

**Family Dynamics and the Developing Child: The Influence of
Parenting Behaviours and Family Functioning on Self-Harm and
Suicidality in Childhood and Adolescence**

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ABSTRACT

Adolescent self-harm is a global public health problem. Suicide is a leading cause of death among adolescents aged 15-19 years, and self-harming thoughts and behaviours are risk factors for suicide. The family environment and associated experiences are recognized as a social determinant of health, affecting the developing child in a myriad of ways, including their mental health. Family dynamics directly teach the child how they must adapt and interact with the world. Ultimately, how a family functions and the parenting practices they rely on influence the child's socioemotional development.

What is not understood is whether family dynamics confer prospective risk or protective effects on the onset of self-harming thoughts and behaviours in childhood and adolescence. Similarly, it is unclear whether these risk or protective effects are causal. Among adolescents who develop self-harming thoughts or behaviours, many do not seek support, not at least until professional mental health care may be urgently required. It has yet to be determined whether family dynamics may promote or hinder support-seeking behaviours among adolescents who experience self-harming thoughts or behaviours. The overall objective of this body of doctoral work was to address these key knowledge gaps to inform clinical practice and, more long-term, upstream suicide prevention efforts.

By summarizing the prospective literature base (study 1), we found that negative family dynamics of family dysfunction and negative parenting practices longitudinally predict self-harm and suicidality (suicidal ideation and attempt) in childhood and adolescence. In study 2, we employed causal inference methods (i.e., marginal structural models) to estimate the effect of

negative parenting practices (harsh and withdrawal methods) on self-harm in adolescence. Both forms of negative parenting practices led to the onset and maintenance of non-suicidal self-harm in adolescence. In the last study (study 3), we demonstrated that cross-sectionally and among adolescents experiencing suicidal ideation, negative family dynamics are a barrier to help-seeking from family and may lead the adolescent to seek support elsewhere (i.e., online).

The findings of this doctoral work highlight the importance of family dynamics on the mental health of the developing child. We provide several clinical and public health recommendations, including addressing family dynamics among children and adolescents presenting with self-harming thoughts or behaviours, and formally recognizing family dynamics as a risk and protective factor in suicide prevention efforts.

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CHAPTER 1

INTRODUCTION

1.1 A PUBLIC HEALTH PERSPECTIVE

Globally, suicide is a leading cause of death among young persons aged 15-19.¹ As a cause of death among Canadian adolescents, suicide is second only to unintentional injuries (e.g., road traffic accidents, falls, drownings), a finding which has remained stable since 2000.² The number of Canadian adolescents presenting to emergency services for self-harm has been rising since before the COVID-19 pandemic,³ but rising trends are not limited to that time period. Canadian data demonstrated that during the COVID-19 pandemic, hospital admissions for self-harm, self-poisoning, and suicidal ideation rose among adolescent females.⁴ Provincially, in Ontario, rates of acute care (emergency department visits and hospital admissions) for self-harm were greater than expected during the first two and a half years of the COVID-19 pandemic for adolescent males and females 14-17 years, and among younger adolescents (10-13 years).⁵ Rising visits for acute care were not explained by adolescents already known to the mental health system.⁵ These findings are supported by global evidence showing rises in pediatric emergency department visits for suicidal ideation and attempt among children and adolescents, and self-harm among adolescents (13-16 years).⁶ In contrast, there was good evidence that rates of pediatric emergency department visits for other mental health concerns and all health conditions declined during the COVID-19 pandemic.⁶ Besides the higher associated healthcare costs for adolescents who seek emergency care for self-harm, adolescents who self-harm are more likely to experience premature mortality, including a greater risk of death by suicide.⁷ Among adolescents who self-

harm⁸ or experience suicidal ideation⁹ and survive into young adulthood, they are at a greater risk of continued self-harm and other adversities, such as employment and educational disadvantages, problematic substance use, depression, and anxiety.

1.2 SELF-HARM AND SUICIDALITY IN ADOLESCENCE

Adolescence is a developmental period comprised of numerous challenges and changes, including changes in stress responsiveness.¹⁰ Changes in physiological systems such as the hypothalamic-pituitary-adrenal (HPA) axis may underpin alterations in stress responsivity,¹⁰ and persons with a history of stressful experiences in childhood and adolescence (i.e., adolescents exposed to early-life adversity) may be particularly at-risk for a dysregulated stress response system.¹¹ For example, among adolescents with major depressive disorder and exposed to child maltreatment (i.e., abuse and neglect), negative coping styles (e.g., “The urge to cry quietly when faced with troubles”) may mediate the relationship with non-suicidal self-harm. Expanding on this hypothesized pathway, a reduced likelihood of utilizing cognitive reappraisal strategies may precede adolescents’ use of negative coping strategies;¹² however, these findings are limited by the cross-sectional study design, which precludes our understanding of the temporality of the relationships. Further, inhibiting one’s emotions (i.e., emotional inhibition) is a good predictor of thoughts of wanting to kill oneself and self-harm, as indicated by high certainty ratings in a recent meta-analytic review.¹³ Conceptually, exposure to stressful situations early in life may lead to a predisposition to non-suicidal self-harm, and interpersonal or other stressors in adolescence may proximally precipitate the expression of non-suicidal self-harm by amplifying “pre-existing diatheses”,¹⁴ a potential result of prior unmet needs (e.g., unmet sense of belonging or not feeling accepted for who you are).¹³ In short, engagement in self-inflicted self-harm may represent a maladaptive coping strategy to blunt feelings of emotional distress originating from

past and/or current stressors. The proposed mechanisms behind self-harm and suicidality are discussed in more detail in section 1.4.

It follows that adolescence is a period of elevated risk for mental health concerns¹⁵ which could result in self-injurious thoughts and behaviours. Thoughts of and engagement in non-suicidal self-harm, defined as deliberate bodily harm (e.g., skin cutting or picking) but without the intent to die,¹⁶ is the most prevalent form of adolescent self-harm. A meta-analytic review including more than 600,000 children and adolescents estimated the global past-year prevalence of non-suicidal self-harm as 19.5% (95% CI: 13.3–27.6%),¹⁷ although the studies used to inform this estimate were highly heterogeneous.¹⁷ Unfortunately, prevalence estimates for thoughts of non-suicidal self-harm in adolescence are scarce. In one study, which teased apart estimates between thoughts and behaviours of non-suicidal self-harm among a community sample of persons aged 14-21 residing in Germany (n=1,180), the estimated lifetime prevalence of non-suicidal self-harm thoughts and behaviours was 18% and 13.6%, respectively.¹⁸

Non-suicidal self-harm may confer an increased risk of more serious self-harm.¹⁹ Specifically, non-suicidal self-harm in adolescence is associated with an increased likelihood of suicide attempt in young adulthood.¹⁹ This finding suggests that, at least in some cases, non-suicidal self-harm is a precursor to suicide. More potentially serious forms of self-harm include suicidal ideation and suicide attempt, which together comprise the concept of suicidality. While suicidality is less common than non-suicidal self-harm, it is more lethal. Among children and adolescents, global estimates for past-year prevalence of suicidal ideation and attempts are 14.2% (95% CI: 11.6–17.3%) and 4.5% (95% CI: 3.4–5.9%), respectively.¹⁷ As expected, estimates for self-harm and suicidality exclusively among children (12 years and younger) are lower, except for non-suicidal self-harm (21.9%, 95% CI: 6.2–54.5%).²⁰ However, this pooled

prevalence estimate was based on only two studies.²⁰ Regardless, any form of self-harm is a risk factor for future suicide,²¹ warranting scientific investigation into the different dimensions of self-harm and suicidality.

1.3 THE FAMILY ENVIRONMENT

Social determinants of health are the non-medical conditions, shaped by social, economic, political, and cultural forces, that people experience from birth and across their life course, which influence their health.²² They encompass experiences related to everyday living, working, and aging; they range from experiences of discrimination, access to resources such as education, food, and housing, to early childhood development.²³ Social determinants of health are unequivocally tied to the expression of mental health and disorder.²⁴ Kirkbride and colleagues²⁴ define the modifiable social determinants of mental health as “...the set of structural conditions to which people are exposed across the life course, from conception to death, which affect individual mental health outcomes, and contribute to mental health disparities within and between populations”.

Recently, a review of 46 meta-analyses demonstrated that several social determinants of health are implicated in an increased risk of suicide-related outcomes.²⁵ Among the strongest risk factors for suicide mortality and suicide attempt were early childhood experiences of foster care and child maltreatment, respectively.²⁵ Outside the scope of that meta-analytic review,²⁵ a recent systematic review²⁶ observed that exposure to emotional adversity in the developing child is also a risk factor for suicide mortality. Consistent with these findings, some of the strongest evidence for reducing self-harm and suicidality in adolescence points to targeting the family unit.^{27–29} However, outside of addressing the role of the family in therapeutic processes, whether aspects

of family dynamics may promote or impede disclosure of self-harming thoughts and behaviours is not known, but is highly relevant to clinical practice.

Environmental exposures at the family level are linked to adolescent suicidality. These family-level environmental exposures include parenting behaviours³⁰ and family functioning.³¹ Among young children, better parent-child relationships are an identified resiliency factor which may protect against poor mental health in the face of early-life childhood adversity.³² The quality of the parent-child relationship may also influence the likelihood of mental health outcomes when adolescents are faced with adversity such as interpersonal stress, especially among males.³³ Such findings are not limited to high-income countries. In low-and middle-income countries, family-level variables are also recognized for their mental health importance.³⁴

Specifically, familial conflict and a supportive or understanding family are identified as risk and protective factors for adolescent self-harm, respectively.³⁴ In addition, when children and adolescents are experiencing mental distress, parents or caregivers are recognized as being a key source of support and act as “gatekeepers” to the child’s mental health, whether that be by identifying changes in the child’s functioning or affecting help-seeking behaviours.³⁵ To facilitate mental health savvy gatekeeping, there are efforts (for example³⁵) to improve parental/caregiver recognition, response, and support-seeking behaviours, including for self-harm and suicide-related concerns, in children and adolescents. It is recognized³⁵ that timely identification and access to care are crucial³⁶ to improve suicidality (suicidal ideation, plans, and attempts) in the long term.³⁷ Identifying barriers and facilitators that may influence professional mental health seeking is important,³⁶ especially as rates of help-seeking are low among adolescents who engage in non-suicidal self-harm or experience suicidality.^{38,39}

1.3.1 PARENTING BEHAVIOURS

For some time, parenting behaviours have been regarded for their potential influence on child development.⁴⁰ Today, there exist numerous interventional efforts to promote positive parenting to foster good child health⁴¹ and mental health outcomes.^{42,43} Interventional objectives of a common parenting intervention, the Triple P-Positive Parenting Program (Triple P),⁴⁴ include increasing the use of positive or encouraging parenting practices.⁴⁵ These practices encompass a variety of parenting behaviours such as giving praise, describing what the child did that the parent was pleased with, rewarding the child in some way, such as with a fun activity, or providing directed positive attention (e.g., a hug or a wink) when the child is behaving appropriately (see example from the program developer, Sanders, and colleagues⁴⁵).

Parents/caregivers are also taught appropriate techniques for reducing their reliance on negative parenting practices or those parenting behaviours to be avoided in general (e.g., smacking, shouting or yelling, spanking, threatening to punish without following through), and when dealing with anxious and/or fearful behaviours in the child (e.g., allowing the child to avoid what they are anxious/fearful of, telling the child to stop being silly) (as outlined in examples^{45,46}). In addition, parents/caregivers are taught to improve their use of more positive parenting strategies when handling child misbehaviour (e.g., proportional consequences for misbehaviour, holding a family meeting to select a suitable consequence), and parenting consistency (e.g., in the management of child misbehaviours) is fostered (examples^{45,46}). The above-mentioned interventional goals also align with validated scales that measure aspects of positive and negative parenting practices (see Study 1, Chapter 2), and that are administered in population-based surveys in Canada and the United Kingdom, for example, and have been linked to mental and physical health outcomes in the developing child (see^{30,47,48}). A detailed

breakdown of conceptualizations of positive and negative parenting practices used to inform this dissertation is provided in the Appendices of Study 1 (Chapter 2).

While widely used interventions, including the Incredible Years program,⁴³ have been shown to improve parenting skills (e.g., reduction in use of corporal punishment, increase in parental use of praise) and reduce childhood externalizing symptoms, whether they can also positively impact the child's emotional health and parental mental health may be more challenging. Similarly, evidence as to whether Triple P translates into improvements in emotional and behavioural functioning on a population level is mixed.^{42,45,46} However, some studies to date have had several methodological shortcomings, such as short follow-up periods (≤ 6 months)⁴³ and difficulty with adequate adjustment of confounders.⁴² For example, a study⁴² which did not detect a population-level net benefit of the Triple P program on children's mental health lacked socioeconomic information at the household level, instead relying on neighbourhood-level deprivation measurements. While the latter may be an acceptable proxy in general, the individual socioeconomic standing of a household is highly relevant to the study of parenting behaviours, where household challenges or other adversity (e.g., financial stressors, adverse childhood experiences) may be a barrier to successfully implementing parenting recommendations. Marryat and colleagues⁴² also point out some of the challenges faced by others,^{45,46} including quasi-experimental designs with different population-based samples pre- and post-intervention.

That said, and as noted by Kirkbride et al,²⁴ there is evidence that these widely implemented programs exert benefits for both internalizing and externalizing symptoms. Further, the authors²⁴ highlight the potential cost savings of these common interventions, which are often delivered cost-effectively in group formats. However, data on exact figures and potential savings

can be difficult to locate, and not always included within published material (as noted by Haggerty et al⁴⁹). In Australia, Triple-P has also been found to be cost-effective for conduct disorder, which is related to an increased risk for self-harm,⁵⁰ when delivered in group or individual formats.⁵¹ Not surprisingly, the greatest savings were observed for group-based formats.⁵¹ Cost savings may extend beyond measurable mental health symptoms and influence delinquency and youth criminal justice behaviours, for example.⁴⁹ A Public Safety Canada report⁵² on Triple-P program evaluations in Canada reported a 2013 deliverable cost of \$23.67 (USD) per family in a community of 100,000 families.⁵³ Even after accounting for rising costs and inflation, the delivery of Triple-P, a multilevel program which ranges from universal to indicated prevention,⁴⁴ may remain less than more family-focused interventions for those at-risk (example⁵⁴), but crude cost metrics do not account for potential individual gains or net benefits.

We should also note that shifting some parenting practices, such as positive parenting, may also prove more difficult than changing other behaviours (e.g., reducing negative practices like spanking or shouting, appropriately managing child misbehaviour), as rates of positive parenting may already be high at baseline (examples^{45,46}). Despite the previously noted methodological limitations of studies examining population-level benefits of widely used parenting programs on mental health, the current lack of an established relationship for parenting programs to positively impact child emotional health aligns with inconsistent findings from observational studies of parenting behaviours and internalizing symptoms of depression and anxiety.⁵⁵ At present, it remains unclear whether parenting behaviours may prospectively confer an emotional benefit for children and whether they may longitudinally influence adolescent onset suicidality and self-harm.

In some individual studies, positive parenting is directly⁵⁶ and indirectly,³⁰ through emotional and behavioural concerns, associated with a reduced likelihood of adolescent suicidality. Using an adolescent sample drawn from Iowa, Boeninger and colleagues⁵⁶ found that nurturant and involved parenting behaviours were associated with a reduced likelihood of adolescent suicidality across time. In their longitudinal study of adolescent girls, Victor and colleagues⁵⁷ demonstrated protective associations between positive parenting and non-suicidal self-harm in univariable models, as well as adverse associations with negative parenting behaviours such as harsh punishment. Physical or corporal punishment is regularly associated with suicidality^{58,59} and is advised against.^{60,61} On the contrary, there is conflicting longitudinal evidence for an association between other forms of parenting behaviours and self-harm and suicidality.^{56,62} In short, the literature base examining longitudinal associations between parenting behaviours and adolescent self-harm and suicidality would benefit from a systematic summary, as suggested by Perquier and colleagues.⁶³ A systematic review and, if possible, meta-analysis will help the field in obtaining a more precise understanding of the true extent of potential relationships.

1.3.2 FAMILY FUNCTIONING

Modifiable family-level factors such as family functioning are implicated in adolescent self-harm.⁶⁴ Family functioning, a family's ability to act cohesively in everyday tasks such as problem-solving,⁶⁵ has also been regarded for its potential role in child and adolescent mental health more broadly.⁶⁶ However, the evidence is mixed and has yet to be quantitatively synthesized.⁶⁶ For more than forty-five years, models have been developed to capture and define family functioning accurately. One such model is the McMaster Model of Family Functioning.⁶⁵ In short, the McMaster Model puts forward that the family is an interconnected and dynamic

system.⁶⁵ Within the family system, there are certain everyday activities in which a functional family needs to be able to engage.⁶⁷ The six everyday activities are as follows: problem solving, communication, behavioural control, affective responsiveness, affective involvement, and roles.⁶⁷ Deficits in these areas may result in a family's inability to function cohesively, which may lead to family dysfunction, also known as discord or conflict.⁶⁸ Family dysfunction is associated with non-suicidal self-harm in adolescence, a relationship which elevated symptoms of depression may partially drive.⁶⁹ However, these conclusions were drawn from a small cross-sectional sample, limiting our ability to interpret potential mediational pathways with confidence. Examples of survey items and free-text terms used to inform the operationalization of family functioning/dysfunction, for purposes of this dissertation, are presented in the Appendices of Study 1 (Chapter 2).

Despite the longstanding literature base which identifies the family unit or family functioning as an essential element on which to intervene in adolescent self-harm and suicidality (for example^{27,64,70,71}), it remains unclear whether better family functioning is directly protective against adolescent self-harm and suicidality, or whether family dysfunction prospectively increases one's risk for experiencing self-harm and suicidality in adolescence. It has been shown that being able to confide in one's parent protects against the transition from non-suicidal self-harm to more serious suicidality for young adults.⁷² Children of families who have an abundance of cohesion and parental involvement are more likely to be protected against the onset of adverse mental health when faced with adversity.⁷³ This protective benefit may be specific to the presence of global family support, as the support of a single family member may not confer resilience when challenged with adversity.⁷³ While there is cross-sectional^{31,69,74} and clinical^{31,75} evidence for a relationship between family functioning and self-harm, the longitudinal evidence

base may suggest otherwise (example⁷⁶). The prospective relationship between aspects of family functioning or dysfunction and adolescent self-harm and suicidality appears to be less studied than parenting behaviours and requires synthesis.

1.4 PROPOSED MECHANISMS

Reasons for experiencing thoughts of or engaging in self-harm and suicidality in adolescence may be attributable to a range of factors, for example, maladaptive coping styles and emotional release. In England, the proportion of young persons aged 16-24 reporting engaging in non-suicidal self-harm for emotional relief more than doubled between 2000 and 2014.⁷⁷ In a systematic review and meta-analysis of functions of non-suicidal self-harm, Taylor et al⁷⁸ found that intrapersonal and interpersonal reasons were the most cited reasons for engaging in non-suicidal self-harm, respectively. The most reported intrapersonal reason was for emotional regulation purposes, which could include avoidance coping or trying to elicit positive feelings.⁷⁸ Suicidality and non-suicidal self-harm are associated with several maladaptive coping styles or emotional states, such as feelings of isolation and perceived inability to tackle everyday activities.¹³ Thoughts of non-suicidal self-harm are understudied.

Regardless of the purpose self-harm and suicidality may serve the individual in their present state, factors which may have led to the onset of their experience of thoughts of or engagement in self-harm and suicidality may have been influenced by family-level stress experienced as a child. In animal research, the experience of early life stress has been shown to affect stress responsivity.⁷⁹ In humans, Raymond and colleagues⁸⁰ proposed that exposure to adversity in childhood, such as physical abuse or neglect, induces physiological changes in the brain which have downstream effects, ultimately leading to increased susceptibility to mental

illness. In a cross-sectional sample of adults, Saleh et al⁸¹ found that exposure to early life stressors of emotional abuse and family conflict were associated with later-life depressive symptoms, cognitive functioning, and measures of brain structure. A prolonged and elevated stress experience throughout one's early years may lead to biological disruptions that affect the child's stress reactivity across their life course.⁸² This phenomenon is known as stress sensitization, and it has been studied in relation to depressive symptoms.^{83,84}

Consistent with the stress sensitization hypothesis, a meta-analysis provided support for a relationship between adversity experienced in childhood/adolescence and a dysregulated stress response when exposed to social stress tasks.¹¹ Included as part of the review,¹¹ Andreotti et al⁸⁵ showed that young adults (18-22 years) exposed to a greater amount of family conflict exhibit a blunted stress response when faced with social stress. Along the same lines, Saxbe and colleagues⁸⁶ demonstrated that adolescents who experience high amounts of family aggression are more likely to have dysregulated stress reactivity when later faced with a family conflict challenge. Relatively recently, Duprey et al⁸⁷ provided initial evidence for the role of stress sensitization in the relationship between childhood maltreatment and suicidal ideation by demonstrating that recent exposure to an acute interpersonal stressor amplified the magnitude of the observed maltreatment-suicidal ideation association. It stands to reason that when faced with age-typical stress and adversity in adolescent years, when intra- and interpersonal struggles may be salient, young persons sensitized to stress originally stemming from their home life may be more likely to experience self-harm and suicidality.

Since it has yet to be established whether exposure to family dynamics confers a greater risk or protective effect on later self-harming thoughts and behaviours in childhood and adolescence, it is similarly unclear exactly what mechanisms or pathways play a role in how

stress expresses itself. For example, adolescents may first experience elevated emotional and behavioural concerns before the onset of self-harming thoughts and behaviours. A systematic review and meta-analysis of longitudinal work found that among young people aged 12-26 years, both internalizing and externalizing symptoms are associated with suicide attempts and suicide.⁸⁸ The strength of the association was stronger for internalizing symptoms.⁸⁸ In a large Canadian cohort of children and adolescents, the National Longitudinal Survey of Children and Youth, negative family dynamics of family dysfunction, hostile parenting, and punitive parenting behaviours measured repeatedly across 0-5 years were prospectively associated with an increased risk of internalizing symptoms (i.e., depression and anxiety) in late childhood (8/9 years).⁴⁷ Other work using the same data source identified direct and indirect (i.e., mediational) relationships between negative parenting practices (10/11 years), emotional and behavioural concerns (12/13 years), with later suicidality (14/15 years).³⁰ Positive parenting was indirectly associated with later suicidality indirectly through behavioural concerns only.³⁰

Undoubtedly, the study of causal mechanisms and how family dynamics may influence the development of adolescent self-harm and suicidality could provide valuable insights for the prevention of new onset or recurrent self-harm. To our knowledge, no study has employed causal inference methodology (i.e., marginal structural models) to determine whether family dynamics exert a causal effect on adolescent self-harm and suicidality, and whether the causal effect is transmitted through earlier emotional and behavioural concerns. Delineating whether any prospective relationship is causal and how it operates can assist in the identification of potential therapeutic targets or windows of prevention opportunity along the causal pathway. For example, when exposure to early life negative family dynamics (<10 years) can no longer be mitigated because the upstream window for prevention has closed (child age 11), understanding whether

intervening (midstream) to address emotional and behavioural symptoms is sufficient to prevent the onset of self-harm and suicidality (downstream) may assist in reducing the population burden of mental disorder in childhood and adolescence (Figure).

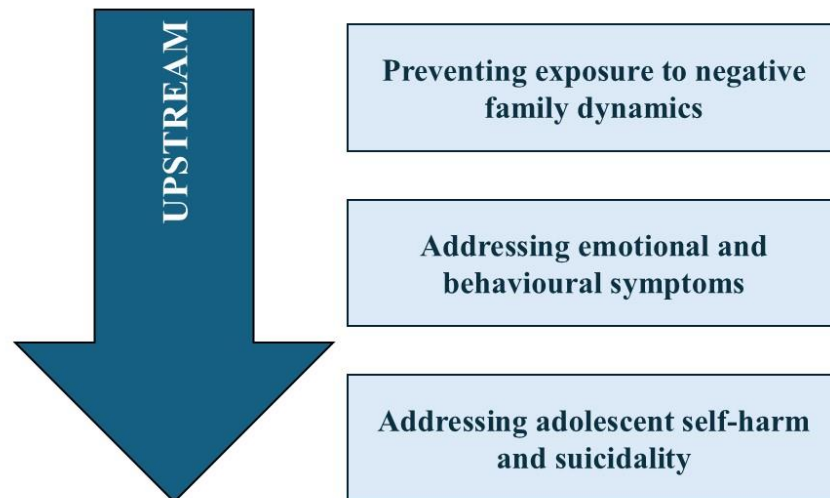


Figure. Opportunities for prevention along a hypothesized causal pathway between exposure to negative family dynamics and later self-harm and suicidality in adolescence.

1.5 THESIS OBJECTIVES

The overall objective of this doctoral work is to determine whether family dynamics of parenting practices and family functioning lead to self-harming thoughts and behaviours in childhood and adolescence, and whether they influence the likelihood of disclosure or help-seeking behaviours. Not only will this knowledge address key knowledge gaps, but it has the potential to be used clinically in the short term when there is an active or imminent risk of self-harm to a child or adolescent. Additionally, this information may be capitalized on more long-term via population-

level public health efforts that seek to reduce the burden of mental health concerns in childhood and adolescence, including the prevention of self-harming thoughts and behaviours. The overall thesis objective can be achieved by:

1. Establishing whether family dynamics are prospectively related to self-harming thoughts and behaviours in childhood and adolescence.
2. Examining whether the relationship between family dynamics and self-harming behaviours is causal. More specifically, by determining whether there is a direct effect of early-life exposure to negative family dynamics on self-harm in adolescence, after accounting for other forms of early-life adversity, after blocking the potential mediational effect of emotional and behavioural symptoms, and after accounting for the potential for reverse causality (i.e., that children with greater emotional and behavioural concerns early in life are more likely to elicit negative family dynamics).
3. Examining whether family dynamics may facilitate or impede disclosure or help-seeking among adolescents who engage in self-harm or experience suicidality.

To achieve the above objectives, the following research questions were addressed in three independent studies.

1. Does existing literature support prospective associations between family dynamics of parenting behaviours and family functioning and self-harming thoughts and behaviours in childhood and adolescence (before 20 years)? More specifically,
 - a. Are negative family dynamics of negative parenting practices (e.g., shouting, yelling, hostility) and family dysfunction (e.g., discord, conflict, lack of cohesion) prospective risk factors for self-harming thoughts and behaviours in childhood and adolescence (before 20 years)?

