detected comparable small associations essentially due to larger samples.

Second, our findings strengthen the notion that adolescent suicide attempts do not predict alcohol/drug dependence in adulthood beyond pre-existing psychopathology.[14; 15] Third, in contrast to the Dunedin study,[15] adolescent suicide attempts were not associated with several aspects of psychosocial functioning in adulthood (e.g., self-rated physical health, life dissatisfaction). Contradictory findings between the two studies may again relate to the level of adjustment or other methodological differences, such as period definitions (e.g., early adulthood included in adolescence vs. adulthood), differences in base rates (e.g., unemployment) or local idiosyncrasies (e.g., socioeconomic context related to education and employment opportunities).

Examination of confounding effects reveals that the outcomes of adolescent suicide attempts were in large part explained by concurrent adolescent psychopathology, in particular major depressive disorder, as well as child maltreatment and family psychopathology. Our investigation points to an important contribution of predisposing family factors in explaining the association between adolescent attempts and poor adult functioning. Both attempts and later difficulties may represent a long-lasting consequence of severely dysfunctional parenting practices and/or diverse expressions of a genetic liability reflected in elevated family psychopathology and possibly underlying a general psychopathology factor (p ;[39]).

A secondary contribution of this study was to examine whether adolescent suicide attempts were equally predictive across gender and three attempt characteristics. We found no differential prediction in males and females and in different types of attempts, except for mental health treatment utilization, which was slightly more likely in attempts of low intent than attempts of high intent. This finding suggests that low intent attempts may represent “cries for help” whereas more serious attempters may be prone to negate help.[40] More generally, the main implication of our secondary analyses is that all adolescent attempters appear at high risk of significant long-term problems. However, this conclusion should be interpreted with a degree of caution given restricted power to detect small effects. Interestingly, one study also reported poorer prognosis in male than female adolescents who were treated in emergency room for a suicide attempt, suggesting that gender differences may exist specifically in serious attempts.[41]

Several limitations should be acknowledged. First, there were only 65 participants in the adolescent attempter group, few of which (11) reported adult attempts. Second, regression models for some of the adult outcomes included no equivalent baseline measure, making it difficult to determine the direction of associations. Although this limitation is unlikely to have affected some outcomes (e.g., being a parent), reverse directionality is more difficult to rule out in others (e.g., social adjustment). Third, we did not apply a strict definition of legal adolescence (i.e., <18 years of age), since approximately half of OADP participants were aged between 18 and 20 by T2. Fourth, participants were sampled in a single region of the country and over-represented White adolescents in comparison to the USA population. Fifth,

measures of psychosocial functioning in adulthood were self-report. Sixth, although limited, attrition may have influenced associations. FIML estimation was employed to preserve statistical power and reduce missingness bias.[35]

Future studies should explore the various mechanisms by which adolescent suicide attempts relate to subsequent adult adjustment problems. Consistent with our stress generation hypothesis, we suggest investigating variables pertaining to interpersonal difficulties (e.g., conflict and rejection in relationships) as candidate mediators in future prospective designs. Our results raise intriguing questions regarding the nature of the association between suicide attempts and psychopathology. Studies have found psychopathology to predict attempts, [4;12;17] attempts to predict psychopathology,[14–15] increasing contemporaneous associations over time,[42] and interactions between attempts and psychopathology in predicting future attempts.[13] Simultaneous tests of competing models for specific disorders are needed to clarify the nature of this association.

Our findings emphasize the necessity of providing appropriate long-term follow-up and support for adolescent suicide attempters, regardless of the severity or recurrence of their attempt(s). The fact that several outcomes appeared to be explained by concurrent adolescent problems rather than the attempts per se implies that it may be clinically indicated to focus on these problems to prevent persistent adult difficulties. Successfully identifying and treating psychopathology before and after attempts is likely to represent the most effective therapeutic avenue in reducing the risk of long-term problems in adolescent suicide attempters. However, results suggest that support should not be limited to psychiatric symptoms and suicidality, but should also promote broader recovery to reduce the potential negative repercussions of attempts on global and interpersonal functioning.[43]

Acknowledgments

Dr. Brière reports a post-doctoral fellowship from Fonds Québécois de la Recherche sur la Société et la Culture (FQRSC) during the conduct of the study.

