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The relationship between adult attachment and suicidal thoughts and behaviors: A systematic
review

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Authors:

Tiago C. Zorzea*

Suicidal Behaviour Research Laboratory, Institute of Health and Wellbeing, University of Glasgow, Academic Centre, Gartnavel Royal Hospital, 1055 Great Western Road, Glasgow G12 0XH, Scotland, United Kingdom. Email address: t.carlos-zorzea.1@research.gla.ac.uk

*Corresponding author. Telephone number: (44) 0141 201 4469.

ORCID: <https://orcid.org/0000-0002-8451-0555>

Twitter handle: @zorzea_tiago

Cindy M. Gray

Institute of Health and Wellbeing, Room 230, 25-29 Bute Gardens, University of Glasgow Glasgow G12 8RS, Scotland, United Kingdom. Email address: Cindy.Gray@glasgow.ac.uk

ORCID: <https://orcid.org/0000-0002-4295-6110>

Rory C. O'Connor

Suicidal Behaviour Research Laboratory, Institute of Health and Wellbeing, University of Glasgow, Academic Centre, Gartnavel Royal Hospital, 1055 Great Western Road, Glasgow G12 0XH, Scotland, United Kingdom. Email address: Rory.OConnor@glasgow.ac.uk

ORCID: <https://orcid.org/0000-0002-3650-4994>

Twitter handle: @suicidresearch

Abstract

Objective: We aimed to (1) determine the extent of the relationship between attachment and suicidal thoughts and behaviors (STB), (2) investigate whether any gender differences exist, and (3) conduct a theoretical synthesis of the included studies.

Methods: A systematic search of the following databases Web of Science, CINAHL, Health Source: Nursing/Academic Edition, Psychology and Behavioral Sciences Collection, PsycINFO, and EMBASE was conducted, with 52 studies meeting the inclusion criteria.

Results and conclusion: As secure attachment acts as protective factor, insecure attachment orientations appear to be vulnerability factors compromising an individual's capacity to cope with relationship issues, increasing suicide risk. There is insufficient evidence about gender differences. The theoretical synthesis suggests that attachment, interacting with other psychological traits in response to negative life events, acts as a vulnerability or protective factor for STB. Implications for treatment are also discussed.

Introduction

Globally, suicide is one of the three leading causes of death among people aged 15-44 years, and the second leading cause of death among young people aged between 15-29 years (World Health Organization, 2014). There have been many advances in understanding which factors are associated with people's vulnerability towards suicidal thoughts and behaviors (Hawton, Saunders, & O'Connor, 2012; O'Connor & Nock, 2014; Turecki & Brent, 2016), including those related to family experiences (Brent et al., 1993; Cero & Sifers, 2013; Fergusson & Lynskey, 1995). *Suicidal thoughts and behaviors* (STB) is an umbrella term to describe suicide-related thoughts or ideation (including casual, transient, passive, active, and persistent thinking) and suicide-related behaviors – acts with some degree of suicidal intent, including suicide attempt with and without injuries (Silverman, Berman, Sanddal, O'Carroll, & Joiner, 2007).

STB affects people of all ages, ethnicities, sexual orientation, and genders, although the overwhelming majority of suicide deaths are by men (World Health Organization, 2014). Although most studies on STB focus on the role of risk factors (Franklin et al., 2017), another approach to improving the knowledge and prevention of suicide is by understanding better the motivations for suicide attempts (Klonsky, May, & Saffer, 2016), as well as how psychological and contextual variables interact to develop vulnerability for STB. Recent research has suggested that key elements associated with developmental vulnerability for STB are having been exposed to adverse childhood experiences (Cleare et al., 2018), harmful parenting (Cero & Sifers, 2013), and early disrupted attachment relationships (Fergusson, Woodward, & Horwood, 2000). Although several researchers have proposed a range of theoretical frameworks to understand the etiology of STB (Barzilay & Apter, 2014), Adam (1994) was the first author to suggest a developmental model where the attachment system plays a central role in the emergence of suicidal behavior. According to this model (Adam,

1994), early adverse parenting experiences and other childhood negative experiences could lead to the development of insecure attachments which could act as a psychological vulnerability factor for suicide risk later in life. Adam's model was based on Bowlby's and Ainsworth's work which suggests a permanent effect of early attachment experiences (Ainsworth & Bowlby, 1991).

Through observational and experimental studies, Mary Ainsworth (Ainsworth, Blehar, Waters, & Wall, 1978; Bretherton, 1992) proposed that the attachment system functioned through different orientations (i.e., attachment styles or attachment patterns), which reflects the way internal working models of the self and others work. A secure attachment orientation is characterized by a self-perception of worthiness (lovability) connected with an expectation that other people are generally accepting and responsive. Insecure attachment may develop different orientations: anxious or avoidant, characterizing specific ways of emotional bonding with attachment figures (mothers or closest carer in infancy, or partner and intimate relationships in adulthood). In general, anxious attachment (also known as preoccupied or ambivalent attachment) is characterized by an amalgamation of a sense of unworthiness (unlovability) and a positive appraisal of others, which leads the person to struggle for self-acceptance by gaining the acceptance of valued others. Finally, an avoidant attachment orientation includes behaviors that aim to produce and keep autonomy, control and independence in their relationships, using 'distancing' and 'detaching' coping strategies, avoiding intimacy and emotional involvement. This is a result of having a negative view of their attachment figures and a negative view of the self (for those who present higher levels of attachment anxiety and attachment avoidance: 'fearful-avoidant' or 'disorganized' attachment patterns) or a negative view of their attachment figures and combined with positive view of the self (also known as 'dismissive-avoidant' patterns) (Mikulincer & Shaver, 2008, 2016a; Simpson & Rholes, 2012).

In trying to understand the role of attachment in STB, it is important to consider how attachment is assessed. Due to the conceptual diversity within attachment theory, several authors have developed different methods to measure adult attachment, including interviews and self-report measures (Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010). These instruments are either based on typological approaches of attachment, which conceptualize secure, anxious and avoidant relationships as categories (patterns or styles), or on dimensional approaches, which operationalize attachment across dimensions (levels) of anxiety and avoidance attachment. Albeit a typological approach seems to be useful in clinical settings (Ravitz et al., 2010), it has been criticized for losing individual variability, having poor reliability and validity properties, and lacking statistical power and precision. These measurement issues have been argued to be solved through dimensional approaches of assessing attachment orientations (Fraley, Heffernan, Vicary, & Brumbaugh, 2011; Fraley, Waller, & Brennan, 2000; Sibley, Fischer, & Liu, 2005).

Although Adam's (1994) theoretical framework suggests the existence of a relationship between attachment and STB, the nature of this relationship is still unclear as is whether insecure attachment orientations (anxiety and avoidance) are specifically more associated with suicidal thoughts and/or suicidal attempts. Similarly, Adam's model does not propose distinct psychological and contextual factors related to attachment that could differentiate those who experience suicidal thoughts from people who attempt suicide.

Recent reviews have endeavored to summarize the available evidence between attachment and STB (Miniati, Callari, & Pini, 2017), and attachment and self-injurious behaviors (Wrath & Adams, 2018). Although Miniati and colleagues' (2017) review's key message is that insecure attachment style is associated with increased suicide risk, their review was not systematically conducted. However, Wrath and Adams' (2018) review was systematic, but its inclusion criteria were stricter, yielding only 17 studies in the final

synthesis. For example, the latter review did not include studies assessing suicidal ideation. The present review not only extends the aims of the aforementioned reviews, but it also addresses some of methodological limitations of these reviews focusing on studies of STB (excluding non-suicidal self-injury and non-suicidal self-harm). In summary, the aims of this systematic review are to (1) investigate the extent of the relationship between attachment orientations and STB, including exploring potential mediators and moderators of the attachment and STB relationship, (2) investigate whether the relationship between attachment and STB is similar for men and women, and (3) provide a theoretical synthesis of the results presented by the included studies.

Method

Information Sources

A literature search was conducted using the following psychological and medical databases: Web of Science (all years: 1900-2017); EBSCO Host Medical and Psychology related resources (all years: 1934-2017, includes: CINAHL, Health Source: Nursing/Academic Edition, Psychology and Behavioural Sciences Collection, PsycINFO); and EMBASE (all years: 1946-2017).

Search (Full Electronic Strategy)

The search was conducted on 6th March 2017 with no date restriction. Key word searches using the terms Attachment AND Suicid* were employed and generated 2,389 records (1,003 after deduplication). The search was refined by document types (articles) and languages (English) (Figure 1).

Eligibility Criteria

Given that there were only 1,003 records, we took the decision to read all abstracts to determine whether they met the following inclusion criteria:

- (i) The Study should be an empirical paper.
- (ii) The Study should report a relationship between attachment and suicidal ideation or behavior.
- (iii) The Study should assess general attachment or attachment to parents.
- (iv) The Study should measure adults' or adolescents' perceptions of attachment or attachment patterns.
- (v) The Study should be written in English.
- (vi) The Study should not be a single case Study.
- (vii) The Study should not be a qualitative Study.

Data Extraction and Quality Assessment

A data extraction sheet was completed for each paper with relevant information for this systematic review (e.g., paper identification, methodological aspects, main results, and authors interpretation of their data). After data extraction, all selected studies were assessed for methodological quality using a 9-item index based on O'Connor, Ferguson, Green, O'Carroll and O'Connor's (2016) quality assessment tool. Total scores were computed ranging from 0 to 13, meaning that a lower score is indicative of a higher probability of methodological bias. Classifications of quality were set as follows: 0-2 = very low quality, 3-4 = low quality, 5-7 = reasonable/medium quality, 8-10 = good quality, and = 11-13 excellent/very good quality. The detailed quality assessment tool can be found in the in the supplementary material (Table A). The checklist of items to include when reporting a systematic review or meta-analysis (Moher et al., 2009) was completed and can be found in the supplementary material available (Table B).

Data Analysis and Synthesis

A narrative synthesis was conducted. The studies were grouped according to Study design. An appraisal of authors' interpretations of their data was also conducted to identify

psychological themes across the studies and compare these with predominant models of suicidal behavior. These models are the Interpersonal Theory of Suicide (IPT – Joiner, 2005), the Integrated Motivational-Volitional Model of Suicidal Behavior (IMV – O’Connor, 2011; O’Connor & Kirtley, 2018), and the Three Step Theory (3ST – Klonsky & May, 2015), and The Developmental Model of Suicidal Behavior and Attachment (Adam, 1994).