- b. Are positive family dynamics of positive parenting practices (e.g., emotionally supportive, offering praise) and family functioning (e.g., lack of discord or conflict, cohesion) prospectively protective against the onset of self-harming thoughts and behaviours in childhood and adolescence (before 20 years)?
- 2. Does exposure to negative parenting practices in early childhood (3-7 years) lead to the onset of non-suicidal self-harm and suicide attempt in adolescence (14-17 years)?
 - a. Do harsh (e.g., shouting, smacking) and withdrawal (e.g., ignoring, sending to room) parenting practices (3-7 years) both lead to the onset of non-suicidal self-harm and suicide attempt (14-17 years)?
 - b. Are the relationships between harsh and withdrawal parenting practices and non-suicidal self-harm and suicide attempt independent of emotional and behavioural concerns in early adolescence (age 11)?
- 3. Among adolescents (14-17 years) who self-harm or experience suicidal ideation, do positive family dynamics promote, and negative family dynamics hinder disclosure and help-seeking behaviours? Specifically,
 - a. Is exposure to family dysfunction and negative parenting practices associated with a reduced likelihood of disclosure and online help-seeking for non-suicidal self-harm and suicidal ideation?
 - b. Is exposure to positive parenting practices associated with an increased likelihood of disclosure and online help-seeking for non-suicidal self-harm and suicidal ideation?

1.6 THESIS ORGANIZATION

This doctoral thesis follows an article format. The organization of the thesis, by Chapter, is explained below.

- **Chapter 1:** provides the background and sets up the need for this doctoral program of research.
- **Chapter 2:** presents the first article of the thesis, published in *The Lancet Psychiatry* (2025).
- **Chapter 3:** presents the second article of the thesis, which is under review at a peer-reviewed journal.
- **Chapter 4:** presents the third article of the thesis, published in the *Canadian Journal of Psychiatry* (2025).
- **Chapter 5:** summarizes the main study findings and the key takeaways from this doctoral work. In addition, this chapter provides an overview of clinical and public health implications and proposed opportunities for future advancements.

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CHAPTER 2

Family dynamics and child and adolescent self-harm and suicidality: a systematic review and meta-analysis

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Article Preface

Existing longitudinal studies have yielded mixed findings for associations between family dynamics and self-harm and suicidality in adolescence. It is currently unclear whether most work has found the presence or absence of an association, and the strength of the potential relationship. A conflicting body of evidence prevents a thorough understanding of potential relationships, making it challenging to guide future work and inform public health efforts. To our knowledge, no study to date has sought to summarize the longitudinal evidence on the relationship between family dynamics and self-harm and suicidality in children and adolescents. This article addresses this knowledge gap by systematically summarizing the existing prospective, longitudinal literature on the relationship between family dynamics, as defined by parenting practices and family functioning or dysfunction, and self-harm and suicidality (suicidal ideation and thoughts) in childhood and adolescence (before 20 years).

Author Contributions

As the lead and corresponding author, I led all aspects of this study, including conceptualization, with the support of my supervisor, Dr. Ian Colman, and co-authors. I developed the study protocol, oversaw data collection, conducted the narrative and quantitative analyses, prepared the initial draft manuscript, revised the manuscript in response to feedback from all co-authors, submitted the manuscript for publication, and addressed all feedback during the peer review stage. More information on the unique contributions of each author is listed on page 42, and the appendices and supplementary materials begin on page 61.

ABSTRACT

Background: Everyday family dynamics are implicated in child and adolescent self-harm and suicidality. However, whether negative and positive family dynamics may confer a prospective risk or protective effect, respectively, is not understood. To address this research gap, we conducted a systematic review and meta-analysis to summarize the prospective, longitudinal evidence examining the relationship between family dynamics, self-harm, and suicidality (suicidal thoughts and behaviours) in childhood and adolescence.

Methods: We searched Medline, Embase, APA PsycINFO, and ERIC (all via Ovid), and CINAHL via EBSCO from their dates of database inception to May 20, 2025, without publication restrictions. Observational studies were eligible if they prospectively followed a community, school, or population-based sample of typically developing or not-at-risk children and adolescents for a minimum of 12 months. Further, studies were eligible if they included prospectively measured family dynamics, including positive (e.g., emotionally supportive) and negative (e.g., harsh, aversive, or punitive) parenting behaviours and family functioning (e.g., family cohesion) or dysfunction (e.g., discord or conflict) in childhood or adolescence (<18 years 11 months). Outcomes ascertained ≥ 12 months after our exposures and before 20 years included: (1) thoughts of non-suicidal self-harm or self-injury; (2) non-suicidal self-harm or self-injury; (3) suicidal ideation; (4) suicide attempt; and (5) non-specific self-harm or self-injury. We included any reporting period (e.g., past 6 or 12 months). We examined individual (e.g., suicidal ideation) and combined (e.g., self-harm and suicidal ideation) outcomes using random-effects models. Study quality was assessed using the Newcastle–Ottawa Scale. This review was registered in PROSPERO (CRD42023434804).

Findings: We screened 3,860 articles, retaining 38 for narrative synthesis and 24 for quantitative analyses. Altogether, the studies comprised 101,879 children and adolescents. Most study samples were from the United States (31.6%) and China (28.9%), with exposure and outcome ascertainment 12 months apart (65.8%) between ages 10-19 (94.7%). Race/ethnicity information was not consistently available. Females comprised a larger proportion of the samples than males (ranges: 42.4-100% and 28.3-57.6%, respectively). Exposure to negative parenting was associated with a greater likelihood of combined self-harm and suicidal ideation (OR=1.29,95%CI:1.15,1.46) and non-suicidal self-harm/self-injury (OR=1.46,95%CI:1.25,1.71), but not suicidal ideation (OR=1.07,95%CI:0.92,1.24). There was no relationship between negative parenting and continuously measured self-harm and suicidality. Positive parenting was not associated with combined self-harm and suicidal ideation or suicidal ideation. Family dysfunction was longitudinally associated with greater combined self-harm and suicidality (OR=1.29,95%CI:1.13,1.48) and non-specific self-harm (OR=1.70,95%CI:1.10,2.63), but not suicide attempt (OR=1.24, 95% CI: 0.93,1.66). Overall study quality was moderate ($M=6.50, SD=1.29$).

Interpretation: Negative parenting practices and family dysfunction appear to precede child and adolescent self-harm and suicidality. Reducing negative family dynamics may alleviate these severe mental health concerns in the short term, while assisting families to minimize early life exposure to negative family dynamics may prevent the onset of self-harm and suicidality.

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Keywords: self-harm, suicidality, adolescence, family dynamics, family functioning, parenting practices

INTRODUCTION

Parenting behaviours have long been of interest due to their potential to affect child development.¹ Parenting shapes the early child environment and associated childhood experiences, laying the groundwork for socioemotional development.² Both positive (e.g., emotionally supportive) and negative (e.g., harsh or punitive) parenting practices are implicated in child and adolescent mental health.^{3–7} Parenting behaviours may therefore represent an ideal target for prevention efforts due to their potential modifiability. Parenting programs have demonstrated efficacy in improving positive parenting behaviours and reducing child externalizing symptoms (for example⁸). However, whether parenting programs can positively affect child and adolescent emotional (internalizing) concerns may be more elusive.^{3,8} Similarly, it is unclear whether parenting behaviours may prospectively confer either an emotional benefit or risk for children and adolescents in the population at large.

Individual studies (examples^{9–14}) have linked both parenting behaviours (e.g., punitive practices) and aspects of family functioning (e.g., conflict) with adolescent self-harm and suicidality (suicidal thoughts and behaviours). However, to our knowledge, no study has sought to systematically summarize the literature on the prospective relationship between family dynamics, as defined by parenting behaviours and family functioning, and subsequent childhood and adolescent non-suicidal and suicidal self-harming thoughts and behaviours (before age 20). This review addresses this research gap. Understanding the potential prospective benefits or risks associated with everyday family dynamics may guide future population-level public health efforts to address pediatric mental health concerns of self-harm and suicidality. In the short term, such knowledge may immediately guide clinical efforts, including psychosocial assessments and family therapy, when there is a potential for or imminent risk of harm to oneself.

METHODS

This review was prepared following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement.¹⁵ The study protocol was registered on PROSPERO (CRD42023434804).

Search strategy and selection criteria

We included published, peer-reviewed, prospective cohort studies that reported at least one estimate between a measure of family dynamics (parenting practices and family functioning/dysfunction) and self-harm or suicidality (terms defined below). More specifically, studies were eligible for inclusion if they: (1) included general population-based, school-based, or community-based sample of children and adolescents (<20 years); (2) the sample was a general or healthy cohort (i.e., not-at-risk); (3) the sample was clearly defined, for example, by geographic region (e.g., national in scope) or other characteristic(s) (e.g., year of birth, grade level); (4) the sample was followed prospectively, with exposure and outcome ascertainment for all participants before age 20; and (5) a minimum of 12 months between exposure-outcome measurements. Given our eligibility criteria, the exposure could be ascertained from birth onwards, while the outcome could be ascertained no later than 19 years and 11 months, aligning with the World Health Organization's definition of adolescence: 10-19 years.¹⁶ We excluded clinical samples, and there were no language restrictions.

We identified five study-level outcomes *a priori*: (1) thoughts of non-suicidal self-harm or self-injury (thoughts of wanting to hurt oneself [e.g., skin cutting] without intending to die); (2) non-suicidal self-harm or self-injury (engagement in acts of bodily self-harm [e.g., skin cutting] but without the intention of inflicting harm so severe that it results in death); (3) suicidal ideation (thoughts of wanting to end one's own life); (4) suicide attempt (a purposeful engagement in bodily self-harm with the intention of dying, but that did not result in death); and

(5) non-specific self-harm or self-injury. The last outcome captured studies that did not or could not differentiate whether the behaviours were non-suicidal or suicidal. Together, suicidal ideation and attempt represent suicidality. During the review, we identified a sixth mixed outcome that we classified as “other”: a combination of two or more of the outcomes above (e.g., suicidal thoughts, plans, and attempts). Study outcomes could be ascertained via questionnaire (e.g., parent/caregiver or child/youth) or diagnostic interview tools. We included studies that captured non-suicidal and suicidal self-harming thoughts and behaviours by single-item questions, multi-item measures, and validated and non-validated tools.

Two Canadian cohort studies informed the operationalization of our exposures.^{17,18} In line with previous work,⁴ we classified parenting practices as positive (e.g., emotionally supportive, offering praise) or negative (e.g., hostile or aversive, yelling). Our operationalization of family dysfunction required studies to directly measure dysfunction or functioning (e.g., familial relationship quality, cohesion) or report on an exposure that aligned with one or more dimensions of the McMaster Model of Family Functioning:¹⁹ communication, roles, problem-solving, affective involvement, affective responsiveness, and behaviour control. Example questions and supplemental free-text terms used to guide this review are presented in eAppendix 1. We excluded child maltreatment, adverse childhood experiences or events, marital conflict, quality of the parental relationship, parental self-efficacy, parental stress, and parental attachment/bonding. Studies using the same cohort or study sample were included if they reported a unique association for one of our exposure-outcome relationships of interest. Otherwise, we selected studies with the largest analytical sample size, followed by the study with the most robust adjustment of confounders.

The following databases were searched by a health sciences librarian (author LS) for published studies examining family dynamics as a prospective predictor of self-harm and suicidality: Medline and Medline in Process, Embase Classic + Embase, APA PsycINFO, ERIC (all via Ovid), and CINAHL via EBSCO. A search strategy was developed for Medline and then translated into the other databases (eAppendix 2). All databases were searched from their dates of inception to May 20, 2025. There were no publication restrictions.

Data extraction

In pairs, reviewers (authors NGH, SNS, GW, LH, HK, JE, IC) independently reviewed studies in three stages: title and abstract screening, full-text review, and data extraction. Disagreements were resolved through discussion, consensus and, as required, by consultation with a third party (author IC). Extracted data consisted of study-level information (e.g., authors), study-level characteristics (e.g., country, attrition), participant characteristics (e.g., sociodemographics), descriptions of study measures (e.g., validated scale, confounders), and study results (e.g., measures of association and corresponding 95% confidence intervals [95% CIs]). A maximum of three attempts were made to contact the authors of the included studies if missing information precluded meta-analysis. Study quality was assessed using the Newcastle–Ottawa Scale²⁰ for cohort studies. We modified the scale’s assessment of outcome rating to determine whether self-harm and suicidality were ascertained via best practice(s) (validated measure or diagnostic/clinical interview [gold standard]) or not (non-validated or no mention of how the outcome was ascertained)⁴ (eAppendix 3).

Data analysis

Measures of effect were odds ratios (OR) for dichotomous outcomes and standardized regression coefficients (β) for continuous outcomes. Bivariate correlation coefficients (raw data)

were transformed into odds ratios. We also conducted a combined self-harm and suicidality meta-analysis by grouping all self-harm and suicidality outcomes for each exposure, when possible. In cases where the same study sample/cohort could contribute >1 estimate to the combined self-harm and suicidality meta-analysis, we selected the exposure-outcome relationship with the largest analytical sample size. When the sample size was equal, we identified the study outcome most similar to those already included. Where studies reported sex/gender-stratified findings, we included each unique sex/gender estimate in the relevant exposure-outcome analysis since estimates from between-group participants were independent. Across-study heterogeneity was explored using the I^2 statistic, with higher values indicative of greater heterogeneity and values $\geq 90\%$ reflecting high heterogeneity.²¹ Results are presented visually using forest plots. We pooled studies and conducted random-effects meta-analysis when at least three estimates were reported. Quantitative analyses were conducted using Comprehensive Meta-Analysis (CMA, version 4).

While we extracted study-level data on family functioning and dysfunction, both capture the same underlying construct. More specifically, and depending on the individual measure used, higher scores reflect either better family functioning (e.g., less conflict and better communication) or more dysfunction (e.g., more conflict and worse communication) within the family unit. In other words, family functioning and dysfunction represent different exposure levels (i.e., more versus less) of the same construct. However, positive and negative parenting practices are separate constructs (e.g., shouting [negative] and praise [positive]), that may be engaged in by a parent or caregiver to a greater or lesser degree, whether that be based on frequency (e.g., daily versus weekly) or intensity of exposure (e.g., exposure to a greater number of negative parenting practices). Thus, to increase the number of available studies and potentially

improve precision, we meta-analyzed family functioning and dysfunction as a single construct. To do so, we calculated the reciprocal effect of family functioning for studies with dichotomous outcomes. The reciprocal of the OR is calculated by dividing the effect estimate and the upper and lower limits of the corresponding 95% CI by 1 (e.g., 1/OR).²² There were insufficient studies with results reported as standardized regression coefficients to permit a similar analysis for continuous outcomes.

Role of the funding source

The funders of the authors [NGH, MCG, MAF] had no role in study design, data collection, data analysis, data interpretation, or writing of the report.

RESULTS

The selection of the included studies is shown in the Figure. We screened 3,860 articles and retained 38 studies, of which 24 had sufficient information for inclusion in quantitative analyses, and 38 contributed to narrative synthesis. The reasons for study exclusion at the full-text stage are described in the Figure. Most studies used samples from the United States (31.6%, $n_{\text{studies}}=12$ [includes one multi-sample study²³], followed by China (28.9%, $n_{\text{studies}}=11$), and reported a one-year follow-up period for our estimates of interest (65.8%, $n_{\text{studies}}=25$); the minimum follow-up period (eTable 1). Two studies^{24,25} reported exposure ascertainment <10 years/<grade 5 for the relationship of interest. Thus, nearly all studies (94.7%, $n=36$) reported exposure and outcome ascertainment in adolescence (10-19 years). Females comprised a larger proportion of the samples than males (ranges: 42.4-100% and 28.3-57.6%, respectively). Five studies reported on gender instead of sex (ranges for women/girls and men/boys aligned with those reported for sex), and three studies did not report either sex/gender. Race/ethnicity, sexual identity, and gender were reported to a lesser extent (eTable 2). For example, approximately one-

third of studies did not report some information on race/ethnicity (34.2%, $n_{\text{studies}}=13$). Less than half of the included studies (44.7%, $n_{\text{studies}}=17$) reported a response rate, while 63.2% reported study-level attrition ($n_{\text{studies}}=24$) (eTable 3). Confounder adjustment was variable; for the relationships of interest, most studies (81.6%, $n_{\text{studies}}=31$) reported adjustment for one or more confounders (eTable 3). No studies reported thoughts of non-suicidal self-injury or self-harm as an independent outcome. Altogether, the studies comprised 101,879 children and youth.

Sixteen studies^{9,11,12,23–35} reported on 19 relationships between negative parenting practices and self-harm and suicidality (Table 1, eTable 4). There were four captured outcomes (Table 1), with most estimates (57.9%, $n_{\text{estimates}}=11$; $n_{\text{studies}}=9$) examining negative parenting practices in relation to non-suicidal self-harm/self-injury. Across all outcomes, the majority of the estimates (78.9%, $n_{\text{estimates}}=15$; $n_{\text{studies}}=14$) were in the expected direction, with exposure to negative parenting associated with more self-harm and suicidality, and over half (57.9%, $n_{\text{estimates}}=11$; $n_{\text{studies}}=11$) were in the expected direction with statistical evidence. For dichotomous outcomes, exposure to negative parenting was statistically associated with the combined outcome of self-harm and suicidal ideation ($n_{\text{estimates}}=12$; $n_{\text{studies}}=10$, $N=31,666$; OR=1.29, 95% CI: 1.15,1.46, $I^2=90\%$) and non-suicidal self-harm/self-injury ($n_{\text{estimates}}=7$; $n_{\text{studies}}=6$, $N=14,341$; OR=1.46, 95% CI: 1.25,1.71, $I^2=79\%$), but not suicidal ideation alone ($n_{\text{estimates}}=3$; $n_{\text{studies}}=2$, $N=11,452$; OR=1.07, 95% CI: 0.92,1.24, $I^2=82\%$). Forest plots are presented in eFigures 1-3, respectively. There was no statistical relationship between negative parenting and combined self-harm and suicidality in the meta-analysis of continuous, standardized outcomes ($n_{\text{estimates}}=3$; $n_{\text{studies}}=3$, $N=1,817$; $\beta=0.07$, 95% CI: -0.10,0.23, $I^2=74\%$) (eFigure 4).

Ten studies^{9,11,12,25,31,35–39} reported on 13 relationships between positive parenting practices and self-harm and suicidality (Table 2, eTable 5). In contrast to negative parenting

practices, more outcomes (5) were studied with positive parenting (Table 2), with most estimates examining suicidal ideation (30.8%, $n_{\text{estimates}}=4$; $n_{\text{studies}}=3$) and non-suicidal self-harm/self-injury (30.8%, $n_{\text{estimates}}=4$; $n_{\text{studies}}=4$). Nearly all estimates in the expected direction (61.5%, $n_{\text{estimates}}=8$; $n_{\text{studies}}=7$), with positive parenting a longitudinal protective factor for self-harm and suicidality, also demonstrated a statistical relationship (53.8%, $n_{\text{estimates}}=7$; $n_{\text{studies}}=6$). In meta-analyses, positive parenting was not statistically associated with a combined outcome of self-harm and suicidal ideation ($n_{\text{estimates}}=7$; $n_{\text{studies}}=6$, $N=27,616$; OR=0.92, 95% CI: 0.82,1.02, $I^2 = 85\%$) or suicidal ideation alone ($n_{\text{estimates}}=3$; $n_{\text{studies}}=2$, $N=14,200$; OR=0.99, 95% CI: 0.84,1.17, $I^2=93\%$) (eFigures 5 and 6). Meta-analysis was not possible for continuous outcomes.

In a combined analysis of family functioning and dysfunction predicting self-harm and suicidality, we identified 21 studies^{10,13,14,23,33,39–54} covering 35 estimates across 5 outcomes (Tables 3 and 4, eTables 6 and 7). Two studies^{14,42} contributed 4 unique estimates each. One study⁴² examined aspects of family functioning (family mutuality) and dysfunction (family conflicts) across multiple outcomes, whereas the other¹⁴ examined suicidal ideation and suicide attempt in relation to family functioning in sex-stratified analyses. The most commonly studied outcome was suicidal ideation ($n_{\text{estimates}}=11$; $n_{\text{studies}}=7$), followed by other (mixed) outcomes ($n_{\text{estimates}}=8$; $n_{\text{studies}}=6$) (Tables 3 and 4). In 80.0% of estimates ($n_{\text{estimates}}=28$; $n_{\text{studies}}=19$), the relationship was in the expected direction (e.g., better family functioning protective against suicide attempt). A smaller proportion of relationships were in the expected direction with statistical support for an association (42.9%, $n_{\text{estimates}}=15$; $n_{\text{studies}}=12$). After taking the reciprocal of family functioning measures, we meta-analyzed the odds of a combined measure of self-harm and suicidality following exposure to family dysfunction. Family dysfunction was longitudinally associated with greater self-harm and suicidality ($n_{\text{estimates}}=12$; $n_{\text{studies}}=11$, $N=36,275$; OR=1.29,

95% CI: 1.13,1.48, $I^2 = 95\%$) (eFigure 7) and non-specific self-harm ($n_{\text{estimates}}=4$; $n_{\text{studies}}=4$, $N=11,117$; OR=1.70, 95% CI: 1.10,2.63, $I^2 = 96\%$) (eFigure 8), but not suicide attempt ($n_{\text{estimates}}=4$; $n_{\text{studies}}=3$, $N=10,331$; OR=1.24, 95% CI: 0.93,1.66, $I^2 = 68\%$) (eFigure 9). Meta-analysis was not possible for continuous outcomes.

In line with our PROSPERO protocol (eAppendix 4), sensitivity (subgroup) analyses were possible (≥ 10 estimates/studies) for the year of outcome assessment (pre-2000, 2000-2011, versus ≥ 2012) and outcome prevalence ($\leq 10\%$ versus $>10\%$) for the combined measure of self-harm and suicidality with family dysfunction. Pooled subgroup effect estimates were similar to the overall pooled estimate; however, a smaller number of studies within each subgroup corresponded with a widening of confidence intervals (outcome timeframe: eFigure 10; outcome prevalence: eFigure 11).

Study quality ratings ranged from 4 to 9 out of 10 stars, where 10 represented the highest quality rating. The mean overall quality rating was 6.50 ($SD=1.29$). A breakdown of individual study quality ratings is presented in eTable 8. Sixteen studies (42.1%) had a quality rating of 7 or above, denoting high quality. Overall, studies were of moderate quality.

DISCUSSION

In this systematic review and meta-analysis, we demonstrate that negative family dynamics consisting of negative parenting practices and family dysfunction are related to future risk of self-harm and suicidality in childhood and adolescence. In contrast, there was no apparent consistency of associations for positive parenting practices in quantitative analyses. In narrative synthesis, 60% of the studies that examined positive parenting supported a protective relationship. Taken together, we conclude that negative family dynamics, a modifiable exposure,

are aspects of the family unit that may particularly lend themselves to being addressed clinically and through population mental health efforts for the reduction of self-harm and suicidality.

The family environment is regarded for its potential utility in addressing child and adolescent mental health concerns,⁶ including self-harm and suicidality.⁷ Family-focused therapeutic care has also demonstrated efficacy in the treatment of pediatric self-harm and suicidality,⁵⁵ though heterogeneity in intervention types precludes specific directives regarding family-centred therapy modalities.⁵⁶ Family-based treatment is also clinically indicated for children and adolescents experiencing eating disorders,⁵⁷ for which there is high comorbidity with self-harm and suicidality.⁵⁸ Familial factors may represent an ideal candidate for public mental health efforts to prevent self-harm and suicidality in childhood and adolescence due to their amenability. In line with this, our longitudinal synthesis of community and population-based studies demonstrates that family dynamics of negative parenting practices and family functioning appear to be most strongly and consistently associated with the prospective risk of self-harm and suicidality.

Our findings align with a recent review⁵⁹ of the relationship between adverse childhood experiences and common mental disorders and suicidality. The authors⁵⁹ observed that across all ages, adverse childhood experiences were associated with internalizing disorders, with the strongest relationship for suicidality. It is possible that, in some cases, there may be exposure overlap between studies of such types of early childhood adversity and the present review. For example, parental incarceration or substance use problems, two types of adversities, can be conceptualized as aspects of family or household dysfunction.⁵⁹ Similarly, exposure to punitive or harsh parenting practices can be classified as adverse experiences.⁵⁹ However, adverse

childhood experiences, while longitudinally associated with self-harm in adolescents,⁶⁰ may represent an extreme end of the family dysfunction and negative parenting continuums.

On the other end, children exposed to high amounts of family cohesion (i.e., better family functioning), parental engagement, and positive parenting strategies may be resilient against adverse mental health when faced with early life challenges.⁶¹ Positive parenting was the least studied parenting practice in the present review, and findings were inconsistent. There is RCT evidence that parenting programs have a small effect on reducing internalizing symptoms.³ Unfortunately, the statistical relationship disappears when isolating universal parenting programs delivered regardless of risk or indication.³ Universal programs are most consistent with public health approaches and the studies included here. Several factors may affect a parenting program's ability to positively affect mental health at a population level, including differences in informant reporting,⁶² challenges in the pragmatic implementation of parenting programs,⁶³ floor effects masking the ability to detect change,³ and standard versus family-tailored curriculum.⁶⁴ It is also possible that positive parenting, compared to other measures of family dynamics, may have a ceiling effect. Regardless, shifting population-level health is challenging, and a small effect of programming with universal coverage may translate to a large public health impact.⁶⁵

Besides this area of inquiry being understudied, limitations of this review include that most studies (78.9%) did not confirm the absence of the outcome at time 1/baseline. In other words, many studies likely did not examine the relationships of interest within a sample initially free from self-harm or suicidality. Longitudinal work has demonstrated that adolescents who engage in self-harm versus not have different perceptions of their parent's use of some parenting practices, and that the relationship further depends on parental awareness of the self-harm.⁶⁶ Other work by Baetens and colleagues,¹² and synthesized here, showed that *parent*-reported

parenting behaviours are reciprocally related to adolescent self-harm, with parenting behaviours predictive of self-harm and vice versa. Future work should strengthen causal inference, examine reverse causality, and examine the impact of multi-informant assessment to enhance measurement precision. Obtaining reports from multiple informants is considered standard clinical practice in child and youth mental health, but is largely absent from epidemiological research. The inherent challenges in addressing multi-informant discrepancies and its resource-intensiveness may explain its research absence. Between-study variability in modelling-based approaches, such as whether baseline self-harm or suicidality was assessed, likely affected the moderate to high degree of heterogeneity observed here. Additionally, there was considerable variation in the extent of confounder adjustment, indicating that there is no consensus on which variables are most likely to distort the relationship between family dynamics, self-harm, and suicidality.

