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## **Risk factors and protective factors for suicidal behaviours in young adulthood:**

### **A systematic review**

Master thesis

<b>Student (number)</b>	Yvonne van der Meer (s2996758)
<b>Master</b>	Pedagogische Wetenschappen (Orthopedagogiek), Faculty of Behavioural and Social Sciences, University of Groningen
<b>Supervisor</b>	dr. A.E. (Elianne) Zijlstra
<b>Second reader</b>	dr. J. (Jorien) Luijkx
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## **Abstract**

**Introduction** Despite ample research, the complex aetiology of suicidal behaviours is still insufficiently understood, hampering prevention efforts. As previous research suggests that risk factors and protective factors may be age group specific and differ per form of suicidal behaviour, this study aimed to identify and compare risk factors and protective factors for suicidal ideation, suicide attempt, and completed suicide in young adults.

**Methods** A systematic review identified 40 quantitative studies on this topic. Risk and protective factors identified in the studies were sorted according to the corresponding level in the socioecological model (SEM) after which themes among factors were inductively derived.

**Results** Most of the identified factors were risk factors, associated with suicidal ideation, and related to the individual and interpersonal level of the SEM. Next to a number of demographic factors, a significant share of identified factors were related to mental, social and to a lesser extent physical health and well-being; some were shared across suicidal behaviours. Although different in number, with the exception of the gender paradox in suicide, no notable differences were found in the nature of the identified factors and themes related to the differentiated suicidal behaviours. The results are discussed in light of dominant theories of the development of suicidal behaviours and developmental tasks in young adulthood.

**Implications** Prevention of suicidal behaviours in young adults might profit from a twofold focus of reduction of risks of, for example, psychopathology, and increasing protective factors such as social connectedness. Recommendations for future research are described.

Key words: young adults, emerging adults, suicidal behavio(u)r, suicidal ideation, completed suicide, suicide attempt, associated factors, risk, protective, systematic review

## **Samenvatting**

**Aanleiding** Ondanks een veelheid van onderzoek naar suïcidaal gedrag, wordt de complexe etiologie ervan onvoldoende begrepen. Dit beïnvloedt de effectiviteit van suïcidepreventie. Omdat eerder onderzoek wijst op mogelijke verschillen in risico- en beschermende factoren voor suïcidaal gedrag tussen leeftijdsgroepen en tussen verschillende suïcidale gedragingen, had dit onderzoek tot doel om risico- en beschermende factoren voor suïcidale gedachten, suïcidepogingen, en daadwerkelijke suïcide onder jongvolwassenen te identificeren en vergelijken.

**Methode** Een systematische review resulteerde in 40 relevante, kwantitatieve onderzoeken. De in die onderzoeken gevonden risico- en beschermende factoren zijn ingedeeld op basis van het bijpassende niveau binnen het sociaal-ecologische model (SEM), waarna thema's onder de factoren inductief zijn afgeleid

**Resultaten** Het gros van de geïdentificeerde factoren betrof risicofactoren, gerelateerd aan suïcidale gedachten, en passend bij het individuele of interpersoonlijke niveau binnen het SEM. Naast een aantal demografische factoren, was een aanzienlijk deel van de gevonden factoren gerelateerd aan mentale, sociale, en in mindere mate fysieke gezondheid en welbevinden; in enkele gevallen voor alle drie de gedragingen. Hoewel verschillend in aantal, zijn – met uitzondering van geslacht – geen noemenswaardige verschillen in de aard van de aan suïcidale gedachten, suïcidepogingen en suïcide gerelateerde factoren en thema's gevonden. De resultaten zijn geïnterpreteerd aan de hand van dominante theorieën over de ontwikkeling van suïcidale gedragingen en de ontwikkelingstaken in de jongvolwassenheid.

**Implicaties** Het enerzijds reduceren van risico's op bijvoorbeeld psychopathologie en anderzijds versterken van beschermende factoren zoals sociale verbondenheid kan mogelijk bijdragen aan effectievere preventie van suïcidale gedragingen onder jongvolwassenen. Aanbevelingen voor toekomstig onderzoek zijn beschreven.

Trefwoorden: jongvolwassenen, jongvolwassenheid, suïcidaal gedrag, suïcidale gedachten, suïcide, suïcidepoging, gerelateerde factoren, risico, beschermend, systematische review

## Background

Suicide is a universal phenomenon, though suicide rates differ from country to country and age group to age group (World Health Organization [WHO], 2021). Despite suicide being rare in childhood and at the start of adolescence and relatively rare among young adults (Pelkonen & Marttunen, 2003), it is the fourth leading cause of death of 15 to 29 year-olds globally (WHO, 2021). In some countries, like the Netherlands, suicide is currently the leading cause of death of 15 to 25 year-old individuals (Centraal Bureau voor de Statistiek [CBS], 2021). Non-fatal suicidal behaviour is a more common phenomenon in childhood, adolescence and young adulthood (Pelkonen & Marttunen, 2003) and could be a precursor to completed suicide (Brent et al., 1993; Nock et al., 2008).

Because a death of suicide is not an inevitable death, suicide can be seen as a public health problem. When young adults die of suicide, their lives are cut short by, on average, around 50 years (WHO, 2022). Consequences of suicide are pervasive and reach far beyond the individual committing suicide. Close contacts of the individual committing suicide are at risk of negative (mental) health outcomes and reduced social functioning (Pitman, Osborn, King & Erlangsen, 2014), and many other and less close contacts are impacted as well and at elevated risk for psychopathology, including suicidal ideation (Cerel, Maple, van de Venne, Flaherty & Brown, 2016; Maple, Cerel, Sanford, Pearce & Jordan, 2017). The effects of suicide and non-fatal suicidal behaviour on the economy are also profound (Doran & Kinchin, 2020; Doran, Ling, Milner & Kinchin, 2016). Because of the presumed preventability of suicide and its widespread consequences, reduction of suicide mortality is part of one of the Sustainable Development Goals by the United Nations (United Nations, n.d.). Since suicide rates tend to increase with age in young people (Pelkonen & Marttunen, 2003) as well as during the lifespan (Shah, 2007), young individuals form an important target group for suicide prevention.

A number of influential theories point towards factors that could spark the development of suicidal behaviour. According to the *interpersonal-psychological theory of suicidal behaviour* (IPTS), suicidal ideation emerges when one perceives oneself to be a burden on other people and one feels disconnected from other people (Joiner, 2005; van Orden, Witte, Cukrowicz, Braithwaite, Selby & Joiner, 2010). IPTS posits that having developed fearlessness of pain and death could increase the ability to die. The *integrated motivational-volitional model* (IMV) considers defeat and entrapment to be important drivers

of suicidal ideation, and capability for suicide as well as a number of other factors – including planning, exposure to suicidal behaviour and impulsivity – to elicit other forms of suicidal behaviour (O'Connor & Kirtley, 2018). A third theory, the *three-step theory* (3ST), hypothesizes a combination of (usually psychological) pain and hopelessness to provoke suicidal ideation (Klonsky & May, 2015). In addition, 3ST hypothesizes that connectedness can serve a protective function when both pain and hopelessness are present. According to 3ST, a possible progression from suicidal ideation to suicide attempts depends on the capacity to attempt suicide. These psychological theories acknowledge that factors in the (social) environment impact suicidal behaviour but do not fully capture its social roots to the extent that sociological research would allow (Mueller, Abutryn, Pescosolido & Diefendorf, 2021). It has also been hypothesized that the synergistic effect between different variables (on different levels) may be important (Díaz-Oliván, Porras-Segovia, Barrigón, Jiménez-Muñoz & Baca-García, 2021).

Despite ample research into risk factors for suicidal behaviour, it is still hard to accurately predict such behaviour (Franklin et al., 2017). One important avenue for increased prevention of suicide, therefore, exists of (more) accurate identification of and support for people at risk (Henry, 2021). Previous research has indicated that there may be different risk factors for different forms of suicidal behaviour (Klonsky & May, 2014; May & Klonsky, 2016), indicating a need for disentanglement of risk factors in order to better inform prevention initiatives. Furthermore, risk factors for suicidal behaviour could be age group specific (Jo, Jeon & Oh, 2017), requiring suicide prevention strategies to be developmentally appropriate.

Because not every person that is exposed to risk factors for suicidal behaviour develops suicidal behaviour, another important line of research alongside that into risk factors, is that into protective factors (Beautrais, Collings, Erhardt & Henare, 2005). Suicide prevention efforts traditionally centered around the reduction of risks. Increasing protective factors like emotional health and connectedness (Borowsky, Resnick, Ireland & Blum, 1999) is a more recent focus and could result in more effective prevention (Allen, Wexler & Rasmus, 2021).

Young adulthood is characterized by considerable changes in individuals' social roles, networks and contexts (Scales, Benson, Oesterle, Hill, Hawkins & Pashak, 2016). This could impact young adults' feelings of belongingness (IPTs) and connectedness (3ST). Moreover, failure to establish a healthy identity and intimacy – developmental tasks in adolescence and

young adulthood – may be a more significant risk factor for suicidal behaviour in young adulthood than in other developmental stages (Portes, Sandhu & Longwell-Grice, 2002), and could result in feelings of thwarted belongingness and perceived burdensomeness (IPTs), defeat and entrapment (IMV), and psychological pain and hopelessness (3ST).

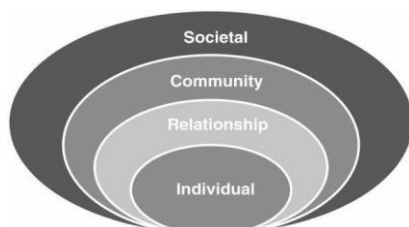
In both scientific literature and practice, different definitions of suicidal behaviour exist (Goodfellow, Kőlves & de Leo, 2019; Posner, Brodsky, Yershova, Buchanan & Mann, 2014). The definition to be used in this study is that by Castle and Kreipe (2007), who define *suicidal behaviour* as including suicidal ideation, suicide attempt and completed suicide. Although this definition excludes self-destructive behaviours without suicidal intent, such as *non-suicidal self-injury* (NSSI), Castle and Kreipe (2007) recognize that those behaviours frequently co-occur with suicidal behaviour (e.g., see Hamza, Stewart & Willoughby, 2012).