The first three contemporary models of suicidal behavior known as ideation-to-action frameworks propose that the factors associated with suicidal ideation (SI) are distinct from those associated with suicide attempts (SA). The IPT suggests that the combination of perceived burdensomeness and thwarted belongingness leads to suicidal thinking, but the presence of acquired capability (e.g., fearlessness of death) is the key factor that distinguishes SI from SA. On the other hand, the IMV model suggests that defeat and entrapment are the main psychological factors that lead to SI, in which entrapment mediates the defeat-SI relationship. A range of volitional moderators, however, are hypothesized to differentiate between SI and SA. Finally, the 3ST suggests that SI arises from the combination of pain and hopelessness; and the SI-SA transition is facilitated by dispositional, acquired, and practical contributors to the capability for SA. Although none of the three new theories includes attachment explicitly, Adam’s model (1994) suggests that attachment may act as a vulnerability or background variable, acting as a general contributor to the development of STB.

Results

Descriptive Overview of the Selected Studies, Quality Assessment and Sample

Characteristics

Of the 1,003 records identified, 52 were included in the systematic review (see Figure 1): 35 of the studies were cross-sectional, 12 were prospective, three were case-control, one

was a randomized controlled trial, and one used mixed methods (quantitative and qualitative analyses). 26 (50%) were conducted in the United States (US), six in Canada, four in the United Kingdom, three in Portugal, two in France, New Zealand, Turkey and Italy, and one in each of the countries: Israel, Iran, South Africa, South Korea, and Finland.

[Please insert Figure 1 around here]

Although Study quality varied, most studies were classified as ‘reasonable/medium’. The majority of the studies employed a cross-sectional design; therefore, it is not possible to comment about causality. The assessment of attachment and STB across the studies was heterogeneous, as the instruments were quite diverse (e.g., validated and non-validated self-report scales, interviews, single item/question, hospital admissions/records) (references of the measures employed by the studies cited in Tables 1-3 can be found in the supplemental material). Although most studies ($n = 43$) employed validated measures of adult attachment, only eight out of the 52 studies assessed the construct via clinical/research interviews. For the assessment of STB, 33 studies used self-administered measures and 19 employed interviews. Furthermore, 19 studies assessed STB through a non-validated scale or a single item/question; 10 used registers from hospital admission for suicide attempt or items from a validated diagnostic rating scale; and 23 assessed STB via clinical interview or a full validated scale.

46,476 participants took part in the 52 studies (21,777 males and 24,689 females). The mean age was 25.1 years old ($SD = 11.8$), and 74% of participants ($N = 34,412$) were from the US. 4,752 participants reported suicidal ideation or a suicide attempt, and 25,893 did not report any STB. 14 studies did not provide details of the number of suicidal and non-suicidal participants. Two-thirds of participants (66.5%) were recruited from the general population, 16.1% were university students, 7.3% were clinical patients (inpatients, outpatients, people looking for treatment, or admitted to the hospital), 4.3% were a mix of

clinical patients and participants from the general population, and 5.7% were participants from specific populations (those who are homeless, war veterans, and immigrants' children). In 24 studies, those in the suicidal group were clinically diagnosed with a mental health condition (non-psychotic) (N = 2,016), whereas in 2 studies members of the suicidal group did not have any psychiatric diagnosis (N = 406). 26 studies did not state whether members of the suicidal group had been diagnosed with a mental health condition (N = 2,330).

Associations Between Attachment and STB

The associations between attachment and suicidal ideation and behaviors are described in detail according to attachment patterns: secure attachment, avoidant attachment; anxious attachment; and other classifications of attachment.

Secure attachment. 33 studies investigated the association between secure attachment and STB, and the vast majority of these associations were negative (i.e., higher levels of secure attachment associated with lower levels of suicidal thoughts or suicide attempts). The following subsections show how secure attachment is related to suicidal ideation, suicide attempt, and STB.

Suicidal ideation. 20 studies reported statistically significant associations between secure attachment and suicidal ideation (studies 1, 10, 11, 13–15, 20, 23, 29, 31–34, 36, 39, 40, 44–47, main results Tables 1-3). With the exception of Study 32, all studies found secure attachment to be a protective factor against suicidal ideation. Study 32, which explored suicidal ideation among Vietnam combat veterans in treatment for PTSD, found the secure attachment group had higher levels of current suicidal ideation than the insecure attachment group: however, given the relatively small sample size (N = 48) and specific population, these results should be interpreted cautiously. In nine studies, suicidal ideation was negatively correlated with secure attachment (studies 10, 11, 13, 15, 23, 29, 31, 34, 40). Other studies conducted multivariate analyses controlling for a range of variables alongside

secure attachment to explain the variance in suicidal ideation (10, 11, 13, 15, 20, 29, 33, 34, 36, 39, 40, 44-47). Within these studies, secure attachment predicted a reduction in suicidal ideation even when confounders were controlled for.

Suicide attempt. All 10 studies found a negative relationship between secure attachment and suicide attempt (studies 2, 3, 4, 19, 26, 36, 39, 40, 41, 46). In particular: (a) high levels of secure attachment were negatively correlated with frequency of suicide attempts (Study 40); (b) suicide attempt survivors reported significantly lower levels of secure attachment compared with those who have not attempted suicide (studies 3, 26); (c) high levels of secure attachment predicted lower frequencies of suicide attempts (studies 40, 41, 2, 4, 26); and (d) low levels of secure attachment predicted suicide attempt (studies 36, 39, 46). The relationship appears robust as some studies (2, 4, 39, 40, 41, 46) controlled for confounders (e.g., sociodemographic factors, depression, self-esteem, religiosity), and only one (Study 40) reported a non-significant association between secure attachment and current suicide attempt (after adjusting for previous suicide attempt). Study 19 compared a ‘drug misuse problem’ group with a ‘no drug misuse problem’ group, with all participants having attempted suicide in the previous year; the former group showed lower levels of secure attachment. Study 3 included individuals with current and past experiences of self-harm recruited from an online community, and Study 26 included adolescents from an inpatient psychiatric unit without previous self-harm.

STB. Eight studies did not differentiate between suicidal ideation and suicide attempt, but referred to “suicidality” as a mixed concept (i.e., including STB). They all reported a negative relationship between secure attachment and STB (studies 3, 6, 7, 30, 37, 43, 48, 50). In particular, (a) there was a negative correlation between secure attachment and STB (studies 3 and 37); (b) suicidal groups reported significantly lower levels of secure attachment (studies 7, 43, 50); and (c) lower levels of secure attachment predicted STB

alongside other psychosocial variables in multivariate analyses (studies 3, 6, 30, 37, 48). In the three studies (studies 30, 37 and 43) that controlled for covariates, the association remained significant after statistical adjustment.

The vast majority of the studies that investigated the relationship between secure attachment and STB found that secure attachment was protective against STB. Even when considering the methodological heterogeneity across the studies, this relationship appears to be robust.

Anxious attachment. 18 studies assessed anxious attachment and how it is associated with STB. This section includes ‘anxious’ and ‘preoccupied’ attachment as they address the same psychological characteristics of attachment anxiety. It is important to note that ‘attachment anxiety’ and ‘anxious attachment’ are used synonymously across the studies.

Suicidal ideation. Seven studies investigated the relationship between anxious or preoccupied attachment and suicidal ideation (studies 12, 15, 23, 28, 31, 38, 52). Higher levels of attachment anxiety were positively correlated with suicidal ideation (studies 12, 15, 23, 31), and suicidal ideation groups reported higher levels of attachment anxiety when compared to controls (studies 23, 52). One Study (Study 38) comparing levels of suicidal ideation across attachment pattern groups (secure, anxious and avoidant), reported that the anxious group had higher levels of suicide ideation than the other groups. Study 15 showed that preoccupied attachment (together with hopelessness and poor problem-solving skills) explained variance in suicidal ideation. Study 28 presented findings indicating that attachment anxiety predicted membership of the suicidal ideation group and this relationship was mediated by interpersonal problems. This was the only Study to investigate the relationship between suicidal ideation and anxious attachment that controlled for age, ethnicity and gender, and demonstrated significant associations after adjustment.

Suicide attempt. Nine studies investigated the relationship between anxious

attachment and suicidal attempts (studies 3, 16, 21, 22, 24, 25, 27, 28, 49). One Study (Study 24) found a positive correlation between the lethality of suicide attempts and the level of anxious attachment (the higher levels of anxious attachment, the more lethal a suicide attempt was). The remainder found that patients who had made a medically serious suicide attempt showed higher levels of anxious attachment than patients who were deemed non-medically serious (medically serious suicide attempts were defined as more than 24 hours of hospitalization in an intensive care unit or surgery under general anesthesia after a suicide attempt). Study 16 found that patients with two or more lifetime suicide attempt presented higher levels of anxious attachment when compared to other groups of patients ('no suicidal ideation' group, 'suicidal ideation with no attempts' group, and 'one suicide attempt' group) after controlling for traits of Borderline Personality Disorder.

Four studies using multivariate analyses reported that attachment was a significant predictor of suicide attempt: (a) Study 21 found that depressive symptoms mediated the relationship between attachment anxiety and suicide attempt; (b) Study 24 showed that attachment anxiety, alongside depression, hopelessness and negative life events, predicted high levels of lethality in suicide attempts and that avoidant attachment explained the variance in medical lethality of suicide attempt mediated by self-disclosure and loneliness; (c) Study 25 found that age and anxious attachment predicted the likelihood of having made a suicide attempt. Finally, (d) Study 28 conducted a mediation analysis and demonstrated that attachment anxiety predicted suicide attempt group membership, but this relationship was mediated by lack of sociability. Other studies (16, 21, 27 and 28) controlled for covariates (e.g., gender, age, ethnicity, Borderline Personality Disorder traits, depressive symptoms), and all reported significant associations between anxious attachment and suicide attempt.

STB. Three studies (studies 8, 17, 30) explored the association between anxious attachment pattern and STB. Study 8 found that anxious attachment explained the variance in

STB through the mediation of dependency and self-criticism, after adjusting for gender.