Since meta-analysis was most often possible for the combined outcome of self-harm and suicidality, this may have further contributed to heterogeneous results. Unfortunately, due to a limited number of studies, we could not isolate the influence of family dynamics exposures for all outcomes, which may have unique risk factors. For example, in a large, well-established cohort, Mars et al⁶⁷ identified several risk factors for transitioning to suicide attempts between adolescents experiencing suicidal thoughts or engaging in non-suicidal self-harm. Furthermore, no study examined thoughts of non-suicidal self-injury or harm as an independent outcome, highlighting this as an area appropriate for future inquiry. It is also important to note that we did not observe a statistical relationship between negative parenting practices and our outcomes when measured continuously. In this case, we may have limited statistical power as our minimum number of studies to conduct a meta-analysis (3) was only met. Additionally, we could

not conduct sensitivity analyses to explore the potential for sex-specific differences due to insufficient studies with sex-stratified findings. As Kingsbury et al⁹ demonstrate, potential causal pathways from harsh parenting to adolescent suicidal ideation and suicide attempt (e.g., direct versus indirect effects) may be sex-specific.

Further, as a greater number of studies become available, permitting more detailed subgroup analyses, it will be of value to examine the potential influence of cultural parenting norms and household composition (e.g., multigenerational families) on the findings observed here. Such analyses may be particularly insightful for the development and delivery of parenting programs to effect change. A clear limitation of the present review is the reliance on self-report measures. Adolescents and parents/caregivers may be susceptible to recall biases related to their mental health state. For example, it is known that the recall of adverse childhood experiences is susceptible to concurrent mental health status,⁶⁸ necessitating the need for less biased, prospective measurement, consistent with the present review. However, this review is not free from this limitation. When parents/caregivers inform the measurement of family dynamics, researchers should also consider accounting for parent/caregiver mental health, while obtaining multi-informant reports, to minimize error and bias.

Besides providing, to our knowledge, a comprehensive and systematic synthesis of the literature to date, other notable strengths of this review include the high degree of comparability in the included studies, as evidenced by high ratings in the selection criteria of our measure of study quality. More specifically, nearly all studies (92.1%) drew an exposed sample from a population representative of a typical child or youth in the respective community or population, and most (84.2%) ascertained family dynamics using a validated measure. The former increases confidence in the generalizability of our findings, while the latter increases confidence in our

ability to conclude that family dysfunction and negative parenting practices represent valid relational constructs worthy of intervention and public prevention initiatives. Heightened attention to the role of the family environment as a psychosocial risk factor for severe mental health concerns among children and adolescents is warranted in clinical assessment.

Contributors: NGH, MCG, LS, CG, MAF, and IC conceptualized the study. LS conducted the literature search, and NGH, SNS, GW, LH, HK, JE, and IC screened records. NGH, SNS, GW, LH, and HK extracted and verified the data. NGH conducted the analyses and wrote the original draft. All authors contributed to writing the manuscript by revising and editing the original draft. IC provided study supervision and validation. NGH and IC have full access to the study data and made the decision to submit for publication.

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Data sharing: Data not presented within this Article or the Supplementary Materials can be requested from the corresponding author.

Research in context Evidence before this study To our knowledge, no study has sought to systematically summarize the literature on the prospective relationship between family dynamics, as defined by parenting behaviours and family dys/functioning, and subsequent childhood and adolescent non-suicidal and suicidal self-harming thoughts and behaviours (suicidality), before age 20. We searched Medline, Embase, APA PsycINFO, and ERIC (all via Ovid), and CINAHL via EBSCO from their dates of inception to February 28, 2023, using terms for thoughts or behaviours related to suicide (suicidality) and non-suicidal self-harm/self-injury (“drug overdose”, “self mutilation”, “attempted”, “self-harm*”, “self-inflict*”, “self-injur*”, “self-mutilat*”, “self-wound*”, “self-poison*”, “self-cut*”, “self-burn*”, “self-immolat*”, “self-destruct*”, “self-inflict*”, “parasuicide”, “para-suicide”, “autodestruct*”, “auto-destruct*”, “automutilat*”, “auto-mutilat*”, “cutt*”, “head bang*”, “overdos*”, “suicid*”), children and adolescents (“adolescent”, “child”, “young adult”, “children”, “childhood”, “paediatric*”, “pediatric*”, “girl”, “girls”, “boy”, “boys”, “kid”, “kids”, “kindergarten*”, “preteen*”, “pre teen*”, “teen”, “teens”, “teenage”, “teenager”, “teenagers”, “youngster”, “youngsters”, “youth”, “youths”, “adolescents”, “adolescence”, “preadolescent”, “preadolescence”, “pre adolescent”, “pre adolescence”, “preschool*”, “pre school*”, “school age”, “school aged”, “schoolchildren”, “juvenile*”, “young adult*”, “nursery school*”, “daycare”, “daycares”, “day care”, “day cares”), family dynamics (“family”, “families”, “function*”, “dysfunction*”, “factor”, “factors”, “characterstic*”, “measure*”, “relations*”, “environment”, “environments”, “quality”, “parenting”, “style”, “styles”, “practice”, “practices”, “behav*”, “strateg*”, “tactic*”, “method”, “methods”, “childrearing”, “child rearing”), and longitudinal studies (“epidemiologic”, “cohort”, “studies”, “study”, “Cohort analy\$”, “follow up”, “observational”, “retrospective”, “prospective”). There were no publication restrictions. Studies were eligible if they included prospectively measured family dynamics (parenting behaviours [positive, negative] or family functioning/dysfunction) ascertained ≥12 months before any thoughts or behaviours related to suicide (suicidality) or non-suicidal self-harm/self-injury (<20 years). We identified 38 studies for narrative synthesis and retained 24 for quantitative	Added value of this study Meta-analyses demonstrated that negative parenting practices and family dysfunction, but not positive parenting practices, longitudinally predict child and adolescent self-harm and suicidality. Negative parenting was most strongly associated with an increased likelihood (46% higher) of non-suicidal self-harm/self-injury, while family dysfunction was most strongly associated with an increased likelihood (70% higher) of non-specific self-harm (with or without suicidal intent). Positive parenting practices did not confer a prospective, protective benefit. Implications of all the available evidence Reducing early life exposure to everyday negative family dynamics of negative parenting practices and family dysfunction may reduce children and adolescents’ present and future risk of self-harm and suicidality. Since we did not observe a prospective benefit of positive parenting practices in attenuating the risk of self-harm and suicidality, we suggest that focusing on minimizing early childhood exposure to negative family dynamics may be most effective in the short term within clinical practice. As parents learn to reduce negative parenting behaviours and practices, engagement in more positive parenting techniques may follow naturally. Whether population-level efforts to improve family dynamics would be an effective public health strategy to prevent self-harm and suicidality is unknown.
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analyses. No studies captured thoughts of non-suicidal self-harm/self-injury as a standalone outcome. We did not find any systematic reviews or meta-analyses.	
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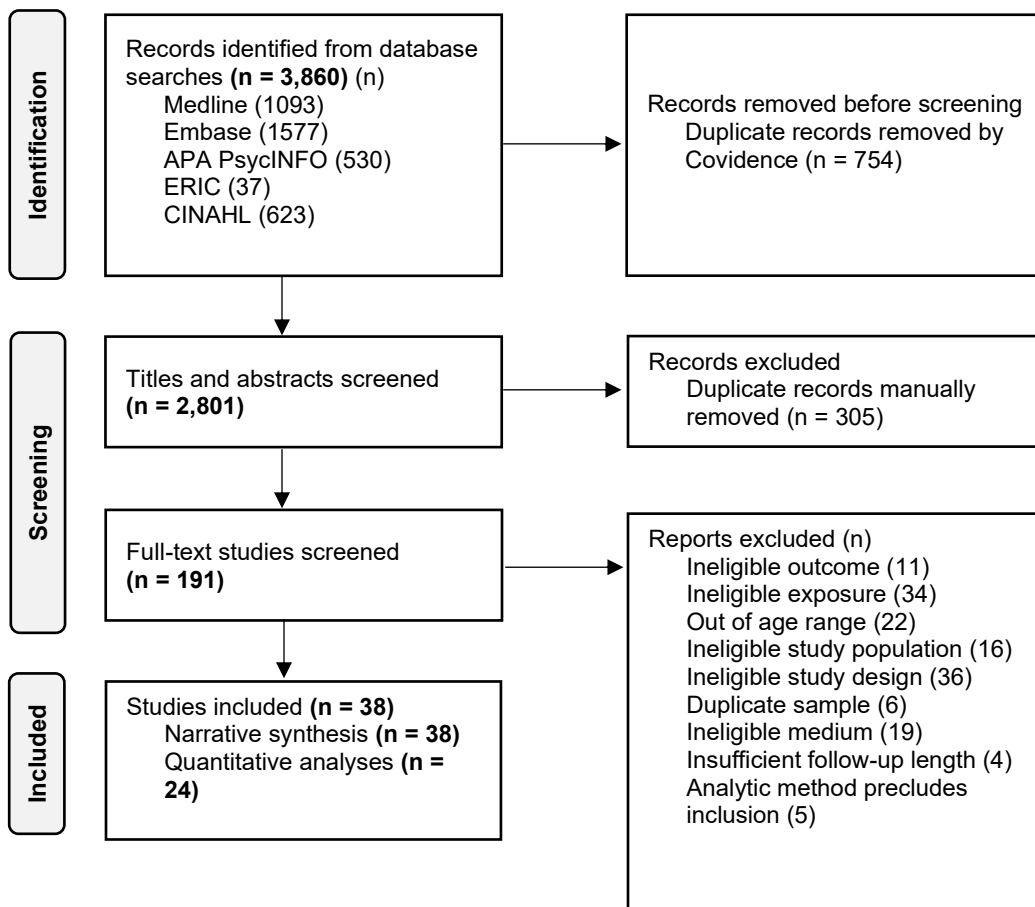


Figure 1. Flowchart of article selection.

Table 1. Negative parenting practices: statistical relationships.													
Study ID	Outcome (n_{outcomes}=4)	Expected direction?	β	SE	OR	95% CI	<i>r</i>	P- value	n*	Adjusted ?	Statistical association ?	Expected direction and statistical association ?	Sex/gender differences ?
Baetens et al (2015) ¹²	NSSH/ NSSI	✓	0.06†	0.06				≥0.05	827	✓			None reported
Victor et al (2019) ¹¹	NSH	✓			1.10	1.02, 1.17		0.008	2,127	✓	✓	✓	Not applicable
Heerde et al (2015) ²³	NSH	✓			1.11	0.90, 1.37		0.318	3,746	✓			None reported
Zhu et al (2020) ²⁶	NSSH/ NSSI	✓					0.16	<0.001	1,987		✓	✓	None reported
You et al (2017) ²⁷	NSSH/ NSSI	✓					0.12	<0.001	3,600		✓	✓	None reported
Pan et al (2017) ²⁸	SI	✓			2.13	1.19, 3.81		0.011	1,570	✓	✓	✓	None reported
Liu et al (2021) ³⁰	NSSH/ NSSI	✓	0.24	0.09		0.06, 0.42		<0.001	373	✓	✓	✓	None reported
Liu et al (2022) ²⁹	NSSH/ NSSI												✓
Males		✓	0.096†		1.10	0.95, 1.27		≥0.05	3,536	✓			—
Females		✓	0.215‡		1.24	1.10, 1.40		<0.01	3,536	✓	✓	✓	—
Lereya et al (2013) ²⁴	NSH		-0.046§	0.054				0.392	4,810	✓			None reported
Kingsbury et al (2020a) ³¹	SI												✓

Males		✓			1.085 ¶	1.006, 1.17		<0.05	4,971	✓	✓	✓	—
Females					0.971 ¶	0.915 1.03		≥0.05	4,911	✓			—
Kingsbury et al (2020b) ⁹	SA	✓			1.07	1.02, 1.12		<0.05	7,507	✓	✓	✓	
Jutengren et al (2011) ³²	NSSH/ NSSI												✓
Males			-0.07			None reported		0.253	445	✓			—
Females		✓	0.13			None reported		0.061	435	✓			—
Dyer et al (2022) ³³	SI		-0.09	0.079				≥0.05	617	✓			None reported
Wichstrøm & Wichstrøm (2024) ²⁵	NSSH/NSSI	✓			1.79	1.18, 2.70		0.030	759	✓	✓	✓	None reported
Gu et al (2024) ³⁴	NSSH/ NSSI	✓					0.12	<0.01	694		✓	✓	None reported
De Luca et al (2024) ³⁵	NSSH/ NSSI	✓					0.13 6	<0.05	229		✓	✓	None reported

Note. NSSHI/ NSSI = non-suicidal self-harm/ non-suicidal self-injury. NSH = non-specific self-harm. SI = suicidal ideation. SA = suicide attempt. A statistical association was evident if $P<0.05$ unless otherwise noted by the authors. Sex/gender differences were not applicable if the sample was restricted to one sex/gender.

* analytical n.

† Author shared standardized coefficient(s).

‡ Author confirmed that their results are on the log-odds scale. Thus, we exponentiated the estimates to obtain the odds ratio (OR) and associated 95% confidence interval (95% CI).

§ b (Unstandardized probit regression coefficient).

¶ Author shared results to the third decimal place to correct the nonsymmetrical confidence interval.

|| Reciprocal of the reported relationship.

Table 2. Positive parenting practices: statistical relationships.													
Study ID	Outcome (n _{outcomes} =5)	Expected direction ?	β	SE	OR	95% CI	r	P-value	n*	Adjusted ?	Statistical association ?	Expected direction and statistical association ?	Sex/gender differences ?
Victor et al (2019) ¹¹	NSH	✓			0.94	0.89, 0.99		0.01	2,127	✓	✓	✓	Not applicable
Kingsbury et al (2020a) ³¹	SI												✓
Males					1.10	1.02, 1.19		<0.05	4,971	✓	✓		—
Females		✓			0.854 †	0.803, 0.907		<0.05	4,911	✓	✓	✓	—
Kingsbury et al (2020b) ⁹	SA				1.01	0.96, 1.06		≥0.05	7,507	✓			
Wright & Wachs (2022) ³⁶													None reported
Outcome 1	SI	✓	-0.31					<0.001	467	✓	✓	✓	—
Outcome 2	NSSH/ NSSI	✓	-0.29					<0.001	467	✓	✓	✓	—
Winfree & Jiang (2010) ³⁷													None reported
Outcome 1	SI		0.028‡	0.050	1.03			≥0.05	4,318	✓			—
Outcome 2	SA		0.041‡	0.067	1.04			≥0.05	4,318	✓			—

Boeninger et al (2013) ³⁸	Other	✓	-1.26§					<0.01	802	✓	✓	✓	
Baetens et al (2015) ¹²	NSSH/ NSSI		0.43¶	0.07				<0.05	827	✓	✓		None reported
Wood et al (2025) ³⁹	Other	✓			0.79	0.64, 0.97		<0.05	10,301	✓	✓	✓	None reported
Wichstrøm & Wichstrøm (2024) ²⁵	NSSH/ NSSI	✓			0.86	0.56, 1.34		0.641	759	✓			None reported
De Luca et al (2024) ³⁵	NSSH/ NSSI	✓					- 0.217	<0.05	229		✓	✓	None reported

Note. NSSH/ NSSI = non-suicidal self-harm/ non-suicidal self-injury. NSH = non-specific self-harm. SI = suicidal ideation. SA = suicide attempt. A statistical association was evident if $P<0.05$ unless otherwise noted by the authors. Sex/gender differences were not applicable if the sample was restricted to one sex/gender.

* analytical n.

† Author shared results to the third decimal place to correct the nonsymmetrical confidence interval.

‡ b (Log odds ratio).

§ b (Unstandardized regression coefficient).

¶ Author provided standardized coefficient(s).

Table 3. Family functioning: statistical relationships.

Study ID	Outcome (n _{outcomes} = 5)	Expected direction?	β	SE	OR	95% CI	r	P- value	n*	Adjusted?	Statistical association?	Expected direction and statistical association?	Sex/gender differences?
Dyer et al (2022) ³³	SI	✓	-0.02	0.061				≥ 0.05	617	✓			None reported
Tatnell et al (2014) ⁴⁰	NSSH/ NSSI		0.13†	0.04	1.14	1.06, 1.22		<0.001	1,973	✓	✓		None reported
Mintz et al (2021) ⁴¹	SI												None reported
LGB		✓	-0.15‡	0.24				0.52	372	✓			—
Other		✓	-0.46‡	0.41				0.27	208	✓			—
Heterosex ual		✓	-0.26‡	0.11				0.02	2,164	✓	✓	✓	—
Law & Shek (2016) ⁴²													None reported
Outcome 1	NSH		0.02					≥ 0.05	1,551	✓			—
Outcome 2	Other	✓	-0.05					≥ 0.05	1,551	✓			—
Kidd et al (2006) ⁴³	SA	✓			0.60			<0.001	9,142	✓	✓	✓	
Jiang et al (2016) ⁴⁴	NSSH/ NSSI	✓	-0.06					≥ 0.05	525	✓			
Hishinum a et al (2018) ⁴⁵	SA	✓			0.56	0.41, 0.77		<0.001	1,975		✓	✓	None reported
Gervais & Jose (2020) ⁴⁶	Other												✓
Males			0.02§	0.023		-0.023, 0.064		≥ 0.05	853	✓			—

Females		✓	- 0.007§	0.028		-0.061, 0.050		≥0.05	921	✓			—
Garrison et al (1991) ⁴⁷	NSH	✓			0.83	0.74, 0.94		<0.05	1,073	✓	✓	✓	None reported
Chiang et al (2022) ⁴⁸	SI	✓	-0.44¶	0.04				<0.001	2,065	✓	✓	✓	None reported
Cassels et al (2018) ⁴⁹	NSSH/ NSSI	✓	-0.06			-0.01, -0.10		<0.05	933	✓	✓	✓	None reported
Zhou et al (2025) ⁵²	NSH	✓					-0.23	<0.001	3,056		✓	✓	None reported
Wang et al (2023) ¹³	NSSH/ NSSI	✓			0.94 6	0.895, 1.002		≥0.05	1,841	✓			None reported
Guo et al (2025) ⁵³													
Outcome 1	SI (intensity)	✓					-0.18	<0.001	712		✓	✓	None reported
Outcome 2	SI (frequency)	✓					-0.09	<0.05	712		✓	✓	None reported
Bakken et al (2025) ¹⁴													
Outcome 1	SI												None reported
Females		✓	-0.01§			-0.05, 0.04		0.918	1,111	✓			—
Males		✓	-0.01§			-0.04, 0.02		0.813	1,088	✓			—
Outcome 2	SA												None reported
Females		✓			0.96	0.61, 1.51		0.918	1,079	✓			—
Males		✓			0.85	0.43, 1.68		0.893	1,044	✓			—

Note. NSSHI/ NSSI = non-suicidal self-harm/ non-suicidal self-injury. NSH = non-specific self-harm. SI = suicidal ideation. SA = suicide attempt. A statistical association was evident if $P < 0.05$ unless otherwise noted by the authors. Sex/gender differences were not applicable if the sample was restricted to one sex/gender.

* analytical n.

† b (Log odds ratio).

‡ b (diagonally weighted least squares estimation)

§ b (Unstandardized regression coefficient).

¶ γ (Intercept-Intercept coefficient).

|| Author confirmed the upper limit of the 95% confidence interval (95% CI).

Table 4. Family dysfunction: statistical relationships.

Study ID	Outcome (n _{outcomes} =4)	Expected direction ?	β	SE	OR	95% CI	r	P- value	n*	Adjusted ?	Statistical association ?	Expected direction and statistical association?	Sex/gender differences ?
Law & Shek (2016) ⁴²													
Outcome 1	NSH		-0.06					≥ 0.05	1,551	✓			None reported
Outcome 2	Other		-0.05					≥ 0.05	1,551	✓			None reported
Zhang et al (2023) ¹⁰													
Outcome 1	Other	✓	0.062 †			0.021, 0.103		<0.001	6,233	✓	✓	✓	None reported
Outcome 2	SI	✓	0.056 †			0.014, 0.098		<0.001	6,233	✓	✓	✓	None reported
Outcome 3	SA	✓	0.074 †			-0.008, 0.156		0.420	6,233	✓			None reported
Sourander et al (2006) ⁵⁰													
Outcome 1	SI	Missing			Missing			≥ 0.05	839	✓			None reported
Outcome 2	Other	Missing			Missing			≥ 0.05	839	✓			None reported
Huang et al (2017) ⁵¹													
Outcome 1	NSH	✓			2.88	1.80, 4.62		<0.001	3,242	✓	✓	✓	None reported
Outcome 2	SA	✓			2.33	1.18, 4.59		0.015	3,175	✓	✓	✓	None reported

Heerde et al (2015) ²³	NSH	✓			1.128‡	0.904, 1.407		0.116	3,746	✓			None reported
Wood et al (2025) ³⁹	Other	✓			1.186‡	1.148, 1.224		<0.001	10,301	✓	✓	✓	None reported
Gonzalves et al (2023) ⁵⁴	Other	✓	1.39§	0.47				<0.01	600	✓	✓	✓	None reported
Note. NSSHI/ NSSI = non-suicidal self-harm/ non-suicidal self-injury. NSH = non-specific self-harm. SI = suicidal ideation. SA = suicide attempt. A statistical association was evident if $P<0.05$ unless otherwise noted by the authors. Sex/gender differences not applicable if the sample was restricted to one sex/gender. * analytical n. † Author confirmed that the results presented in-text are on the log-odds scale. Thus, we exponentiated the estimates to obtain the odds ratio (OR) and associated 95% confidence interval (95% CI). ‡ Author shared (corrected) results to the third decimal place to correct the nonsymmetrical confidence interval. § b(Unstandardized regression coefficient).													

eAppendix 1. Survey questions drawn from the National Longitudinal Survey of Children and Youth (NLSCY)¹ and the Québec Longitudinal Study of Child Development (QLSCD)² and free-text terms used to guide this review.

Exposure	Survey items	Supplemental free-text terms
Family functioning/ dysfunction		
	– Planning family activities is difficult because we misunderstand each other. – In times of crisis we can turn to each other for support. – We cannot talk to each other about sadness we feel. – Individuals (in the family) are accepted for what they are. – We avoid discussing our fears or concerns. We express feelings to each other. – There are lots of bad feelings in our family. We feel accepted for what we are. – Making decisions is a problem for our family. – We are able to make decisions about how to solve problems. – We don't get along well together. – We confide in each other.	– Accepted – Express/ discuss/ feelings/ emotions/ love – Decisions/ solve/ problems/ adaptability – Get along/ harmony – Confide – Communication – Roles – Problem-solving – Affection – Involvement – Responsiveness/ support – Behaviour – Control – Cohesion/ discord – Conflict/ resolution – Concern – Interaction
Parenting practices		
<i>Positive or emotionally supportive parenting</i>		
	– How often do you praise ...(name), by saying something like “Good for you!” or “What a nice thing you did!” or “That’s good going!”? – How often do you and he/she talk or play with each other, focusing attention on each other for five minutes or more, just for fun? – How often do you and he/she laugh together? – How often did you do something special with him/her that he/she enjoys? – How often do you play games with him/her? – In the past 12 months, how often did you play sports activities, hobbies or games with him/her?	– Positive/ emotional/ good – Praise/ talk/ attention/ ignore/ show interest – Hug/ love/ warm/ affection/ support – Laugh/ special/ enjoy/ gratitude – Play/ games/ sports/ activities/ hobbies

	– In past 12 months, all the times that you talked to ...(name) about his/her behaviour, what proportion was praise? – In the past 12 months, when ...(name) broke the rules or did things that he/she was not supposed to, how often did you: calmly discuss the problem? – In the past 12 months, when ...(name) broke the rules or did things that he/she was not supposed to, how often did you: describe alternative ways of behaving that are acceptable? – In the past 12 months, how often did you play fight with %him/her% just for fun? – In the past 12 months, how often did you say to %FNAME% that you were proud of %HIM/HER%? – In the past 12 months, how often did you help %FNAME% doing tasks that were difficult for %HIM/HER%? – In the past 12 months, how often did you comfort %FNAME% when %HE/SHE% was sad? – In the last 12 months, how often have you told %FNAME% that you were proud of or happy with %LUI/ELLE%? – I enjoy doing things with him/her. I cheer him/her up when he/she is sad. – I give him/her a lot of care and attention. – I listen to his/her ideas and opinions. – I speak of the good things he/she does.	
<i>Negative parenting behaviours</i>		
	– How often do you get annoyed with ... (name) for saying or doing something he/she is not supposed to? – How often do you tell him/her that he/she is bad or not as good as others? – In past 12 months, all the times that you talked to him/her about his/her behaviour, what proportion was disapproval? – In the past 12 months, How often did you get angry when you were punishing ...(name)? – In the past 12 months, how often did you think that the kind of punishment you gave to him/her depends on your mood?	– Coercive/ hostile/ ineffective/ punitive/ aversive – Bad/ negative – Disapproval/ approval/ angry/ punish – Raise voice/ scold/ yell/ shout/ swear/ name-calling/ threaten/ discuss – Physical/ corporal/ punish – Spank/ slap/ hit/ shove/ grab

	– In the past 12 months, how often did you feel you were having problems managing him/her in general? – In the past 12 months, how often did you have to discipline him/her repeatedly for the same thing? In the past 12 months, when ...(name) broke the rules or did things that he/she was not supposed to, how often did you: raise your voice, scold or yell at him/her? – In the past 12 months, when ...(name) broke the rules or did things that he/she was not supposed to, how often did you: use physical punishment? – In the past 12 months, how often did you grab firmly or shake %FNAME% when %HE/SHE% was difficult? – In the past 12 months, how often did you hit %FNAME% when %HE/SHE% was difficult? – I nag him/her about little things. I – get angry and yell at him/her. – I threaten punishment more often than I use it. – Whether I keep or do not keep a rule depends on my mood. – I say mean things to make him/her feel bad (e.g., sad, mad, guilty).	
Note. NLSCY question items are publicly available on the Statistics Canada website: https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getInstanceList&Id=56797. QLSCD question items are publicly available on the Institut de la Statistique Québec website: https://www.iamillbe.stat.gouv.qc.ca/informations_chercheurs/outils_collecte/outils_collecte_an.html.		