To the author’s best knowledge, a systematic review of suicidal behaviour among young adults distinguishing risk factors and protective factors per form of suicidal behaviour is lacking. Therefore, the present study aims to answer the following question: *What are risk factors and protective factors for suicidal ideation, suicide attempt, and completed suicide in young adulthood?* Age ranges used to define young adulthood differ (Scales et al., 2016). As there is a focus on ages 18 to 25 (Arnett, 2000), this study considers young adults to have a minimum age of 18 and a maximum age of 25.

Because of the multitude of factors that have been associated with suicidal behaviours and their different ‘positions’ in the environment of the individual (i.e., more proximal or more distal), Bronfenbrenner’s (1977) socioecological model has been applied to suicide (risks) before (Ayyash-Abdo, 2002; Henderson, 2020; Musyimi, Mutiso, Nyamai, Ebuenyi & Ndeti, 2020). The model could aid in the development of a multi-level perspective on suicidal behaviour that can inform suicide prevention strategies (Cramer & Kapusta, 2017). An adapted version of the socioecological model (Dahlberg & Krug, 2002), which is used in this study, is shown in Figure 1.

**Figure 1**

*The socioecological model as adapted by Dahlberg and Krug (2002)*



## Methods

### *Search strategy*

EBSCOhost was used to determine which electronic databases to search and to determine the final search string (see Table 1). On 15 April 2022, Medline, APA PsycINFO, CINAHL, Academic Search Premier and SocINDEX were searched for potentially relevant studies. Only studies published in 2015 or thereafter were retrieved. Already in this step, articles that are not peer reviewed were excluded.

**Table 1**

### *Search string*

Category 'AND'	Search terms
Suicidal behaviour	suicidality OR "suicidal behavio*" OR suicide OR "completed suicide" OR "suicide attempt*" OR "suicidal ideation" OR "suicidal thoughts"
Age group	"young adult*" OR "emerging adult*" OR "late adolescen*"
Related factors	"risk factor*" OR "protective factor*" OR "contributing factor*" OR "predisposing factor*"

### *Eligibility criteria*

The following inclusion and exclusion criteria were formulated to assess the eligibility of the articles.

#### Inclusion criteria:

1. The article is about actual suicidal behaviour(s);
2. The article is about risk factors and/or protective factors in relation to the suicidal behaviour(s);
3. The suicidal behaviour was assessed in adults with a maximum age of 25;
4. The article is based on an empirical study;
5. The article was published between 2015 and 2022;
5. The article is written in the Dutch or English language.

#### Exclusion criteria:

1. The suicidal intent of the studied behaviour(s) cannot be determined or is absent (for instance, in case of NSSI);

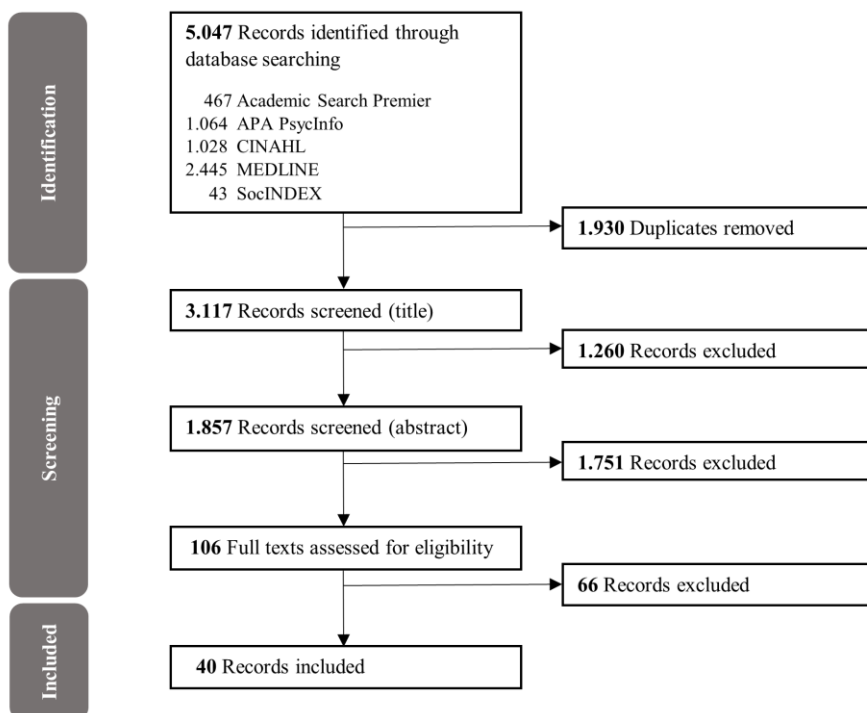
2. The article is solely about risk factors and/or protective factors that are not socioecological in nature;
3. It cannot be ascertained that the reported suicidal behaviour took place during young adulthood as defined in this study (for instance, in case of lifetime suicidal ideation);
4. The article is based on an empirical study that was solely conducted among individuals with a specified somatic diagnosis or occupation.

### *Selection process*

All searches combined yielded a total of 5.047 records. First, using RefWorks, 1.930 duplicates were removed. Then, the selection process continued using Rayyan. Keeping the stated eligibility criteria in mind, titles were screened on relevance by predominantly identifying the topic, research population, type of study, and language if possible. Next, abstracts were screened and included or excluded according to the selection criteria. In this step, the age range of the sample was looked up in the method section if it was not reported in the abstract. Full texts of 106 remaining articles were then assessed for eligibility, resulting in 40 included articles. A schematic overview of the total selection process is shown in Figure 2 (Page et al., 2021).

**Figure 2**

*PRISMA flow diagram of the selection process*





### *Data analysis*

In order to analyse the data, a qualitative content analysis was carried out in three phases (Elo, Kääriäinen, Kanste, Pölkki, Utriainen & Kyngäs, 2014). In the *preparation* phase, suitable data were collected and units of analysis were determined. In every article, the associated factors were coded. A p-value below 0.05 was considered significant. For articles reporting several analyses (e.g., bivariate and multivariate), data concerning results were coded based on the final (relevant) reported analysis. In the *organization* phase, data were reviewed for content in three steps. First, associated factors identified in the included studies were deductively coded according to the form(s) of suicidal behaviour (suicidal ideation, suicide attempt, or completed suicide) with which they have been associated (Polit & Beck, 2012). Second, associated factors were deductively coded on the basis of the corresponding level (individual, relationships, community, or society) in the aforementioned adapted version of the SEM (see Figure 1). Third, inductive coding was used to derive overarching themes among associated factors (Elo & Kyngäs, 2008). In the *reporting* phase, the content of the themes – combined with the categorizations in terms of form of suicidal behaviour and level in the SEM – guided the presentation of the results.

## Results

A complete overview of the included studies, the study characteristics and relevant findings per study is provided (see Appendix A). An overview of themes that were distilled from the separate findings of individual studies is shown in Figure 3 and will be described thereafter.

**Figure 3**

*Overview of themes distilled from factors identified in this review*

	Suicidal ideation	Suicide attempt	Completed suicide
Individual	<b>P</b> Gender (male <sup>9</sup> ) Race (black <sup>14</sup> ) Ethnic identity (strong <sup>7</sup> ) Educational attainment ((some) college <sup>27</sup> ) Academic performance (poor/moderate <sup>24</sup> ) Religious beliefs <sup>27</sup> Psychological well-being <sup>10,16,20,28,35</sup> Traumatic event (life-threatening accident <sup>6</sup> ) Physical well-being (problems <sup>5</sup> , aware of risks <sup>39</sup> ) Health behaviours (alcohol consumption/drug use <sup>38</sup> )	Race (black <sup>30</sup> ) Use of psychiatric medication <sup>30</sup>	Race (Hispanic/non-Hispanic black <sup>13</sup> ) Educational attainment (some college <sup>13</sup> )
	<b>R</b> Gender (female <sup>1,2,4,27</sup> , gender minority <sup>1,4,26</sup> ) Race (not white, black or Hispanic <sup>27</sup> , white <sup>39</sup> ) Sexuality (minority <sup>1,2,6</sup> ) Educational background (science <sup>24</sup> ) Academic performance (personal satisfaction <sup>24</sup> ) Psychopathology <sup>5,7,9,14,15,19,22,23,24,27,29,32,35,39</sup> Psychiatric medication <sup>9</sup> Past suicide attempt <sup>22</sup> Self-harm <sup>14</sup> Psychological difficulties <sup>1,2,6,9,19,20,23,24,32,35,38,40</sup> Received psychological help <sup>9,23</sup> (Childhood) trauma(tic events) <sup>5,10,14,21</sup> Physical well-being (poor/problems <sup>23</sup> ) Health behaviours (alcohol consumption <sup>23,38</sup> , smoking <sup>23,29</sup> ) Sleep (problems <sup>4</sup> )	Gender (female <sup>30</sup> ) Race (non-Hispanic white <sup>30</sup> ) Psychopathology <sup>3,19,30,36</sup> Past suicide attempt <sup>30</sup> Psychological difficulties <sup>19</sup> (Childhood) trauma(tic) events <sup>30</sup>	Gender (male <sup>13</sup> , female <sup>18</sup> ) Educational attainment (lower than high school <sup>13</sup> ) Psychopathology <sup>17,18</sup> Use of psychiatric medication <sup>18</sup> Past suicide attempt <sup>17</sup> Self-harm <sup>20</sup> (Milestone) birthday <sup>25</sup>
Interpersonal	<b>P</b> Social well-being (positive relationships <sup>5</sup> , support/connectedness <sup>33</sup> )		
	<b>R</b> Marital status (never married/separated <sup>27</sup> ) Employment status (unemployed <sup>27,31</sup> ) Social well-being (low social support, low social acceptance, interpersonal conflicts <sup>7,11,21,22,37,38</sup> ) Family trauma (parental death <sup>22</sup> ) Parental psychopathology <sup>5,22</sup> Antisocial behaviour <sup>9,14</sup>	Employment status (unemployed/sick leave <sup>3</sup> ) Social well-being (low social support, low social acceptance, interpersonal conflicts <sup>11,30,36</sup> )	Social well-being (low social support, interpersonal conflicts, social pressure <sup>17,36</sup> ) Family trauma (family loss <sup>30</sup> ) Family history of suicide <sup>30</sup>
Community	<b>P</b> Urban area <sup>24</sup> Religious services (attendance <sup>27</sup> ) Social well-being (positive relationships <sup>5</sup> , support/connectedness <sup>33</sup> )		
	<b>R</b>	Rural area <sup>36</sup>	Social pressure <sup>17</sup>
Society			Social pressure <sup>17</sup>

Note. P = protective factors, R = risk factors.