Study 17, assessing teenagers in psychiatric treatment, showed that those who were female, older than 15 years, and had unresolved-disorganized attachment-related trauma and anxious attachment pattern were significantly more likely demonstrate STB. Finally, Study 30 found being older and having anxious attachment pattern increased the likelihood of belonging to the STB group, after controlling for age and gender. Having an anxious (or preoccupied) relationship orientation seems to be a vulnerability factor for both suicidal ideation and suicide attempt even when other psychological variables are controlled for.

Avoidant attachment. 17 studies looked at the relationship between avoidant attachment orientation and their association with suicidal thoughts and actions. This section includes studies reporting on avoidant attachment orientations in general, as well as the dismissive avoidant and fearful avoidant patterns. ‘attachment avoidance’ and ‘avoidant attachment’ are used interchangeably across the studies.

Suicidal ideation. Suicidal ideation was associated with (a) avoidant attachment (studies 4, 42), (b) fearful avoidant attachment (studies 15, 23, 31), and (c) dismissive avoidant attachment (studies 15, 23). Specifically, avoidant attachment predicted variance in suicidal ideation at two-time points (baseline and 3-month follow-up) (Study 42), and suicidal ideation group membership in Study 4 (when adjusted for several sociodemographic and mental health variables). Levels of fearful avoidant attachment were positively correlated with suicidal ideation (studies 15, 23, 31), and participants within the suicidal ideation group reported higher levels of fearful avoidant attachment than controls (Study 23). The picture in relation to dismissive avoidant attachment is less clear: Study 15 found a positive correlation between levels of dismissive avoidant attachment and suicidal ideation but only among female participants, and a negative correlation was found between dismissive avoidant attachment and suicidal ideation in Study 23.

Suicide attempt. Most of the studies that investigated the relationship between avoidant attachment and STB found it to be more strongly associated with suicide attempts than suicidal thoughts (studies 3, 4, 16, 19, 22, 24, 27, 28, 42, 49, 51). In particular, (a) levels of avoidant attachment were positively correlated with levels of medical lethality of suicide attempts (Study 24), and (b) higher levels of attachment avoidance among those who attempted suicide in the past compared to those who had never engaged in suicidal behavior or had suicidal ideation (Study 27). Six studies (4, 24, 27, 28, 42, 51) investigated avoidant attachment as part of a multivariate model predicting suicide attempt. Study 28 found that interpersonal sensitivity mediated the relationship between avoidant attachment and the risk of suicide attempt. Three studies (3, 19, 22) investigating the relationship between dismissive and fearful avoidant attachments and suicide attempt showed that: (a) people with a history of suicide attempts reported higher levels of dismissive and fearful avoidant attachment than those with no history of suicide attempts (Study 3); (b) women with a history of suicide attempt and drug misuse problems had significantly higher dismissive and fearful attachment scores than those with no history of drug misuse (Study 19), and (c) participants with history of suicide attempt were most likely to describe themselves as having a dismissive and avoidant attachment pattern in comparison with other attachment patterns (Study 22). Study 49 found higher levels of fearful avoidant attachment in people with a history of suicide attempts compared with patients with major depression and health controls. Of the eleven studies that focused on the relationship between suicide attempt and avoidant attachment orientations, only six (4, 16, 27, 28, 42, 51) controlled for confounders and found no post-adjustment changes in their results.

STB. Four studies found associations between avoidant attachment orientations and STB (3, 8, 17, 43). Study 8 found that avoidant attachment predicted variation in STB, and this relationship was mediated by self-criticism. Two studies (3, 17) found dismissive

avoidant attachment and STB to be associated but in different ways: Study 3 revealed a positive correlation between levels of dismissive avoidant attachment and STB, even after controlling for other psychological variables; but Study 17 found that dismissive avoidant attachment was associated with the absence of suicidal ideation or attempt. Authors of this latter Study suggested that it is unlikely that suicidal feelings were simply denied in the dismissive avoidant group and, therefore, future longitudinal research was needed. Studies 3 and 43 found that (a) levels of fearful avoidant attachment were positively correlated with levels of STB (Study 3), and (b) participants with ultra-high levels of suicide risk reported significantly higher scores of fearful avoidant attachment after controlling for confounders (Study 43).

Consistent with the pattern of findings found in the studies reporting an anxious attachment-STB relationship, the literature also suggests that an avoidant orientation of attachment acts as a vulnerability factor for STB in interaction with other psychological variables. In most of the studies, this finding also appears to hold regardless of how the type of avoidant attachment is conceptualized (i.e. dismissive or fearful).

Other Attachment Classifications. The conceptualization of attachment patterns may vary across theoretical views on attachment in the literature. Although Ainsworth's original proposition established three basic attachment patterns (secure, anxious/ambivalent, or avoidant), attachment is used as synonym for a diverse range of definitions across the studies, including emotional bonding (33), object relations (6), parental involvement (5), parental closeness (44), and separation anxiety (52). Therefore, some studies have assessed attachment differently from the more frequent used classifications (secure, anxious and avoidant). In this section, we describe the results of those studies that adopt other conceptual attachment patterns and their associations with suicidal thoughts and actions.

Suicidal ideation. Two studies (32, 38) assessed unresolved/disorganized attachment.

In Study 38, authors define unresolved attachment as a state of mind “not an enduring, organized attachment strategy but rather a brief collapse of an adult’s mental organization during discussions of trauma” (p. 196). The authors found that unresolved adults (especially females) were significantly more likely than other attachment groups to report emotional distress and suicidal ideation. In Study 32, those in the unresolved/disorganized group demonstrated lower levels of current suicidal ideation when controlling for PTSD severity than those in the secure group. These results should be interpreted cautiously, though, given the relatively small sample size (N = 48). Moreover, the findings may not be generalized beyond the existing sample of Vietnam combat veterans in treatment for PTSD.

In Study 5, secure and insecure attachment were assessed as ‘parental positive stimuli’ and ‘parental negative stimuli’, respectively, with parental negative stimuli being the only predictor of suicidal ideation group membership. Finally, in Study 9 attachment patterns were assessed via ‘linkage prototypes’ (defined as relationship proximity patterns). Using this operationalization of attachment, suicidal ideation was found to be associated with lower levels of ‘comfort with proximity’ and ‘trust in others’ and with higher levels of linkage anxiety.

Suicide attempt. Study 18 assessed attachment through a projective test comprising seven black and white images of people illustrated in several circumstances eliciting themes of separation, loneliness, and loss. The vast majority of the participants with history of suicide attempt were classified as having unresolved attachment (73.7%, n = 123). 11 were classified with preoccupied attachment pattern (6.6%), 29 with dismissing attachment pattern (17.4%), and 3 (1.7%) classified as secure. In this Study, participants with disorganized attachment pattern and five or more risk factors were 37 times more likely to belong to the suicidal group than those with zero risk factors. Study 41 employed a longitudinal design to assess attachment to parents among adolescents who had engaged in suicide attempt. It found

that insecure maternal attachment independently predicted suicide attempt at 6-month follow up. Finally, Study 35 evaluated general insecure attachment among women diagnosed with bulimia nervosa with 27.5% of them reporting a suicide attempt history. These authors found that: (1) the lifetime suicide attempt group had significantly higher levels of insecure attachment than the no suicide attempt group; (2) insecure attachment predicted lifetime suicide attempt group membership (univariate logistical regression) and; (3) insecure attachment alongside identity problems, depression and anxiety disorder predicted the suicide attempt group membership (multiple logistic regression).

STB. Only Study 17 assessed the relationship between different classifications for insecure attachment and STB. The Study reported that adolescents who were female, older than 15, and had unresolved-disorganized attachment-related trauma, and preoccupied attachment pattern had a significant increase in the probability of membership in the STB group. By unresolved-disorganized attachment-related trauma the authors meant a lack of resolution of traumatic events related to attachment such as the death of a parent or other close relationship figure and for the lack of resolution of physical or sexual abuse. In this Study, 77% of all participants classified as having unresolved-disorganized attachment-related trauma, and preoccupied attachment pattern were in the suicidal group.

Moderating and Mediating Factors.

Out of the 52 studies of the current review, only eight (8, 10, 13, 21, 24, 28, 29, 45) investigated the effect of mediators or moderators of the attachment – STB relationship. Three studies (10, 24, 28, 29) found significant associations for the mediating effect of interpersonal factors: self-disclosure and loneliness (24), interpersonal sensitivity, aggression, and lack of sociability (28), anomie (broken social bonds – Study 10), and thwarted belongingness (29). Studies 8 and 10 reported evidence for the mediating effects of intrapersonal characteristics: self-criticism (8) and self-control (10). Two studies (13, 21)

tested the role of psychiatric symptoms as mediators between attachment and STB: both studies found significant associations for depressive symptoms, and Study 13 also found evidence for the mediating effect of defensive psychopathology, measured substance use, borderline features, and dissociative symptoms. Only one Study (Study 45) conducted a moderator analysis and found moderating roles for demographic characteristics (age and ethnicity).

Gender Differences

Only seven out of the 52 studies within this systematic review (14, 17, 18, 38, 44, 45, 48) reported on gender differences or effects specific to males or females. Four studies (19, 22, 35, 40) recruited only female participants. The studies that reported gender differences, with exception of Study 45, showed that insecure attachment increased suicide risk if the participants were female.

Studies 14 and 44 reported that the association between secure attachment and suicidal ideation was significant only for female participants. Study 45 found for girls, attachment to fathers independently predicted reduction of suicidal ideation over time and for boys, attachment to mothers independently predicted reduction of suicidal ideation over time. One Study (Study 48) reported a gender effect increasing suicide risk: Being female, perceiving poor attachment to parents, a high level of paternal rejection, a high degree of maternal control, and a low level of family cohesion increase the probability of membership in the self-destructive thoughts and behaviors group.

Although there was some evidence of a potential gender effect for the attachment-STB relationship, the current evidence is inconclusive as there was no consistent pattern of findings across the studies and often the gender analyses appeared to be post hoc.

[Please insert Tables 1, 2 and 3 around here]

Theoretical Explanations of the relationship between Attachment and STB

Although the studies yielded evidence of the existence of an association, an important question to be addressed is *why* attachment and STB are associated. Taking an overview of these studies, most authors argued that, in interaction with other personality factors, attachment moderates or mediates the relationship between current negative events and psychological states that, in turn, may lead to STB. More specifically, 1) current negative events interpreted as threatening contextual cues would 2) activate the attachment system which, through one's models of the self and of others, would interact with other personality traits to act as coping strategies to deal with those negative events and with the emotional reactions to those events. This interaction would 3) trigger certain psychological states if those strategies fail to work, which would subsequently lead to 4) STB when a resolution of those current negative events are not met.