References

1. Michaud S. The National Longitudinal Survey of Children and Youth - overview and changes after three cycles. *Can Stud Popul* 2001; **28**: 391.
2. Orri M, Boivin M, Chen C, et al. Cohort profile: Quebec Longitudinal Study of Child Development (QLSCD). *Soc Psychiatry Psychiatr Epidemiol* 2021; **56**: 883-894.

eAppendix 2. Search strategy.

Medline

1. drug overdose/
2. self-injurious behavior/ or self mutilation/ or suicide, attempted/ or suicide/ or suicidal ideation/
3. (self-harm* or self-inflict* or self-injur* or self-mutilat* or self-wound* or self-poison* or self-cut* or self-burn* or self-immolat* or self-destruct* or self-inflict* or parasuicide or para-suicide or autodestruct* or auto-destruct* or automutilat* or auto-mutilat* or cutt* or head bang* or overdos*).tw,kw,kf.
4. suicid*.tw,kw,kf.
5. or/1-4
6. adolescent/ or exp child/ or young adult/
7. (child or children or childhood or paediatric* or pediatric* or girl or girls or boy or boys or kid or kids or kindergarten* or preteen* or pre teen* or teen or teens or teenage or teenager or teenagers or youngster or youngsters or youth or youths or adolescent or adolescents or adolescence or preadolescent or preadolescence or pre adolescent or pre adolescence or preschool* or pre school* or school age or school aged or schoolchildren or juvenile* or "young adult*" or "nursery school*" or daycare or daycares or day care or day cares).tw,kw,kf.
8. 6 or 7
9. exp Family/
10. ((family or families) adj2 (function* or dysfunction* or factor or factors or characterstic* or measure* or relations* or environment or environments or quality)).tw,kw,kf.
11. (parenting adj2 (style or styles or practice or practices or behav* or strateg* or tactic* or method or methods or childrearing or child rearing)).tw,kw,kf.
12. or/9-11
13. Epidemiologic studies/
14. exp cohort studies/
15. (cohort adj (study or studies)).tw.
16. Cohort analy\$.tw.
17. (Follow up adj (study or studies)).tw.
18. (observational adj (study or studies)).tw.
19. Longitudinal.tw.
20. Retrospective.tw.
21. prospective.tw.
22. or/13-21
23. 5 and 8 and 12 and 22

Embase

1. exp drug overdose/
2. automutilation/ or suicide attempt/ or suicide/ or suicide ideation/
3. (self-harm* or self-inflict* or self-injur* or self-mutilat* or self-wound* or self-poison* or self-cut* or self-burn* or self-immolat* or self-destruct* or self-inflict* or parasuicide or para-suicide or autodestruct* or auto-destruct* or automutilat* or auto-mutilat* or cutt* or head bang* or overdos*).tw,kw,kf.
4. suicid*.tw,kw,kf.
5. or/1-4
6. adolescent/ or exp child/ or young adult/
7. (child or children or childhood or paediatric* or pediatric* or girl or girls or boy or boys or kid or kids or kindergarten* or preteen* or pre teen* or teen or teens or teenage or teenager or teenagers or youngster or youngsters or youth or youths or adolescent or adolescents or adolescence or preadolescent or preadolescence or pre adolescent or pre adolescence or preschool* or pre school* or school age or school aged or schoolchildren or juvenile* or "young adult*" or "nursery school*" or daycare or daycares or day care or day cares).tw,kw,kf.

8. 6 or 7
9. exp Family/
10. ((family or families) adj2 (function* or dysfunction* or factor or factors or characteristic* or measure* or relations* or environment or environments or quality)).tw,kw,kf.
11. (parenting adj2 (style or styles or practice or practices or behavior* or strategy* or tactic* or method or methods or childrearing or child rearing)).tw,kw,kf.
12. or/9-11
13. Epidemiologic studies/
14. exp cohort studies/
15. (cohort adj (study or studies)).tw.
16. Cohort analysis.tw.
17. (Follow up adj (study or studies)).tw.
18. (observational adj (study or studies)).tw.
19. Longitudinal.tw.
20. Retrospective.tw.
21. prospective.tw.
22. or/13-21
23. 5 and 8 and 12 and 22

APA PsycINFO

1. drug overdoses/
2. exp self-destructive behavior/
3. (self-harm* or self-inflict* or self-injury* or self-mutilate* or self-wound* or self-poison* or self-cut* or self-burn* or self-immolate* or self-destruct* or self-inflict* or parasuicide or para-suicide or autodestruct* or auto-destruct* or automutilate* or auto-mutilate* or cut* or head bang* or overdose*).tw.
4. suicid*.tw.
5. Suicidal Ideation/
6. or/1-5
7. pediatrics/
8. (child or children or childhood or paediatric* or pediatric* or girl or girls or boy or boys or kid or kids or kindergarten* or preteen* or pre teen* or teen or teens or teenage or teenager or teenagers or youngster or youngsters or youth or youths or adolescent or adolescents or adolescence or preadolescent or preadolescence or pre adolescent or pre adolescence or preschool* or pre school* or school age or school aged or schoolchildren or juvenile* or "young adult*" or "nursery school*" or daycare or daycares or day care or day cares).tw.
9. or/7-8
10. exp family/
11. exp parenting/ or childrearing attitudes/ or exp parental characteristics/
12. ((family or families) adj2 (function* or dysfunction* or factor or factors or characteristic* or measure* or relations* or environment or environments or quality)).tw.
13. (parenting adj2 (style or styles or practice or practices or behavior* or strategy* or tactic* or method or methods or childrearing or child rearing)).tw.
14. or/10-13
15. exp experimental design/
16. (cohort adj (study or studies)).tw.
17. Cohort analysis.tw.
18. (Follow up adj (study or studies)).tw.
19. (observational adj (study or studies)).tw.
20. Longitudinal.tw.
21. Retrospective.tw.

22. prospective.tw.
23. or/15-22
24. 6 and 9 and 14 and 23

ERIC

1. exp self-destructive behavior/
2. (self-harm* or self-inflict* or self-injur* or self-mutilat* or self-wound* or self-poison* or self-cut* or self-burn* or self-immolat* or self-destruct* or self-inflict* or parasuicide or para-suicide or autodestruct* or auto-destruct* or automutilat* or auto-mutilat* or cutt* or head bang* or overdos*).tw.
3. suicid*.tw.
4. Suicidal Ideation/
5. or/1-4
6. pediatrics/
7. (child or children or childhood or paediatric* or pediatric* or girl or girls or boy or boys or kid or kids or kindergarten* or preteen* or pre teen* or teen or teens or teenage or teenager or teenagers or youngster or youngsters or youth or youths or adolescent or adolescents or adolescence or preadolescent or preadolescence or pre adolescent or pre adolescence or preschool* or pre school* or school age or school aged or schoolchildren or juvenile* or "young adult*" or "nursery school*" or daycare or daycares or day care or day cares).tw.
8. or/6-7
9. exp family relationships/ or child rearing/ or exp family characteristics/
10. ((family or families) adj2 (function* or dysfunction* or factor or factors or characterstic* or measure* or relations* or environment or environments or quality)).tw.
11. (parenting adj2 (style or styles or practice or practices or behav* or strateg* or tactic* or method or methods or childrearing or child rearing)).tw.
12. or/9-11
13. exp experimental design/
14. (cohort adj (study or studies)).tw.
15. Cohort analys\$.tw.
16. (Follow up adj (study or studies)).tw.
17. (observational adj (study or studies)).tw.
18. Longitudinal.tw.
19. Retrospective.tw.
20. prospective.tw.
21. or/13-20
22. 5 and 8 and 12 and 21

CINAHL

#	Query
S24	S6 AND S10 AND S16 AND S23
S23	S17 OR S18 OR S19 OR S20 OR S21 OR S22
S22	longitudinal or retrospective or prospective
S21	(observational N1 (study or studies))
S20	(Follow up N1 (study or studies))
S19	cohort analys*

S18	(cohort N1 (study or studies))
S17	(MH "Prospective Studies+")
S16	S11 OR S12 OR S13 OR S14 OR S15
S15	AB (parenting N2 (style or styles or practice or practices or behav* or strateg* or tactic* or method or methods or childrearing or child rearing))
S14	TI (parenting N2 (style or styles or practice or practices or behav* or strateg* or tactic* or method or methods or childrearing or child rearing))
S13	AB ((family or families) N2 (function* or dysfunction* or factor or factors or characterstic* or measure* or relations* or environment or environments or quality))
S12	TI ((family or families) N2 (function* or dysfunction* or factor or factors or characterstic* or measure* or relations* or environment or environments or quality))
S11	(MH "Family+")
S10	S7 OR S8 OR S9
S9	AB (child or children or childhood or paediatric* or pediatric* or girl or girls or boy or boys or kid or kids or kindergarten* or preteen* or pre teen* or teen or teens or teenage or teenager or teenagers or youngster or youngsters or youth or youths or adolescent or adolescents or adolescence or preadolescent or preadolescence or pre adolescent or pre adolescence or preschool* or pre school* or school age or school aged or schoolchildren or juvenile* or "young adult*" or "nursery school*" or daycare or daycares or day care or day cares)
S8	TI (child or children or childhood or paediatric* or pediatric* or girl or girls or boy or boys or kid or kids or kindergarten* or preteen* or pre teen* or teen or teens or teenage or teenager or teenagers or youngster or youngsters or youth or youths or adolescent or adolescents or adolescence or preadolescent or preadolescence or pre adolescent or pre adolescence or preschool* or pre school* or school age or school aged or schoolchildren or juvenile* or "young adult*" or "nursery school*" or daycare or daycares or day care or day cares)

S7 (MH "Adolescence+") OR (MH "Child+") OR (MH "Young Adult") OR (MH "Minors (Legal)")

S6 S1 OR S2 OR S3 OR S4 OR S5

S5 AB (self-harm* or self-inflict* or self-injur* or self-mutilat* or self-wound* or self-poison* or self-cut* or self-burn* or self-immolat* or self-destruct* or self-inflict* or parasuicide or para-suicide or autodestruct* or auto-destruct* or automutilat* or auto-mutilat* or cutt* or head bang* or overdos* or suicid*)

S4 TI (self-harm* or self-inflict* or self-injur* or self-mutilat* or self-wound* or self-poison* or self-cut* or self-burn* or self-immolat* or self-destruct* or self-inflict* or parasuicide or para-suicide or autodestruct* or auto-destruct* or automutilat* or auto-mutilat* or cutt* or head bang* or overdos* or suicid*)

S3 (MH "Self-Injurious Behavior")

S2 (MH "Injuries, Self-Inflicted")

S1 (MH "Overdose+")

eAppendix 3. Modified Newcastle-Ottawa Quality Assessment Scale.

(MODIFIED) NEWCASTLE - OTTAWA QUALITY ASSESSMENT SCALE

COHORT STUDIES

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Outcome categories. A maximum of two stars can be given for Comparability

Selection

- 1) Representativeness of the exposed cohort
 - a) truly representative of the average (child/youth) in the community ✱
 - b) somewhat representative of the average (child/youth) in the community ✱
 - c) selected group of children/youth
 - d) no description of the derivation of the cohort
- 2) Selection of the non exposed cohort
 - a) drawn from the same community as the exposed cohort ✱
 - b) drawn from a different source
 - c) no description of the derivation of the non exposed cohort
- 3) Ascertainment of exposure
 - a) validated measure ✱
 - b) non-validated measure
 - c) no description
- 4) Demonstration that outcome of interest was not present at start of study
 - a) yes ✱
 - b) no

Comparability

Comparability of cohorts on the basis of the design or analysis

- 1) study controlled for or examined the potential for effect modification: sex/gender ✱
- 2) study controlled for or examined the potential for effect modification: age ✱
- 3) study controlled for socioeconomic status (for example, income, combined SES measure) ✱

Outcome

- 1) Assessment of outcome
 - a) validated measure ✱
 - b) diagnostic/clinical interview ✱
 - c) non-validated measure
 - d) no description
- 2) Was follow-up long enough for outcomes to occur
 - a) yes (minimum 12 months) ✱
 - b) no
- 3) Adequacy of follow-up of cohorts
 - a) complete follow-up - all subjects accounted for ✱
 - b) subjects lost to follow-up unlikely to introduce bias (i.e., small number lost [attrition <20%]), or adequate description of those lost to follow-up (e.g., how differed on exposure and/or sociodemographics) ✱
 - c) follow-up rate <80% or no description of those lost to follow-up
 - d) no statement/did not address those lost to follow-up

**Family functioning and parenting practices as
predictors of child and adolescent onset self-harm
and suicidality: a systematic review and meta-
analysis of prospective studies**

Nicole G Hammond, Lindsey Sikora, Ian Colman

To enable PROSPERO to focus on COVID-19 submissions, this registration record has undergone basic automated checks for eligibility and is published exactly as submitted. PROSPERO has never provided peer review, and usual checking by the PROSPERO team does not endorse content. Therefore, automatically published records should be treated as any other PROSPERO registration. Further detail is provided [here](#).

Citation

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REVIEW TITLE AND BASIC DETAILS

Review title

Family functioning and parenting practices as predictors of child and adolescent onset self-harm and suicidality: a systematic review and meta-analysis of prospective studies

Review objectives

- 1) In prospective studies, are positive parenting practices and family functioning (positive family dynamics) protective against non-suicidal and suicidal self-harming thoughts and behaviours in children and adolescents (<20 years)?
- 2) In prospective studies, are negative parenting practices and family dysfunction (negative

family dynamics) risk factors for non-suicidal and suicidal self-harming thoughts and behaviours in children and adolescents (<20 years)?

Keywords

adolescent, child, family functioning, Parenting, self-harm, suicidality

SEARCHING AND SCREENING

Searches

The following sources will be searched by a health sciences librarian (author LS) with expertise in epidemiology and systematic reviews: MEDLINE and MEDLINE in Process via Ovid, Embase Classic + Embase via Ovid, APA PsycINFO via Ovid, ERIC via Ovid, and CINAHL via EBSCO. All databases will be searched from their dates of inception to February 28, 2023. There are no language restrictions. The searches will be re-run before publication in a peer-reviewed journal.

We will scan the reference lists of other relevant reviews and studies that meet our inclusion criteria to identify studies not previously captured. This review will not include the grey literature.

Study design

This review will include published, peer-reviewed studies with a prospective cohort design.

ELIGIBILITY CRITERIA

Condition or domain being studied

Parenting behaviours/practices (exposure), family functioning (exposure), self-harm and suicidality (outcomes) in childhood and adolescence.

Population

Inclusion: We are interested in general population-based, school-based, community-based and convenience samples of children and adolescents (<20 years). The participants must be general or healthy and clearly defined, for example, by geographic region (e.g., provincial or national in scope) or other characteristics (e.g., year of birth, grade level, race or ethnicity). The sample must be followed prospectively, and the exposure and outcome must be measured before age 20.

Exclusion: We will exclude studies of clinical populations (e.g., patients known to be receiving inpatient/residential, partial hospitalization, or outpatient/ambulatory mental health care) or subpopulations of community or population-based samples at special risk of adverse outcomes due to a clinical characteristic (e.g., the subpopulation of neurodiverse children and adolescents in a cohort study, children with a traumatic brain injury, children/youth with elevated or clinical depression symptoms). We will exclude cross-sectional studies, clinical trials/intervention studies (e.g., of parenting programs), case-control studies, case

summaries, chart reviews, case-crossover studies, ecological studies, twin studies, reviews, meta-analyses, and retrospective cohorts (i.e., where outcome status is already known [e.g., from health administrative records] and the exposure data source is retrospective [i.e., not originally intended to measure the exposure of interest]).

Intervention(s) or exposure(s)

The two overarching study exposures are parenting behaviours (positive versus negative) and family functioning (versus dysfunction). Two Canadian cohort studies informed our selection of exposures: the National Longitudinal Survey of Children and Youth and the Québec Longitudinal Study of Child Development. We will similarly classify parenting practices as positive or emotionally supportive (e.g., offering praise), behaviour management or disciplinary (e.g., consistently enforcing punishment), and hostile and aversive (e.g., spanking, scolding). Depending on the state of the literature and our ability to classify parenting behaviours into pre-specified categories, we may consider collapsing our parenting behaviours into positive and negative behaviours, as others have done. Family functioning measures must directly measure functioning (e.g., relationship quality, cohesion) or align with one or more dimensions of the McMaster Model of Family Functioning (Epstein, Bishop, & Levin, 1978): communication, roles, problem-solving, affective involvement, affective responsiveness, and behaviour control.

Exposures must have been measured no later than 18 years and 11 months for the entire cohort and reported by a primary caregiver or person most knowledgeable (PMK) about the child, the child, or a combination of both (e.g., an average of caregiver and child report), or by direct observation (e.g., third-party observer).

Comparator(s) or control(s)

The comparators will consist of children or adolescents (<20 years) with the absence of the exposure(s) or a lower exposure 'dose' than the exposed group. More specifically, our comparators:

1. The presence of parenting behaviours and family functioning compared with the absence of or lower exposure to the same parenting behaviour or family functioning (dichotomized exposure, e.g., parenting behaviours categorized via median split).
2. Parenting behaviours and family functioning compared with the absence of or lower exposure to the same parenting behaviour or family functioning (categorical or ordinal [>2 categories], e.g., family functioning categorized by quartile).
3. A greater amount of parenting behaviours and family functioning compared with lower exposure to the same parenting behaviour or family functioning (continuous exposure measures).

Context

We will restrict the setting to population-based and community-based studies with a prospective cohort design. We will exclude clinical samples where patients are known to be

enrolled in hospital-based programming (e.g., inpatient admission, partial hospitalization or day treatment programs, outpatient hospital-based services).

OUTCOMES TO BE ANALYSED

Main outcomes

The study outcomes are measures of non-suicidal and suicidal self-harming thoughts and behaviours:

1. Thoughts of non-suicidal self-harm (thoughts of wanting to hurt oneself [e.g., skin cutting] without intending to die).
2. Non-suicidal self-harm behaviours (engagement in acts of bodily self-harm [e.g., skin cutting] but without the intention of inflicting harm so severe that it results in death).
3. Suicidal ideation (thoughts of wanting to end one's own life).
4. Suicide attempt (a purposeful engagement in bodily self-harm with the intention of dying, but that did not result in death)
5. Non-specific self-harm: thoughts of or engagement in self-harm with or without suicidal ideation. This outcome will capture studies that did not or could not differentiate whether the thoughts and/or behaviours were non-suicidal or suicidal.

Study outcomes may be ascertained via self-report (e.g., parental or child/youth) measures or diagnostic interview tools in their original form or adapted/modified. We will include studies that capture non-suicidal and suicidal self-harming thoughts and behaviours by single-item questions, multi-item measures, and validated and non-validated tools. Outcomes must be ascertained no later than 19 years and 11 months for the entire cohort, and there must be a minimum of 12 months between exposure and outcome ascertainment.

Measures of effect

We will extract relative measures of association (e.g., odds ratios, risk ratios) and their corresponding confidence intervals. If measures of association are unavailable, we will obtain raw numbers of exposed/unexposed by study outcome (presence/absence) to calculate unadjusted effect measures.

Secondary measures of effect: if we cannot obtain an odds or risk ratio, or raw numbers, we will extract information on continuous outcome measures (e.g., a questionnaire that produces a total scale score [e.g., of suicidality]).

Additional outcomes

None.

DATA COLLECTION PROCESS

Data extraction (selection and coding)

This study will use Covidence (<https://www.covidence.org/>) for title/abstract and full-text screening and data extraction. At least two independent reviewers from the research team will screen the article titles and abstracts for eligibility by following the review's inclusion criteria (stage 1). Studies that pass stage 1 will move into stage 2, where full-text copies of the published articles are retrieved and undergo full-text screening. At least two independent reviewers will also perform stage 2. In the event of disagreement (stage 1 or 2), the reviewers will meet to discuss and resolve their concerns through consensus. If required, we will seek input from the most senior research team member (author IC).

If multiple studies use the same sample or data source and all our inclusion criteria are met, we will use a pre-established decision tree to determine which article to include (e.g., the study with the larger analytic sample size).

A standardized data extraction tool will be developed a priori and piloted by the lead author (NGH). We will extract data from included studies after full-text screening is complete.

Disagreements will be resolved following the above method. Extracted data will consist of basic study information (e.g., authors, publication date), study-level characteristics (e.g., country, length of the follow-up period, attrition, how missing data was handled), participant characteristics (e.g., sociodemographics), descriptions of study measures (e.g., validated scale, interview, confounders), and study results (e.g., measures of association, corresponding 95% confidence intervals, raw numbers). Should we be required to contact the authors of the original study for additional or missing information and there is no response, we will make a maximum of three contact attempts: 1) an initial email request, 2) a follow-up email request two weeks after the initial email, and 3) a final email attempt four weeks after the most recent attempt.

Risk of bias (quality) assessment

The Newcastle–Ottawa Scale for cohort studies will be used to assess study quality. The scale uses a maximum nine-star system to rate three quality aspects: selection (e.g., representativeness), cohort comparability, and outcome (e.g., length of follow-up). We will complete quality ratings during the data extraction process. Before resolving discrepancies in quality ratings by consensus, we will compute a measure of inter-rater reliability (Cohen's kappa corrected for chance agreement). In-text, we will report the inter-rater reliability results by each subdomain of the quality assessment scale and overall (total stars).

This study will focus on observational studies with a prospective cohort design. The purpose of this study is not to examine interventions or therapies. Study outcomes include the presence or absence of non-suicidal and suicidal self-harming thoughts and behaviours. We do not wish to inform clinical practice decisions directly. Instead, we strive to inform the scientific community about family-level risk and protective factors for the onset of self-harm and suicidality in childhood and adolescence. For these reasons, we will assess study quality but not use the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) rating system for the strength of the evidence.

PLANNED DATA SYNTHESIS

Strategy for data synthesis

We intend to conduct a series of meta-analyses to answer our research questions. We will pool studies if there are at least three studies for each research question, and the level of between-study heterogeneity does not preclude pooling. To decide, we will explore across-study heterogeneity through statistical (e.g., I^2 statistic, Q statistic) and visual inspection (e.g., forest plots). Should the amount of heterogeneity be considered substantial (high I^2 statistic $>75\%$, a statistically significant Q statistic [$p<0.05$]), we will consider collapsing our exposures. For example, we may collapse the parenting behaviour categories into positive and negative and the family functioning measures into functional/dysfunctional. If collapsing the exposures (sensitivity analysis) reduces heterogeneity, we will attempt to account for the variability by conducting subgroup or moderation analyses. These additional analyses will be contingent on a minimum number of studies to conduct subgroup or moderation analyses ($n=10$).

Random effects meta-analyses are planned because we expect some degree of between-study heterogeneity (i.e., nonzero) and wish to generalize our findings beyond the studies included in our review. We will use the inverse-variance method and combine odds ratios and risk ratios. If a study reports an odds ratio and risk ratio for the same relationship, we will extract the risk ratio information when the outcome is prevalent ($>10\%$). Review Manager (RevMan) allows for combining relative risk measures for random and fixed effects meta-analysis. We will use the latest RevMan version available at the time of analysis. We will require a minimum of three studies for each meta-analytic review. In cases where there are fewer than five studies to answer a research question, we will use a fixed-effects model.

Secondary effect measures: if we are unsuccessful in reaching the authors of studies that do not report odds ratios, risk ratios, or raw numbers, we will either meta-analyze (minimum three studies) or narratively synthesize studies of continuous outcome measures. For the summary statistic of secondary effect measures, we will use the mean difference or the standardized mean difference. The former will be used when the studies use the same outcome scale, and the latter when the outcome scale differs between studies.

Alternative analyses: we will narratively present our systematic review findings if heterogeneity precludes us from reporting pooled effect estimates. If a narrative description is required, we will use descriptive aids (e.g., tables) and separately describe the results for family functioning and parenting behaviours by study outcome.

Analysis of subgroups or subsets

Subgroup analyses: we will explore several subgroup analyses if ten or more studies are available. Specifically, we will examine whether the following factors account for study heterogeneity:

1. average participant age at the time of outcome ascertainment (childhood [≤ 9 years] versus adolescence [10-19 years]),

2. year of outcome ascertainment (pre-2000, 2000-2011, and ≥ 2012),
3. average length of the follow-up period (1-4 years versus ≥ 5 years),
4. repeated exposure measurement (≥ 2 assessments versus 1),
5. outcome prevalence (>10 versus $\leq 10\%$), and,
6. measure of effect (odds ratio versus risk ratio).

For the year of outcome ascertainment, if one or more subgroup categories have less than $n=3$ studies, we will consider collapsing categories (i.e., ≤ 2011 versus ≥ 2012). Subgroup analyses will not be performed if any subgroup category has fewer than $n=3$ studies.

Sensitivity analyses: we will assess the robustness of our findings by conducting a sensitivity analysis using a moderate heterogeneity threshold (I^2 statistic $>50\%$, a Q statistic $p<0.05$).

We will also explore whether excluding studies of lesser quality (Newcastle-Ottawa Scale score of <6 stars) or that did not adjust for confounders helps explain variability.

REVIEW AFFILIATION, FUNDING AND PEER REVIEW

Review team members

- Ms Nicole G Hammond, University of Ottawa
- Ms Lindsey Sikora, University of Ottawa
- Dr Ian Colman, University of Ottawa

Review affiliation

University of Ottawa, School of Epidemiology and Public Health

Funding source

Nicole G Hammond is supported by a Frederick Banting and Charles Best Canada Graduate Scholarship Doctoral Award. No funders are or will be involved in any aspect of the study, including but not limited to study design and conduct, data collection, synthesis, interpretation, or write-up. Finally, no funders will review or approve the submission of the manuscript for publication.

Named contact

Nicole G Hammond.

TIMELINE OF THE REVIEW

Review timeline

Start date: 28 February 2023. End date: 31 August 2024

Date of first submission to PROSPERO

14 June 2023

Date of registration in PROSPERO

25 June 2023

CURRENT REVIEW STAGE

Publication of review results

The intention is to publish the review once completed. The review will be published in English

Stage of the review at this submission

Review stage	Started	Completed
Pilot work	✓	
Formal searching/study identification	✓	
Screening search results against inclusion criteria	✓	
Data extraction or receipt of IP		
Risk of bias/quality assessment		
Data synthesis		

Review status

The review is currently planned or ongoing.

ADDITIONAL INFORMATION

Additional information

This review is the first to solely investigate the prospective influence of parenting practices and family functioning on self-harm and suicidality in early life. In addition, we explore multiple self-harm and suicidality-related outcomes, including a focus on the lesser-studied non-suicidal self-harm thoughts and behaviours. The prospective focus of this study will assist in minimizing the impact of recall bias and help to ensure the appropriate temporal ordering of the exposure and outcome. The latter will strengthen our conclusions on the influence of parenting behaviours and family functioning on adolescent onset self-harm and suicidality.