## **The individual level**

### *Protective factors*

*Gender.* In a study on recurrent suicidal ideation, a lower proportion of male than female young adults reported recurrent suicidal ideation<sup>9</sup>.

*Race/Ethnicity.* Race is another personal characteristic that has been associated with suicidal behaviour in studies conducted in the United States (US). Black young adults experiencing homelessness or unstable housing (YAEH) were less likely than white YEAH to report suicidal ideation<sup>14</sup>. Another study found that, compared to white young adults, black young adults were less likely to have attempted suicide<sup>30</sup>. A third study found that both Hispanic and non-Hispanic black young adults were less likely than their non-Hispanic white counterparts to commit a fatal suicide attempt<sup>13</sup>. Moreover, in a multi-ethnic sample of young adults, having a stronger sense of ethnic identity was related to lower levels of suicidal ideation and a reduction of the impact of other risk factors for suicidal ideation, such as anxiety<sup>7</sup>.

*Education.* With regard to young adults' educational attainment, compared to educational attainment less than high school, having completed (some) college education was linked to lower chances of suicidal ideation<sup>27</sup>. Compared to completed college education or higher educational attainment, having completed some college education was also linked to lower chances of committing a fatal suicide attempt<sup>13</sup>. Regarding academic performance, a study among university entrance test-takers found that, compared to a high grade point average (GPA), having had a poor or moderate GPA in secondary school lowered the chances of experiencing suicidal ideation as a young adult<sup>24</sup>.

*Religiosity.* One study looked into religiosity and religious activities in relation to suicidal ideation among young adults. Finding religious beliefs very important was associated with lower chances of experiencing suicidal ideation<sup>27</sup>.

*Psychological well-being.* In terms of psychological well-being, both self-esteem<sup>10,28</sup> and perseverance<sup>35</sup> have been linked to lower levels of suicidal ideation. Self-esteem was also found to mediate the relationship between childhood emotional abuse and suicidal ideation<sup>10</sup>. Having reasons for living<sup>35</sup> and finding meaning in life<sup>16</sup> and in stress<sup>20</sup> are also associated with lower levels of suicidal ideation in young adulthood. Meaning in life explained a notable 91% of the variance in suicidal ideation among Indian young adults<sup>16</sup>.

*Psychiatric medication.* In a sample of young adults that were hospitalized for a mental illness, using antipsychotics was associated with lower chances of a suicide attempt<sup>30</sup>.

*Traumatic event.* Having suffered a life-threatening accident in the past year was found to lower chances of suicidal ideation<sup>5</sup>.

*Physical well-being.* With regard to general physical health, suffering from chronic health problems or physical impairment was counterintuitively related to reduced chances of experiencing suicidal ideation in young adulthood<sup>5</sup>. Among young adult smokers and non-smokers, higher health risk expectancies have been related to lower levels of suicidal ideation<sup>39</sup>. With regard to actual health behaviours, current drug use and having consumed alcohol a week ago were both linked to lower levels of suicidal ideation in young adults<sup>38</sup>.

#### *Risk factors*

*Gender.* Gender has been associated with all three forms of suicidal behaviour in young adulthood. Female gender is linked to higher chances of suicidal ideation<sup>12,14,24,27</sup> and of suicide attempt<sup>30</sup>. Chances of completed suicide are higher in males<sup>13</sup>, but compared to those who had not attempted suicide before committing suicide, suicide decedents that had attempted suicide before were more likely to be female<sup>18</sup>. Moreover, belonging to a gender minority has been linked to higher chances<sup>14</sup> and levels<sup>26</sup> of suicidal ideation.

*Race.* Compared to being white, being a young adult of a race other than white, black or Hispanic has been associated with higher chances of suicidal ideation in a study conducted in the US<sup>27</sup>. A second US study found that being white is associated with higher levels of suicidal ideation in young adulthood<sup>39</sup>. With regard to suicide attempts, a third US study among young adults hospitalized for a mental illness found that compared to being white, being non-Hispanic white had increased chances of attempting suicide<sup>30</sup>.

*Sexuality.* Sexuality was associated with suicidal ideation in a couple of studies. A study among Canadian and US sexual and gender minority young adults found that asexuality is associated with higher levels of suicidal ideation<sup>26</sup>. Moreover, a US study among lesbian, gay, bisexual and transgender (LGBT) young adults found that internalized homophobia heightened their chances of experiencing suicidal ideation<sup>11</sup>.

*Education.* In terms of education, one study found that young adults reporting educational attainment lower than high school had nearly fourfold greater chances of committing suicide

than young adults who have at least graduated college<sup>13</sup>. A study among Bangladeshi young adult university entrance test-takers found that those with an educational background in science were more likely to experience suicidal ideation than those with an educational background in commerce<sup>24</sup>. Furthermore, entrance test-takers that reported being satisfied with previous mock tests also had higher chances of experiencing suicidal ideation<sup>24</sup>.

*Psychopathology.* A considerable proportion of the included studies mention psychiatric symptoms and disorders in relation to chances and levels of suicidal behaviours in young adults. A suspected or unspecified psychiatric disorder has been associated with higher chances of suicidal ideation<sup>14</sup> and completed suicide<sup>17,18</sup> in this age group. Furthermore, abuse of and dependence on alcohol or other substances and classified alcohol-related or substance use disorders have been linked to higher chances of suicidal ideation<sup>19,27</sup>, (impulsively) attempting suicide<sup>3,19,30</sup>, and committing suicide<sup>17</sup>. In one-third of the included studies, (symptoms of) mood disorders were related to higher chances<sup>5,9,22,23,24,27,28</sup> and levels<sup>7,15,32,35,39</sup> of (recurrent) suicidal ideation and higher chances of (an impulsive) suicide attempt<sup>3,30,36</sup>. Contrary to the above findings regarding addiction, one study found that in the presence of depressive symptoms, addictive behaviour concerning social media may protect against suicidal ideation<sup>15</sup>. Likewise mood disorders, (symptoms of) anxiety disorders were associated with increased chances<sup>5,9,24</sup> and levels<sup>7</sup> of suicidal ideation. Personality disorders<sup>30,36</sup> and adjustment disorder<sup>30</sup> have been linked to greater chances of suicide attempts in young adults.

*Psychiatric medication.* Use of (specific types of) psychiatric medication is associated with increased chances of suicidal ideation<sup>9</sup> and completed suicide<sup>18</sup> in young adulthood.

*Previous self-destructive behaviours.* A shared possible risk factor for all three types of suicidal ideation in young adulthood, is having attempted suicide in the past. Young adults who had attempted suicide in the past were more than three times more likely to report occasional suicidal thoughts and eleven times more likely to report frequent suicidal thoughts than young adults that have never attempted suicide<sup>22</sup>. Furthermore, they were five times more likely to attempt suicide than young adults without a personal history of attempted suicide<sup>30</sup>. A study into Turkish university students who committed suicide, found that 44% of suicide decedents had a history of repeated suicide attempts<sup>17</sup>. In terms of other self-destructive behaviour, recent self-harm has been linked to significantly higher chances of

committing suicide<sup>29</sup> and engaging in NSSI - specifically for social negative reinforcement - is associated with higher levels of suicidal ideation<sup>34</sup>.

*Psychological difficulties.* Next to psychiatric problems and self-destructive behaviours, factors related to the psychological well-being of young adults may confer risk for suicidal behaviours. (Psychological) distress has been associated with higher chances<sup>23</sup> and levels<sup>19</sup> of suicidal ideation and chances of attempting suicide<sup>19</sup> and was found to mediate the relationships between alcohol abuse and suicidal ideation for both genders and for females, and alcohol abuse and suicide attempt for females only<sup>19</sup>. Notably, Canadian young adults with mild to severe distress were around 20 times more likely to experience suicidal ideation than young adults without distress<sup>23</sup>. Suffering from burnout was also linked to increased chances of suicidal ideation<sup>24</sup>. Perceived burdensomeness was associated with higher levels<sup>2,20,32,40</sup> and frequency<sup>6</sup> of suicidal ideation in young adults, and most pronouncedly so in young adults who subjugate their needs to the needs of family members<sup>2</sup> or experience high levels of thwarted belongingness<sup>20</sup>. Thwarted belongingness was also independently associated with higher levels<sup>2,20</sup> and frequency<sup>6</sup> of suicidal ideation. Moreover, hopelessness<sup>1</sup>, low problem-solving skills<sup>1</sup>, lack of premeditation<sup>35</sup> and internalizing negative affect<sup>38</sup> among young adults were related to higher levels of suicidal ideation. Hopelessness does mediate part of the association between low problem-solving skills and suicidal ideation and hopelessness itself was only predictive of suicidal ideation in women<sup>1</sup>. Lastly, young adults who reported poor or fair mental health were more likely to experience recurrent suicidal ideation<sup>9</sup>.

*Psychological help.* Young adults who reported having sought psychological help in the past year were also more likely to experience recurrent suicidal ideation<sup>9</sup> than those who did not. Another study found that young adults who report having received mental health support were almost twelve times more likely to experience suicidal ideation than young adults that had not received mental health support<sup>23</sup>.

*(Childhood) traumatic experiences.* A number of studies looked at certain traumatic experiences in relation to suicidal behaviour in young adults. Childhood emotional abuse<sup>10</sup> has been linked to higher levels of suicidal ideation; childhood neglect<sup>14</sup> and parental maltreatment<sup>21</sup> have been associated with higher chances of experiencing suicidal ideation. Emotional, physical and sexual trauma are individually associated with higher chances of suicide attempt in young adulthood<sup>30</sup>. Young adults who were a victim of sexual assault or

rape in the past year specifically were four times more likely to experience suicidal ideation than young adults without that experience<sup>5</sup>.