An example could be: 1) in contexts of a high likelihood of being criticized by others, such as an experience of being bullied, 2) individuals with higher levels of anxious attachment generally develop a negative internal working model of the self and tend to engage in self-critical verbal behavior and harsh self-evaluation (and other traits of neuroticism and self-criticism), aimed at reducing the likelihood of being criticized by others. If this strategy fails to work, 3) other psychological states such as depression, hopelessness and isolation may ensue and lead to 4) STB if the experiences of being bullied remain.

Discussion

This systematic review set out to examine the relationship between attachment and STB in adolescents and adults. A key finding was that secure attachment functions as a protective factor against STB, and insecure attachment (variations of avoidant and anxious attachment orientations) seems to increase risk for suicidal thinking and behavior. Although

the literature clearly shows the existence of an association between attachment and STB, the precise nature of the relationship between insecure attachment orientations and STB remains unclear: in the vast majority of the studies, all forms of insecure attachment orientations were found to be associated with both suicidal ideation and suicide attempt. This suggests that it is not possible to determine whether a specific orientation or style of insecure attachment differentiates between suicidal ideation and suicide attempt groups. As a consequence, it is difficult to identify a single explanation for why anxious attachment, for instance, would be positively associated with suicidal ideation but not with suicide attempts. Wrath and Adams's (2018) review reported that attachment anxiety is a crucial factor for engaging in both forms of self-injurious behavior (non-suicidal self-harm and suicide attempt), but did not demonstrate whether specific forms of insecure attachment differentiated between those who engaged in self-injurious behavior from those who attempted suicide. Despite including a wider range of studies, our review yielded similar findings in that we found it difficult to determine whether anxious and avoidant attachment orientations were differentially associated with histories of suicidal ideation versus suicide attempt.

A secondary aim was to investigate whether there are gender differences in the relationship between attachment and STB. Although gender differences regarding suicide are prominent and well documented in suicide research more generally, the same cannot be concluded for the attachment-STB literature. Few studies reported the effect of gender on the relationship between attachment and STB. Although six studies demonstrated that insecure attachment increased suicide risk in women, the generalizability of these findings should be interpreted with caution as the majority of the studies were cross-sectional and they represent only 21% of the total papers in this systematic review and 12.2% of the total number of participants. Moreover, it was often difficult to investigate the relationship in men as there were too few male participants in the majority of studies. Thus, there is insufficient evidence

to draw any conclusions on gender differences on the relationship between attachment and STB.

Regarding factors that may elucidate our understanding of the relationship between adult attachment and STB, only eight out of the 52 studies (15.3%) tested the role of interpersonal, intrapersonal, psychopathological, and demographic factors. Although the inclusion of such factors was theoretically justified by the studies' authors, only one Study (29) tested a component of a contemporary theory of suicidal behavior (IPT – Joiner, 2005) (thwarted belongingness). The attachment theory research field would benefit from investigating the extent to which psychological variables suggested by the ideation-to-action models of suicidal behavior help understand the attachment – STB relationship (Joiner, 2015; Klonsky & May, 2015; O'Connor, 2011; O'Connor & Kirtley, 2018).

Nonetheless, it is possible to note that the relationship between attachment and STB is consistent with contemporary frameworks of suicidal behavior. For example, Adam's (1994) model of suicidal behavior, focused on how the vulnerability for STB develops across the lifespan, positing that attachment insecurities in childhood may act as distal risk factors for STB later in life (e.g., studies 11, 36, 37). Although the vast majority of the studies in this review are not longitudinal, their findings are consistent with Adam's hypothesis of attachment serving as an intermediate risk factor connected to other psychological states and personality traits preceding STB.

The theoretical synthesis also suggests that types of insecure attachment may act as a diathesis as described in the Integrated Motivational-Volitional Model of Suicidal Behavior (O'Connor, 2011). According to the latter, in conjunction with environmental influences, life events and other personality traits (e.g., social perfectionism, loneliness), forms of insecure attachment may act as a psychological vulnerability for STB. Insecure attachment orientations may increase one's sensitivity to feeling defeated and trapped (psychological

states) thereby elevating the likelihood that suicidal thoughts emerge. Likewise, insecure attachment may also facilitate the development of thwarted belongingness and burdensomeness proposed in the Interpersonal Model of Suicide (Joiner, 1995). In Study 29, for example, Venta et al. (2014) suggest that interpersonal risk factors for STB can potentially be targeted by addressing beliefs of thwarted belongingness, rather than treating attachment-related risk for STB as static. Moreover, activation of the attachment system could also increase emotional pain and weaken feelings of connectedness as outlined in the Three-Step Theory (Klonsky & May, 2015), increasing the risk of developing STB. Although most authors mentioned the potential interaction of attachment with proximal psychological and interpersonal factors to increase suicide risk, no study has investigated the location of attachment within the ideation-to-action frameworks, with exception of Study 29.

Our findings highlight that both anxious and avoidant attachment may lead to STB, but the mechanisms involved in this vulnerability development for each attachment orientation are still unclear. Mikulincer and Shaver (2016), for example, propose that a suicide attempt could be the result of an anxiety-mediated hyperactivation of the attachment system, communicating the need for help, indicating that the person is struggling to cope with adversities and emotional pain. Levi-Belz et al. (Study 24) is another example that demonstrates how avoidant and anxious attachment may increase one's vulnerability for a suicide attempt. These authors propose that the negative perception of others (internal working model of others), characteristic of high avoidant individuals, makes it precarious for them to disclose their emotions and thoughts to others. These attachment processes, in turn, reduce such individuals' ability to approach someone and ask for help in an emotional crisis. As consequence, they are more likely to become detached, lonely, and alienated, which increases the risk of suicidal behavior. Falgares et al. (Study 8) offered a similar interpretation for their results finding that, having a negative view of others, individuals with

higher levels of attachment avoidance may feel the necessity to be highly competent or nearly flawless at life tasks to keep self-reliance rather than risk potential rejection. A suicide attempt could be a response to interpersonal rejection and/or to failing to reach these standards of perfectionism.

There was no evidence that high quality studies had a different relationship between attachment and STB compared to low-quality studies. When evaluating the quality of the studies, we considered how attachment and STB are assessed. It is known, for instance, that adult attachment can be assessed both through self-administered scales (e.g., Arnsden and Greenberg, 1987; Griffin and Bartholomew, 1994) and clinical/research interview (e.g., George et al., 1985; Hesse, 2008). These procedures are not only grounded in different approaches to attachment, but they can yield very different results which vary as function of the nature of the assessment (e.g., an interview versus questionnaire, typological versus dimensional conceptualization). Although most studies assessed attachment and STB through self-administered measures, STB were most often assessed via clinical/research interviews when the participants were patients. Whereas most studies, irrespective of sample characteristics, used self-administered scales to assess attachment. Therefore, it is difficult to say whether the assessment method differentially impacted upon the findings.

There are a number of clinical implications that arise from this review. Centrally clinical assessment of a patient should include an evaluation of their attachment relationships, their views of themselves and of others and, thus, their potential approach to cope with a mental health crisis involving suicidal ideation and attempts. Clinicians should employ both self-report measures and clinical interviews when possible (see Ravitz et al., 2010 for an extensive review of adult attachment measures) to examine the patient's beliefs and behaviors about close relationships. Such assessments may provide useful information about the patient's vulnerability associated with attachment insecurities as well as their coping

strategies to deal with difficult life events and mental health crises. For example, if a patient tends to engage in anxious hyperactivation strategies (Mikulincer & Shaver, 2016d) and does not find the support needed from their attachment figures, feelings of thwarted belongingness may emerge and increase the likelihood of suicidal thoughts (as suggested by Study 29). Such information may be useful when establishing a safety planning intervention (Stanley & Brown, 2012), for instance. By being aware of a patient's attachment-related strategies (anxious hyperactivation or avoidant deactivating) during a crisis, both the clinician and the patient will be able to collaboratively plan a strategy that involves internal coping strategies and social support to mitigate against suicide risk. Such awareness will also provide clues about likely engagement with the therapeutic process. Some psychotherapeutic approaches that include attachment as a key construct, such as Mentalization-Based Treatment (MBT; e.g., Bateman & Fonagy, 2013) and Attachment-Based Family Therapy (ABFT; e.g., Ewing, Diamond, & Levy, 2015) can provide clinicians a wide range of tools for assessment, formulation, and intervention.

The results of the present systematic review should be interpreted within the context of its limitations. Conducting a meta-analysis of the studies included within this review was not feasible due to the level of heterogeneity across the studies regarding (1) the variety of conceptual frameworks of attachment and STB, (2) the diversity of instruments assessing attachment and suicidal thinking and behaviors, and (3) the heterogeneous populations participating in the studies. Therefore, we conducted a narrative review, which may be more susceptible to bias and subjectivity than a meta-analysis. We can also say little about whether the attachment–STB relationship differs across cultures as the vast majority (74%) of the participants in the 52 studies were American. The attachment-STB relationship appears to hold irrespective of whether the samples were clinical or not. It is important to note, however, that we did not investigate publication and selection biases and we did not pre-register a

systematic review.

A significant challenge in integrating the attachment–STB research literature is the inconsistent use of terminology used to describe different patterns of attachment. This is, in part, because attachment theory comprises different conceptual approaches including Bowlby and Ainsworth’s original conceptualization (e.g., Ainsworth & Bowlby, 1991; Ainsworth, 1964; Bowlby, 1988) as well as the contemporary frameworks on adult attachment (e.g., Bartholomew & Horowitz, 1991; Hazan & Shaver, 1987; Mikulincer & Shaver, 2016c). This inconsistency complicates the process of synthesizing the studies since the authors conceptualize attachment in such diverse ways, even though they are analyzing the same psychological phenomena. Equally, the term ‘insecure’ attachment (e.g., Study 35) limits our understanding of the specific attachment orientation that is being referred to, since insecure attachment encapsulates a whole range of patterns including being anxious, dismissive, preoccupied, fearful and disorganized. A similar concern can be extended to the various definitions of STB. Suicide risk, suicide tendencies, suicidal triggers, and suicidality have all been employed to describe suicidal ideation or behavior in a non-uniform manner. Studies assessing suicidal ideation and behaviors as a mixed concept, i.e., suicidality, may restrict the understanding of their relationship with attachment further, as suicidal ideation and suicide attempts are different phenomena and have unique psychological characteristics (O’Connor & Kirtley, 2018). Terms such as ‘suicidality’ and ‘suicidal behaviors’ are often defined in a vague manner (Silverman, 2006). A similar criticism can also be applied to uses of self-harm or self-injury to encompass both suicide attempt and non-suicidal self-injurious behaviors.