Dr. Rohde reports grants from National Institute of Mental Health, grants from National Institute on Drug Abuse, during the conduct of the study.

This study was supported by grants from the National Institute of Mental Health (MH40501, MH, 50522, and MH52858) and the National Institute on Drug Abuse (DA12951) awarded to Peter M. Lewinsohn and a postdoctoral fellowship from the Fond Québécois de Recherche sur la Société et la Culture (FQRSC) awarded to Frédéric N. Brière. The authors wish to thank Jeff Gau for providing help with data organization.

References

1. Hawton K, Saunders KE, O'Connor RC. Self-harm and suicide in adolescents. *Lancet*. 2012; 379:2373–2382. [PubMed: 22726518]
2. Evans E, Hawton K, Rodham K, Deeks J. The prevalence of suicidal phenomena in adolescents: a systematic review of population-based studies. *Suicide Life Threat Behav*. 2005; 35:239–250. [PubMed: 16156486]
3. Rohde P, Lewinsohn PM, Klein DN, et al. Key Characteristics of Major Depressive Disorder Occurring in Childhood, Adolescence, Emerging Adulthood, Adulthood. *Clin Psychol Sci*. 2013; 1:41–53.
4. Spirito A, Esposito-Smythers C. Attempted and completed suicide in adolescence. *Annu Rev Clin Psychol*. 2006; 2:237–266. [PubMed: 17716070]