*Physical well-being.* Several factors related to physical well-being have been linked to suicidal ideation in young adults. Regarding physical health, perceiving one's own physical health to be poor or fair, chronic (physical) illness and restrictions to daily living were associated with higher chances of experiencing suicidal ideation<sup>23</sup>. In terms of health behaviours, both smoking and alcohol consumption have been linked to higher chances<sup>23</sup> and levels<sup>38,39</sup> of experiencing suicidal ideation. Moreover, the association between smoking rate and suicidal ideation is stronger at higher expectations of negative effect reduction through smoking<sup>39</sup>. As for sleep, variability in sleep timing, nightmares, and insomnia were all (longitudinally) associated with increased suicidal ideation<sup>4</sup>.

*Birthday.* Lastly, one study found that young adults' chances of committing suicide are higher on (their own) birthdays and especially on the milestone 20<sup>th</sup> birthday<sup>25</sup>.

## **The interpersonal level**

### *Protective factors*

*Social well-being.* On the socioecological level that is concerned with relationships, possible protective factors were exclusively found in relation to suicidal ideation in young adulthood. Social support and social connectedness have both been linked to lower levels of suicidal ideation<sup>33</sup>. More specifically, having had moderately to very positive relationships in childhood and/or adolescence at school, with family, and with peers or other people were all associated with lower chances of experiencing suicidal ideation as a young adult<sup>5</sup>.

### *Risk factors*

*Employment status.* Concerning demographic factors, employment status has been linked to suicidal ideation and suicide attempt in young adults. Being unemployed is associated with higher chances of suicidal ideation<sup>27,31</sup> and suicide attempt<sup>3</sup>. Being on sick leave is linked to higher chances of attempting suicide<sup>3</sup> and working part-time and being out of the labour force heighten the chance of experiencing suicidal ideation<sup>27</sup>. Not being in education, employment or training is associated with higher chances of experiencing suicidal ideation<sup>31</sup>.

*Marital status.* Marital status has also been linked to suicidal ideation: being divorced or separated, as well as never having been married, are associated with increased chances of experiencing suicidal ideation in young adulthood<sup>27</sup>.

*Social well-being.* With respect to social well-being, social support, social acceptance and interpersonal conflicts have been related to suicidal behaviours in young adulthood. A deficient support network has been related to completed suicide in young adults<sup>36</sup>. Having experienced suboptimal parental support is linked to increased chances of both occasional and frequent suicidal ideation<sup>22</sup>. With regard to social acceptance, peer victimization and more specifically bullying were found to be associated with higher chances of suicidal ideation<sup>21,37</sup> and suicide attempts<sup>30</sup>. Furthermore, rejection<sup>38</sup>, criticism<sup>38</sup>, and perceived discrimination<sup>7</sup> (only at high levels of anxiety) have been associated with increased levels of suicidal ideation. Internalizing negative affect mediates the relationships between both rejection and suicidal ideation and criticism and suicidal ideation<sup>38</sup>. Furthermore, in a study among LGBT young adults, those with parents with homosexual religious beliefs had increased chances of experiencing suicidal ideation and of attempting suicide<sup>11</sup>. With regard to interpersonal conflicts of young adults, romantic problems have been associated with completed suicide<sup>17</sup>. (Past) interfamily conflicts were found to be related to increased chances of experiencing suicidal ideation<sup>11</sup>, attempting suicide<sup>11,36</sup>, and committing suicide<sup>17</sup>. With regard to suicidal ideation and suicide attempt and conflicts related to sexuality, internalized homophobia did mediate those associations<sup>11</sup>. Next to social support, social acceptance, and interpersonal conflicts, experiencing social pressure has been linked to completed suicide<sup>17</sup> in young adults.

*Family.* In terms of family history, traumatic family loss has been associated with increased chances of completed suicide<sup>30</sup>, and parental death with higher chances of suicidal ideation in young adulthood<sup>22</sup>. Moreover, as with individual psychopathology, (past) parental psychopathology has been associated with increased chances of suicidal ideation in young adults<sup>5,22</sup> and a family history of suicide with higher chances of completed suicide<sup>30</sup>.

*Antisocial behaviour.* Two studies' findings were concerned with antisocial behaviour of young adults. Persistent antisocial behaviour (i.e., in adolescence and young adulthood) of young adults has been linked to increased chances of experiencing suicidal ideation<sup>8</sup>. Likewise, perpetrators of gun violence were found to have increased chances of suicidal ideation<sup>14</sup>.



## **The community level**

### *Protective factors*

At the community level, living in an urban area has been associated with lower chances of suicidal ideation in young adulthood<sup>24</sup>. Among religious young adults, attending religious services one to five times a year was also linked to lower chances experiencing of suicidal ideation<sup>27</sup>. The aforementioned positive relationships in childhood and adolescence<sup>5</sup> and social support and connectedness<sup>33</sup> could also be ascribed to this level of the SEM.

### *Risk factors*

Living in a rural area has been linked to higher chances of suicide attempts in young adults<sup>36</sup>. Regarding completed suicide, the previously mentioned social pressure<sup>17</sup> could also be experienced at this level.

## **The societal level**

### *Protective factors*

At the societal level, no protective factors for suicidal behaviours were identified.

### *Risk factors*

With regard to completed suicide, the aforementioned social pressure<sup>17</sup> may (in part) stem from this level.

## **Discussion**

### *Conclusion*

To the author's best knowledge, this systematic review was the first study to identify associated factors of three differentiated forms of suicidal behaviour in young adults from a socioecological perspective. The majority of studies on associated factors of suicidal behaviour in young adulthood that were included in this review are concerned with suicidal ideation; relatively few studies deal with suicide attempt or completed suicide among young adults. This is not surprising given the higher incidence of suicidal ideation compared to suicide attempt and completed suicide (Gibbons, 2013; Pelkonen & Marttunen, 2003) and the methodological challenges related to studying completed suicide (see Gibbons, 2013). Another notable finding is that the lion's share of identified associated factors are factors belonging to the individual level or interpersonal level of the SEM; factors related to the community and society level were scarce. This may reflect the longstanding dominance of psychological theories of suicidal behaviour (Marsh, 2016).

As mentioned above, in theorizing about the development of suicidal behaviours, IPTS, IMV and 3ST are primarily concerned with the individual as well as specific interpersonal aspects. They do not explicitly include elements of the broader socioecological environment. In line with these theories, this study explicitly identified thwarted belongingness and perceived burdensomeness (IPTS) and hopelessness (3ST) as individual level risk factors related to suicidal ideation. Reporting poor or fair mental health, and distress, burnout, internalizing negative affect, and low problem-solving skills may implicitly relate to defeat and entrapment (IMV) and psychological pain (3ST). In the same vein, experiencing physical problems and restrictions to daily living may increase perceived burdensomeness (IPTS). At the interpersonal level, several factors related to social acceptance and social conflicts which were found to confer risk for suicidal ideation may impact feelings of belongingness (IPTS).

All three theories consider capability for suicide to play a role in the possible progression of suicidal ideation into attempted or completed suicide. In this regard, a personal history of attempted suicide was identified as a risk factor for both suicide attempt and completed suicide. Further relevant identified risk factors for completed suicide include recent self harm and a family history of suicide. Other than IPTS and IMV, in the presence of capability, 3ST considers connectedness to protect against the progression of ideation into

attempted or completed suicide. This study did not identify any interpersonal level protective factors of suicide attempt and completed suicide in young adulthood.

Based on the foregoing, it could be concluded that this review provides some support for IPTS, IMV and 3ST and differences in risk and protective factors for different forms of suicidal behaviour. However, risk and protective factors that are considered to have a role in the progression of ideation into suicide attempt and completed suicide were not exclusively found in relation to those forms of suicidal behaviour; and in some cases exclusively found in relation to suicidal ideation. For example, a history of suicide attempt and self harm were also identified as risk factors for suicidal ideation, and lack of premeditation - which relates to impulsivity (IVM) - was only identified as a risk factor for suicidal ideation. Furthermore, social connectedness was exclusively identified as a protective factor for suicidal ideation.

Taking into account the difference in numbers of risk and protective factors per form of suicidal behaviour and comparing themes of factors, differences in the number of themes linked to suicidal ideation, suicide attempt, and completed suicide are apparent, but do not necessarily imply that certain themes that apply to suicidal ideation do not apply to suicide attempt and completed suicide. At the level of individual factors, the only qualitative difference to be noted seems to be that females have a higher risk of both suicidal ideation and suicide attempt, while males have a higher risk of completed suicide. This phenomenon is known as the 'gender paradox in suicide' (Canetto & Sakinofsky, 1998).

Healthy identity development - which is most prominent in adolescence - and finding intimacy in particular are considered important developmental tasks in young adulthood (Portes et al., 2002). Several of the factors identified in this study seem related to these tasks. In terms of protective factors, a strong ethnic identity could be linked to identity development; and positive relationships in childhood and adolescence and experiencing social connectedness to intimacy. As for risk factors, not being employed (and able to acquire a professional identity), having a minority sexual or gender identity, internalized homophobia, and experiences of social disapproval (e.g., perceived discrimination, rejection, or criticism) and social pressure may be linked to identity development; and not being married or having separated or divorced, having a deficient support network, as well as not having experienced optimal parental support and having experienced traumatic events, may relate to intimacy.

This study does not allow for direct comparisons of identified factors with risk and protective factors identified in studies of other age groups. That being said, the present results can be compared to included studies in which age groups were compared. The study on suicide attempt in children, adolescents, and young adults by Ong and colleagues (2020), found shared (e.g., being female, depressed, or bullied as risk factors) as well as distinctive predictors of suicide attempt for the different age groups. Alcohol use disorder was found to confer risk for young adults specifically. Another study found alcohol consumption to be a stronger risk factor for suicidal ideation in young adults than in 25 to 44 year-old adults (MacKinnon & Colman, 2016). Apart from these two studies, substance use and abuse were (also) identified as risk factors for suicidal ideation, suicide attempt, and completed suicide in young adulthood in a number of other included studies. In a study that was not included in this review, substance abuse was found to distinguish young adults whose risk of suicide emerged after adolescence from those who have persistent, or no suicide risk (Hooven, Snedker & Thompson, 2012). Based on these findings alone, it is unclear by which mechanisms alcohol use and abuse are associated with suicidal behaviours in this age group. Next to an independent association with suicide risk, a recent study among Colombian university students found support for a mediating role of alcohol consumption between hopelessness, anxiety, depression and risk of suicide (Núñez, Gómez, Tabares, Moreno, Méndez, Agudelo Osorio & Caballo, 2022). Furthermore, alcohol consumption may be related to social and contextual factors that are characteristic of young adulthood, such as the desire to belong, peer pressure and also a reduction of perceived stress (Núñez et al., 2022).