This review generates key research questions, such as (1) whether attachment plays a role in the differentiation between those who suffer from suicidal ideation and those who have a history of suicide attempt; (2) whether and how specific attachment dimensions might play different functions in this differentiation; (3) the need for empirical testing of what role

attachment play in the theoretical understanding of suicidal behavior (Joiner, 2005; Klonsky & May, 2015; O'Connor, 2011); and lastly, (4) what is the role of gender in the attachment-STB relationship.

Conclusion

The findings of this systematic review reveal that secure attachment seems to act as a protective factor against suicidal ideation and suicide attempt, and insecure dimensions of attachment seem to function as vulnerability factors for STB. A synthesis of the studies' explanations of how attachment may be related to suicidal ideation and suicide attempts indicates that, in interaction with other personality factors, attachment moderates or mediates the relationship between current negative events and psychological states that, in turn, may lead to STB. Implications for treatment include targeting attachment-related coping strategies to mitigate vulnerability for STB.

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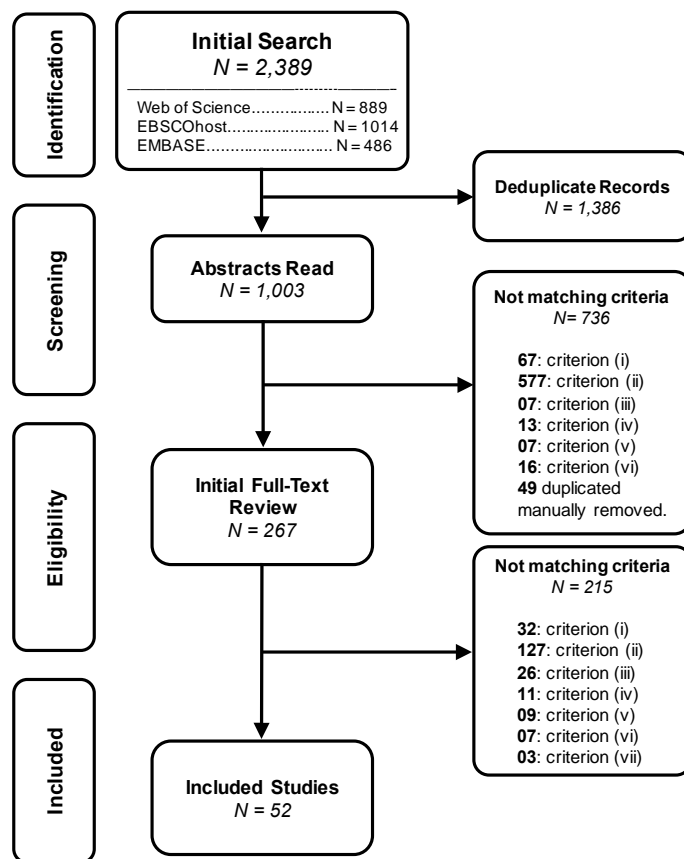


Figure 1. Flow chart of the selection process.

Table 1. Cross-sectional studies on attachment and suicidal ideation/behaviors.

<i>General Population</i>							
Study No.	Study / Country	Population		Constructs and Measures		Main Results (<i>effect sizes included when reported in the studies</i>)	Quality Assessment
		Sample size / Source	Gender / Age	Suicidal ideation/behaviors	Attachment		
1	Baiocco et al., 2015. [Italy and Spain]	1832, Volunteers from the general population. 1,125 from Italy and 707 from Spain.	716 male, 1116 female, Mean age 25.66 (SD = 6.2)	<i>Construct:</i> SI. <i>Measure:</i> Single item from the Beck Depression Inventory (BDI-II, Beck, Steer, & Brown, 1996).	<i>Construct:</i> Attachment to peers. <i>Measure:</i> Short form of the Peer Subscale of the IPPA (Armsden & Greenberg, 1987).	Low levels of (secure) peer attachment increased the risk for SI. Effect size for both samples: OR = 1.53. Effect size for Italy: OR = 1.68. Effect size for Spain: OR = 1.33, <i>ns</i> .	2
2	Maimon & Kuhl, 2008. [USA]	6369, Data from the National Longitudinal Study of Adolescent Health.	3057 male, 3312 female. Mean age 16.3 (SD = 1.62)	<i>Construct:</i> SA. <i>Measure:</i> Single question on having attempted suicide in the past 12 months.	<i>Construct:</i> AP (Secure). <i>Measure:</i> Two non-validated questions on attachment to parents.	Secure attachment predicts reduction in SA rates by 21 percent ($\beta = -0.242$).	2
3	Nagra, et al., 2016. [UK]	323, People with current or past experience of self-harming.	38 Male, 285 female. Mean age 22.86 (SD = 7.62).	<i>Construct:</i> S, SA. <i>Measure:</i> Suicidal Behaviors Questionnaire- Revised (SBQ-R; Osman et al., 2001).	<i>Construct:</i> AS. <i>Measure:</i> RQ (Bartholomew and Horowitz, 1991).	Suicidality was positively correlated to dismissing ($r = 0.09$) and fearful avoidant attachment ($r = 0.12$), and negatively correlated to secure attachment ($r = -0.21$). Dismissing avoidant attachment predicted suicidality ($\beta = 0.14$) alongside no mental illness diagnosis, self-forgiveness, social support, and emotion coping.	5
4	Palitsky et al., 2013. [USA]	5692, data from the National Comorbidity Survey collected in 48 states of the US.	2382 male, 3310 female. Mean age 45 years old.	<i>Construct:</i> SI, SA. <i>Measure:</i> Self-reports of lifetime suicidal ideation and suicide attempts.	<i>Construct:</i> AS. <i>Measure:</i> Attachment Self-Report (Hazan & Shaver, 1987).	Higher levels of secure attachment were associated with a lower likelihood of SA in all models (OR _{range} = 0.67–0.81). Higher rates of avoidant attachment remained associated with a higher likelihood of both SI and SA in all models examined (OR _{range} = 1.13–1.81).	3
5	Peter et al., 2008.	1032, data from National	485 male, 547 female.	<i>Construct:</i> SI. <i>Measure:</i> Single question on	<i>Construct:</i> AP (parental positive	Insecure attachment to parents predicted SI ($\beta = 0.068$). Secure attachment with	2

	[Canada]	Longitudinal Survey of Children and Youth.	Mean age 13.6 years old (SD = 1.1).	having experienced suicidal ideation in the past 12 months.	stimuli, parental negative stimuli, and parental involvement). <i>Measure:</i> 20-item non-validated scale.	parents had no significant effect as protective measures against SI ($\beta = 0.007$).	
<i>College and University Students</i>							
6	Buelow et al., 2000. [USA]	163, undergraduate students.	45 male, 109 female. Mean age 26 (SD = 7.6).	<i>Construct:</i> Suicidal thoughts and behaviors. <i>Measure:</i> The Suicide Behavior Questionnaire (Linehan & Nielson, 1981)	<i>Construct:</i> AS and object relations. <i>Measure:</i> The Attachment and Object Relations Inventory (Buelow et al., 1996).	Secure attachment was an additional significant negative predictor of suicidal thoughts and behaviors ($F [2, 158] = 30.88$).	2
7	de Jong, 1992. [USA]	126, undergraduate students.	51 male, 75 female. Mean age 18.5.	<i>Construct:</i> S. (history of serious suicidal ideation or attempt). <i>Measure:</i> Non-validated self-report questionnaire.	<i>Construct:</i> APP. <i>Measure:</i> IPPA (Armsden & Greenberg, 1987).	Participants with history of SI and SA reported significantly lower levels of secure attachment to parents (mother: $d = 0.3714$; father: $d = 0.4295$) than control group.	2
8	Falgares et al., 2017. [Italy]	340, high-school students	92 male, 248 female. Mean age 16.5 (SD = 1.52)	<i>Construct:</i> S. (Lifetime suicidal ideation and attempts). <i>Measure:</i> Suicidal Behaviors Questionnaire-Revised (Osman et al., 2001).	<i>Construct:</i> AS. <i>Measure:</i> Attachment Style Questionnaire (Feeney, Noller, & Hanrahan, 1994)	Anxious attachment predicts suicidality mediated by self-criticism ($\beta = 0.15$) and dependency ($\beta = -0.05$). Avoidant attachment predicts suicidality mediated by self-criticism ($\beta = 0.13$).	6
9	Goncalves et al., 2016. [Portugal]	1074, undergraduate students.	379 male, 695 female. Mean age 23.9 (SD = 6.10)	<i>Construct:</i> SI. <i>Measure:</i> Suicidal Ideation Questionnaire (Ferreira & Castela, 1999).	<i>Construct:</i> Attachment linkage prototypes. <i>Measure:</i> Adult Linkage Scale (Canavarro, Dias, & Lima, 2006)	Lower levels of comfort with proximity ($\beta = -0.10$) and trust in others ($\beta = -0.14$), and higher linkage anxiety ($\beta = -0.31$) were associated with higher SI risk.	3
10	Heydari et al., 2015. [Iran]	336, university students.	152 male, 184 female. Mean age 21.9 (SD = 2.38).	<i>Construct:</i> S. (questions on suicidal ideation). <i>Measure:</i> 5-item Scale of Suicidality (Heydari et al., 2014).	<i>Construct:</i> APP. <i>Measure:</i> Attachment Scale (Ozbay & Ozcan, 2006) modified version for this	Suicidality correlated negatively significant with secure attachment (mother: $r = -0.33$; father: $r = -0.31$; Peer: $r = -0.35$). Secure maternal ($\beta = -0.14$) and peer attachment ($\beta = -0.16$) predicted suicidality via self-control and	0