Collaborators

- **Dr Jordan Edwards**, McMaster University
- **Ms Seana Semchishen**, University of Ottawa
- **Mr Gamal Wafy**, University of Ottawa
- **Mr Hassan Khan**, University of Ottawa
- **Ms Lia Hsueh**, University of Ottawa

PROSPERO version history

- Version 1.1 published on 25 Jun 2023
- Version 1.0 published on 25 Jun 2023

Review conflict of interest

None known

Country

Canada

Medical Subject Headings

Adolescent; Child; Humans; Parenting; Prospective Studies; Self-Injurious Behavior; Suicidal Ideation; Suicide

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eTable 1. Summary characteristics of studies identified by systematic literature review (n=38).										
					Exposure ascertainment					
Study	Country	Data source	Birth cohort?	Setting	Age(s)			Grade(s)	Year(s)	Length of follow-up
					<i>M</i> _{years}	SD	Range			
Zhu et al., 2020 ¹	China		No	Community	12.32	0.53	10-14 years	7	2018	1 year
Zhang et al., 2023 ²	China	Shandong Adolescent Behavior & Health Cohort (SABHC)	No	Community	14.52	1.46		7, 8, 10	2015	1 year
You et al., 2017 ³	China		No	Community	14.63	1.25	12-18 years	7-10		1 year
Wright & Wachs, 2022 ⁴	United States		No	Community	13.81	0.53	12-15 years	6-7		1 year
Winfree & Jiang, 2010 ⁵	United States	National Longitudinal Survey of Adolescent Health (Add Health)	No	Population			11-18 years	7-12	1994-1995	1 year
Victor et al., 2019 ⁶	United States	Pittsburgh Girls Study (PGS)	No	Population			13-16 years			1 year
Tatnell et al., 2014 ⁷	Australia		No	Population	13.89	0.97	12-18 years		2009-2011†	1 year
Sourander et al., 2006 ⁸	Finland	Finnish Family Competence Study (FCC)	Yes	Population	12					3 years
Pan et al., 2017 ⁹	Taiwan		No	Community			13-14 years	7-8	2005	1 year
Mintz et al., 2021 ¹⁰	United States		No	Community	LGB: 15.16, Other: 15.01, Hetero-sexual: 15.13	LGB: 0.92, Other: 0.92, Hetero sexual: 0.93	12-18 years	9-10	2017	1.5 years

Liu et al., 2021 ¹¹	China		No	Community	12.8	0.84		7		2 years
Liu et al., 2022 ¹²	China	Shandong Adolescent Behavior & Health Cohort (SABHC)	No	Community	14.58	1.46		7, 8, 10	2015	1 year
Lereya et al., 2013 ¹³	UK	Avon Longitudinal Study of Parents and Children (ALSPAC)	Yes	Population			1.8-4 years	Preschool		≥6 years
Law & Shek, 2016 ¹⁴	China		No	Population			10-16 years	10		2 years
Kingsbury et al., 2020a ¹⁵	Canada	National Longitudinal Survey of Children and Youth (NLSCY)	No	Population			10-11 years		1994-1995	2 years
Kingsbury et al., 2020b ¹⁶	Canada	National Longitudinal Survey of Children and Youth (NLSCY)	No	Population			10-11 years		1994-1995	4 years
Kidd et al., 2006 ¹⁷	United States	National Longitudinal Study of Adolescent Health (Add Health)	No	Population	16 (median)			7-11	1995	1 year
Jutengren et al., 2011 ¹⁸	Sweden		No	Community	13.72	0.78	13-15 years	7-8	2007	1 year
Jiang et al., 2016 ¹⁹	China		No	Community	12.97	1.02	11-16 years	7-9	2013	1 year
Huang et al., 2017 ²⁰	Taiwan	The Taiwanese Adolescent Self-Harm Project	No	Community	16.02	0.52			2008-2010	1 year

Hishinuma et al., 2018 ²¹	United States	Hawaiian High Schools Health Survey (HSHS)	No	Community				9-11	1992-1993	1 year
Heerde et al., 2015 ²²	United States; Australia	International Youth Development Study (IYDS)	No	Community	Washington : 14.1; Victoria: 13.9			7, 9	2002	1 year
Gervais & Jose, 2020 ²³	New Zealand	Youth Connectedness Project (YCP)	No	Community	12.3	1.73	10-15 years		2006	2 years
Garrison et al., 1991 ²⁴	United States		No	Community			11-15 years	7- 8	1986	2 years
Dyer et al., 2022 ²⁵	United States	Family Foundations of Youth Development project	No	Population	13.1	0.86	11-15 years		2016	2 years
Chiang et al., 2022 ²⁶	Taiwan	Child and Adolescent Behaviors in Long-term Evolution (CABLE) study	No	Community			≥10 years	6	2003	1 year
Cassels et al., 2018 ²⁷	UK	Roots study	No	Community			14 years			3 years
Boeninger et al., 2013 ²⁸	United States	Iowa Youth and Families Project (IYFP)	No	Community	15.3			7	1989	5 years
Baetens et al., 2015 ²⁹	Belgium	JOnG!	No	Population	12					1 year
Zhou et al., 2025 ³⁰	China		No	Community	13.27	0.73		7, 8	2021	1 year
Wood et al., 2025 ³¹	United States	Adolescent Brain Cognitive Development (ABCD) study	No	Population			10-11 years		2017-2019	1 year

Wichstrøm & Wichstrøm, 2024 ³²	Norway	Trondheim Early Secure Study (TESS)	Yes	Population	6.72	0.17			2009/2010	≥6 years
Wang et al., 2023 ³³	China		No	Community	16.13	0.79	15-18 years	10-12	2019	1 year
Guo et al., 2025 ³⁴	China		No	Community	15.20	1.43	11-18 years	8, 11	2020	1 year
Gu et al., 2024 ³⁵	China		No	Community	13.27	0.74			2021	1 year
Gonzalves et al., 2023 ³⁶	United States	California Families Project (CFP)	No	Community	16.8			11		1 year
De Luca et al., 2024 ³⁷	Italy		No	Community	14.52	0.80	12-20* years	9, 10	2020	1 year
Bakken et al., 2025 ³⁸	Norway	Youth and Mental Health Study (YAMHS)	No	Population	13.7	0.60			1998	1 year

* No participants were 19 years old, and n=1 (0.10%) was 20 years old.

† Author confirmed that study data were collected between 2009 and 2011.

eTable 2. Sociodemographic characteristics of studies identified by systematic literature review (n=38).

Study	Sex % (n)		Race and ethnicity % (n)					Sexual identity % (n)			Gender % (n)		
	Male	Female	Black	East Asian	Hispanic	Native Hawaiian	White	Lesbian / Gay	Bisexual	Hetero-sexual	Girl/woman	Boy/man	Trans-gender and gender diverse
Zhu et al., 2020 ¹	56.1% (1,115)	43.9% (872)		100% (1,987)									
Zhang et al., 2023 ²	51.2% (3,189)	48.8% (3,044)		100% (6,233)									
You et al., 2017 ³	43.4% (1,562)	56.6% (2,038)		100% (3,600)									
Wright & Wachs, 2022 ⁴	40% (187)	59% (276)	15% (70)		20% (94)		63% (294)						
Winfree & Jiang, 2010 ⁵													
Victor et al., 2019 ⁶		100% (2,127)	56% (1,191)				42% (893)						
Tatnell et al., 2014 ⁷	28.3% (559)	71.7% (1,414)											
Sourander et al., 2006 ⁸	47.2% (396)	52.8% (443)											
Pan et al., 2017 ⁹	50.6% (794)	49.4% (776)											
Mintz et al., 2021 ¹⁰					47.6% (1,306)	0.2% (5)	36.4% (1,000)	2.5% (68)	11.1% (304)	78.9% (2,164)	46.2% (1,267) †	50.9% (1,396) †	3.10% ⁰ Trans (85 ^{Trans}); 1.6% ⁰ Diverse (43 ^{Diverse})
Liu et al., 2021 ¹¹				100% (373)							54.2% (202)	45.8% (171)	

Liu et al., 2022 ¹²	50% (3,536)	50% (3,536)		100% (7,072)									
Lereya et al., 2013 ¹³	41% (1,972)	59% (2,838)					96.1% (4,438)						
Law & Shek, 2016 ¹⁴	48% (971)	52% (1,052)											
Kingsbury et al., 2020a ¹⁵	50.3% (4,971)	49.7% (4,911)											
Kingsbury et al., 2020b ¹⁶	50% (3,754)	50% (3,753)											
Kidd et al., 2006 ¹⁷	48% (4,388)	52% (4,754)	20.1% (1,838)		12% (1,097)		70.1% (6,409)						
Jutengren et al., 2011 ¹⁸											49.4% (435)	50.6% (445)	
Jiang et al., 2016 ¹⁹	57% (299)	43% (226)		100% (525)									
Huang et al., 2017 ²⁰	44.1% (1,908)	55.9% (2,423)		100% (4,331)									
Hishinuma et al., 2018 ²¹	46% (959)	54% (1,124)				64.2% (1,324)	3.6% (75)						
Heerde et al., 2015 ²²	49% (1,899)	51% (1,977)					65% (1,247)*						
Gervais & Jose, 2020 ²³	48.1% (853)	51.9% (921)					57.7% (1,024)						
Garrison et al., 1991 ²⁴	48% (515)	52% (558)	15.1% (162)				85% (911)						
Dyer et al., 2022 ²⁵					6% (37)		88% (543)						
Chiang et al., 2022 ²⁶	51.86% (1,071)	48.14% (994)											
Cassels et al., 2018 ²⁷													
Boeninger et al. 2013 ²⁸	48% (385)	52% (417)											

Baetens et al., 2015 ²⁹											54.7% (764)	45.3% (633)	
Zhou et al., 2025 ³⁰	57.6% (1,784)	42.4% (1,314)		100% (3,098)									
Wood et al., 2025 ³¹	52.4% (5,399)	47.6% (4,902)	17.1% (1,758)	6.2% (643)	19.5% (2,004)		55.7% (5,736)						
Wichstrøm & Wichstrøm, 2024 ³²	50.1% (400)	49.9% (398)					91.6% (732)						
Wang et al., 2023 ³³	48.2% (1,217)	51.8% (1,310)		2,527 (100%)									
Guo et al., 2025 ³⁴	44.2% (315)	55.8% (397)		712 (100%)									
Gu et al., 2024 ³⁵				786 (100%)							52.0% (409)	48.0% (377)	
Gonzalves et al., 2023 ³⁶	50% (337)	50% (337)	10% (67)	11% (74)	53% (357)		20% (135)						
De Luca et al., 2024 ³⁷	55.8% (463)	44.2% (367)					89.4% (742)						
Bakken et al., 2025 ³⁸	49.23% (1,213)	50.77% (1,251)											
Note. Black = Black, African, African American/Canadian, or Afro-Caribbean. East Asian = East Asian, Chinese, Japanese, Korean, Taiwanese. Hispanic = Hispanic or Latino. Native Hawaiian = Native Hawaiian or Pacific Islander. * Washington state. † Gender was reported as male, female, transgender, and other (an open-ended response option).													

eTable 3. Methodological characteristics of studies identified by systematic literature review (n=38).

Study	Response rate (%)	% attrition	Handling of missing data	Complex survey design?	Use of survey weights?	Sample size (n)	Repeated ascertainment?		Confounders
							Exposure	Outcome	
Zhu et al., 2020 ¹		8.45%	Other: Multiple imputation and full-information maximum likelihood estimation (FIML)	Not mentioned		1,987			None
Zhang et al., 2023 ²		18%	Maximum likelihood estimation (MLE)	✓	Not mentioned	6,233			Gender; Age; Symptoms of depression/anxiety of the child/youth (internalizing symptoms); Other (grade, perceived physical health status, ever cigarette smoking, ever alcohol drinking, family economic status, father occupation, mother occupation, and externalizing symptoms).
You et al., 2017 ³	99%	33.6%	Complete case analysis/ listwise deletion	Not mentioned		3,600			None
Wright & Wachs, 2022 ⁴	85.9%	0%	Not reported			467			Gender; Other (homophobic face-to-face bullying involvement,

									homophobic cyberbullying victimization, homophobic cyberbullying bystanding, suicidal ideation [Time 1], non-suicidal self-harm [Time 1], subjective health complaints [Time 1 and 2]).
Winfree & Jiang, 2010 ⁵			Complete case analysis/ listwise deletion	✓	Not mentioned	4,318			Gender; Age; Other (parental expressive support, school support [individual level], parental supervision, parental expectations, prior suicide ideation, prior suicide attempt, family member's prior suicide attempt, friend's prior suicide attempt, cigarette use, alcohol use, substance use, delinquency, school safety [individual level], mean school support [school level], mean school safety [school level], and community poverty).
Victor et al., 2019 ⁶			Maximum likelihood estimation (MLE)	✓	Not mentioned	2,127	✓	✓	Race; Other (cohort, depression severity).

Tatnell et al., 2014 ⁷	64%	25.2%	Complete case analysis/ listwise deletion	Not mentioned		1,973			Gender; Age; Other (attachment anxiety, social support from friends, social support from a significant other, cognitive reappraisal, emotional suppression, self-efficacy, and self-esteem)
Sourander et al., 2006 ⁸	91.2%	34.8%	Complete case analysis/ listwise deletion	✓	Not mentioned	839			Sex
Pan et al., 2017 ⁹			Complete case analysis/ listwise deletion			1,570			Gender; Family/household socioeconomic status (combined measure [e.g., income + education]); Other (grade, BMI category, academic performance, family dynamics variables [unhappy parental marriage, poor child-parent relationship, and parental expectation], physical maltreatment, recent psychosocial stressors [financial distress, conflicts between parents, loss of physical health and child-parent conflicts] and baseline depressive symptom score).

Mintz et al., 2021 ¹⁰	78.8%		Full-information maximum likelihood estimation (FIML) and diagonally weighted least squares estimation			2,744			Gender; Age; Ethnicity; Sexual minority status (e.g., lesbian/gay, transgender); Other (medical access Time 1, counseling access Time 1, help seeking beliefs Time 1, trusted adults Time 1, family support Time 1, friends support Time 1, spirituality Time 1).
Liu et al., 2021 ¹¹		30.4%	Complete case analysis/ listwise deletion			536			Gender; Age; Other (depressive symptoms, NSSI at Time 1, catechol-O-methyltransferase [COMT] Val158Met polymorphism).
Liu et al., 2022 ¹²		18%	Complete case analysis/ listwise deletion			7,072			Gender; Age; Parental/caregiver education; Other (depressive symptoms, smoking, alcohol use, physical health status, family economic status, and parental married status).
Lereya et al., 2013 ¹³			Other: missingness accommodated with probit regression.			4,810	✓		Sex; Other (preschool domestic violence, being bullied, internalizing/externalizing behavior, borderline personality disorder

									symptoms, and depression symptoms).
Law & Shek, 2016 ¹⁴			Complete case analysis/ listwise deletion	✓	✓	2,023			Gender; Other (family non-intactness, economic disadvantage, cognitive-behavioural competencies, prosocial attributes, general positive youth development qualities, positive identity, family communication, mutuality, and conflicts).
Kingsbury et al., 2020a ¹⁵			Complete case analysis/ listwise deletion	✓	✓	9,882			Sex; Age; Parental/caregiver sex/gender; Parental/caregiver age; Family/household socioeconomic status (combined measure [e.g., income + education]); Other (positive and harsh-punitive parenting, primary caregiver's relationship to the child [e.g., biological parent], education, employment status, depressive symptoms, smoking status, excessive alcohol consumption, and chronic physical conditions).
Kingsbury et al., 2020b ¹⁶	86.5%		Complete case analysis/	✓	No (analytic	7,507			Sex; Parental/caregiver sex/gender;

			listwise deletion		method precluded use of weights)				Parental/caregiver education; Parental/caregiver age; Family/household socioeconomic status (combined measure [e.g., income + education]); Symptoms of depression/anxiety of the child/youth (internalizing symptoms); Other (caregiver's working status, caregiver's smoking, alcohol misuse, and depression score).
Kidd et al., 2006 ¹⁷			Complete case analysis/ listwise deletion	✓	Not mentioned	9,142			Gender; Other (depression, peer relations, school relations, and Wave 1 suicide attempts)
Jutengren et al., 2011 ¹⁸	89%		Full-information maximum likelihood (FIML)	✓	Other method	880			Gender; Other (deliberate self-harm at Time 1, peer victimization at Time 1 and Time 2, Harsh parenting at Time 2).
Jiang et al., 2016 ¹⁹	86.3%		Complete case analysis/ listwise deletion			525			Gender; Age; Parental/caregiver education; Other: (Current living arrangements, parents' occupational status, baseline NSSI, peer victimization, and self-compassion).

Huang et al., 2017 ²⁰		26.33%	Complete case analysis/ listwise deletion	Not mentioned		4,331			Gender; Family/household socioeconomic status (combined measure [e.g., income + education]); Other (school ranking)
Hishinuma et al., 2018 ²¹	60%		Complete case analysis/ listwise deletion	✓	✓	2,083			None
Heerde et al., 2015 ²²	Washington State: 74% Victoria: 75%	≤1%	Complete case analysis/ listwise deletion	✓	✓	3,876			Gender; Other (grade, state, alcohol use, cannabis use, tobacco use, emotional control, bullying victimization, antisocial behavior, depressive symptoms, impulsivity, poor family management, family conflict, and parent control.
Gervais & Jose, 2020 ²³			Other: expectation–maximization imputation	Not mentioned		1,774			Gender; Age; Other (maladaptive coping, adaptive coping)
Garrison et al., 1991 ²⁴	95-98%	30%	Complete case analysis/ listwise deletion	Not mentioned		1,073			Gender; Race; Other (family adaptability, CES-D score)
Dyer et al., 2022 ²⁵		18%	Full-information maximum likelihood (FIML)			617			Gender; Race; Other (suicidality at Wave 1, abandonment by god, shame, positive religious coping, private religion practices, church service)

									attendance, family religious practices, church support, child report of mother verbal hostility, child report of father verbal hostility, parental report of father verbal hostility, child report of family flexibility, and child depression).
Chiang et al., 2022 ²⁶	Grade 6 (2003): 91%	11.7%	Not reported	✓	Not mentioned	2076			Sex; Other (depression symptoms).
Cassels et al., 2018 ²⁷			Multiple imputation	Not mentioned		933			Gender; Other (childhood family adversity, diagnosed mental disorder, friendship quality, neighborhood socioeconomic status.
Boeninger et al. 2013 ²⁸	78%	<10%	Complete case analysis/ listwise deletion	Not mentioned		802 adolescents			Sex; Age; Parental/caregiver education; Parental/caregiver age; Symptoms of depression/anxiety of the child/youth (internalizing symptoms); Other (parental history of internalizing problems, suicidality, observed nurturant-involved parenting [1991, 1992], and adolescent suicidality [1991, 1992].

Baetens et al., 2015 ²⁹	15%	24.5%	Full-information maximum likelihood (FIML)			1,397			Other (parent-reported parenting behaviors and adolescent reported NSSI across three time points).
Zhou et al., 2025 ³⁰		1.4%	Complete case analysis/ listwise deletion			3,098			None
Wood et al., 2025 ³¹		2.2%	Complete case analysis/ listwise deletion	✓	Not mentioned	10,301			Sex; Age; Household/parental income; Symptoms of depression/anxiety of the child/youth (internalizing symptoms); Other (risk of experiencing racism, family conflict, externalizing symptoms of the child/youth, parental acceptance, and parental monitoring).
Wichstrøm & Wichstrøm, 2024 ³²	82.2%	16.2%	Maximum likelihood estimation (MLE)	✓	✓	759		✓	Gender; Other (parental depression, parenting stress, child-perceived parental negativity/hostility, parental emotional availability, negative affectivity, emotion regulation, symptoms of emotional disorders, symptoms of disruptive disorder, victimization from bullying, and

									serious negative life events).
Wang et al., 2023 ³³		30%	Complete case analysis/ listwise deletion			2,527			Gender; Age; Ethnicity; Parental/caregiver education; Other (grade, single-child, left-behind child, home locality, family cohesion (exposure) at follow-up, family adaptability, teacher support, peer support, autonomy opportunities, total life events, neuroticism, impulse system, and self-control system).
Guo et al., 2025 ³⁴		58.3%	Complete case analysis/ listwise deletion			750			None
Gu et al., 2024 ³⁵		11.7%	Complete case analysis/ listwise deletion			786			None
Gonzalves et al., 2023 ³⁶		5.2%	Full-information maximum likelihood (FIML)			674			Sex; Other (generation status, peer conflict, ethnic discrimination, and familism).
De Luca et al., 2024 ³⁷	75.3%	19.4%	Complete case analysis/ listwise deletion			830			None
Bakken et al., 2025 ³⁸	88.3%	4.3%	Complete case analysis/	✓	Not mentioned	2,464			Sex

			listwise deletion						
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eTable 4. Negative parenting practices: description of exposures and outcomes.									
Study		Measure	Name	Classification	Source	Informant	Timeframe	Scale	Exposure: α
									Outcome: %
Bactens et al., 2015 ²⁹									
		Exposure	Harsh punishment	Negative parenting behaviours; Hostile or aversive parenting	Questionnaire /scale	Primary parent/caregiver	None reported	Parental Behavior Scale, short version (PBS)	None reported
		Outcome	Non-suicidal self-injury (NSSI)	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Questionnaire /scale	Child/youth	Since the previous survey (i.e., past 12 months)	Single-item question	<10%
Victor et al., 2019 ⁶									
		Exposure	Harsh punishment	Negative parenting behaviours; Hostile or aversive parenting	Interview format of a questionnaire/ scale	Child/youth	Nonspecific	the Conflict Tactics Scale: Parent–Child version	0.75-0.77
		Outcome	Non-suicidal self-injury (NSSI)	Non-specific self-harm	Interview format of a questionnaire/ scale	Child/youth	Past 12 months	Adolescent Symptom Inventory-4	<10%
Heerde et al., 2015 ²²									
		Exposure	Parental overcontrol	Negative parenting behaviours	Questionnaire /scale	Child/youth	Nonspecific	None reported	0.72
		Outcome	Deliberate self-harm	Non-specific self-harm	Questionnaire /scale	Child/youth	None reported	Past 12 months	<10%
Zhu et al., 2020 ¹									
		Exposure	Parental rejection	Negative parenting behaviours; Hostile or aversive parenting	Questionnaire /scale	Child/youth	Past 6 months	Chinese version of the Parental Rejection Scale	0.63

		Outcome	Non-suicidal self-injury (NSSI)	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Questionnaire /scale	Child/youth	Past 6 months	None reported	Not reported
You et al., 2017 ³									
		Exposure	Perceived parental control	Negative parenting behaviours; Hostile or aversive parenting	Questionnaire /scale	Child/youth	Nonspecific	The 10-item Hostile/Coercive subscale of the Parent Behavior Inventory (PBI)	0.88
		Outcome	Non-Suicidal Self-Injury (NSSI)	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Questionnaire /scale	Child/youth	Past 6 months		<10%
Pan et al., 2017 ⁹									
		Exposure	Feeling not cared about by parents	Negative parenting behaviours	Questionnaire /scale	Child/youth	Nonspecific	None reported	None reported
		Outcome	Suicidal ideation	Suicidal ideation (with or without a plan)	Questionnaire /scale	Child/youth	Past (1) month	None reported	<10%
Liu et al., 2021 ¹¹									
		Exposure	Harsh parenting	Negative parenting behaviours; Hostile or aversive parenting	Questionnaire /scale	Child/youth	Nonspecific	the Chinese version of the Parent-Child Conflict Tactics Scale	0.83
		Outcome	Non-suicidal self-injury (NSSI)	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Questionnaire /scale	Child/youth	Since the last assessment (Time 3 = 24 months)	Shortened/ modified version of the Deliberate Self-Harm Inventory (DSHI)	Not reported
Liu et al., 2022 ¹²									

		Exposure	Maternal authoritarian parenting	Negative parenting behaviours; Hostile or aversive parenting	Questionnaire /scale	Child/youth	Nonspecific	Adapted from Parenting Style & Dimensions Questionnaire (PSDQ)	0.84
		Outcome	Non-suicidal self-injury (NSSI)	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Questionnaire /scale	Child/youth	Past 12 months	None reported	Males: 7.5%; Females: 10.0%; Overall: 8.8%
Lereya et al., 2013 ¹³									
		Exposure	Maladaptive parenting	Negative parenting behaviours; Hostile or aversive parenting	Questionnaire /scale	Biological mother/female caregiver	Current (hitting and shouting) /nonspecific (hostility)	None reported	None reported
		Outcome	Self-harm	Non-specific self-harm	Questionnaire /scale	Child/youth	Past 12 months	None reported	≥10%
Kingsbury et al., 2020a ¹⁵									
		Exposure	Harsh parenting	Negative parenting behaviours; Hostile or aversive parenting	Questionnaire /scale	Biological mother/female caregiver	Nonspecific	None reported	0.55
		Outcome	Suicidal ideation	Suicidal ideation (with or without a plan)	Questionnaire /scale	Child/youth	Past 12 months	None reported	<10%
Kingsbury et al., 2020b ¹⁶									
		Exposure	Punitive-harsh parenting	Negative parenting behaviours; Hostile or aversive parenting	Questionnaire /scale	Biological mother/female caregiver	Nonspecific	The Parenting Scale	0.55
		Outcome	Suicide attempt	Suicide attempt	Questionnaire /scale	Child/youth	Past 12 months	Drawn from the Centre for Disease Control's	<10%

								Youth Risk Behaviour Survey (YRBS)	
Jutengren et al., 2011 ¹⁸									
		Exposure	Harsh parenting	Negative parenting behaviours; Hostile or aversive parenting	Questionnaire /scale	Child/youth	Nonspecific	None reported	0.85
		Outcome	Deliberate self-harm	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Questionnaire /scale	Child/youth	Past 6 months	Deliberate self-harm inventory: nine-item version (DSHI-9)	≥10%
Dyer et al., 2022 ²⁵									
		Exposure	Verbal hostility: mother	Negative parenting behaviours; Hostile or aversive parenting	Questionnaire /scale	Parents/caregivers (2 reporters)	Nonspecific	Parenting Styles and Dimensions Questionnaire-Short Version (PSDQ)	0.92*
		Outcome	Passive suicide ideation	Suicidal ideation (with or without a plan)	Questionnaire /scale	Child/youth	Ever (lifetime)	Single item informed by the Centers for Disease Control and Prevention's Youth Risk Behavior Survey ideation question	Not reported
Wichstrøm & Wichstrøm, 2024 ³²									
		Exposure	Parental negativity/ hostility	Negative parenting behaviours; Hostile or aversive parenting	Interview	Child/youth	Nonspecific	Berkeley Puppet Interview (BPI)	0.88†