### *Strengths and limitations*

This study combined a socioecological perspective, differentiation between different forms of suicidal behaviour and focus on a single age group to contribute to the understanding of the complex aetiology of suicidal behaviours. It provided a comprehensive overview of recent research into protective factors and risk factors and in doing so, shed light on methodological concerns, possible research gaps, and recommendations for suicide prevention. Next to these strengths, a number of limitations should be taken into account.

One important limitation of most of the included studies is their cross-sectional nature. Association alone does not imply causation and does not reliably allow distinguishing causes (risk or protective factors) and effects. Moreover, the aetiology of suicidal behaviour is thought to be complex and involve many factors that may interact and activate feedback

loops (de Beurs et al., 2020). For example, low mood may lead to or worsen sleep problems, which, in turn, may lead to even lower mood, impacting suicidal behaviour. Studying risk and protective factors in isolation and at one point in time, therefore, may only elucidate part of the puzzle and information needed for optimally effective suicide prevention.

Another possible limitation of the findings presented here is that the studies included in the review were conducted in a restricted number of countries. Although previous research among countries of all different continents has found evidence of cross-national risk factors for suicidal behaviours (Nock et al., 2008), other research findings show that risk and protective factors and the progression from suicidal ideation to suicide attempts or completed suicide may depend on the cultural setting (Bertolote et al., 2005) and cultural, religious and societal norms (Canetto & Sakinofsky, 1998; Ghazinour, Mofidi & Richter, 2010). Since the present study found very few factors at the community level and societal level of the SEM, does not comprise the full range of cultures, ecological factors may have an aetiological role in the development of suicidal behaviour (Arafat, Marthoenis, Khan & Razeian, 2022) and it is assumed that the different ecological systems in the SEM interact and influence - and are influenced by - the individual (Eriksson, Ghazinour & Hammarström, 2018), caution should be applied when generalizing the present findings across socioecological contexts.

Regarding the methodological quality of the present study, the internal validity of the results may be limited due to the absence of substantive attention paid to risk of bias. The selection process and content analysis were performed by the author only, which did not allow for inter-rater reliability checks. Moreover, for reasons of feasibility, included studies were required to be peer reviewed but not otherwise subjected to quality appraisal. This may have led to equal appraisal of studies and findings of unequal quality.

### *Implications*

As mentioned above, the majority of identified risk and protective factors for suicidal behaviours in young adults are factors related to the individual or interpersonal level of the SEM. Furthermore, the overall picture of associated factors is dominated by risk factors. This may reflect the focus on mitigation of symptoms instead of cultivation of psychological strengths and on avoidance of negative experiences instead of fostering positive experiences, which long dominated Western psychology (Kleiman, Adams, Kashdan & Riskind, 2013). Importantly, however, many of the risk factors identified here are dynamic in nature, meaning that they are not fixed or unchangeable and can be addressed in suicide prevention and

intervention programmes. Psychopathology, emotional distress, substance use or abuse, and suicidality itself are examples of dynamic risk factors of suicidal behaviour (Welton, 2007) and were also identified as such in this study. In addition, the present study identified several dynamic risk factors (e.g., peer victimization and a deficient support network) at the interpersonal level and social pressure as a dynamic risk factor that might (in part) stem from the community or societal level. Although risk reduction strategies have dominated suicide prevention, protective factors are increasingly incorporated in suicide prevention strategies (Allen et al., 2021). Protective factors that were identified in this study and are modifiable, are mostly related to suicidal ideation and include perseverance, self esteem, meaning in life, having had positive relationships in childhood and adolescence, social support and connectedness.

Based on a systematic review and meta-analysis of interventions for suicide prevention in 12 to 25 year-olds, it was concluded that such interventions can be effective in reducing the risk of suicidal behaviours in young people (Robinson et al., 2018). As suicide prevention efforts tend to focus on generic instead of youth-specific interventions, however, important opportunities for intervention - such as digital interventions - may be missed (Doty, Bass, Ryan, Zhang & Wilcox, 2022; Robinson et al., 2018). Furthermore, despite the breadth of determinants of suicidal behaviour, a large share of existing interventions are focused on (individual) mental health (Michail, Mughal & Robinson, 2020).

Considering that social contexts change considerably in adulthood (Scales et al., 2016), succeeding at developmental tasks requires a sense of connectedness (Portes et al., 2002), connectedness has been repeatedly found to protect against suicidal behaviours (Whitlock, Wyman & Moore, 2014) and targeting protective factors may lead to higher effectiveness of prevention efforts (Allen et al., 2021), suicide prevention for young adults may profit from the development of youth-specific interventions and a twofold focus of reduction of risks factors such as alcohol abuse and increasing or strengthening assumed protective factors such as social connectedness and meaning in life. Due to the continuous and mutual interaction of young adults and their (changing) environment, multilevel strategies of prevention are recommended.

Recommendations for future research are threefold. First, research into the aetiology of suicidal behaviour should adopt a network approach to better grasp how associated factors are interrelated and interact (de Beurs et al., 2021; Holman & Williams, 2022). Second, more

qualitative research should be conducted to broaden and possibly improve the understanding of the progression from suicidal ideation to attempting or even committing suicide. The focus of quantitative research is on explanations - which is different from understanding - and has led to repetitive research in suicidology (Hjelmeland & Knizek, 2010). It has been argued that the complexity of individuals as well as their (suicidal) behaviour can only be meaningfully studied in qualitative research (Hjelmeland & Knizek, 2010). Qualitative research may also be helpful in understanding contradictory and somewhat counterintuitive findings, such as this study's findings that chronic physical illness and impairment are both risk factors and protective factors for suicidal ideation among young adults; and that poor or moderate academic performance (and not high academic performance) protects against suicidal ideation. Third and finally, future research should explicitly aim to identify factors at the community and societal level that are associated with suicidal behaviours in this age group. Studies into the relationship between community or societal level factors and suicidal behaviours do exist and were retrieved in the literature search for the present study; but generally excluded for not exclusively studying suicidal behaviour in young adults and not presenting disaggregated data by age groups. Knowledge about the social roots of suicidal behaviour (Mueller et al., 2021) may aid the development of multilevel strategies of suicide prevention.

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## Appendix A

### Summary of relevant information of included articles

	<b>Authors (year)</b>	<b>Design</b>	<b>Country</b>	<b>Sample (size)</b>	<b>(Outcome) variable(s) + assessment</b>	<b>Associated factor(s)</b>
1	Abdollahi, Talib, Yaacob & Ismail (2016)	Quantitative, Cross-sectional	Malaysia	Undergraduate students (n= 500)	Suicidal ideation - past week  Beck Scale for Suicide Ideation (BSS)	<p><u>Direct</u></p> <ul style="list-style-type: none"> <li>- Problem-solving skills (+)</li> </ul> <p>Low problem-solving confidence, avoiding style and external personal control of emotion are all significant predictors of suicidal ideation.</p> <ul style="list-style-type: none"> <li>- Hopelessness (+)</li> </ul> <p>Hopelessness is the strongest significant predictor of suicidal ideation.</p> <p>Problem-solving skills and hopelessness explain 63% of variance in suicidal ideation.</p> <p><u>Indirect</u></p> <ul style="list-style-type: none"> <li>- Mediation</li> </ul> <p>Hopelessness partially mediates all relationships between problem-solving skills and suicidal ideation.</p> <ul style="list-style-type: none"> <li>- Moderation</li> </ul> <p>Gender moderates the relationship between hopelessness and suicidal ideation: this relationship is not significant for male students.</p>
2	Aceves & Piña-Watson (2021)	Quantitative, Cross-sectional	United States	University students of Mexican descent (n=249)	Suicidal ideation - past week  Beck Scale for Suicidal Ideation (BSS)	<p><u>Direct</u></p> <ul style="list-style-type: none"> <li>- Thwarted belongingness (+)</li> </ul> <p>Higher levels of thwarted belongingness (believing that one does not belong, e.g., in relation to family or friends) are associated with higher levels of suicidal ideation.</p> <ul style="list-style-type: none"> <li>- Perceived burdensomeness (+)</li> </ul>

						<p>Higher levels of perceived burdensomeness (believing that one burdens others by existing) are associated with higher levels of suicidal ideation.</p> <p><u>Indirect</u> - Moderation Subjugation of self (i.e., subjugation of a person's needs to the needs of in this case their family) moderates the relationship between perceived burdensomeness and suicidal ideation. Those with higher levels of subjugation of self, have a higher risk of reporting suicidal ideation in the context of perceived burdensomeness than those with lower endorsement of subjugation of self.</p>
3	Beckman, Lindh, Waern, Stromsten, Renberg, Runeson & Dahlin (2019)	Quantitative, Cross-sectional	Sweden	Young adults presenting for psychiatric evaluation in psychiatric university departments after a suicide attempt in the previous week (n=187)	<p>Suicide attempt -past week</p> <p>&gt; Impulsive suicide attempt (ISA) (i.e., an attempt without preparation and without premeditation)</p> <p>&gt; Non-impulsive suicide attempt (non-ISA)</p> <p>Beck's Suicidal Intent Scale (SIS)</p>	<p><i>ISA (versus non-ISA)</i></p> <ul style="list-style-type: none"> <li>- Substance use disorder, adjusted OR 2.1 (0.99-4.4)</li> <li>- Affective disorder, adjusted OR 0.3 (0.2-0.7)</li> <li>- Unemployment/sick leave, adjusted OR 0.4 (0.2-0.8)</li> </ul> <p>Substance use disorder is associated with impulsive suicide attempts, whilst affective disorders and unemployment/sick leave are associated with non-impulsive attempts.</p>
4	Bernert, Hom, Iwata & Joiner (2017)	Quantitative, Longitudinal - 3-week observation period with 3 time points	United States	Undergraduate students at high risk of suicide (n=50) (i.e., with a suicide attempt history and recent suicidal ideation or no current as well as recent suicidal	<p>Suicidal ideation - past week (x3)</p> <p>Beck Scale for Suicide Ideation (BSS)</p>	<ul style="list-style-type: none"> <li>- Objectively measured sleep disturbances (+) Variability in sleep timing (i.e., sleep duration minus awakenings) is a predictor of increases in suicidal ideation.</li> <li>- Subjectively measured sleep disturbances (+) Nightmares and insomnia are both predictors of increases in suicidal ideation.</li> </ul>