					Study.	anomie.	
11	Nunes & Mota, 2016. [Portugal]	604, high school, college and university students.	274 male, 330 female. Mean age 15.99 (SD = 0.97)	<i>Construct:</i> SI. <i>Measure:</i> The Suicidal Ideation Questionnaire (SIQ) (Reynolds, 1991)	<i>Construct:</i> AP. <i>Measure:</i> The Father/Mother Attachment Questionnaire (FMAQ; Matos & Costa, 2001).	Young people who indicate good quality of emotional bond to their parents reveal 19 times fewer SI ($\beta = 0.82$). Secure attachment to parents mediates the relationship between authoritative (father: $\beta = -0.19$; mother: $\beta = -0.17$), authoritarian (father: $\beta = 0.05$; mother: $\beta = 0.06$) and permissive (father: $\beta = 0.03$; mother: $\beta = 0.04$) parenting styles, and SI.	4
12	Park et al., 2011. [South Korea]	249, university students.	66 male, 182 female. Mean age 21.8 (SD = 1.9).	<i>Construct:</i> Suicide tendency. <i>Measure:</i> The Multi-Attitude Suicide Tendency (Orbach et al., 1991).	<i>Construct:</i> AAAS. <i>Measure:</i> ECRS (Brennan et al., 1998).	Levels of anxious attachment were positively correlated with levels of suicide proneness ($r = 0.15$).	2
13	Rodgers et al., 2011. [France]	615, High school students.	382 male, 233 female. Mean age 16.8 (SD = 1.3).	<i>Construct:</i> SI. <i>Measure:</i> Suicidal Behaviors Questionnaire-Revised (Osman et al., 2001)	<i>Construct:</i> AP (Secure) <i>Measure:</i> IPPA (Armsden & Greenberg, 1987).	Attachment to parents was negatively correlated with SI (boys: $r = -0.27$; girls: $r = -0.23$). Attachment to parents predicted (negatively) SI mediated by defensive psychopathology and depression SI (boys $\chi^2 = 24.66$; girls: $\chi^2 = 10.99$, <i>ns</i>).	4
14	Strang & Orlofsky, 1990. [USA]	191, College students from two urban public universities.	92 male, 99 female. Mean age 19.5.	<i>Construct:</i> SI. <i>Measure:</i> Scale for Suicide Ideators (Schotte & Clum, 1982).	<i>Construct:</i> AP (Secure) <i>Measure:</i> IPPA (Armsden & Greenberg, 1987).	The low SI group had less secure attachment than the non-SI group ($d = -0.53$), and moderate to severe SI group had less secure attachment than non-SI ($d = -1.09$) and low SI groups ($d = -0.61$).	4
15	Zeyrek et al., 2009. [Turkey]	180, University students.	70 male, 110 female. Mean age 20.3 (SD = 1.6).	<i>Construct:</i> SI. <i>Measure:</i> The Suicide Probability Scale (Cull & Gill, 1982).	<i>Construct:</i> AS. <i>Measure:</i> RQ (Bartholomew & Horowitz, 1991; Scharfe & Bartholomew, 1998).	SI was significantly correlated with secure ($r = -0.39$), preoccupied ($r = 0.29$), and fearful attachment ($r = 0.16$). Only for women, secure ($\beta = -0.18$), dismissing ($\beta = 0.19$), and preoccupied ($\beta = 0.18$) attachment patterns predicted variations in SI.	4
<i>Patients</i>							
16	Aaltonen et al., 2016. [Finland]	287, patients from psychiatric units.	78 male, 209 female. Mean age	<i>Construct:</i> SI, SA. <i>Measure:</i> Questions adopted from the National	<i>Construct:</i> AS. <i>Measure:</i> ECRS (Fraley et al., 2000).	Patients with history of repeated SA reported higher levels of anxious attachment ($d = 0.558$).	7

			39.9 (SD = 13.0)	Comorbidity Survey (NCS) (Kessler et al., 1999).			
17	Adam et al., 1996. [Canada]	133, patients (in- and out-) from psychiatric treatment centres.	74 male, 59 female. Mean age 15.3 (SD = 1.47).	<i>Construct:</i> S. (defined as history of serious suicidal ideation or suicide attempt). <i>Measure:</i> Adam's (1973) Suicidal Ideation and Behavior protocol.	<i>Construct:</i> AS. <i>Measure:</i> AAI (George et al., 1985).	For the case group of adolescent patients with a history of STB, the predominant attachment pattern was unresolved-disorganized with preoccupied (41% of male patients and 30% of female patients in the case group).	5
18	Bedi et al., 2014. [Canda]	167, Treatment-seeking women who suffered from childhood abuse.	All female. Mean age 39.95 (SD = 11.11)	<i>Construct:</i> SH, SA. <i>Measure:</i> Structured interview <i>adapted</i> from the "Major Depressive Episode", section of the Dissociative Disorders Interview Schedule (Ross et al., 1989).	<i>Construct:</i> AS. <i>Measure:</i> Adult Attachment Projective System (George et al., 1997).	Women with disorganized attachment pattern and other five or more risk factors were 37 times more likely to belong to the suicidal/self-harm group (adjusting for age) (AOR = 37.37).	4
19	D'Orio et al., 2015. [USA]	146, Treatment-seeking African-American women who attempted suicide in the prior year.	All female. Mean age 35.6 (SD = 11.43).	<i>Construct:</i> SA. <i>Measure:</i> Single self-report question on suicide attempt in the past 12 months.	<i>Construct:</i> AS. <i>Measure:</i> RSQ (Griffin & Bartholomew, 1994).	Low levels of secure attachment ($\eta\rho^2 = 0.065$), high levels of fearful ($\eta\rho^2 = 0.062$) and dismissive ($\eta\rho^2 = 0.035$) attachment patterns are related to suicidal behavior in the presence of drug misusing.	4
20	DiFilippo & Overholser, 2000. [USA]	59, Adolescent psychiatric inpatients from a private psychiatric hospital.	25 male, 34 female. Mean age 15.6 (SD = 1.2).	<i>Construct:</i> Suicidal Ideation. <i>Measure:</i> BSSI (Beck & Steer, 1991).	<i>Construct:</i> AP (Secure). <i>Measure:</i> IPPA (Armsden & Greenberg, 1987).	Attachment to mother and to peers ($\beta = -0.38$) independently predicted variations on SI. Attachment to mother and peers no longer accounted for significant variance in SI after adjusting for depressive symptoms.	5
21	Gormley & McNiel, 2010. [USA]	109, Short-term psychiatric inpatients from a university hospital.	65 male, 44 female. Mean age 40.7 (SD = 13.6).	<i>Construct:</i> Self-directed aggression (history of suicide attempt and non-suicidal self-injury). <i>Measure:</i> Two questions on history of suicide attempt and non-suicidal self-injury since age 12.	<i>Construct:</i> AAAS. <i>Measure:</i> RQ (Bartholomew & Horowitz, 1991).	Higher levels of attachment anxiety were significantly associated with history of SA (OR = 1.09).	5
22	Ilardi & Kaslow, 2009. [USA]	51, Treatment-seeking African-American women reporting intimate	All female. Mean age 34.5 (SD = 8.78).	<i>Construct:</i> SA. <i>Measure:</i> Single self-report question on suicide attempt in the past 12 months.	<i>Construct:</i> AS. <i>Measure:</i> RSQ (Griffin & Bartholomew,	Participants were most likely to describe themselves as having a dismissive attachment pattern, followed by fearful, and preoccupied attachment patterns.	3

		partner violence and a SA.			1994).		
23	Lessard & Moretti, 1998. [Canada]	116, Clinical patients from a government-funded, provincial mental health facility.	73 male, 43 female. Mean age 13.4 (SD = 1.4).	<i>Construct:</i> SI: (a) severity of suicidal wish, and (b) lethality of method. <i>Measures:</i> (a) Youth Self Report of the Ontario Child Health Study Scales (Offord et al., 1987), and the BDI (Beck et al., 1961); and (b) Diagnostic Interview of Childhood and Adolescence-Revised (Reich et al., 1991).	<i>Construct:</i> AS. <i>Measure:</i> Semi-structured psychological intake interviews based on Bartholomew (1990) attachment framework.	Youth with fearful attachment were 6.5 times more likely to endorse SI ($r = 0.42$). Elevated lethality of imagined method was correlated with higher ratings on the preoccupied pattern ($r = 0.59$).	5
24	Levi-Belz et al., 2013. [Israel]	102, Consecutive patients after medically serious and non-serious suicide attempt at a university hospital.	49 male, 53 female. Mean age 37.3 (SD = 15.3).	<i>Construct:</i> SI and Degree of Lethality of the SA. <i>Measures:</i> SIS (Beck et al., 1974); The Lethality Rating Scale (Beck et al., 1975).	<i>Construct:</i> AAAS. <i>Measure:</i> ECRS (Brennan et al., 1998).	Medically serious suicide attempt patients showed higher levels of anxious attachment than non-serious suicide attempt patients ($d = 0.45$). Self-disclosure and loneliness mediated the paths between avoidant attachment and lethality of SA; loneliness mediated the paths between anxious and lethality of SA.	6
25	Lizardi et al., 2011. [USA]	524, Depressed patients presenting for participation in research at a university hospital.	211 male, 313 female. Mean age 37 (SD = 13.3).	<i>Construct:</i> SA. <i>Measure:</i> CUSHF (Oquendo et al., 2003).	<i>Construct:</i> AS. <i>Measure:</i> AAS (Simpson, 1990).	The SA group showed higher levels of anxious attachment than non-SA group ($d = 0.29$). Anxious attachment was associated with the likelihood of having made a SA (OR = 1.33).	7
26	Sheftall et al., 2013. [USA]	236, Adolescents who have received inpatient psychiatric care.	124 male, 112 female. Mean age 14.48 years old.	<i>Construct:</i> SA. <i>Measure:</i> Suicidal Behavior Questionnaire (Addis & Linehan, 1989).	<i>Construct:</i> AP (secure). <i>Measure:</i> IPPA (Armsden & Greenberg, 1987).	Lower parental attachment levels for the SA group ($d = 0.33$). Paternal attachment was the only significant predictor of SA status ($\beta = -0.014$).	6
27	Sheftall et al., 2014. [USA]	80, Presenting to behavioral health clinics or emergency department of a large children's	20 male, 60 female. Mean age 15.5 (SD = 1.35).	<i>Construct:</i> SA. <i>Measure:</i> CUSHF (Mann et al., 1992).	<i>Construct:</i> AAAS. <i>Measure:</i> ECRS (Brennan et al., 1998).	The SA group had higher levels of avoidant ($d = 0.75$) and anxious attachment ($d = 0.62$). Attachment avoidance was the only significant predictor of SA in the multivariable model (OR = 2.05).	7