5. Crosby AE, Han B, Ortega LA, et al. Suicidal thoughts and behaviors among adults aged ≥ 18 years--United States, 2008--2009. *MMWR Surveill Summ*. 2011; 60:1--22. [PubMed: 22012169]
6. World Health Organisation. [Accessed January 24, 2014] Suicide Prevention (SUPRE). http://www.who.int/mental_health/prevention/suicide/suicideprevent/en/.
7. Center for Disease Control. [Accessed January 24, 2014] Web-based Injury Statistics Query and Reporting System (WISQARS). <http://www.cdc.gov/injury/wisqars/index.html/>.
8. Lewinsohn PM, Rohde P, Seeley JR. Adolescent Suicidal Ideation and Attempts: Prevalence, Risk Factors, and Clinical Implications. *Clinical Psychology: Science and Practice*. 1996; 3:25--46.
9. Beghi M, Rosenbaum JF, Cerri C, Cornaggia CM. Risk factors for fatal and nonfatal repetition of suicide attempts: a literature review. *Neuropsychiatr Dis Treat*. 2013; 9:1725--1736. [PubMed: 24235836]
10. Joiner TE Jr, Conwell Y, Fitzpatrick KK, et al. Four studies on how past and current suicidality relate even when "everything but the kitchen sink" is covaried. *J Abnorm Psychol*. 2005; 114:291--303. [PubMed: 15869359]
11. Lewinsohn PM, Rohde P, Seeley JR. Psychosocial risk factors for future adolescent suicide attempts. *J Consult Clin Psychol*. 1994; 62:297. [PubMed: 8201067]
12. Nock MK, Kessler RC. Prevalence of and risk factors for suicide attempts versus suicide gestures: analysis of the National Comorbidity Survey. *J Abnorm Psychol*. 2006; 115:616--623. [PubMed: 16866602]
13. Goldston DB, Daniel SS, Reboussin DM, Reboussin BA, Frazier PH, Kelley AE. Suicide attempts among formerly hospitalized adolescents: A prospective naturalistic study of risk during the first 5 years after discharge. *J Am Acad Child Adolesc Psychiatry*. 1999; 38:660--671. [PubMed: 10361783]
14. Fergusson DM, Horwood LJ, Ridder EM, Beautrais AL. Suicidal behaviour in adolescence and subsequent mental health outcomes in young adulthood. *Psychol Med*. 2005; 35:983--993. [PubMed: 16045065]
15. Goldman-Mellor SJ, Caspi A, Harrington H, et al. Suicide Attempt in Young People: A Signal for Long-term Health Care and Social Needs. *JAMA Psychiatry*. 2014; 71:119--127. [PubMed: 24306041]
16. Kerr DC, Capaldi DM. Young men's intimate partner violence and relationship functioning: long-term outcomes associated with suicide attempt and aggression in adolescence. *Psychol Med*. 2011; 41:759--769. [PubMed: 20540815]
17. Bridge JA, Goldstein TR, Brent DA. Adolescent suicide and suicidal behavior. *J Child Psychol Psychiatry*. 2006; 47:372--394. [PubMed: 16492264]
18. Lewinsohn PM, Hops H, Roberts RE, et al. Adolescent psychopathology: I. Prevalence and incidence of depression and other DSM-III-R disorders in high school students. *J Abnorm Psychol*. 1993; 102:133--144. [PubMed: 8436689]
19. Rohde P, Lewinsohn PM, Seeley JR, et al. Psychosocial functioning of adults who experienced substance use disorders as adolescents. *Psychol Addict Behav*. 2007; 21:155--164. [PubMed: 17563135]
20. Orvaschel H, Puig-Antich J, Chambers W, et al. Retrospective assessment of prepubertal major depression with the Kiddie-SADS-e. *J Am Acad Child Psychiatry*. 1982; 21:392--397. [PubMed: 7119313]
21. First, MB.; Spitzer, RL.; Gibbon, M.; Williams, JBW. User's guide for the Structured Clinical Interview DSM-IV Axis I Disorders -- Clinician version (SCID-I). Washington, DC: American Psychiatric Press; 1997.
22. Keller MB, Lavori PW, Friedman B, et al. The Longitudinal Interval Follow-up Evaluation. A comprehensive method for assessing outcome in prospective longitudinal studies. *Arch Gen Psychiatry*. 1987; 44:540--548. [PubMed: 3579500]
23. First, MB.; Spitzer, RL.; Gibbon, M.; Williams, JBW. Structured Clinical Interview for DSM-IV Axis I disorders, non-patient edition (SCID-NP, Version 2.0). New York: 1996.
24. Mannuzza, S.; Fyer, AJ. Family informant schedule and criteria (FISC), revision. New York: 1990.
25. Leckman JF, Sholomskas D, Thompson WD, et al. Best estimate of lifetime psychiatric diagnosis: a methodological study. *Arch Gen Psychiatry*. 1982; 39:879--883. [PubMed: 7103676]