				ideation but no suicide attempt history)		
5	Blasco et al. (2019)	Quantitative, Cross-sectional	Spain	Incoming first-year bachelor's degree university students (n=2.118)	<p>Suicidal ideation - past year</p> <p>Self-Injurious Thoughts and Behaviors Interview (SITBI) – modified version</p> <p>Columbia-Suicide Severity Rating Scale (CSSRS) – screening version</p>	<ul style="list-style-type: none"> <li>- Parental psychopathology, OR 1.8 (1.2-2.7)</li> <li>- Positive relationships in childhood/adolescence <ul style="list-style-type: none"> <li>- within school, middle tertile of positivity (vs. lowest), OR 0.6 (0.4-0.9)</li> <li>- family, high tertile of positivity (vs. lowest), OR 0.4 (0.3-0.7)</li> <li>- peers/others, middle tertile of positivity (vs. lowest), OR 0.6 (0.4-0.9)</li> </ul> </li> <li>- Past year life-threatening accident, OR 0.2 (0.1-0.6)</li> <li>- Past year sexual assault/rape, OR 4.0 (1.0-15.7)</li> <li>- Chronic health problems or physical impairment, OR 0.6 (0.4-1.0)</li> <li>- Lifetime mood disorder, OR 4.9 (3.3-7.1)</li> <li>- Lifetime anxiety disorder, OR 1.9 (1.3-2.8)</li> </ul>
6	Chang, Chang, Martos & Sallay (2017)	Quantitative, Cross-sectional	Hungary	College students (n=195)	<p>Suicidal ideation - past year</p> <p>Frequency of Suicidal Ideation Inventory (FSSI) - adapted version</p>	<p><u>Direct</u></p> <ul style="list-style-type: none"> <li>- Perceived burdensomeness (+)</li> <li>- Thwarted belongingness (+)</li> </ul> <p><u>Indirect</u></p> <ul style="list-style-type: none"> <li>- Both perceived burdensomeness and thwarted belongingness fully mediate a relationship (-) between future orientation (i.e., believing that the future could be changed, even when faced with stressful and negative events/circumstances) and suicidal ideation and are negatively associated with future orientation.</li> </ul> <p>Future orientation, perceived burdensomeness and thwarted belongingness account for 46,3% of the variance in suicidal ideation.</p>

7	Cheref, Talavera & Walker (2019)	Quantitative, Cross-sectional	United States	Multi-ethnic sample of emerging adults (Asian American, Hispanic, African American) (n=742)	Suicidal ideation - past month  Adult Scale for Suicidal Ideation (ASIQ)	<p><u>Direct</u> <i>Across ethnic groups (correlations)</i></p> <ul style="list-style-type: none"> <li>- Perceived discrimination (+)</li> <li>- Ethnic identity (-)</li> <li>- Anxiety symptoms (+)</li> <li>- Depressive symptoms (+)</li> </ul> <p>Together, these variables accounted 20% (Asian American), 32% (African American), and 46% (Hispanic) of the variance in suicidal ideation.</p> <p><i>Hispanic (regression)</i> Depressive symptoms (+)</p> <p><u>Indirect</u> <i>Hispanic</i></p> <ul style="list-style-type: none"> <li>- Mediation</li> </ul> <p>Anxiety symptoms moderate (+) the relationship between perceived discrimination and suicidal ideation. Perceived discrimination is a predictor of suicidal ideation only when anxiety levels are high.</p> <ul style="list-style-type: none"> <li>- Interaction</li> </ul> <p>In the presence of both anxiety symptoms and perceived discrimination, ethnic identity (-) acts as a buffer against suicidal ideation.</p>
8	Choi et al. (2016)	Quantitative, Longitudinal	United States	Young adults that were diagnosed with symptoms of conduct disorder (CD) and substance use disorder (SUD) as 13- to 19 year-old	Suicidal ideation - past year  Single question - only asked to young adults reporting past-year MDD	<ul style="list-style-type: none"> <li>- ‘Trajectory class’ of those with past-year MDD</li> </ul> <p>Suicidal ideation was significantly more prevalent among trajectory classes that are (in part) characterised by persistent antisocial behaviour.</p> <p>Persistent antisocial behaviour (in adolescence and still in young adulthood) may confer increased risk of suicidal ideation.</p>

				youth (n=524)		
9	Dugas, Low, O'Loughlin & O'Loughlin (2015)	Quantitative, Prospective	Canada	Young adults that were recruited whilst in secondary school and aged 12 to 13 (n=785)	(Recurrent) suicidal ideation - past year (x2)  Single question	32% of young adults who reported past-year suicidal ideation at age 20 also reported suicidal ideation at age 24.  Compared to those with non-recurrent or no lifetime suicidal ideation, young adults with recurrent suicidal ideation: - were less likely to be male;  - were more likely to report poor or fair (instead of good, very good or excellent) mental health;  - were more likely to have been diagnosed with a mood disorder during their lifetime;  - were more likely to have been diagnosed with an anxiety disorder during their lifetime;  - were more likely to have used medication for mood or anxiety in the past month;  - were more likely to have sought psychological help in the past year.
10	Duprey, Oshri & Liu (2019)	Quantitative, Cross-sectional	United States	Non-college educated emerging adults of low socioeconomic status (n=167)	Suicidal ideation - past year  Suicide Ideation Scale (SIS)	<u>Direct</u> - Childhood emotional abuse (+)  - Self-esteem (-)  <u>Indirect</u> - Mediation Self-esteem mediates the relationship between childhood emotional abuse and suicidal ideation. (Childhood emotional abuse is negatively associated with self-esteem.)  - Moderation



						<p>Heart rate variability buffers the indirect (via reduced self-esteem) association of childhood emotional abuse and suicidal ideation.</p> <p>Childhood emotional abuse and self-esteem explain 48,6% of the variance in suicidal ideation.</p>
11	Gibbs & Goldbach (2015)	Quantitative, Cross-sectional	United States	LGBT emerging adults (n=2.949)	<p>Suicidal ideation &gt; suicidal thoughts &gt; chronic (i.e., non-fleeting) suicidal thoughts - past month</p> <p>Single question</p> <p><i>Suicide attempt</i> - past month</p> <p>Single question</p>	<p><u>Direct</u> <i>Suicidal thoughts</i> - Religious upbringing with unresolved conflicts, OR 1.4 (1.1-1.9)</p> <p>- Parents with anti-homosexual religious beliefs, OR 1.6 (1.3-1.9)</p> <p>- Conflict as a reason to leave region of origin, OR 1.3 (1.1-1.7)</p> <p><i>Chronic suicidal thoughts</i> - Parents with anti-homosexual religious beliefs, OR 1.6 (1.0-2.4)</p> <p><i>Suicide attempt</i> - Parents with anti-homosexual religious beliefs, OR 2.0 (1.2-3.4)</p> <p>- Conflict as a reason to leave region of origin, OR 2.4 (1.2-4.5)</p> <p><u>Indirect</u> <i>Suicidal thoughts</i> -Mediation Internalized homophobia fully mediates the relationship between religious upbringing with unresolved conflicts and suicidal thoughts, OR 1.2 (1.1-1.3) Internalized homophobia partially mediates the relationship between parents with anti-homosexual religious beliefs and suicidal thoughts, OR 1.1 (1.1-1.2) Internalized homophobia partially mediates the relationship between conflict as a reason to leave origin and suicidal thoughts, OR 1.3 (1.2-1.5)</p>

						<p><i>Chronic suicidal thoughts</i></p> <p>- Mediation</p> <p>Internalized homophobia fully mediates the relationship between parents with anti-homosexual religious beliefs and suicidal thoughts, OR 1.3 (1.1-1.5)</p>
12	Gomes, Soares, Kieling, Rohde & Gonçalves (2019)	Quantitative, Cross-sectional	Brazil	Young adults (22 year-olds) born in 1983 in an urban area (n=3.810)	Suicidal ideation - past month  Mini International Neuropsychiatric Interview (MINI)	Females were significantly more likely to report suicidal ideation than males (3,7% versus 1,8%).
13	Han, Kott, Hughes, McKeon, Blanco & Compton (2016)	Quantitative, Cross-sectional	United States	Mortality files of adults (n=147.427) and nationally representative data concerning (n=2000) adult suicide attempters that survived. - 18-25 year-olds were a subsample.	Completed suicide  Suicide case fatality rate (SCFR)	Individuals with the following characteristics were more or less likely to commit a fatal suicide attempt: - male (vs. female), SCFR ratio 5.7 (4.7-7.0); - non-Hispanic black (vs. non-Hispanic white), SCFR ratio 0.5 (0.3-0.7); - Hispanic (vs. non-Hispanic white), SCFR ratio 0.4 (0.3-0.7); - lower than high school education (vs. college graduate or beyond), SCFR ratio 3.8 (2.4-6.1); - some college education (vs. college graduate or beyond) , SCFR ratio 0.6 (0.4-1.0)
14	Hsu et al. (2020)	Quantitative, Cross-sectional	United States	Young adults experiencing homelessness or unstable housing (YAEH) in cities (n=1.426)	Suicidal ideation - past year  Single question	YAEH with the following characteristics were more or less likely to report past year suicidal ideation: - female (vs. male), OR 1.5 (1.1-2.0); - gender minority (vs. male), OR 2.2 (1.3-3.6); - black (vs. white), OR 0.6 (0.4-0.8);