		hospital.					
28	Stepp et al., 2008. [USA]	406, From psychiatric inpatient, outpatient, medical, and university settings.	136 male, 270 female. Mean age 37.2 (SD = 10.5).	<i>Construct:</i> Suicide-related behaviors. <i>Measures:</i> Part of standardized AXIS II diagnostic interviews for assessing one of the criterion for borderline personality disorder related to suicide and self-harm.	<i>Construct:</i> AAAS. <i>Measure:</i> A combination of factors from the ECRS (Fraley et al., 2000) and the Attachment Q-Sort (Kobak, 1989).	Anxious attachment increased the odds of belonging to the suicidal behavior group (OR = 2.03). Anxious attachment predicted suicidal behaviors mediated by interpersonal sensitivity ($z = 2.05$), aggression ($z = -2.29$), and lack of sociability ($z = 2.04$). Avoidant attachment predicted suicidal behaviors mediated by interpersonal sensitivity ($z = -1.99$).	9
29	Venta et al., 2014. [USA]	114, Adolescent inpatients admitted to an acute inpatient facility.	40 male, 74 female. Mean age 14.69 (SD = 1.47).	<i>Construct:</i> SI. <i>Measure:</i> One item (number 9) from the BDI (Beck et al., 1996).	<i>Construct:</i> Attachment-related Schemas <i>Measure:</i> Security Scale (Kerns et al., 2005).	Maternal attachment security is negatively correlated with suicide-related thoughts ($r = -0.351$). Secure attachment predicted variations in SI, mediated by thwarted belongingness ($\beta = -0.386$).	3
30	West et al., 1999. [Canada]	187, Adolescent inpatients admitted to a psychiatric treatment centre.	102 male, 85 female. Mean age 14.9 (SD = 1.6).	<i>Construct:</i> S. <i>Measure:</i> The Suicidal Ideation and Behaviors Protocol (Adam, 1973).	<i>Construct:</i> Adolescent AS. <i>Measure:</i> The Adolescent Attachment Questionnaire (West et al., 1998).	Lower levels of secure ($\beta = 0.21$) and high levels of preoccupied attachment ($\beta = -1.64$) predict suicide risk.	6
<i>Specific Populations</i>							
31	Kidd & Shahr, 2008. [USA]	208, Homeless who had no fixed address or were living in a shelter.	122 male, 86 female. Mean age 20.2 (SD = 2.39).	<i>Construct:</i> SI. <i>Measures:</i> 4 items - Schedule for Affective Disorders and Schizophrenia for School-Age Children (Lewinsohn et al., 1996).	<i>Construct:</i> AS. <i>Measure:</i> RQ (Bartholomew & Horowitz, 1991).	SI was positively correlated with fearful ($r = 0.23$) and preoccupied attachment ($r = 0.16$), and negatively with secured attachment ($r = -0.15$).	4
32	Nye et al., 2009. [USA]	48, Treatment seeking Vietnam combat veterans.	All male. Mean age 57.7 years old.	<i>Construct:</i> Current SI, lifetime SI. <i>Measure:</i> The Adam's Suicidal Ideation and Behaviors Protocol (Adam, 1973), & BSSI (Beck & Steer, 1993).	<i>Construct:</i> Attachment representation <i>Measure:</i> AAI (Main, Goldwyn, & Hesse, 2002).	The secure attached group demonstrated higher levels of SI ($d = 0.77$). The unresolved/disorganized group demonstrated lower levels of SI when controlling for PTSD severity ($d = 0.51$).	7
33	Rodell et	188, Homeless	178 male, 10	<i>Construct:</i> SI.	<i>Construct:</i> Levels of	Early positive attachment to caregivers	3

	al., 2003. [USA]	veterans in a substance abuse program in a Veterans affairs medical centre.	female. Mean age 44.5 (SD = 4.7).	<i>Measure:</i> Hudson's (1990) Multi-Problem Screening Inventory.	bonding (secure attachment) <i>Measure:</i> Hudson's (1990) Multi-Problem Screening Inventory.	(female caregiver: $\beta = -0.25$; male caregiver: $\beta = -0.27$) predicted a reduction on the probability of experiencing suicidal thoughts.	
34	Van Leeuwen et al., 2010. [France]	292, High school immigrant adolescents.	170 male, 122 female. Mean age 17.2 (SD = 1.3).	<i>Construct:</i> SI. <i>Measure:</i> Suicidal Behaviors Questionnaire-Revised (Osman et al., 2001)	<i>Construct:</i> AP (Secure). <i>Measure:</i> IPPA (Armsden & Greenberg, 1987).	Attachment to parents inversely predicted SI (Boys: $\beta = -0.23$; Girls: $\beta = -0.34$). The total score of attachment was negatively correlated with levels of SI ($r = -0.27$).	5
<i>Patients and General Population</i>							
35	Pisetsky et al., 2015. [USA]	337, Adult women from local eating disorder clinics and from the community	All female. Mean age 25.67 (SD = 8.85)	<i>Construct:</i> SA. <i>Measure:</i> Item on lifetime suicide attempt from the Impulsive Behavior Scale (Rossotto, Yager, & Rorty, 1994)	<i>Construct:</i> Insecure Attachment <i>Measures:</i> Subscale of the Dimensional Assessment of Personality Pathology – Basic Questionnaire (DAPP-BQ; Livesley, Jang, & Vernon, 1998).	Insecure attachment predicted lifetime suicide attempt group membership (OR = 1.08). Insecure attachment predicted SA alongside identity problems, depression and anxiety disorder ($\beta = 0.07$).	7

Notes: SI = Suicidal Ideation. SA = Suicide Attempt. S = Suicidality (Authors' terminology for suicidal ideation and/or behaviors). SH = Non-suicidal self-harm. BDI = Beck Depression Inventory. BHS = Beck Hopelessness Scale. AS = Attachment Style. AP = Attachment to Parents. APP = Attachment to Parents and Peers. IPPA = Inventory of Parent and Peer Attachment. AAAS = Avoidant and Anxious Attachment Styles. ECRS = Experiences in Close Relationships Scale. RQ = The Relationship Questionnaire. AAI = Adult Attachment Interview. SIS = The Suicide Intent Scale. AAS = The Adult Attachment Scale. BSSI = Beck Scale for Suicide Ideation. RSQ = The Relationship Style Questionnaire. CUSHF = Columbia University Suicide History Form. PTSD = Post-Traumatic Stress Disorder.

Table 2. Prospective studies on attachment and suicidal ideation/behaviors.

<i>General Population</i>							
Study No.	Study / Country	Population		Constructs, Measures, and Assessments/Follow-Up		Main Results <i>(effect sizes included when reported in the studies)</i>	Quality Assessment
		Sample size / Source	Gender / Age	Suicidal ideation/behaviors	Attachment		
36	Fergusson et al., 2000. [New Zealand]	965, Data were gathered over the course of a 21-year longitudinal Study of a birth cohort of 1265 children born in New Zealand.	479 male, 486 female.	<i>Constructs:</i> SI, SA. <i>Measures:</i> Questions on history of experiencing the constructs. <i>Assessments:</i> Conducted annually from age 15 to 21.	<i>Construct:</i> AP (secure). <i>Measure:</i> IPPA (Armsden & Greenberg, 1987). <i>Assessment:</i> At age 15.	Attachment to parents predicted SI ($\beta = -0.04$) and SA ($\beta = -0.07$) along with family and personality variables. Participants reporting suicidal behavior were significantly more likely to come from families characterized by poor parent-child attachment and other factors.	8
37	Raudino et al., 2013. [New Zealand]	924, Gathered as part of the Christchurch Health and Development Study from general population over 30 years.	449 male, 475 female.	<i>Constructs:</i> SI, SA. <i>Measures:</i> Questions on history of experiencing the constructs. <i>Assessments:</i> Conducted annually in two waves: from age 21 to 25, and from 25 to 30.	<i>Construct:</i> AP (secure). <i>Measure:</i> IPPA (Armsden & Greenberg, 1987). <i>Assessment:</i> At age 15.	Increasing in parental attachment levels was correlated with declining rates of STB ($r = -0.11$). Alongside parental care and over-protection, low attachment levels predicted individuals' propensity to suicidal behaviors.	7
38	Riggs & Jacobvitz, 2002. [USA]	233, 125 couples in the third trimester of a first-time pregnancy recruited through research ads.	115 male, 118 female. Mean age 30.5 years old.	<i>Construct:</i> SI. <i>Measures:</i> Self-report question on suicidal ideation. <i>Assessments and follow-up:</i> Not informed.	<i>Construct:</i> AS. <i>Measure:</i> AAI (George et al., 1985). <i>Assessments and follow-up:</i> Not informed.	Preoccupied adults more often reported SI than did secure or dismissing adults over time ($X^2[3] = 9.71$). Unresolved trauma (abuse) attachment patterns for women alone was related SI.	6
39	Turanovic & Pratt, 2015. [USA]	13555, Data from the National Longitudinal Study of Adolescent Health.	6396 male, 7162 female. Mean age 22 years old.	<i>Construct:</i> S. <i>Measures:</i> 2 dichotomous reports of suicidal thoughts and behaviors. <i>Assessment:</i> conducted in the second wave of interviews, participants aging 22.	<i>Construct:</i> Family attachment (secure). <i>Measures:</i> 6-items on parents and family attachment. <i>Assessment:</i> conducted in the first wave of interviews, participants aging 15.	Family attachment reduced the effects of STB on adult outcomes substantially for both males ($\beta = -0.09$) and females ($\beta = -0.10$).	9