		Outcome	Non-suicidal self-injury	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Interview	Parent/caregiver & child/youth (2 reporters)	Past 12 months	The Child and Adolescent Psychiatric Assessment (CAPA), and the Schedule for Affective Disorders and Schizophrenia for School-Age Children–Present and Lifetime version (K-SADS-PL)	≥10%
Gu et al., 2024 ³⁵									
		Exposure	Harsh parenting	Negative parenting behaviours	Questionnaire /scale	Child/youth	Not reported	Harsh Parenting Scale	0.77
		Outcome	Non-suicidal self-injury (NSSI)	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Questionnaire /scale	Child/youth	Past 6 months	None reported	Not reported
De Luca et al., 2024 ³⁷									
		Exposure	Negative parenting	Negative parenting behaviours	Questionnaire /scale	Child/youth	Not reported	Alabama Parenting Questionnaire short form (APQ) Italian version	0.80-0.81†
		Outcome	Non-suicidal self-injury (NSSI)	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Questionnaire /scale	Child/youth	Past 12 months	None reported	≥10%
Note. Nonspecific timeframe: Do you and your family discuss problems? * Rakov's Maximal Reliability † Intraclass correlation coefficient									

‡ McDonald's Omega

eTable 5. Positive parenting practices: description of exposures and outcomes.									
Study		Measure	Name	Classification	Source	Informant	Timeframe	Scale	Exposure: α
									Outcome: %
Victor et al., 2019 ⁶									
		Exposure	Positive parenting	Positive parenting behaviours	Interview format of a questionnaire/ scale	Child/youth	Nonspecific	The Positive Parenting Scale	0.83-0.86
		Outcome	Non-suicidal self-injury (NSSI)	Non-specific self-harm	Interview format of a questionnaire/ scale	Child/youth	Past 12 months	Adolescent Symptom Inventory-4	<10%
Kingsbury et al., 2020a ¹⁵									
		Exposure	Positive parenting	Positive parenting behaviours; Positive or emotionally supportive parenting	Questionnaire /scale	Biological mother/female caregiver	Nonspecific	None reported	0.78
		Outcome	Suicidal ideation	Suicidal ideation (with or without a plan)	Questionnaire /scale	Child/youth	Past 12 months	None reported	<10%
Kingsbury et al., 2020b ¹⁶									
		Exposure	Positive parenting	Positive parenting behaviours	Questionnaire /scale	Biological mother/female caregiver	Nonspecific	The Parenting Scale	0.78
		Outcome	Suicide attempt	Suicide attempt	Questionnaire /scale	Child/youth	Past 12 months	Questions drawn from the Centre for Disease Control's Youth Risk Behaviour Survey (YRBS)	<10%
Wright & Wachs, 2022 ⁴									

		Exposure	Perceived Parental Social Support	Positive parenting behaviours; Positive or emotionally supportive parenting	Questionnaire /scale	Child/youth	Nonspecific	The Child and Adolescent Social Support Scale	0.81
		Outcome 1	Suicidal ideation	Suicidal ideation (with or without a plan)	Questionnaire /scale	Child/youth	Past 12 months	None reported	Not reported
		Outcome 2	Non-suicidal self-harm	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Questionnaire /scale	Child/youth	Ever	The Self-Harm Inventory	Not reported
Winfree & Jiang, 2010 ⁵									
		Exposure	Parental behavioral support	Positive parenting behaviours; Positive or emotionally supportive parenting	Questionnaire /scale	Child/youth	Past (1) week/ 7 days	None reported	0.61
		Outcome 1	Suicide ideation	Suicidal ideation (with or without a plan)	Questionnaire /scale	Child/youth	Past 12 months	None reported	Not reported
		Outcome 2	Suicide attempt	Suicide attempt	Questionnaire /scale	Child/youth	Past 12 months	None reported	Not reported
Boeninger et al., 2013 ²⁸									
		Exposure	Nurturant-involved parenting	Positive parenting behaviours; Positive or emotionally supportive parenting; Behaviour management or disciplinary parenting	Observer assessment (e.g., in home)	Third-party observer	Current	Family interaction and problem-solving tasks (Tasks 1 and 2)	Not reported
		Outcome	Suicidality	Other: Suicidal ideation, plans, and attempts	Questionnaire /scale	Child/youth	Past 12 months	Same questions used in the Youth	≥10%

								Risk Behavior Survey	
Baetens et al., 2015 ²⁹									
		Exposure	Positive parenting	Positive parenting behaviours; Positive or emotionally supportive parenting	Questionnaire /scale	Primary parent/caregiver	Not reported	Parental Behavior Scale, short version (PBS)	0.85
		Outcome	Non-suicidal self-injury (NSSI)	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Questionnaire /scale	Child/youth	Since the previous survey (i.e., past 12 months)	Single-item screening question	<10%
Wood et al., 2025 ³¹									
		Exposure	Parental acceptance	Positive parenting behaviours; Positive or emotionally supportive parenting	Questionnaire /scale	Child/youth	Nonspecific	Child's Report of Parent Behavior Inventory (CRPBI-Acceptance)	Not reported
		Outcome	Suicidality	Other: Suicidal ideation and/or suicide attempt(s)	Diagnostic/ clinical interview	Parent/caregiver & child/youth (2 reporters)	Not reported	Kiddie Schedule for Affective Disorders and Schizophrenia (KSADS-5)	≥10%
Wichstrøm & Wichstrøm, 2024 ³²									
		Exposure	Parental emotional availability	Positive parenting behaviours; Positive or emotionally supportive parenting	Interview	Child/youth	Nonspecific	Berkeley Puppet Interview (BPI)	0.79*
		Outcome	Non-suicidal self-injury	Non-suicidal self-harm behaviours/	Interview	Parent/caregiver & child/youth (2 reporters)	Past 12 months	The Child and Adolescent Psychiatric	≥10%

				non-suicidal self-injury				Assessment (CAPA), and the Schedule for Affective Disorders and Schizophrenia for School-Age Children–Present and	
De Luca et al., 2024 ³⁷									
		Exposure	Positive parenting	Positive parenting behaviours	Questionnaire /scale	Child/youth	Not reported	Alabama Parenting Questionnaire short form (APQ) Italian version	0.80-0.81†
		Outcome	Non-suicidal self-injury (NSSI)	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Questionnaire /scale	Child/youth	Past 12 months	None reported	≥10%
Note. Nonspecific timeframe: Do you and your family discuss problems? * Intraclass correlation coefficient † McDonald’s Omega									

eTable 6. Family functioning: description of exposures and outcomes.									
Study		Measure	Name	Classification	Source	Informant	Timeframe	Scale	Exposure: α
									Outcome: %
Dyer et al., 2022 ²⁵									
		Exposure	Family flexibility	Family functioning	Questionnaire /scale	Parents/caregivers (2 reporters)	Nonspecific	FACES IV	0.93
		Outcome	Passive suicide ideation	Suicidal ideation (with or without a plan)	Questionnaire /scale	Child/youth	Ever	Single item modelled after the Centers for Disease Control's Youth Risk Behavior Survey	Not reported
Tatnell et al., 2014 ⁷									
		Exposure	Family support	Family functioning	Questionnaire /scale	Child/youth	Nonspecific	Multidimensional Scale of Perceived Social Support (MSPSS) - Family Support Subscale	0.91
		Outcome	Non-suicidal self-injury (MSSI)	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Questionnaire /scale	Child/youth	Ever	Self-Harm Behaviour Questionnaire (SHBQ)	$\geq 10\%$
Mintz et al., 2021 ¹⁰									
		Exposure	Family support	Family functioning; Positive or emotionally supportive parenting	Questionnaire /scale	Child/youth	Past 6 months	Single item measure	Not applicable
		Outcome	Suicidal ideation	Suicidal ideation (with or without a plan)	Questionnaire /scale	Child/youth	Past 6 months	None reported	LGB: $\geq 10\%$, Other:

									>=10%, Heterosexual : <10%
Law & Shek, 2016 ¹⁴									
		Exposure	Family functioning: mutuality	Family functioning	Questionnaire /scale	Child/youth	Nonspecific	Trimmed version of the Chinese Family Assessment Inventory	0.87
		Outcome 1	Self-harm behavior	Non-specific self- harm	Questionnaire /scale	Child/youth	Past 12 months	None reported	≥10%
		Outcome 2	Suicidal behaviors	Other: Suicidal thoughts, plans, and attempts	Questionnaire /scale	Child/youth	Past 12 months	None reported	<10%
Kidd et al., 2006 ¹⁷									
		Exposure	Parent relations	Family functioning	Questionnaire /scale	Child/youth	Nonspecific	None reported	0.88
		Outcome	Suicide attempts	Suicide attempt	Questionnaire /scale	Child/youth	Past 12 months	None reported	<10%
Jiang et al., 2016 ¹⁹									
		Exposure	Family cohesion	Family functioning	Questionnaire /scale	Child/youth	Nonspecific	9-item Cohesion subscale of the Chinese version of Family Environment Scale	0.86
		Outcome	Non-suicidal self-injury (NSSI)	Non-suicidal self- harm behaviours/ non-suicidal self- injury	Questionnaire /scale	Child/youth	Past 12 months	None reported	≥10%
Hishinuma et al., 2018 ²¹									

		Exposure	Family support	Family functioning	Questionnaire /scale	Child/youth	Nonspecific	Derived from the Perceived Social Support Scale	Not reported
		Outcome	Suicide attempt	Suicide attempt	Questionnaire /scale	Child/youth	Past 6 months	Single item from the Major Life Events Scale	<10%
Gervais & Jose, 2020 ²³									
		Exposure	Family connectedness	Family functioning	Questionnaire /scale	Child/youth	Nonspecific	Informed by The Family Adaptability and Cohesion Evaluation Scale (FACES II)	0.90
		Outcome	Self-harm (behavior and ideations)	Other: non-specific self-harm/thoughts of self-harm	Questionnaire /scale	Child/youth	Past (1) month	Two items adapted from the CORE group system	Not reported (continuous outcome)
Garrison et al., 1991 ²⁴									
		Exposure	Family cohesion	Family functioning	Questionnaire /scale	Child/youth	Nonspecific	Family Adaptability and Cohesion Evaluation Scales (FACES-II)	0.88
		Outcome	(High) suicide score	Non-specific self-harm	Questionnaire /scale	Child/youth	Past (1) week/ 7 days	None reported	<10%
Chiang et al., 2022 ²⁶									
		Exposure	Family involvement	Family functioning	Questionnaire /scale	Child/youth	Nonspecific	None reported	Not reported

		Outcome	Suicidal ideation	Suicidal ideation (with or without a plan)	Questionnaire /scale	Child/youth	Past (1) month	None reported	≥10%
Cassels et al., 2018 ²⁷									
		Exposure	Family functioning	Family functioning	Questionnaire /scale	Child/youth	Nonspecific	The McMaster Family Assessment Device General Functioning Subscale (FAD-GF)	Not reported
		Outcome	Non-suicidal self-injury (NSSI)	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Questionnaire /scale	Child/youth	Ever	Single item from the Drug, Alcohol and Self-Injury Questionnaire (DASI)	<10%
Zhou et al., 2025 ³⁰									
		Exposure	Family support	Family functioning	Questionnaire /scale	Child/youth	Nonspecific	Multidimensional Scale of Perceived Social Support-Chinese Version (MSPSS-C)	0.65
		Outcome	Non-suicidal self-injury (NSSI)	Non-specific self-harm	Questionnaire /scale	Child/youth	Past 6 months	Modified and condensed version of the Deliberate Self-Harm Inventory	≥10%
Wang et al., 2023 ³³									
		Exposure	Family cohesion	Family functioning	Questionnaire /scale	Child/youth	Nonspecific	Family Adaptability and	0.852

								Cohesion Evaluation Scale (FACES II)	
		Outcome	Non-suicidal self-injury (NSSI)	Non-suicidal self-harm behaviours/ non-suicidal self-injury	Questionnaire /scale	Child/youth	Past 12 months	Functional assessment of self mutilation (FASM)	≥10%
Guo et al., 2025 ³⁴									
		Exposure	Family affective responsiveness	Family functioning	Questionnaire /scale	Child/youth	Nonspecific	The McMaster Family Assessment Device (FAD) Chinese version	0.82
		Outcome 1	Suicidal ideation intensity	Suicidal ideation (with or without a plan)	Questionnaire /scale	Child/youth	Not reported	Beck Scale for Suicidal Ideation (BSSI) Chinese version	≥10%
		Outcome 2	Suicidal ideation frequency	Suicidal ideation (with or without a plan)	Questionnaire /scale	Child/youth	Past 6 months	None reported	≥10%
Bakken et al., 2025 ³⁸									
		Exposure	Family functioning	Family functioning	Questionnaire /scale	Child/youth	Nonspecific	The McMaster Family Assessment Device - General Functioning Subscale	0.86†
		Outcome 1	Suicidal ideation	Suicidal ideation (with or without a plan)	Questionnaire /scale	Child/youth	Current	Mood and Feelings Questionnaire (MFQ) and single item from the Center for	≥10%

								Epidemiological Studies Depression Scale (CES-D)	
		Outcome 2	Suicide attempts	Suicide attempt	Questionnaire /scale	Child/youth	Ever	None reported	<10%
Note. Nonspecific timeframe: Do you and your family discuss problems? Rakov's Maximal Reliability † McDonald's Omega									

eTable 7. Family dysfunction: description of exposures and outcomes.									
Study		Measure	Name	Classification	Source	Informant	Timeframe	Scale	Exposure: α
									Outcome: %
Law & Shek, 2016 ¹⁴									
		Exposure	Family functioning: conflicts	Family dysfunction	Questionnaire /scale	Child/youth	Nonspecific	Trimmed version of the Chinese Family Assessment Inventory"	0.76
		Outcome 1	Self-harm behavior	Non-specific self-harm	Questionnaire /scale	Child/youth	Past 12 months	None reported	$\geq 10\%$
		Outcome 2	Suicidal behaviors	Other: Suicidal thoughts, plans, and attempts	Questionnaire /scale	Child/youth	Past 12 months	None reported	$< 10\%$
Zhang et al., 2023 ²									
		Exposure	Family conflict	Family dysfunction	Questionnaire /scale	Child/youth	Nonspecific	Family conflict subscale from the Family Environment Scale-Chinese Version (FES-CV)	0.68
		Outcome 1	Any suicidal behaviour	Other: Suicidal thoughts, plans, and attempts	Questionnaire /scale	Child/youth	Past 12 months	None reported	$< 10\%$
		Outcome 2	Suicidal thought	Suicidal ideation (with or without a plan)	Questionnaire /scale	Child/youth	Past 12 months	None reported	$< 10\%$
		Outcome 3	Suicide attempt	Suicide attempt	Questionnaire /scale	Child/youth	Past 12 months	None reported	$< 10\%$
Sourander et al., 2006 ⁸									

		Exposure	Poor family functioning	Family dysfunction	Questionnaire /scale	Parents/caregivers (2 reporters)	Nonspecific	12-item General Functioning Scale part of McMaster's Family Assessment Device (FAD)	Not reported
		Outcome 1	Ideations of deliberate self-harm	Suicidal ideation (with or without a plan)	Questionnaire /scale	Child/youth	Past 6 months	None reported	<10%
		Outcome 2	Deliberate self-harm (acts)	Other: Ideations of or acts of deliberate self-harm	Questionnaire /scale	Child/youth	Past 6 months	None reported	<10%
Huang et al., 2017 ²⁰									
		Exposure	Family discord	Family dysfunction	Questionnaire /scale	Child/youth	Nonspecific	None reported	Not reported
		Outcome 1	Incident deliberate self-harm	Non-specific self-harm	Questionnaire /scale	Child/youth	Ever	None reported	<10%
		Outcome 2	Incident suicide attempt	Suicide attempt	Questionnaire /scale	Child/youth	Ever	None reported	<10%
Heerde et al., 2015 ²²									
		Exposure	Family conflict	Family dysfunction	Questionnaire /scale	Child/youth	Nonspecific	None reported	0.79
		Outcome	Deliberate self-harm	Non-specific self-harm	Questionnaire /scale	Child/youth	Past 12 months	None reported	Grade 7: 1.71% males, 3.18% females. Grade 9: 3.47% males, 8.18% females.

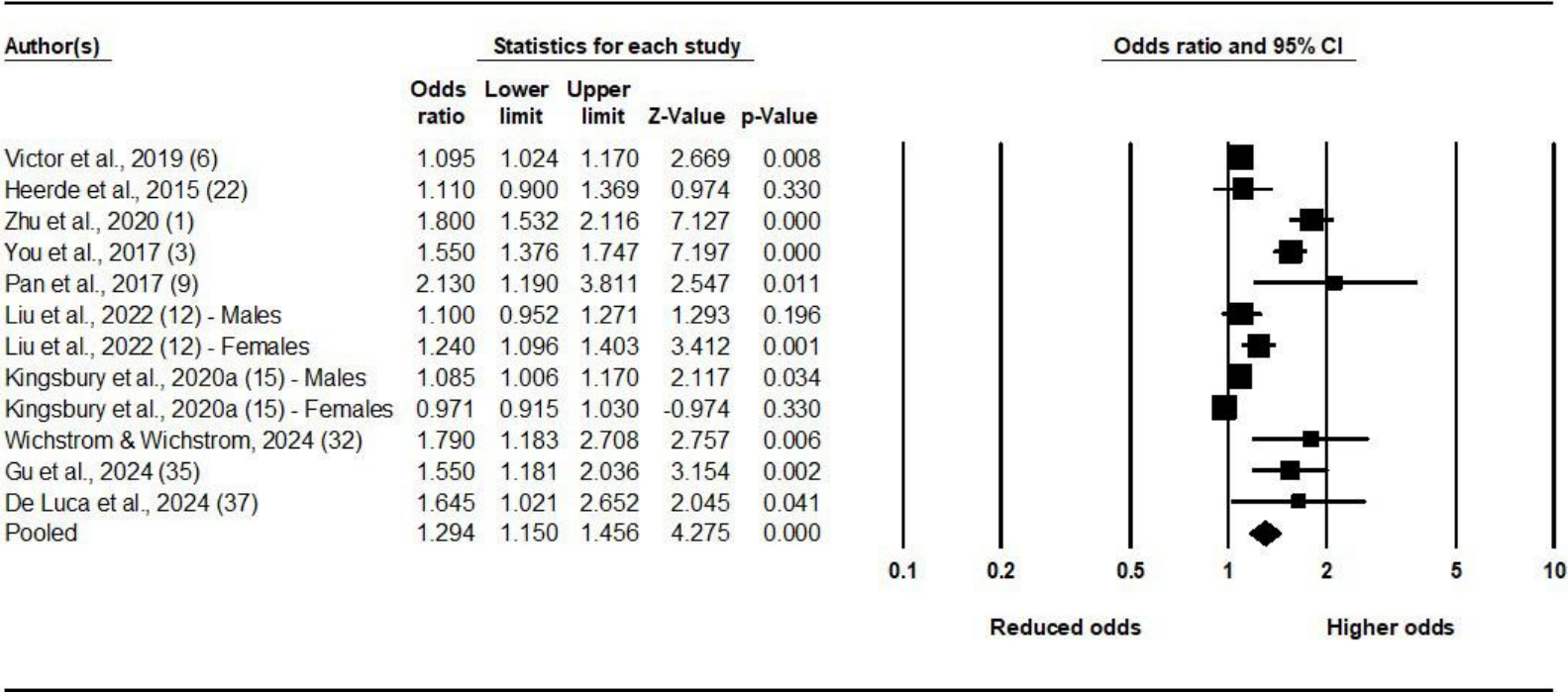
Wood et al., 2025 ³¹									
		Exposure	Family conflict	Family dysfunction	Questionnaire /scale	Child/youth	Nonspecific	Family Conflict Subscale of the Youth Family Environment Scale	Not reported
		Outcome	Suicidality	Other: Suicidal ideation and/or suicide attempt(s)	Diagnostic/ clinical interview	Parent/caregiver & child/youth (2 reporters)	Not reported	Kiddie Schedule for Affective Disorders and Schizophrenia (KSADS-5)	≥10%
Gonzalves et al., 2023 ³⁶									
		Exposure	Family conflict	Family dysfunction	Questionnaire /scale	Child/youth	Past 3 months	Multicultural Events Scale for Adolescents (MESA)	0.64
		Outcome	Suicidal thoughts and/or behaviors	Other: Suicidal ideation and attempt	Questionnaire /scale and diagnostic/ clinical interview	Child/youth	Past 12 months	National Institute of Mental Health Diagnostic Interview Schedule for Children (DISC-IV) and a brief suicide questionnaire	≥10%
Note. Nonspecific timeframe: Do you and your family discuss problems?									

eTable 8. Study quality ratings using a modified Newcastle-Ottawa Quality Assessment Scale (n=38).										
	Presence of quality element									
Study	Selection				Comparability			Outcome		
	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10
Zhu et al., 2020 ¹	★	★	★	☆	☆	☆	☆	☆	★	★
Zhang et al., 2023 ²	★	★	★	★	★	★	★	☆	★	★
You et al., 2017 ³	★	★	★	☆	☆	☆	☆	★	★	★
Wright & Wachs, 2022 ⁴	☆	★	★	☆	★	☆	☆	★	★	★
Winfree & Jiang, 2010 ⁵	★	★	☆	☆	★	★	☆	☆	★	☆
Victor et al., 2019 ⁶	☆	★	★	★	★	★	☆	★	★	☆
Tatnell et al., 2014 ⁷	★	★	★	★	★	★	☆	★	★	☆
Sourander et al., 2006 ⁸	★	★	★	☆	★	☆	☆	☆	★	★
Pan et al., 2017 ⁹	★	★	☆	☆	★	★	★	☆	★	☆
Mintz et al., 2021 ¹⁰	★	★	☆	☆	★	★	☆	☆	★	☆
Liu et al., 2021 ¹¹	★	★	★	☆	★	★	☆	★	★	★
Liu et al., 2022 ¹²	★	★	★	☆	★	★	★	☆	★	★
Lereya et al., 2013 ¹³	★	★	☆	★	★	☆	☆	☆	★	★
Law & Shek, 2016 ¹⁴	★	★	★	☆	★	☆	★	☆	★	☆
Kingsbury et al., 2020a ¹⁵	★	★	★	☆	★	★	★	☆	★	☆
Kingsbury et al., 2020b ¹⁶	★	★	★	☆	★	★	★	★	★	★
Kidd et al., 2006 ¹⁷	★	★	★	☆	★	☆	☆	☆	★	☆
Jutengren et al., 2011 ¹⁸	★	★	★	☆	★	☆	☆	★	★	☆
Jiang et al., 2016 ¹⁹	☆	★	★	☆	★	★	☆	☆	★	☆
Huang et al., 2017 ²⁰	★	★	☆	★	★	☆	★	☆	★	★
Hishinuma et al., 2018 ²¹	★	★	★	☆	☆	★	☆	★	★	☆
Heerde et al., 2015 ²²	★	★	★	★	★	★	☆	☆	★	★
Gervais & Jose, 2020 ²³	★	★	★	☆	★	★	☆	☆	★	☆
Garrison et al., 1991 ²⁴	★	★	★	☆	★	☆	☆	☆	★	★
Dyer et al., 2022 ²⁵	★	★	★	☆	★	☆	☆	☆	★	★
Chiang et al., 2022 ²⁶	★	★	☆	☆	★	☆	☆	☆	★	★
Cassels et al., 2018 ²⁷	★	★	★	★	☆	★	☆	★	★	☆

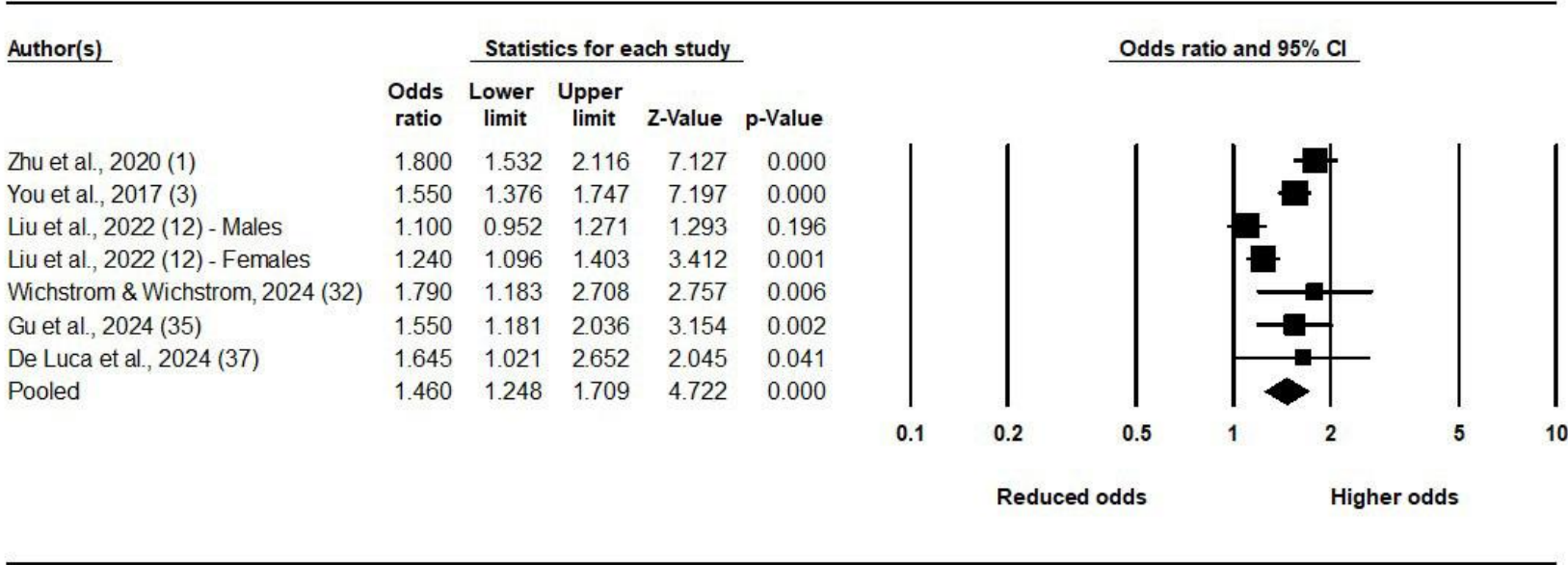
Boeninger et al., 2013 ²⁸	★	★	★	☆	★	★	☆	☆	★	★
Baetens et al., 2015 ²⁹	★	★	★	☆	☆	☆	☆	☆	★	☆
Zhou et al., 2025 ³⁰	★	★	★	☆	☆	☆	☆	★	★	★
Wood et al., 2025 ³¹	★	★	★	☆	★	★	★	★	★	★
Wichstrøm & Wichstrøm, 2024 ³²	★	★	★	☆	★	☆	☆	★	★	★
Wang et al., 2023 ³³	★	★	★	★	★	★	☆	★	★	★
Guo et al., 2025 ³⁴	★	★	★	☆	☆	☆	☆	★	★	★
Gu et al., 2024 ³⁵	★	★	★	☆	☆	☆	☆	★	★	★
Gonzalves et al., 2023 ³⁶	★	★	★	☆	★	☆	☆	★	★	★
De Luca et al., 2024 ³⁷	★	★	★	☆	☆	☆	☆	★	★	☆
Bakken et al., 2025 ³⁸	★	★	★	☆	★	☆	☆	★	★	★

Note. Shaded (black) stars indicate that the respective item was present. Items: (1) exposed cohort somewhat or truly representative of the average child/youth in the community; (2) unexposed cohort drawn from the same community as the exposed; (3) exposure ascertained via a validated measure; (4) outcome not present at study outset; (5) study controlled for or examined the potential for effect modification by sex/gender; (6) study controlled for or examined the potential for effect modification by age; (7) study controlled for a measure of socioeconomic status; (8) outcome ascertained via a validated measure or diagnostic/clinical interview; (9) follow-up length long enough for outcomes to occur (minimum 12 months); and, (10) complete follow-up or loss to follow-up unlikely to introduce bias (<10%) or adequate description of those lost to follow-up.