						<ul style="list-style-type: none"> <li>- experienced childhood neglect, OR 1.8 (1.3-2.6);</li> <li>- mental illness (diagnosed), OR 2.0 (1.5-2.7);</li> <li>- perpetrator of gun violence, OR 1.5 (1.0-2.0)</li> </ul>
15	Jasso-Medrano & López-Rosales (2018)	Quantitative, Cross-sectional	Mexico	University students (n=374)	<p>Suicidal ideation (negative suicidal ideation)</p> <ul style="list-style-type: none"> <li>- past two weeks</li> </ul> <p>Positive And Negative Suicidal Ideation Inventory (PANSI)</p>	<p><u>Direct</u></p> <ul style="list-style-type: none"> <li>- Depression in the past two weeks (+)</li> </ul> <p><u>Indirect</u></p> <ul style="list-style-type: none"> <li>- Interaction</li> </ul> <p>Addictive behaviour related to social media may be protective of suicidal ideation (-) in the presence of depressive symptoms.</p>
16	Jose & Angelina (2019)	Quantitative, Cross-sectional	India	Young adults in mental hospitals (n=160)	<p>Suicidal ideation</p> <ul style="list-style-type: none"> <li>- past week</li> </ul> <p>Beck Scale for Suicide Ideation (BSS)</p>	<ul style="list-style-type: none"> <li>- Meaning in life (-)</li> </ul> <p>Meaning in life explains 89% of the variance in suicidal ideation.</p>
17	Karbeyaz, Toygar & Çelikel (2016)	Quantitative, Cross-sectional	Turkey	Deaths of college students deemed as suicides as a result of criminal investigation (n=75)	Completed suicide	<p>Reported risk factors (total %, more important in male/female sex):</p> <ul style="list-style-type: none"> <li>- (possible) psychiatric illness diagnosis (81%, male)</li> <li>- history of repeated suicide attempts (44%, female)</li> <li>- abuse of alcohol and other substances (68%, male)</li> <li>- romantic problems (39%, male)</li> <li>- family problems and social pressure (36%, female)</li> </ul>

18	Keeshin, Gray, Zhang, Presson & Coon (2018)	Quantitative, Cross-sectional	United States	Young adults who died by suicide (n=885)	Completed suicide	<p>Compared to those who had not attempted suicide before (their completed suicide), young adult suicide decedents that had attempted suicide before were more likely to:</p> <ul style="list-style-type: none"> <li>- be female</li> <li>- have a psychiatric diagnosis</li> <li>- receive psychiatric medication</li> </ul>
19	Kim & Burlaka (2018)	Quantitative, Cross-sectional	United States	Young adults (n=13.069)	<p>Suicidal ideation - past year</p> <p>Single question</p> <p>Suicide attempts - past year</p> <p>Single question</p>	<p><u>Direct</u> <i>Suicidal ideation</i></p> <p>Males</p> <ul style="list-style-type: none"> <li>- Alcohol abuse or dependence (+)</li> <li>- Psychological distress (+)</li> </ul> <p>Females</p> <ul style="list-style-type: none"> <li>- Alcohol abuse or dependence (+)</li> <li>- Psychological distress (+)</li> </ul> <p><i>Suicide attempt</i></p> <p>Males</p> <ul style="list-style-type: none"> <li>- Alcohol abuse or dependence (+)</li> </ul> <p>Females</p> <ul style="list-style-type: none"> <li>- Alcohol abuse or dependence (+)</li> <li>- Psychological distress (+)</li> </ul> <p><u>Indirect</u> <i>Suicidal ideation</i></p> <p>Males</p> <ul style="list-style-type: none"> <li>- Mediation</li> </ul> <p>Psychological distress mediates the relationship between alcohol abuse and dependence and suicidal ideation. (Alcohol abuse disorder is positively associated with psychological distress.)</p>

						<p>Females - Mediation Psychological distress mediates the relationship between alcohol abuse and dependence and suicidal ideation. (Alcohol abuse disorder is positively associated with psychological distress.)</p> <p><i>Suicide attempt</i> Females - Mediation Psychological distress mediates the relationship between alcohol abuse and dependence and suicide attempt. (Alcohol abuse disorder is positively associated with psychological distress.)</p>
20	Lockman & Servaty-Seib (2016)	Quantitative, Cross-sectional	United States	University students (n=165)	<p>Suicidal ideation - past year</p> <p>Suicidal Ideation Scale (SIS)</p>	<p><u>Direct</u> - Perceived burdensomeness (PB) (+)  - Thwarted belongingness (TB) (+)  - Meaning made of stress (i.e., the degree to which one has maintained/reconstructed a sense of global meaning in life after stressful events) (-)</p> <p><u>Indirect</u> - Interaction The association between perceived burdensomeness and suicidal ideation is stronger at higher levels of thwarted belongingness.</p> <p>Perceived burdensomeness, thwarted belongingness, meaning made of stress and the interaction between perceived burdensomeness and thwarted belongingness together explain 56% of the variance in suicidal ideation.</p>
21	Macalli, Orri, Tzourio & Côté (2021)	Quantitative, Cross-sectional	France	Students in French-speaking universities and	Suicidal ideation - past year	<p>- Peer victimization only, OR 1.6 (1.3-2.1)</p> <p>- Parental maltreatment only, OR 2.1 (1.4-3.1)</p>

				institutions for higher education (n=2.271)	Single question	<p>- Both peer victimization and parental maltreatment, OR 2.6 (1.9-3.8)</p> <p>Peer victimization alone explains 15,6% of variance in suicidal ideation, parental maltreatment alone 7,5%, and the two combined 14,5%.</p>
22	Macalli, Tournier, Galéra, Montagni, Soumare, Côté & Tzourio (2018)	Quantitative, Cross-sectional	France	Students in French-speaking universities and institutions for higher education (n=10.015)	<p>Suicidal ideation - past year</p> <p>&gt; Occasional suicidal thoughts</p> <p>&gt; Frequent suicidal thoughts</p> <p>Single question</p>	<p><i>Occasional suicidal thoughts</i></p> <p>Compared to students who experienced extremely strong parental support, students with the following levels of perceived parental support were more likely to have occasional suicidal thoughts:</p> <ul style="list-style-type: none"> <li>- strong, OR 1.5 (1.3-1.7)</li> <li>- moderate, OR 2.1 (1.8-2.5)</li> <li>- low, OR 3.1 (2.5-3.7)</li> <li>- none, OR 4.1 (2.9-5.8)</li> </ul> <p>The following characteristics also raised the odds of experiencing occasional suicidal thoughts:</p> <ul style="list-style-type: none"> <li>- parental history of depression or of anxiety, OR 1.6 (1.4-1.8)</li> <li>- personal history of depression or of attempted suicide, OR 3.6 (3.1-4.2)</li> </ul> <p><i>Frequent suicidal thoughts</i></p> <p>Compared to students who experienced extremely strong parental support, students with the following levels of parental support were more likely to have frequent suicidal thoughts:</p> <ul style="list-style-type: none"> <li>- strong, OR 1.3 (1.0-1.8)</li> <li>- moderate, OR 2.9 (2.2-4.0)</li> <li>- low, OR 5.2 (3.6-7.4)</li> <li>- none, OR 8.5 (5.1-14.3)</li> </ul> <p>The following characteristics also raised the odds of experiencing frequent suicidal thoughts:</p> <ul style="list-style-type: none"> <li>- parental death, OR 1.8 (1.1-2.9)</li> <li>- parental history of depression or of anxiety, OR 1.6 (1.2-2.1)</li> <li>- personal history of depression or of attempted suicide, OR 11.7 (9.1-15.1)</li> </ul>

23	Mackinnon & Colman (2016)	Quantitative, Cross-sectional	Canada	Transition-aged youth (n=4.427)	Suicidal ideation - past year Single question	The following factors are associated with an increased risk of suicidal ideation among transition-aged youth: - high risk of depression, OR 14.3 (8.3-24.6)  - mental health perceived as poor/fair, OR 17.5 (10.5-29.2)  - mild distress, OR 18.9 (7.3-48.7)  - moderate or severe distress, OR 22.8 (7.1-73.1)  - smoking, OR 2.6 (1.6-2.9)  - any alcohol consumption, OR 3.4 (1.6-2.7)  - chronic (physical) illness, OR 4.5 (2.6-7.8)  - restrictions to daily living, OR 4.2 (2.4-7.2)  - physical health perceived as poor/fair, OR 3.8 (2.1-6.9)  - received mental health support, OR 11.9 (6.7-19.5)
24	Mamun, Misti, Hosen & Al Mamun (2022)	Quantitative, Cross-sectional	Bangladesh	University-entrance test takers (n=911)	Suicidal ideation -past year Single question  Suicide attempt - past year Single question	<i>Suicidal ideation</i> Entrance test takers with the following characteristics were more/less likely to experience suicidal ideation: - female, OR 2.3 (1.6-3.2)  - living in an urban area, OR 0.6 (0.3-0.8)  - secondary school certificate GPA - poor (compared to high), OR 0.4 (0.2-0.7) - moderate (compared to high), OR 0.5 (0.3-0.7)  - satisfaction with mock tests, OR 1.6 (1.1-2.4)  - educational background - science (compared to commerce), OR 2.7 (1.8-6.8)

						<ul style="list-style-type: none"> <li>- suffering from depression, OR 4.2 (2.8-6.1)</li> <li>- suffering from anxiety, OR 3.5 (2.4-4.9)</li> <li>- suffering from burnout, OR 1.7 (1.2-2.4)</li> </ul> <p>Moreover, repeat test taking students were significantly more likely to have suicidal thoughts than students taking the test for the first time (20,7% versus 14.6%).</p>
25	Matsubayashi, Lee & Ueda (2019)	Quantitative, Cross-sectional	Japan	Individual death records (for young adults, n= +- 60)	Completed suicide	In the young adult age group, suicides are more likely to occur on birthdays and in particular on the milestone birthday (20th birthday).
26	McInroy, Beaujolais, Leung, Craig, Eaton & Austin (2020)	Mixed methods, Cross-sectional	United States & Canada	Sexual and gender minority young adults (n=1.238)	Suicidal ideation - past 6 months Single question	<p>Gender minority young adults experienced higher levels of suicidal ideation than cisgender young adults.</p> <p>Asexual young adults experienced significantly higher levels of suicidal ideation than non-asexual young adults.</p>
27	Nishi, Susukida, Kuroda & Wilcox (2017)	Quantitative, Cross-sectional	United States	Nationally representative sample of the (non-institutionalized) population of young adults (n=120.838)	Suicidal ideation - past year Single question	<p>The following characteristics led to higher/lower odds of suicidal ideation among young adults:</p> <ul style="list-style-type: none"> <li>- religious beliefs being very important, OR 0.7 (0.7-0.8)</li> <li>- frequency of attending religious services (annually) <ul style="list-style-type: none"> <li>- 1-2 times (versus 0 times), OR 0.9 (0.8-1.0)</li> <li>- 3-5 times (versus 0 times), OR 0.8 (0.8-0.9)</li> </ul> </li> <li>- female, OR 1.3 (1.2-1.4)</li> <li>- race/ethnicity other than white, black or Hispanic (vs. white), OR 1.4 (1.3-1.6)</li> </ul>