26. Smith K, Conroy RW, Ehler BD. Lethality of suicide attempt rating scale. *Suicide Life Threat Behav.* 1984; 14:215–242. [PubMed: 6528343]
27. Loranger, AW. *Personality disorder examination (PDE) manual.* Yonkers: DV Communications; 1988.
28. Andrews, FM.; Withey, SB. *Social indicators of well-being: American's perceptions of life quality.* New York, NY: Plenum Press; 1976.
29. Weissman MM, Bothwell S. Assessment of social adjustment by patient self-report. *Arch Gen Psychiatry.* 1976; 33:1111–1115. [PubMed: 962494]
30. Rahdert, ER. *The adolescent assessment/referral system manual.* Rockville, MD: NIDA; 1991.
31. Berger AM, Knutson JF, Mehm JG, Perkins KA. The self-report of punitive childhood experiences of young adults and adolescents. *Child Abuse Negl.* 1988; 12:251–262. [PubMed: 3395899]
32. Bernstein DP, Fink L, Handelsman L, et al. Initial reliability and validity of a new retrospective measure of child abuse and neglect. *Am J Psychiatry.* 1994; 151:1132–1136. [PubMed: 8037246]
33. Cohen, J. *Statistical power analysis for the behavioral sciences.* 2nd ed. Hillsdale, NJ: Erlbaum; 1988.
34. Lipsey, MW.; B, WD. *Practical Meta-Analysis.* Thousand Oaks, CA: Sage Publications; 2001.
35. Enders, CK. *Applied missing data analysis.* New York, NY: Guilford Press; 2010.
36. Muthén, LK.; Muthén, BO. *Mplus User's Guide. Sixth Edition.* Los Angeles, CA: Muthén & Muthén; 2010.
37. Reinherz HZ, Tanner JL, Berger SR, et al. Adolescent suicidal ideation as predictive of psychopathology, suicidal behavior, and compromised functioning at age 30. *Am J Psychiatry.* 2006; 163:1226–1232. [PubMed: 16816228]
38. Hammen C. Generation of stress in the course of unipolar depression. *J Abnorm Psychol.* 1991; 100:555–561. [PubMed: 1757669]
39. Caspi A, Houts RM, Belsky DW, et al. The p Factor: One General Psychopathology Factor in the Structure of Psychiatric Disorders? *Clin Psychol Sci.* 2014; 2:119–137. [PubMed: 25360393]
40. Rudd MD, Joiner TE Jr, Rajab MH. Help negation after acute suicidal crisis. *J Consult Clin Psychol.* 1995; 63:499–503. [PubMed: 7608366]
41. Farbstein I, Dycian A, Gothelf D, et al. A follow-up study of adolescent attempted suicide in Israel. *J Am Acad Child Adolesc Psychiatry.* 2002; 41:1342–1349. [PubMed: 12410077]
42. Goldston DB, Daniel SS, Erkanli A, et al. Psychiatric diagnoses as contemporaneous risk factors for suicide attempts among adolescents and young adults: developmental changes. *J consulting and clinical psychology.* 2009; 77:281–290.
43. Geller JL. *The Roots of the Recovery Movement in Psychiatry: Lessons Learned.* *Psychiatric Services.* 2011; 62:225–226.

Table 1

Descriptive Statistics for Study Outcomes by Adolescent Attempt Status

	Frequency [%] or Mean (SD)	
	Non-Attempters (n=751)	Attempters (n=65)
Suicidality		
Suicide attempt (1=yes)	27 [3.5]	11 [16.6]
Psychopathology		
Major depression (1=yes)	308 [41.0]	47 [72.2]
Alcohol/drug dependence (1=yes)	163 [21.7]	27 [42.2]
Anxiety disorder (1=yes)	104 [13.9]	27 [42.1]
Antisocial personality disorder symptoms	1.8 (3.0)	3.9 (5.2)
Borderline personality disorder symptoms	0.5 (1.2)	2.0 (3.1)
Psychosocial functioning		
Mental health treatment utilization (1=yes)	209 [27.8]	39 [61.0]
Not married (1=yes)	318 [42.3]	27 [42.2]
Never parent (1=yes)	409 [54.4]	29 [45.6]
Years of schooling	14.7 (1.9)	13.9 (1.9)
Weeks of Unemployment	4.0 (2.0)	4.0 (2.0)
Income	3.6 (1.3)	3.4 (1.3)
Self-rated physical health	4.1 (0.6)	3.9 (0.6)
Life dissatisfaction	29.7 (7.6)	33.3 (8.6)
Social adjustment	3.3 (0.3)	3.1 (0.5)
Risky sex	0.5 (1.2)	1.1 (1.8)
Global functioning	80.3 (7.3)	73.0 (11.1)

Table 2
Association between Suicide Attempt in Adolescence and Suicidality, Psychopathology, and Psychosocial Functioning in Adulthood