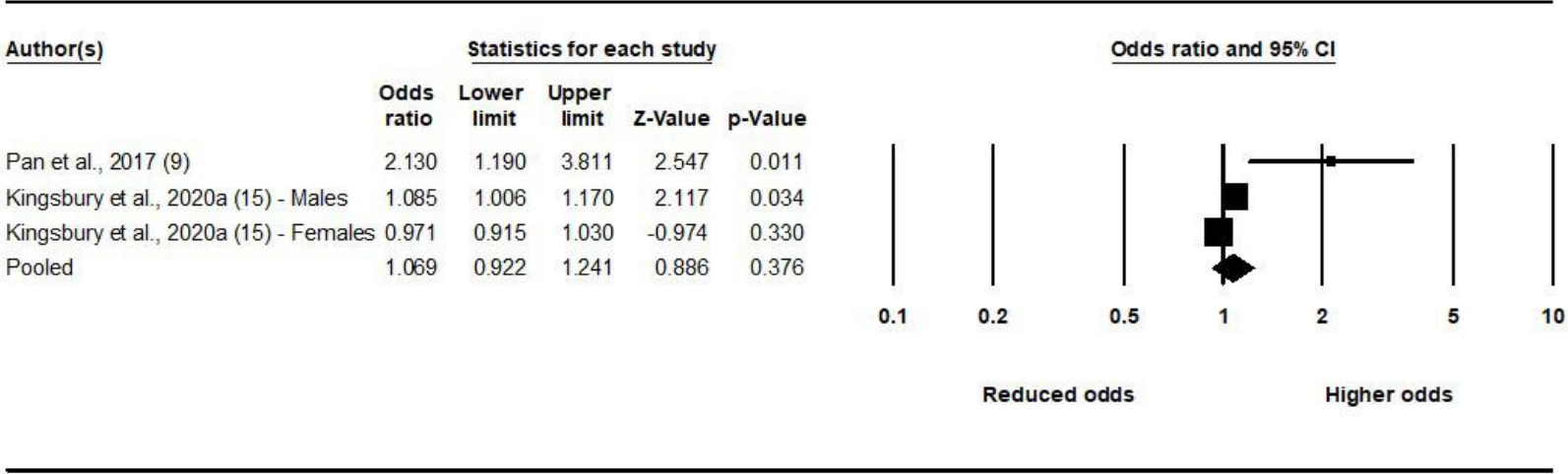
eFigure 1. Forest plot of the longitudinal relationship between negative parenting practices and child and adolescent self-harm and suicidality: dichotomous outcomes.



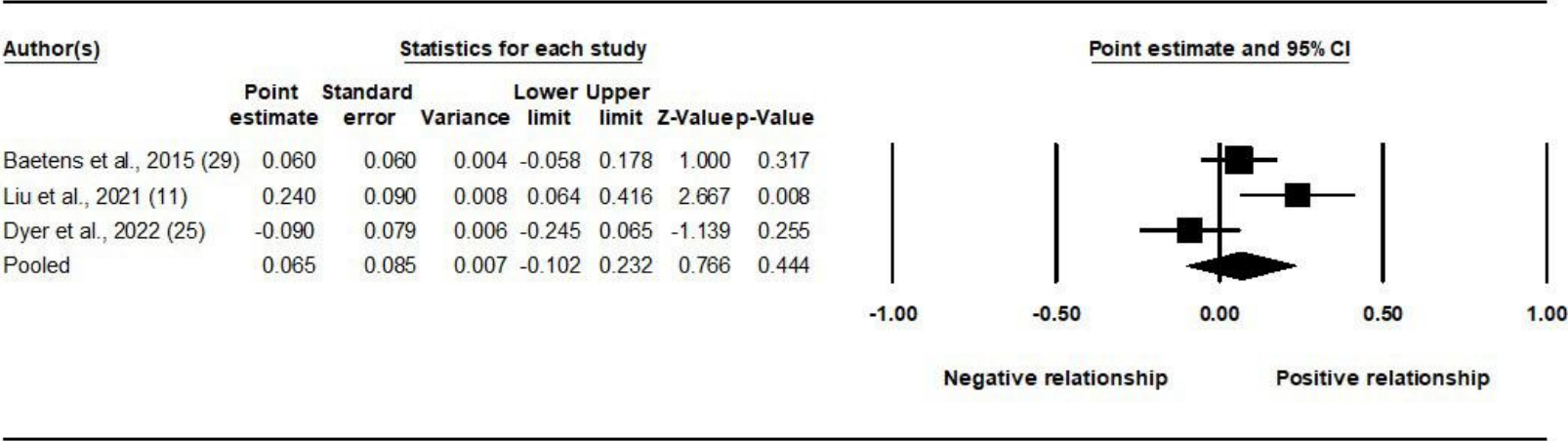
eFigure 2. Forest plot of the longitudinal relationship between negative parenting practices and child and adolescent non-suicidal self-harm/self-injury: dichotomous outcomes.



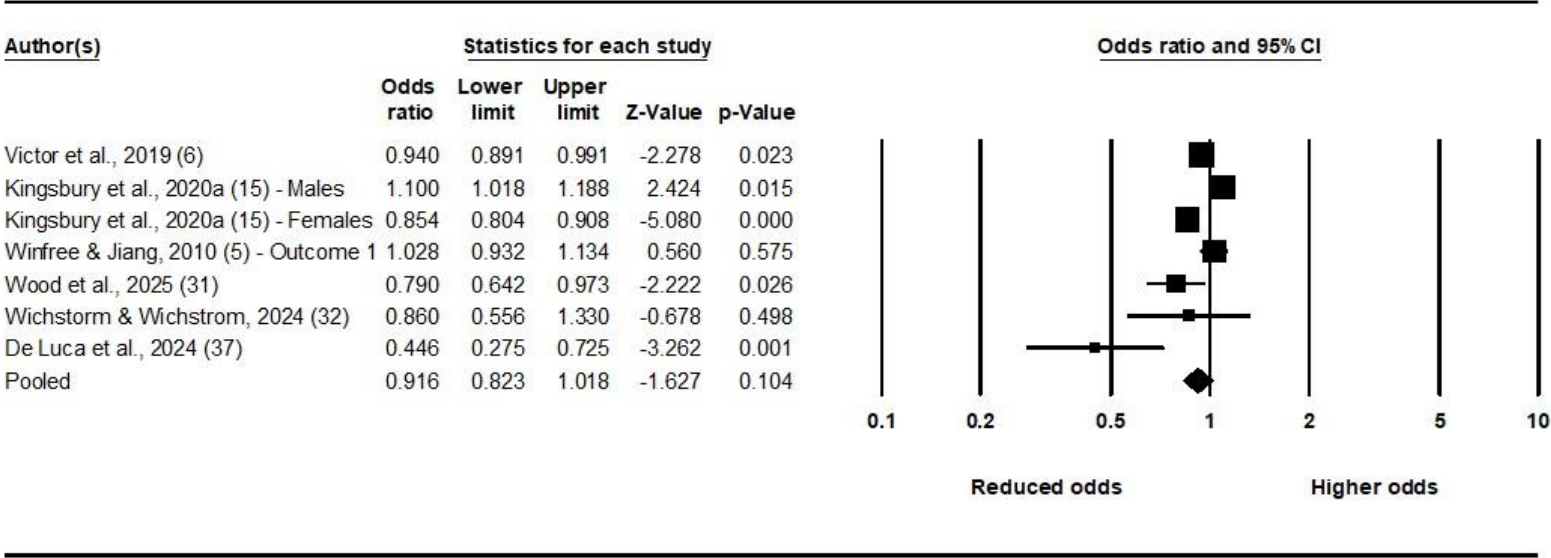
eFigure 3. Forest plot of the longitudinal relationship between negative parenting practices and child and adolescent suicidal ideation: dichotomous outcomes.



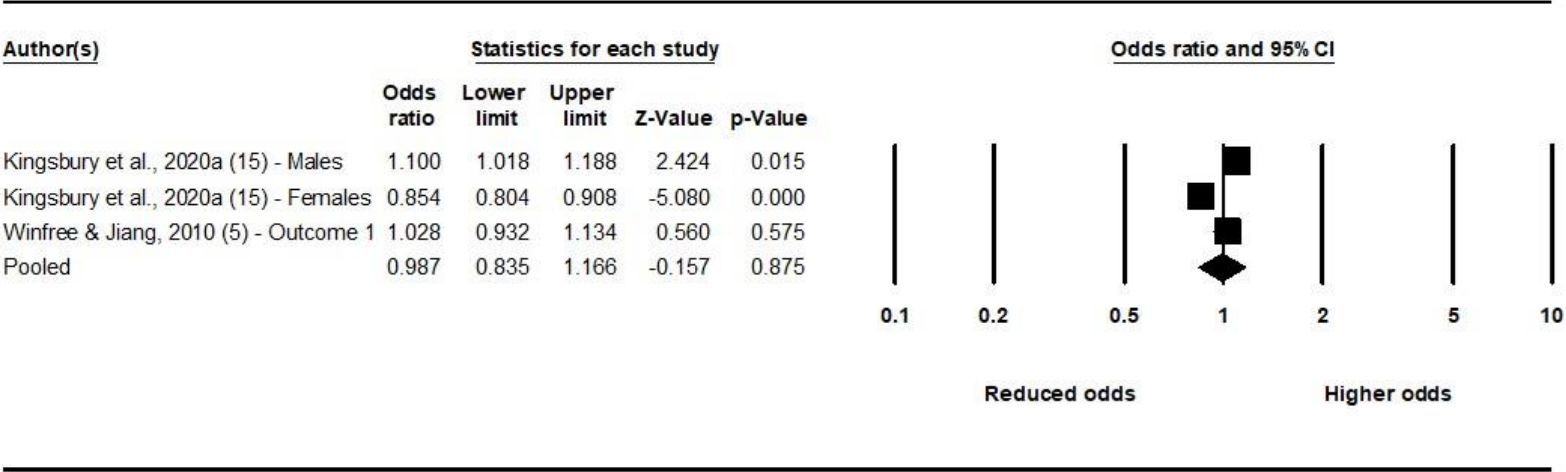
eFigure 4. Forest plot of the longitudinal relationship between negative parenting practices and child and adolescent self-harm and suicidality: continuous outcomes.



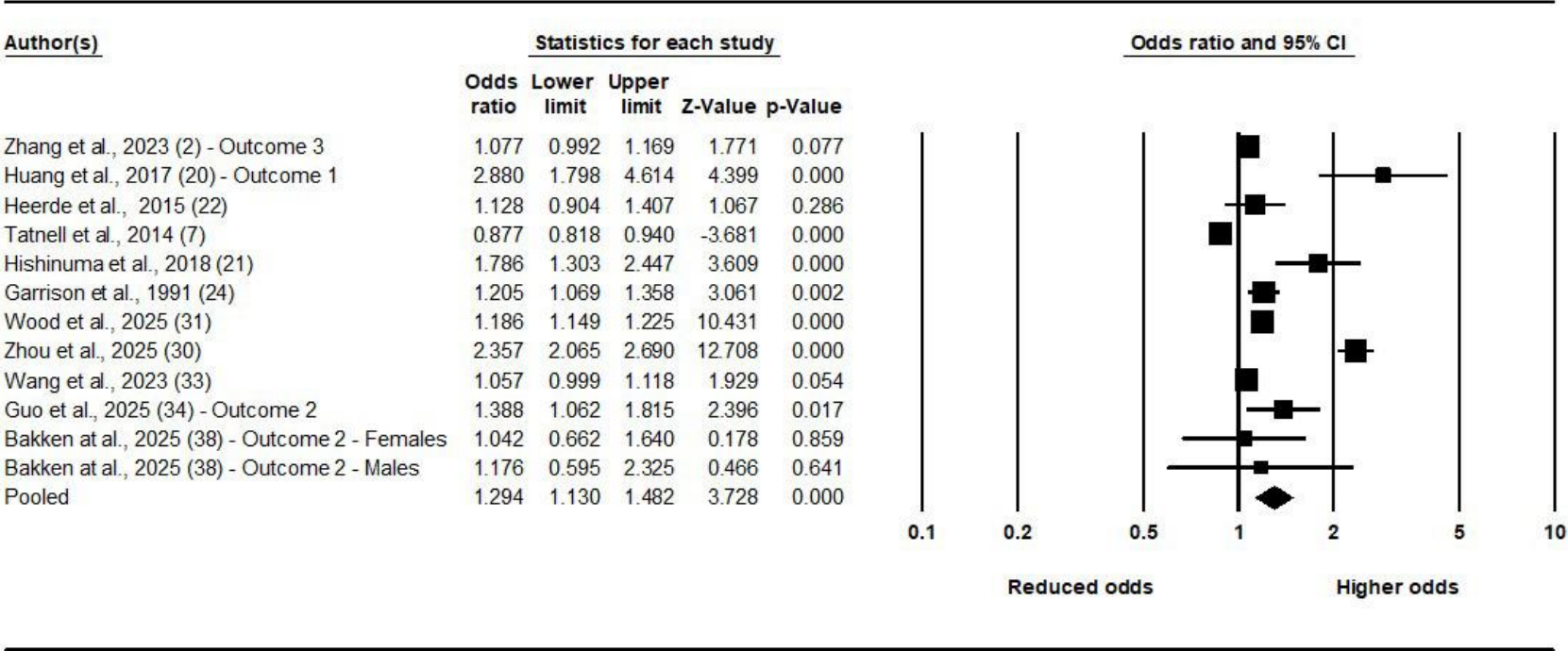
eFigure 5. Forest plot of the longitudinal relationship between positive parenting practices and child and adolescent self-harm and suicidality: dichotomous outcomes.



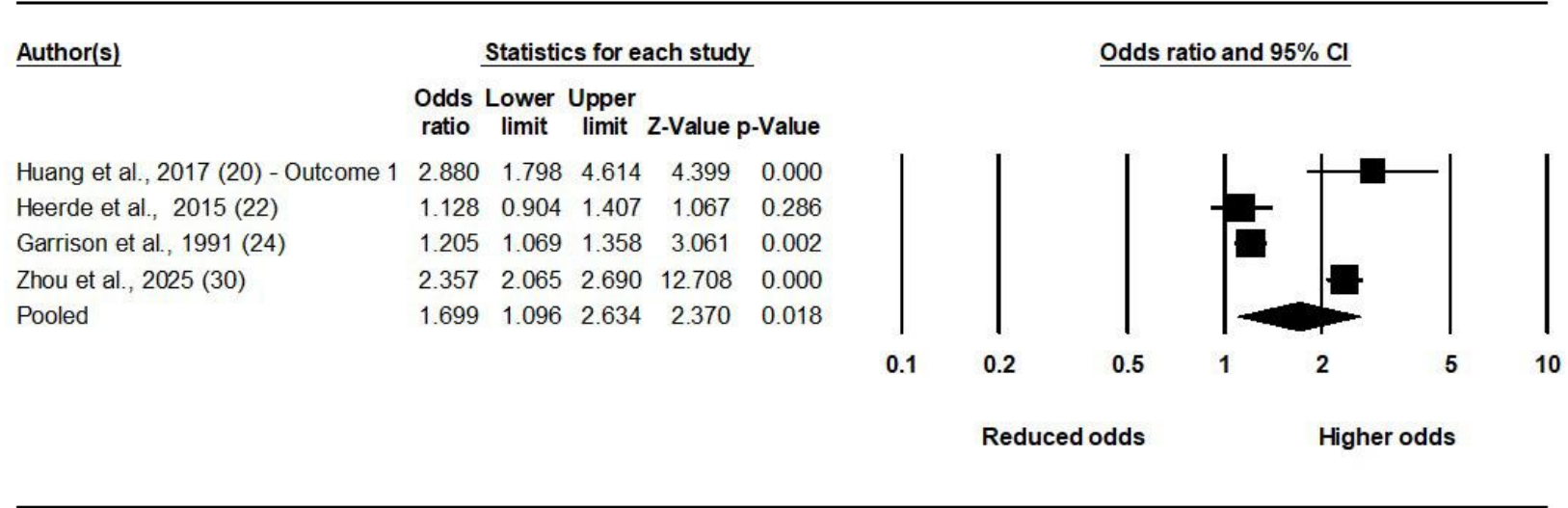
eFigure 6. Forest plot of the longitudinal relationship between positive parenting practices and child and adolescent suicidal ideation: dichotomous outcomes.



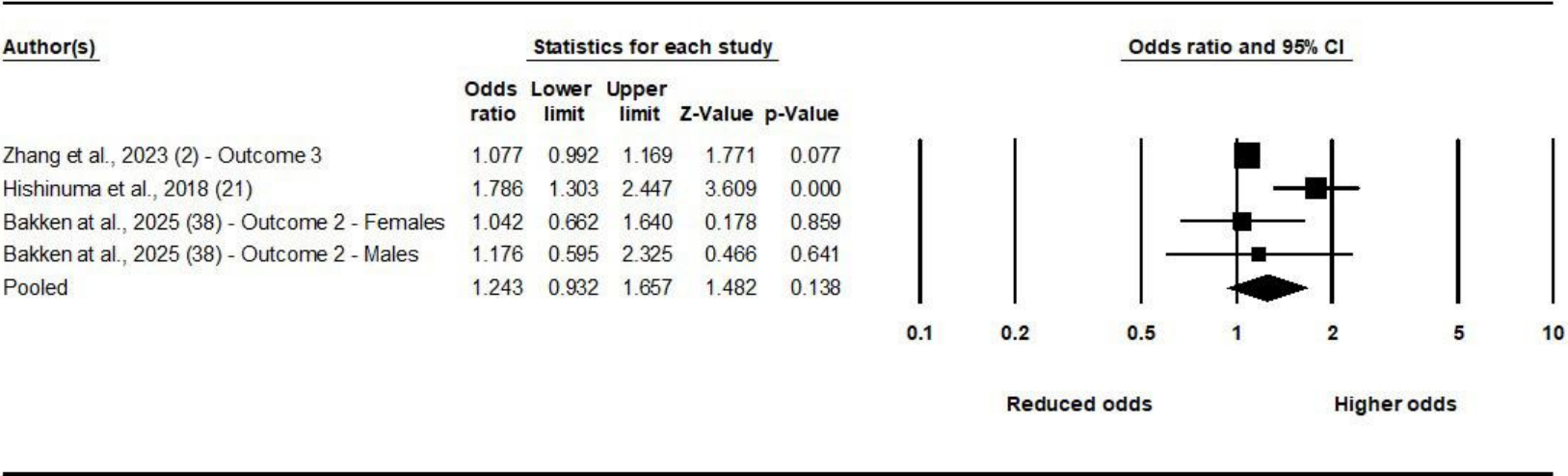
eFigure 7. Forest plot of the longitudinal relationship between family dysfunction and child and adolescent self-harm and suicidality: dichotomous outcomes.



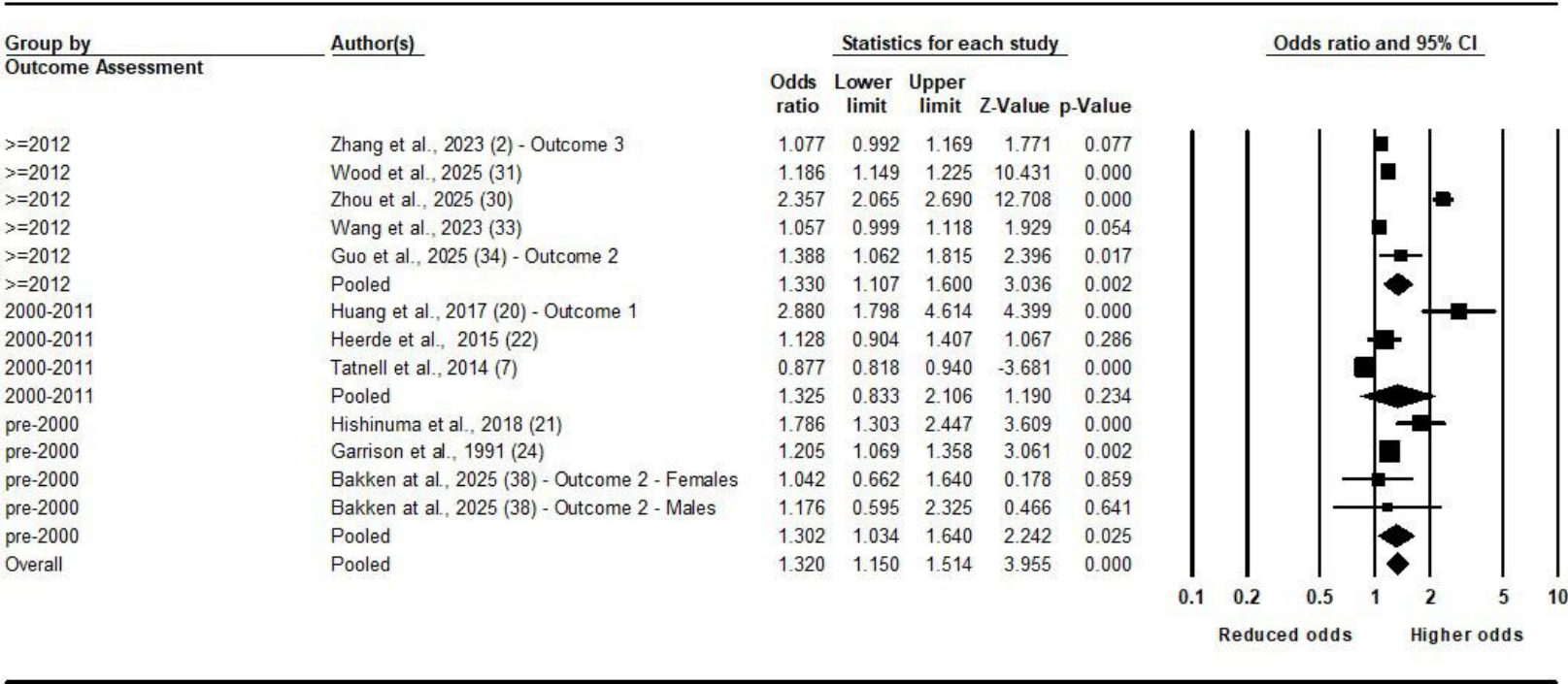
eFigure 8. Forest plot of the longitudinal relationship between family dysfunction and child and adolescent non-specific self-harm: dichotomous outcomes.



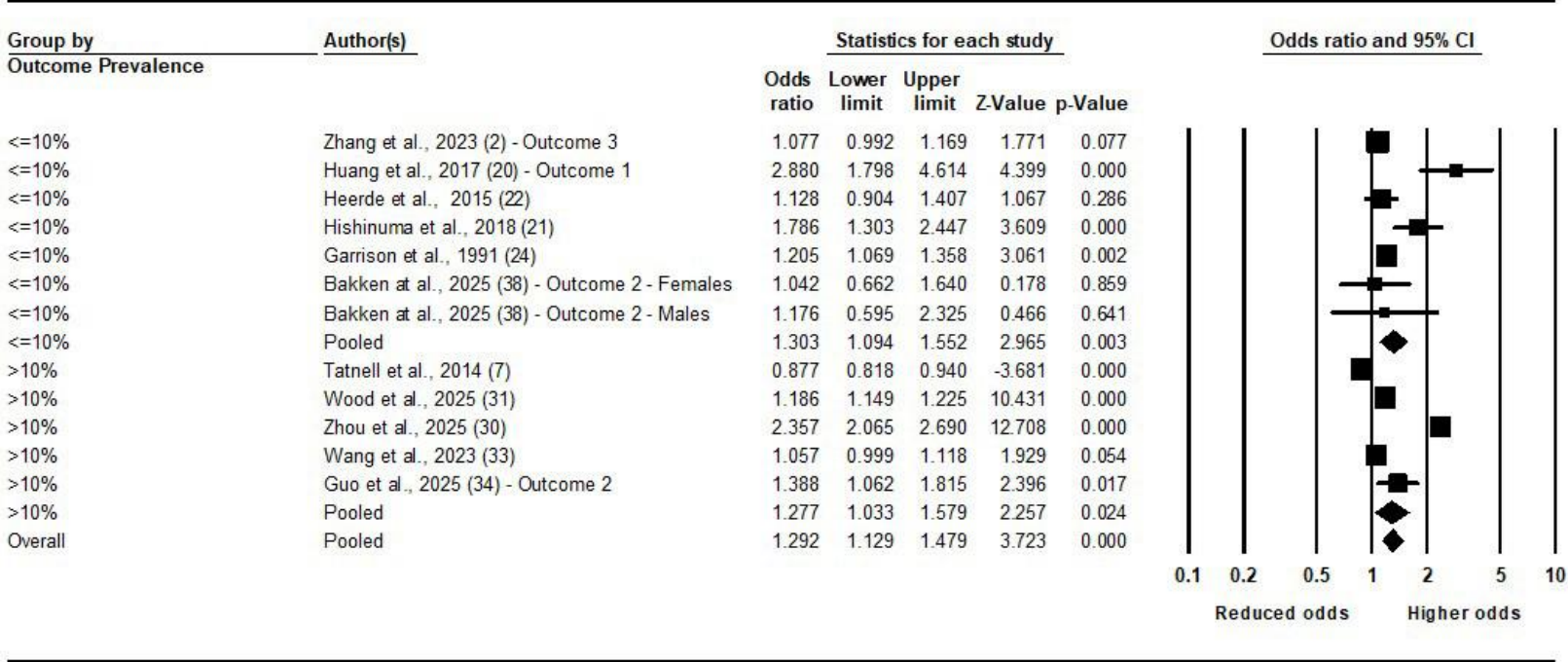
eFigure 9. Forest plot of the longitudinal relationship between family dysfunction and child and adolescent suicide attempt: dichotomous outcomes.



eFigure 10. Forest plot of the longitudinal relationship between family dysfunction and child and adolescent self-harm and suicidality by year of outcome assessment (pre-2000, 2000-2011, ≥2012): dichotomous outcomes.



eFigure 11. Forest plot of the longitudinal relationship between family dysfunction and child and adolescent self-harm and suicidality by outcome prevalence ($\leq 10\%$ and $>10\%$): dichotomous outcomes.