						<ul style="list-style-type: none"> <li>- marital status <ul style="list-style-type: none"> <li>- divorced or separated (vs. married), OR 1.7 (1.4-2.2)</li> <li>- never married (vs. married), OR 1.4 (1.3-1.6)</li> </ul> </li> <li>- employment status <ul style="list-style-type: none"> <li>- part-time (vs. full-time), OR 1.2 (1.1-1.4)</li> <li>- unemployed (vs. full-time), OR 1.4 (1.3-1.6)</li> <li>- out of labour force (vs. full-time), OR 1.1 (1.0-1.2)</li> </ul> </li> <li>- educational attainment <ul style="list-style-type: none"> <li>- some college (vs. less than high school), OR 0.8 (0.8-0.9)</li> <li>- college graduate (vs. less than high school), OR 0.6 (0.5-0.7)</li> </ul> </li> <li>- depression (past year), OR 6.7 (6.2-7.3)</li> <li>- alcohol abuse or dependence (past year), OR 1.9 (1.8-2.1)</li> <li>- illicit drug abuse or dependence (past year), OR 2.2 (2.0-2.5)</li> </ul>
28	Oginni, Robinson, Jones, Rahman & Rimes (2019)	Quantitative, Longitudinal	United Kingdom	Individuals born in 1991 or 1992 who were enrolled whilst in-utero or in childhood and followed to the age of 20 (n=4.274)	<p>Suicidal ideation - past year</p> <p>Questions derived from the Child and Adolescent Self-harm in Europe (CASE) study.</p> <p>NB the associated variables are taken from the supplementary material that distinguishes suicidal ideation from self-harm.</p>	<ul style="list-style-type: none"> <li>- Self-esteem at the age of 17 (-)</li> <li>- Depressive symptoms at the age of 18 (+)</li> </ul>

29	Olfson, Wall, Wang, Crystal, Bridge, Liu & Blanco (2018)	Quantitative, Cross-sectional	United States	Patients in the Medicaid programme who have self-harmed (n=14.968)  75 died, 25 deaths were suicides.	Completed suicide - in the year following self-harm	Young adults who have self-harmed were at significantly greater risk of suicide in the following year than matched controls in the general population, OR 19.2 (12.7-28.0).
30	Ong et al. (2021)	Quantitative, Cross-sectional	United States	Young adults hospitalized for a mental illness (n=9.847)	Suicide attempt - within 6 months prior to the hospitalization  Topic in behavioural health assessment conducted by a nurse at admission	The following factors are associated with higher/lower odds of a suicide attempt in the past 6 months: - female, OR 2.0 (1.7-2.3) - black, OR 0.5 (0.4-0.6) - Hispanic, OR 0.7 (0.6-0.9) - non-Hispanic white, OR 1.7 (1.3-2.2) - depressive disorder, OR 2.1 (1.8-2.4) - adjustment disorder, OR 1.4 (1.1-1.7) - alcohol-related disorder, OR 1.6 (1.3-1.9) - personality disorder, OR 1.5 (1.2-1.8) - bullying, OR 1.6 (1.2-2.1) - emotional trauma, OR 1.6 (1.3-1.8) - physical trauma, OR 1.4 (1.1-1.7) - sexual trauma, OR 1.4 (1.1-1.7) - traumatic family loss, OR 1.5 (1.1-2.1)

						<ul style="list-style-type: none"> <li>- past SA, OR 5.3 (4.4-6.5)</li> <li>- family history of suicide, 2.7 (2.3-3.3)</li> <li>- antipsychotic use, 0.7 (0.6-0.9)</li> </ul>
31	Power et al. (2015)	Quantitative, Longitudinal	Ireland	Young adults (n=212)	<p>Suicidal ideation - past month</p> <p>Structured Clinical Interview for DSM-IV Axis 1 Disorders (SCID-1)</p>	<p>Young adults with the following characteristics were at elevated risk of experiencing suicidal ideation:</p> <ul style="list-style-type: none"> <li>- Not in education, employment or training (NEET), OR 7.9 (1.8-34.7)</li> </ul>
32	Ream (2016)	Quantitative	United States	College undergraduates (n=188)	<p>Suicidal ideation - past year</p> <p>SBQ-R</p>	<p>Past year suicidal ideation was experienced to a greater degree by young adults:</p> <ul style="list-style-type: none"> <li>- who were depressed, OR 1.1 (1.0-1.2)</li> <li>- with thwarted belongingness, OR 1.6 (1.2-2.5)</li> </ul> <p>NB log odds were transformed into odds ratio by the author</p>
33	Reyes, Davis, Chua, Olaveria, Pamintuan, Serrano & Tan (2020)	Quantitative, Cross-sectional	Philippines	Late adolescent Filipinos (n=811)	<p>Suicidal ideation - past month</p> <p>Adult Suicide Ideation Questionnaire (ASIQ)</p>	<p>Suicidal ideation in late adolescent Filipinos is associated with:</p> <ul style="list-style-type: none"> <li>- social support (-)</li> <li>- social connectedness (-)</li> </ul> <p>Social support accounts for 0,8% of the variance in suicidal ideation, social connectedness for 17,6% and social support and social connectedness combined for 18,1%.</p>
34	Roley-Roberts, Zielinski, Hurtado, Hovey & Elhai (2017)	Quantitative, Cross-sectional	United States	(Native) English speaking university students with trauma exposure prior to	<p>Suicidal ideation - past week</p> <p>Beck Scale for Suicidal Ideation (BSS)</p>	<p>Among students who engage in non-suicidal self harm (NSSI), engaging in NSSI for social negative reinforcement (i.e., anticipating that a negative social stimulus, for instance bullying, will be removed) is associated (+) with suicidal ideation.</p>

				the age of 12 (n=121)		
35	Salami, Brooks & Lamis (2015)	Quantitative, Cross-sectional	United States	African American undergraduate students (n=130)	Suicidal ideation - past two weeks  Modified Scale for Suicide Ideation (MSSI)	Predictor: - reasons for living (-)  - impulsivity: lack of premeditation (+) - impulsivity: perseverance (-)  Covariate: - depressive symptoms (+)  Reasons for living, levels of premeditation, and levels of perseverance explain 19% of the variance in suicidal ideation.
36	SimaComănicu, Lukacs, Nireştean, Lemeti & Muntean (2021)	Quantitative, Cross-sectional	Romania	Patients of a hospital psychiatric clinic diagnosed with a depressive disorder (n= 103)	Suicide attempt (before hospitalization)	The following factors were more common in patients that had attempted suicide prior to hospitalization than those who did not: - living in a rural area  - deficient support network  - (multiple) intrafamily conflicts  - borderline personality disorder diagnosis  - severe (vs. moderate or mild) depressive disorder
37	Townsend, Powers & Loxton (2017)	Quantitative, Cross-sectional	Australia	Post-school-age women (n=16.801)	Suicidal ideation - past year  Single question	The following experiences are associated with past year suicidal ideation: - bullied in the past, OR 1.9 (1.8-2.0)  - bullied recently, OR 2.7 (2.5-2.9)

38	Victor, Scott, Stepp & Goldstein (2019)	Quantitative, Longitudinal	United States	Young adult women reporting past-year self-injurious thoughts (n=62)	Suicidal ideation - past week  Single question	<p><u>Direct</u></p> <ul style="list-style-type: none"> <li>- Drug use (current) (-)</li> <li>- Alcohol use (current) (+)</li> <li>- Alcohol use (week ago) (-)</li> <li>- Internalizing negative affect (week ago) (+)</li> </ul> <p><u>Indirect</u></p> <ul style="list-style-type: none"> <li>- Mediation An association between rejection and later suicidal ideation (+) is mediated by internalizing negative affect.</li> <li>- Mediation An association between criticism and later suicidal ideation (+) is mediated by internalizing negative affect.</li> </ul>
39	Waters, Peltier, Roys, Stewart & Copeland (2021)	Quantitative, Cross-sectional	United States	College undergraduates (n=607)	Suicidal ideation - past week  Beck Scale for Suicide Ideation (BSS)	<p><u>Direct</u></p> <ul style="list-style-type: none"> <li>- Race (+)</li> <li>- MDD (+)</li> <li>- Daily smoking rate (+)</li> <li>- Health related expectancies (-)</li> </ul> <p><u>Indirect</u></p> <ul style="list-style-type: none"> <li>- Moderation Negative affect reduction expectancies moderate the influence of the daily smoking rate on suicidal ideation; higher daily smoking rates and higher negative affect reduction expectancies predict higher suicidal ideation and vice versa.</li> </ul>

40	Zhang, Wu & Slesnick (2021)	Quantitative, Longitudinal	United States	Homeless youth who have been randomly assigned to Treatment As Usual alone or to Cognitive Therapy for Suicide Prevention (CTSP) and Treatment As Usual (n=150)	Suicidal ideation - past three months  Scale for Suicide Ideation-Worst (SSI-W)	<p><u>Direct</u> - Perceived burdensomeness (only for the CTSP condition)</p> <p><u>Indirect</u> - Mediation Perceived burdensomeness mediates a non-significant association between social problem-solving and suicidal ideation (only for the CTSP condition). Social problem-solving and perceived burdensomeness are negatively associated.</p> <p>Social problem-solving has a protective effect on suicidal ideation through this mediating effect.</p>
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