Patients

40	Chapman et al., 2009. [USA]	55, Volunteers diagnosed with Borderline Personality Disorder participating in a RCT at University of Washington.	All female. Mean age 31.99 (SD = 7.65).	<i>Constructs:</i> SI, SA, NSSI. <i>Measures:</i> The Suicide Attempt Self-Injury Interview (Linehan et al., 2006). <i>Assessments:</i> Conducted at pre-treatment, 4-month intervals throughout the treatment, and 12-month follow-up.	<i>Constructs:</i> Attachment (secure) <i>Measure:</i> Subscale of Reward Dependence - The Temperament and Character Inventory (Cloninger, 1992). <i>Assessments:</i> Conducted at pre-treatment and post-treatment.	Attachment was negatively correlated with SA ($r = -0.48$) and suicide intent ($r = -0.35$) over time. Lower levels of attachment predicted suicide intent at pre-Study time-point ($\beta = -0.32$). Lower levels of attachment predicted SA prospectively ($\beta = -0.30$).	7
41	Glazebrook et al., 2015. [UK]	52, Adolescents referred to mental health services with recent history of self-harm.	3 male, 49 female. Mean age 15 years old.	<i>Construct:</i> Self-harm (SA + NSSI). <i>Measures:</i> The self-harm questionnaire (developed from the questions used in Hawton et al.'s (2002)). <i>Assessments:</i> 6-month follow-up.	<i>Constructs:</i> AS towards parents and peers. <i>Measure:</i> The Child Attachment Interview (Target et al., 2003); The Attachment Questionnaire for Children (Muris et al., 2000). <i>Assessment:</i> 6-month follow-up.	Participants who engaged in self-harm (including suicidal intent) at follow-up were classified as having insecure maternal attachment at baseline ($X^2[1] = 5.46$). Insecure maternal attachment (OR = 7.80) and poor peer attachment (OR = 8.01) independently predicted self-harm (including suicidal intent) at follow-up.	5
42	Grunebaum et al., 2010. [USA]	135, Patients who presented to the researcher's clinic institution for evaluation and treatment of major depressive episode.	55 male, 80 female. Mean age 39.2 (SD = 12.3).	<i>Constructs:</i> SA, SI. <i>Measures:</i> CUSHF (Oquendo et al., 2003); SSI (Beck et al., 1979). <i>Assessments:</i> 1-year follow-up.	<i>Constructs:</i> AAAS. <i>Measures:</i> Simpson's Adult Attachment Scale (Simpson, 1990). <i>Assessments:</i> 1-year follow-up.	Avoidant attachment independently predicted greater risk of SA during one-year follow-up of adults after presentation with a major depressive episode (HR = 1.16). Avoidant attachment predicted SI at three months (HR = 1.07).	10
43	Yaseen et al., 2014. [USA]	161, Psychiatric patients hospitalised following suicidal ideation or suicide	76 male, 85 female. Mean age 37.76 (SD = 13.0)	<i>Constructs:</i> SI, SA, and suicide triggers. <i>Measures:</i> Suicide Trigger Scale (Yaseen et al., 2013); Columbia Suicide-Severity	<i>Construct:</i> AS. <i>Measure:</i> RSQ (Griffin & Bartholomew, 1994). <i>Assessments:</i> 6-	Participants with ultra-high levels of suicide risk reported significantly higher scores of fearful attachment. Participants with ultra-low levels of suicide risk reported significantly	10

		attempt.		Rating Scale (Posner et al., 2011); SIS (Beck et al., 1988); <i>Assessments:</i> 6-month follow-up.	month follow-up.	higher scores of secure attachment pattern.	
<i>School and University Students</i>							
44	Gilreath et al., 2009. [South Africa]	657, Data from South Africa epidemiology high school survey.	296 male, 361 female. Mean age 14 (SD = 1.1).	<i>Construct:</i> SI. <i>Measure:</i> Two self-report questions on suicide thoughts in the past 12 months. <i>Assessments:</i> 2-year follow-up.	<i>Construct:</i> Maternal closeness (secure attachment to mother). <i>Measure:</i> Two self-report questions on participant-mother closeness. <i>Assessment:</i> 2-year follow-up.	Among females, maternal closeness was a negatively significant predictor of SI ($\beta = -0.145$). SI was a significant mediator of the effect of maternal closeness on Lifetime Smoking ($\beta = 0.381$).	3
45	Liu, 2005. [USA]	2966, Data from the National Longitudinal Study of Adolescent Health with school based design.	1426 male, 1540 female. Mean age 15 years old.	<i>Construct:</i> SI. <i>Measure:</i> Single self-report questions on suicide thoughts in the past 12 months. <i>Assessments:</i> 1-year follow-up.	<i>Construct:</i> Closeness with parents (secure AP). <i>Measure:</i> 10-item self-report scale on participant-parents closeness. <i>Assessments:</i> 1-year follow-up.	For girls, attachment to fathers independently predicted reduction of SI over time ($\beta = -0.24$). For boys, attachment to mothers independently predicted reduction of SI over time ($\beta = -0.24$).	6
<i>Patients and General Population</i>							
46	Salzinger et al., 2007. [USA]	153, Patients (New York City Register for Child Maltreatment) and control from general population.	93 male, 60 female. Mean age 16.5 (SD = 0.53).	<i>Constructs:</i> SI, SA. <i>Measure:</i> Youth Risk Behavior Survey (Garrison et al., 1993). <i>Assessment:</i> Conducted at time 2 (at participants' 16.5 years old).	<i>Construct:</i> AP (secure). <i>Measure:</i> IPPA (Armsden & Greenberg, 1987). <i>Assessment:</i> Conducted at participants' ages 10.5 (time 1) and 16.5 years old (time 2).	Attachment to parents when participants were 16.5 years old independently decreased risk of SI (OR = 0.43) and SA (OR = 0.39).	9
<i>Specific Populations</i>							

47	Smith et al., 2016. [USA]	2107, US military veterans.	1919 male, 188 female. Mean age 60.3 (SD = 15.0)	<i>Constructs:</i> SI. <i>Measure:</i> Modified item from the Patient Health Questionnaire-9 (Kroenke & Spitzer, 2002).	<i>Construct:</i> AS. <i>Assessment:</i> Question assessing feeling and attitudes in relationships (Hazan and Shaver, 1990).	Lower levels of secure attachment predicted SI over time (two years later) (RR = 4.37).	12
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Notes: SI = Suicidal Ideation. SA = Suicide Attempt. S = Suicidality (Authors' terminology for suicidal ideation and/or behaviors). NSSI = Non-suicidal self-injury. AS = Attachment Style. AP = Attachment to Parents. IPPA = Inventory of Parent and Peer Attachment. AAAS = Avoidant and Anxious Attachment Styles. AAI = Adult Attachment Interview. SIS = The Suicide Intent Scale. BSSI = Beck Scale for Suicide Ideation. RSQ = The Relationship Style Questionnaire. CUSHF = Columbia University Suicide History Form.

Table 3. Other Study designs on attachment and suicidal ideation/behaviors.

<i>Case-control Studies</i>							
Study No.	Study / Country	Population		Constructs and Measures		Main Results (effect sizes included when reported in the studies)	Quality Assessment
		Sample size / Source	Gender / Age	Suicidal ideation/behaviors	Attachment		
48	Cruz et al., 2013. [Portugal]	1308, Adolescents from community (control = 1266) and patients with suicidal behaviors (clinical sample = 42).	609 male, 699 female. Mean age 15.87 (SD = 2.11).	<i>Constructs:</i> History of self-destructive thoughts and behaviors. <i>Measure:</i> Questions on suicidality from The Youth Self-Report (Achenbach, 1991)	<i>Construct:</i> AP (Secure) <i>Measure:</i> The Father/Mother Attachment Questionnaire (Matos et al., 2001)	Being female, perceiving poor attachment to parents, a low level of control and a high level of rejection from one's father (OR = 0.58), a high degree of control from one's mother (OR = 0.003), and a low level of family cohesion increase the probability of membership in the self-destructive thoughts and behaviors group.	6
49	Ozer et al., 2015. [Turkey]	122, psychiatric patients and controls from the general population.	20 male, 109 female. Mean age 31.48 (SD = 9.71).	<i>Constructs:</i> SI, SA. <i>Measures:</i> Scale of Suicidal Ideation (Dilbaz et al, 1995); Suicidal Behavior Scale (Bayam et al., 1995)	<i>Construct:</i> AAAS. <i>Measure:</i> ECRS (Brennan et al., 1998).	SA and depressive groups reported higher levels of avoidant ($d = -0.07$) and anxious ($r = 0.40$) attachment. The rate of patients with SA was found to be higher in the group of patients with the fearful attachment style ($r = 0.51$).	5
50	Violato & Arato, 2004. [Canada]	52, Suicidal clinical adolescents (n = 17) and community control group (n = 35).	24 male, 28 female. Mean age 14.7 (SD = 1.7)	<i>Construct:</i> SA. <i>Measure:</i> Clinical diagnostic based on the Diagnostic Statistical Manual (APA, 2000).	<i>Construct:</i> Levels of secure attachment. <i>Measure:</i> Adolescent Attachment Survey (Genuis et al., 2000).	The SA group had significantly higher levels of insecure parental attachment ($r = 0.52$).	5
<i>Randomized Controlled Trial</i>							
51	Rossouw & Fonagy, 2012. [UK]	80, Adolescent psychiatric patients with self-harm (inclusive suicidality).	12 male, 68 female. Mean age 14.7.	<i>Construct:</i> Self-harm (suicidality inclusive) <i>Measure:</i> Risk-Taking and Self-Harm Inventory (Vrouva et al., 2010).	<i>Construct:</i> AAAS. <i>Measure:</i> ECRS (Brennan et al. 1998).	Avoidant attachment style independently predicted variations of self-harm (including suicidal intent) at the end of the treatment ($\beta = -0.17$). Avoidant Attachment mediates the relationship between	9

						Mentalization-Based Treatment for Adolescents and variances in Self-harm/SA ($\beta = -5.95$).
<i>Mixed Methods Study</i>						
52	Wright et al., 2005. [UK]	35, Clinical population undergoing assessment for weekly psychotherapy. Control group from general public.	12 male, 23 female. Mean age 17.	<i>Construct:</i> Suicide risk. <i>Measure:</i> Pfeffer Child Suicide Scale (Pfeffer, 1986).	<i>Construct:</i> Separation anxiety. <i>Measure:</i> The Adolescent Separation Anxiety Interview (Richard et al., 1998).	The high suicide risk group included a majority of adolescents who gave preoccupied attachment narratives and no secure narratives. The low suicide risk group was more diversely spread across the three main insecure attachment patterns, and the control sample over-represented the secure category.

Notes: SA = Suicide Attempt. AP = Attachment to Parents. AS = Attachment Style. AAAS = Avoidant and Anxious Attachment Styles. ECRS = Experiences in Close Relationships Scale.