	OR or β (95%CI)			
	Unadjusted	Adjusted: Sociodemographics/ ¹	Adjusted: Sociodemographics + Psychopathology ²	Adjusted: Sociodemographics + Psychopathology + Family Risk Factors ³
Suicidality				
<i>Dichotomous outcome</i>				
Suicide attempt (1=yes)	5.4 (2.8–10.6)***	4.3 (2.1–8.6)***	2.3 (1.2–4.7)*	1.8 (0.8–3.8)
Psychopathology				
<i>Dichotomous outcomes</i>				
Major depressive disorder (1=yes)	3.7 (2.6–6.2)***	2.9 (1.7–5.0)***	1.9 (1.04–3.4)*	1.6 (0.9–3.0)
Alcohol/drug dependence (1=yes)	2.6 (1.7–4.2)***	3.1 (1.9–5.0)***	1.7 (1.0–3.1)	1.3 (0.7–2.5)
Anxiety disorder (1=yes)	4.5 (2.8–7.3)***	3.6 (2.2–5.8)***	2.6 (1.5–4.4)***	2.0 (1.1–3.5)*
<i>Continuous outcomes</i>				
Antisocial personality disorder symptoms	0.2 (0.1,0.3)***	0.2 (0.1,0.3)***	0.1 (0.04,0.2)**	0.1 (0.01,0.2)*
Borderline personality disorder symptoms	0.3 (0.2,0.4)***	0.3 (0.2,0.4)***	0.2 (0.1,0.3)**	0.1 (0.04,0.2)*
Psychosocial functioning				
<i>Dichotomous outcomes</i>				
Mental health treatment utilization (1=yes)	4.1 (2.5–6.6)***	3.4 (2.1–5.6)***	2.3 (1.4–3.8)**	2.0 (1.2–3.4)*
Never married (1=yes)	1.0 (0.6–1.6)	1.1 (0.7–1.7)	1.0 (0.6–1.6)	0.9 (0.5–1.5)
Never parent (1=yes)	0.7 (0.4–1.1)	0.9 (0.5–1.4)	1.0 (0.6–1.6)	1.0 (0.6–1.7)
<i>Continuous outcomes</i>				
Years of schooling	-0.1 (-0.2,-0.05)***	-0.1 (-0.2,-0.02)*	-0.04 (-0.1,0.03)	-0.02 (-0.1,0.1)
Weeks of unemployment (log 10 base)	0.04 (-0.03,0.1)	0.02 (-0.1,0.1)	-0.01 (-0.1,0.1)	-0.04 (-0.1,0.03)
Income	-0.04 (-0.1,0.02)	-0.02 (-0.1,0.04)	0.02 (-0.04,0.1)	0.1 (-0.01,0.1)
Self-rated physical health	-0.1 (-0.2,-0.04)**	-0.1 (-0.2,-0.01)*	-0.1 (-0.1,0.02)	-0.03 (-0.1,0.04)
Life dissatisfaction	0.1 (0.1,0.2)***	0.1 (0.1,0.2)***	0.1 (0.004,0.1)*	0.1 (-0.02,0.1)
Social adjustment	-0.2 (-0.3,-0.1)***	-0.2 (-0.2,-0.1)***	-0.1 (-0.2,-0.04)**	-0.1 (-0.2,-0.004)*
Risky sex	0.1 (0.04,0.2)**	0.1 (0.04,-0.2)***	0.1 (0.03,0.2)**	0.1 (0.02,0.2)*
Global functioning	-0.3 (-0.3,-0.2)***	-0.2 (-0.3,-0.2)***	-0.2 (-0.2,-0.07)***	-0.1 (-0.2,-0.02)*

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

¹ Age, gender, parental education, family structure, ethnicity

² Major depressive disorder, alcohol/drug dependence, anxiety disorder, disruptive behavior disorder by T2

³ Family history of suicidality, family history of psychopathology, child maltreatment