Note. The results were the same as presented here when subgroup comparisons were examined by outcome prevalence of $<10\%$ versus $\geq 10\%$.

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CHAPTER 3

Negative parenting practices and adolescent non-suicidal self-harm and suicide attempt: causal inference in a population-based birth cohort

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The article presented in this chapter is under review.

Hammond NG, Gravel C, Ferro MA, Geoffroy MC, & Colman I. Negative parenting practices and adolescent non-suicidal self-harm and suicide attempt: causal inference in a population-based birth cohort.

Article Preface

Using meta-analytic methods, the preceding Chapter (2) of this dissertation demonstrated that negative family dynamics were prospective risk factors for self-harm and suicidality (suicidal ideation and attempt) in children and adolescents. Importantly, none of the individual studies included in the systematic review and meta-analysis used epidemiological causal inference-based methods to establish whether negative family dynamics are causal antecedents to self-harm and suicidality before age 20 years. This study addresses this second knowledge gap by using causal inference methodology to estimate the controlled direct effects of exposure to negative parenting practices, defined as harsh and withdrawal-based methods, before 10 years on later adolescent non-suicidal self-harm and suicide attempt (14-17 years). Here, the controlled direct effect represents the causal effect of negative parenting practices that is *not* mediated by adolescent emotional and behavioural concerns at age 11. Identifying the controlled direct effect, or its absence, can provide useful clinical and public health insights for the prevention of self-harm and suicide attempt. For example, whether therapeutically addressing intermediaries in the causal process (e.g., emotional and behavioural concerns) can prevent later self-harm and suicide attempt. Using the most robust analytic approach for the analysis of observational data (i.e., marginal structural models), this study seeks to determine whether the apparent prospective relationship between family dynamics and self-harm and suicidality (Chapter 2) can be considered causal.

Author Contributions

As the lead and corresponding author, I led all aspects of this study with the support of my supervisor, Dr. Ian Colman, and co-authors. I conceptualized the study, developed the analytic plan, conducted the statistical analyses, prepared the initial draft manuscript, and revised the

manuscript in response to feedback from all co-authors. The appendices and supplementary materials begin on page 168.

Acknowledgements

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ABSTRACT

Objective: Negative parenting practices precede the onset of self-harm in observational-based studies of adolescents. However, to our knowledge, no study has used causal inference methodology to obtain the most robust estimates of the effect of negative parenting practices in childhood (<10 years) on later self-harm in adolescence.

Methods: Using a population-based birth cohort study of children born across the United Kingdom (2000-2002), the Millennium Cohort Study, we estimated the causal effect of exposure to negative parenting practices across ages 3-7 on the onset of non-suicidal self-harm and suicide attempt in adolescence (14/17 years). Negative parenting was either harsh (smacking, shouting, telling off) or withdrawal-based (ignoring, sending to room/chair, taking away treats) (exposed: $\geq$ median versus unexposed: $<$ median [referent]). Marginal structural models used stabilized inverse probability of treatment and censoring weights, accounted for adolescent emotional and behavioural concerns (mediator) and time-dependent confounders (substance use and physical activity) at age 11. Other confounders (age 3) included early-childhood emotional and behavioural concerns, household composition, and other early-life stressors (e.g., parental interpersonal violence). We used modified Poisson regression to obtain the effect of negative parenting practices on combined self-harm (with or without suicidal intent) and multinomial logistic regression to isolate the effect of self-harm type by age: non-suicidal self-harm at age 14 only, age 17 only, 14 and 17 years, and suicide attempt at age 17.

Results: There was good evidence of a total effect of negative parenting practices on non-suicidal self-harm initiated by age 14 and maintained at age 17 (harsh: OR=1.31,95%CI:1.03,1.67, withdrawal: OR=1.45,95%CI:1.14,1.85). In marginal structural models, there was modest evidence of a controlled direct effect of negative parenting practices

on non-suicidal self-harm initiated by age 14 and maintained at age 17 (harsh: OR=1.28,95%CI:0.98,1.66, withdrawal: OR=1.40,95%CI:1.06,1.86). Effect estimates were largest in magnitude for withdrawal parenting practices. There was less evidence for other total and controlled direct effects.

Conclusion: Negative parenting practices lead to the onset and maintenance of non-suicidal self-harm across adolescence and represent a public health concern. Widespread knowledge dissemination efforts are warranted, as are campaigns to minimize childhood exposure to negative parenting practices to curb rates of self-harm. Interventions to address adolescent emotional and behavioural concerns and prevent self-harm should be guided by the specific type of exposure to negative parenting strategies.

Keywords: causal inference, epidemiology, parenting practices, self-harm, adolescence

INTRODUCTION

Parenting practices are associated with mental health outcomes, from symptoms to disorders, in children and adolescents.¹ Furthermore, due to their potential modifiability, they may particularly lend themselves to prevention efforts to prevent the onset of poor mental health among children and adolescents.¹ Negative parenting practices (e.g., hostile, aversive, yelling) have recently been implicated in the onset of adolescent self-harm,² a severe form of poor mental health. There are several candidate mechanisms for how exposure to negative parenting practices may lead to the development of self-harming behaviours in adolescence. For example, population-based work has demonstrated that early exposure to harsh discipline (<12 years) prospectively predicts adolescent emotional and behavioural concerns (internalizing and externalizing symptoms),³ which in turn predicts suicide attempt in adolescence.⁴ However, most of these conclusions are informed by observational work that may be subject to selection bias and confounding; thus, there is a need for more robust causal inference techniques to advance our knowledge base and better inform prevention efforts.¹

A quantitative summary of the longitudinal literature in young persons aged 12-26 supports a direct relationship from emotional and behavioural concerns to suicide attempt.⁵ Whether this relationship holds for non-suicidal self-harm, self-inflicted bodily harm without the intention of dying, is, to our knowledge, unknown. Other syntheses⁶ provide some longitudinal evidence for an association between negative parenting practices and later emotional concerns in adolescence, though findings were not meta-analyzed. Whether negative parenting practices may similarly affect the risk of behavioural concerns in childhood and adolescence is supported in a longitudinal study⁴ and by a large evidence base supporting the use of parenting interventions to disrupt harmful practices to improve child behavioural outcomes.¹

While identifying key contributing mechanisms (i.e., mediators) to the onset of adolescent self-harm is highly relevant to clinical practice and public health prevention, application of causal inference methodology has, to our knowledge, not been applied to investigate causal effects of parenting practices. Drawing on causal inference techniques, we estimate the controlled direct effect of negative parenting practices in early life (3-7 years) on adolescent non-suicidal self-harm and suicide attempt (14-17 years), *not* mediated by adolescent emotional and behavioural concerns at age 11. Elucidating the answer to this causal question enables us to clarify whether intervening to treat adolescent emotional and behavioural concerns is sufficient to prevent non-suicidal self-harm and suicide attempt(s) in later adolescence, or whether other upstream causal factors require attention to prevent these important public health outcomes. Drawing on other work^{2-4,7} that provides support for the proposed causal pathway (Figure), we hypothesized that negative parenting practices would influence the risk of adolescent non-suicidal self-harm and suicide attempt through adolescent emotional and behavioural concerns.

METHODS

Data source

We analyzed data from the Millennium Cohort Study (MCS), a population-based prospective cohort study of children born in the United Kingdom (UK) between 2000-2002.⁸ Families were enrolled when eligible children were 9 months (2001) or 3 years (2004). The nearly universal Child Benefit defined the sampling frame⁹ which was complex (stratification and clustering) with oversampling in economically disadvantaged and ethnic minority concentrated geographic areas.⁹ Some families were excluded, including those with temporary or uncertain residency status.⁹ We used data from age 3, when all participants were introduced

(singleton births: n=15,381), to 17 years (2004-2018), inclusive. Accounting for new survey entrants in 2004, the response rate was 79%.¹⁰

Measures

Non-suicidal self-harm and suicide attempt

Adolescents self-reported self-harm with or without suicidal intent at age 14. Specifically, adolescents were asked: “In the past year have you hurt yourself on purpose in any way?” (yes/no). At age 17, respondents were asked about nonspecific self-harm and suicide attempt: “During the last year, have you hurt yourself on purpose in any of the following ways?” (yes/no for each): “cut or stabbed yourself”, “burned yourself”, “bruised or pinched yourself”, “taken an overdose of tablets”, “pulled out your hair”, and/or “hurt yourself some other way”, and “Have you ever hurt yourself on purpose in an attempt to end your life?” (yes/no). We utilized data from both timepoints to generate two outcomes: (1) a dichotomous measure of combined (i.e., any) self-harm with or without suicidal intent at age 14 and/or 17 (yes/no [referent]), and, (2) a five-level categorical measure of type of self-harm by age: no self-harm (referent), non-suicidal self-harm at age 14 only, non-suicidal self-harm at age 17 only, non-suicidal self-harm at ages 14 and 17 (self-harm maintenance), and (ever) suicide attempt.

Negative parenting practices

Our exposures consisted of two parenting practices, harsh and withdrawal methods, before age 10. Items were drawn from Straus's Conflict Tactics Scale,¹¹ and both parenting practices were measured using three questions at each survey sweep (ages 3, 5, 7). Harsh parenting was ascertained by asking the main parent/caregiver respondent how often they do the following when the child is “naughty”: “smack”, “shout”, “tell [child] off”. Withdrawal parenting was again assessed with the main/caregiver respondent reporting how often they

“ignore”, “send [child] to [their] bedroom, naughty chair, etc”, and “take away treats” when the child is “naughty”. Higher scores (maximum 15) represent a greater frequency of exposure (e.g., daily [5] versus never [1]) to the respective negative parenting practice. Answers to each respective negative parenting practice item were summed and averaged across the repeated measurements.

Our exposure operationalization was informed by Rajyaguru et al,⁷ who conducted confirmatory factor analyses, which demonstrated good model fit and yielded a moderate correlation ($r = 0.45$) between the parenting behaviours.⁷ Both parenting practices at age 3 were longitudinally associated with parent-rated adolescent emotional and behavioural concerns at age 11 in the MCS,⁷ aligning with measurement timing in the present study. Parenting practices measured at ages 5 and 7 were most strongly correlated (harsh: $r=0.62$, withdrawal: $r=0.57$), while parenting practices measured at ages 3 and 7 were the least strong (harsh: $r=0.49$, withdrawal: $r=0.42$). For analysis, we computed a median split of each exposure to aid in the identification of those most at-risk of later self-harm, and for whom intervention may be most strongly indicated.

Adolescent emotional and behavioural concerns

The hypothesized mediator was ascertained using the total difficulties score on the Strengths and Difficulties Questionnaire.¹² Higher scores reflect greater total difficulties or emotional and behavioural concerns, specifically more internalizing (emotional and peer difficulties) and/or externalizing (conduct and hyperactivity) symptoms.¹³ For analysis, we computed quartiles of multi-informant reported (parent and teacher) and parent-only adolescent emotional and behavioural concerns. For multi-informant analyses, scores were averaged when

both were non-missing; otherwise, the main parent/caregiver's score (non-missing or missing) defined the value of the mediator.

Confounders

We drew from the literature² and discussion within the research group to select the age 3 exposure-outcome (child and household) and age 11 (time-dependent) mediator-outcome confounders. Child-level confounders (age 3) were sex, age, visible minority status, longstanding illness, and emotional and behavioural concerns (Table 1). Household confounders (age 3): parental/caregiver age, educational attainment, low income status, parental/caregiver immigrant status, whether the biological parent(s) reside in the household, whether grandparents reside in the household, the number of children in the residence, whether the main parent/caregiver received a diagnosis of depression or severe anxiety, parental/caregiver psychological distress, general health, longstanding illness, exposure to parental/caregiver substance use (tobacco, drugs, and alcohol), and interpersonal violence (Table 1). The categorization of the drug and alcohol use items used to inform our household substance use measure, an adverse childhood experience, was informed by the work of Deng and Lacey.¹⁴ The (age 11) time-dependent confounders are conceptualized as consequences of the exposures that also confound the mediator-outcome relationship: adolescent substance use (alcohol and cigarettes) and physical activity (Table 1).

Several of our household-level confounders were asked of the main parent/caregiver, most often the biological mother (98.2%), and their partner, most often the biological father (96.3%), where applicable (households with a partner respondent: n=7,073). In the case of multi-informant confounder reports, the measure was considered present if either reported household exposure; otherwise, the main/caregiver respondent's score defined the value of the confounder,

consistent with our approach for multi-informant reports of adolescent emotional and behavioural concerns.

Statistical analysis

The work of Nandi and colleagues informed our causal model and analytical approach.¹⁵ A directed acyclic graph (DAG) of the hypothesized causal relationships between negative parenting practices and adolescent emotional and behavioural concerns on non-suicidal self-harm and suicide attempt is presented in the Figure. As noted in the DAG (an alternative representation of the same causal pathway is identified in the eFigure), we expected time-dependent confounders of adolescent substance use and physical activity (age 11) to affect adolescent emotional and behavioural concerns (age 11 [cross-sectionally]). As a result, the decomposition of the natural indirect (i.e., mediating) effect is prevented.¹⁶ After hypothetically intervening to hold the mediator constant and accounting for all confounders, including mediator-outcome confounders induced by the exposure, the sole unconfounded effect estimate remaining is the controlled direct effect, which can only be estimated using a marginal structural model.¹⁷ As such, we sought to estimate the controlled direct effect, or whether exposure to negative parenting practices that rely on harsh or withdrawal methods in early life (3-7 years) prospectively cause adolescent self-harm and suicide attempt (14-17 years) if we could hypothetically have intervened to prevent emotional and behavioural concerns at age 11 entirely.

To do so, we estimated marginal structural models using stabilized inverse probability of treatment and censoring weighting (IPTCW weights) (eMethods). We conducted multiple imputation using chained equations¹⁸ to impute m=54 datasets to account for missing data on the sample retained longitudinally (n=10,681). The five-level type of self-harm outcome was included in the imputation model, but then missing values were excluded from the final models,

consistent with multiple imputation and then deletion.¹⁹ We trimmed the IPTCW weight at the 1st and 99th percentiles. Next, we fit a marginal structural model to estimate the controlled direct effect. Initially, an exposure * mediator interaction was introduced, but was removed if not statistically significant. The above procedures were completed for each exposure (harsh and withdrawal) model. We used modified Poisson regression to estimate the risk of combined self-harm (14 or 17 years) and multinomial logistic regression to estimate the risk of the type of self-harm. Analyses were conducted in Stata 18.0 (StataCorp LLC).

Consent, ethical approval, and data availability

Adolescent and parent/caregiver participants provided informed consent. The University of Ottawa Research Ethics Board (File #H-10-21-7520) approved this study. Data is publicly available to users with authorized projects through the UK Data Service, which approved the study protocol and granted the corresponding author data access.

Role of the funding source

The funders of the authors [NGH, MCG, MAF] had no role in study design, data collection, data analysis, data interpretation, or writing of the report.

RESULTS

Sample characteristics are presented in Table 2. The proportion of combined self-harm between 14 and 17 years was 35.96% (95%CI:34.60,37.34) (n=2,857). Of the sample, 5.80% (95%CI:5.21,6.46) reported non-suicidal self-harm at age 14 only (n=472), 12.53% (95%CI:11.67,13.45) reported non-suicidal self-harm at age 17 only (n=1,006), 5.29% (95%CI:4.75,5.88) reported non-suicidal self-harm at ages 14 and 17 (n=402), while 8.75% (95%CI:7.95,9.61) reported a suicide attempt (n=633).

There was a total effect for withdrawal parenting practices ($RR=1.10$, $95\%CI:1.02,1.19$) but not harsh parenting ($RR=0.99$, $95\%CI:0.92,1.07$) on combined self-harm. In the marginal structural models, there was no statistical evidence of a controlled direct effect for either harsh ($RR=0.97$, $95\%CI:0.90,1.06$) or withdrawal parenting practices ($RR=1.08$, $95\%CI:1.00,1.18$). Across the models that accounted for adolescent emotional and behavioural concerns (Models 2-4, Table 3), there was a dose-response pattern with increasing severity of symptoms associated with a greater risk of combined self-harm.

In models examining harsh parenting and the risk of non-suicidal self-harm and suicide attempt, there was evidence of statistical differences by type of self-harm and age. More specifically, there was a total effect of harsh parenting on non-suicidal self-harm maintained across ages 14 and 17 ($OR=1.31$, $95\%CI:1.03,1.67$). However, in the marginal structural model, there was no statistical evidence of a controlled direct effect ($OR=1.28$, $95\%CI:0.98,1.66$), and only the top quartile of adolescent emotional and behavioural concerns exhibited evidence of a statistical relationship for non-suicidal self-harm maintained across adolescence ($OR=1.78$, $95\%CI:1.18,2.70$). There was no evidence of total effects or controlled direct effects for any of the other self-harm outcomes (Table 4). A dose-response relationship for adolescent emotional and behavioural concerns was less frequently observed for the multi-categorical self-harm outcome; however, the top 25th percentile of severity of emotional and behavioural concerns was associated with subsequent risk of all forms of self-harm (Table 4, Model 4).

In line with the above results for harsh parenting, withdrawal parenting practices did not exert total effects or controlled direct effects on any form of self-harm except non-suicidal self-harm maintained across ages 14 and 17 (Table 5). However, contrary to the above, withdrawal parenting practices exerted statistical evidence of both a total ($OR=1.45$, $95\%CI:1.14,1.85$) and

controlled direct effect (OR=1.40, 95%CI:1.06,1.86) on non-suicidal self-harm maintenance. In the marginal structural model, there was no effect of adolescent emotional and behavioural concerns on non-suicidal self-harm maintenance, regardless of the quartile of symptom-level and contrary to the results for the other self-harm categories (Table 5).

Sensitivity analyses

As expected, a greater proportion of adolescents were considered to have elevated (top 25th percentile) emotional and behavioural concerns when parents versus teachers were the sole reporters (eTable 1). In marginal structural models using the parent-only version of adolescent emotional and behavioural concerns, there was some model-dependent variability in the magnitude of effect estimates (eTables 2-4); however, the results for combined self-harm (eTable 2) and non-suicidal self-harm maintained across adolescence (eTables 3 and 4) were similar to our multi-informant results. When using continuously measured negative parenting practices, total effect estimates (eTable 5) corresponded with our main results. Finally, the results of the marginal structural models estimated using an alternative truncation of the IPTCW weights (0.5th and 99.5th percentiles) were also consistent with the main findings.

DISCUSSION

In a novel application of causal inference methodology, we have shown that harsh and withdrawal parenting practices appear to exert a causal effect on non-suicidal self-harm maintained between 14 and 17 years. There was no evidence of causal effects for early onset (age 14) but discontinued (age 17) non-suicidal self-harm, late onset non-suicidal self-harm (age 17), or ever suicide attempt. In models examining combined self-harm, with and without suicidal intent, there was further support that withdrawal parenting practices lead to self-harm. However,

by disaggregating findings by self-harm type and age, we identified a pronounced relationship between withdrawal parenting practices and non-suicidal self-harm.

Our findings align with conclusions from a recent systematic review and meta-analysis,² which found that negative parenting practices confer a prospective risk of adolescent non-suicidal self-harm (46% greater likelihood) in longitudinal studies with a minimum follow-up period of one year. The majority of the included studies in that review² used a single informant report, measured both exposure to parenting practices and self-harm in later childhood and adolescence (>10 years), and none employed causal inference techniques.

Using causal inference methods, we estimated the controlled direct effect of negative parenting practices on non-suicidal self-harm and suicide attempt, *not* mediated by adolescent emotional and behavioural concerns. In the presence of a total effect but the absence of statistical evidence of a controlled direct effect for harsh parenting on non-suicidal self-harm maintenance, our findings suggest that the effect may be transmitted through the most elevated symptoms of adolescent emotional and behavioural concerns. Our supplementary (parent-only) findings further support this conclusion. However, by relaxing standard thresholds for statistical evidence and considering the evidence in totality, including consistency of relationships and the limits of the confidence intervals for the controlled direct effects, negative parenting practices of harsh and withdrawal methods appear to cause non-suicidal self-harm that is maintained across adolescence, independent of adolescent emotional and behavioural concerns. Altogether, these findings suggest an alternative risk pathway.

Using the Avon Longitudinal Study of Parents and Children, Warne and colleagues²⁰ demonstrated that emotional dysregulation at age 7 is prospectively related to disordered eating and self-harm at 16 years. Emotional dysregulation includes difficulties in “the modulation of

emotional arousal”, and in “the awareness, understanding, and acceptance of emotions, and the ability to act in desired ways regardless of emotional state”.²¹ A dysregulated emotional response can include lack of impulse control (e.g., feeling out of control or an inability to control behaviours) or an inability to engage in goal-directed behaviour (e.g., accomplishing tasks) when feeling upset.²¹ In their review, Wolff et al²² reported a strong relationship between emotional dysregulation and non-suicidal self-harm after accounting for publication bias. Further, emotional dysregulation has been identified for its potential role in linking child maltreatment with adolescent self-harm.²³ Within clinical samples, negative family dynamics are proposed to affect self-harm behaviours through maladaptive emotion regulation.^{24,25} On the other hand, our lack of findings for suicide attempt is in accord with the earlier noted meta-analysis² that did not detect associations between negative parenting practices and suicidal ideation or between family dysfunction and suicide attempt. It is possible that the risk of more lethal self-harm is dependent on compounded exposure to early-life stress. After accounting for several adverse childhood experiences (e.g., household exposure to interpersonal violence and substance use), we did not detect effects of negative parenting practices on suicide attempt. Employing other epidemiologic approaches, such as examining interactions on the additive scale, may reveal causal effects layered by risk (exposure to negative parenting practices $\pm$ adverse childhood experiences).

In the present study, the transparent application of causal inference methods to estimate causal effects enables us to identify targets for intervention and prevention. Efforts to regularly and explicitly use causal inference are likely hampered by the inherent complexities in the study of psychiatric epidemiology, including but not limited to sufficient measurement of all relevant variables, adequate sample sizes, availability of multi-informant reports when applicable, bidirectional relationships, and the potential for reverse causation. Regarding the latter, we

accounted for emotional and behavioural symptoms at study entry (age 3) to ensure that parenting practices were not a response to early child behaviour, further strengthening our causal conclusions. Key limitations include that after excluding respondents who did not answer the self-harm-related questions at 14 or 17 years, the sample was reduced by 22.4-25.6% depending on the outcome. The further reduction in sample size, coupled with attrition, may have affected the statistical power and precision of our effect estimates. It is hoped that, as additional observational evidence using similar methodological approaches becomes available, meta-analysis may assist us in obtaining a more precise causal effect.²⁶

While we attempted to account for all potential confounders, residual confounding exists. For example, shared genetic liability was not fully accounted for and could explain the relationship between parenting practices and emotional and behavioural concerns or self-harm (for example²⁷). Also, while utilizing all available multi-informant data, the main parent/caregiver, who was most often the biological mother, exclusively reported on negative parenting practices, which may have led to some underreporting, especially for harsh methods (e.g., telling off). It is conceivable that the main parent/caregiver was less likely to underreport withdrawal parenting practices (e.g., taking away treats), as they may be perceived to be less negative. We expect any underreporting of harsh or withdrawal parenting practices to reduce the magnitude of the observed effect estimates. Despite this limitation, repeated ascertainment of the exposure may have helped to minimize the effect of measurement error; however, we would have preferred to have both parents/caregivers inform exposure ascertainment, when possible.

When there are dual parents/caregivers, soliciting feedback from both is routine in clinical assessment; both maternal and paternal reports of parenting practices independently predict internalizing symptoms in children and adolescents.²⁸ However, maternal and paternal

reports of some parenting behaviours, such as parental monitoring, are weakly to moderately correlated.²⁹ Understanding how parenting behaviours in two-parent/caregiver households may interact or compound to influence child development will permit a richer understanding of family dynamics as a whole.²⁸ Further, it may facilitate a more inclusive representation of partners,²⁸ in line with shifting societal attitudes towards a more equitable distribution of caregiving responsibilities. Nonetheless, negative parenting practices represent a public health concern due to their causal influence on later child development of non-suicidal self-harm, independent of other early-life stressors.

Public health efforts that seek to address the intermediate consequences of negative parenting practices should be tailored to the type of childhood exposure. Among children exposed to particularly harsh or punitive parenting practices, prevention efforts should first focus on ensuring emotional and behavioural concerns remain within typically developing levels. As needed and potentially through a stepped care treatment approach, adolescents exposed to harsh parenting practices and who continue to exhibit elevated emotional and behavioural concerns may require more intensive intervention. Among adolescents exposed to withdrawal parenting practices, addressing emotional and behavioural concerns will be of benefit; however, it may not be sufficient. In these cases, self-harm prevention efforts may want to consider emotional regulation strategies from the outset, such as those taught in dialectical behaviour therapy, for which there is good evidence.³⁰ Moving further upstream, we have demonstrated that to reduce self-harm at the population level, preventive medicine must strive to reduce childhood exposure to negative parenting practices. To strengthen prevention efforts, the parenting strategies that should be leveraged to promote resilience need to be isolated.

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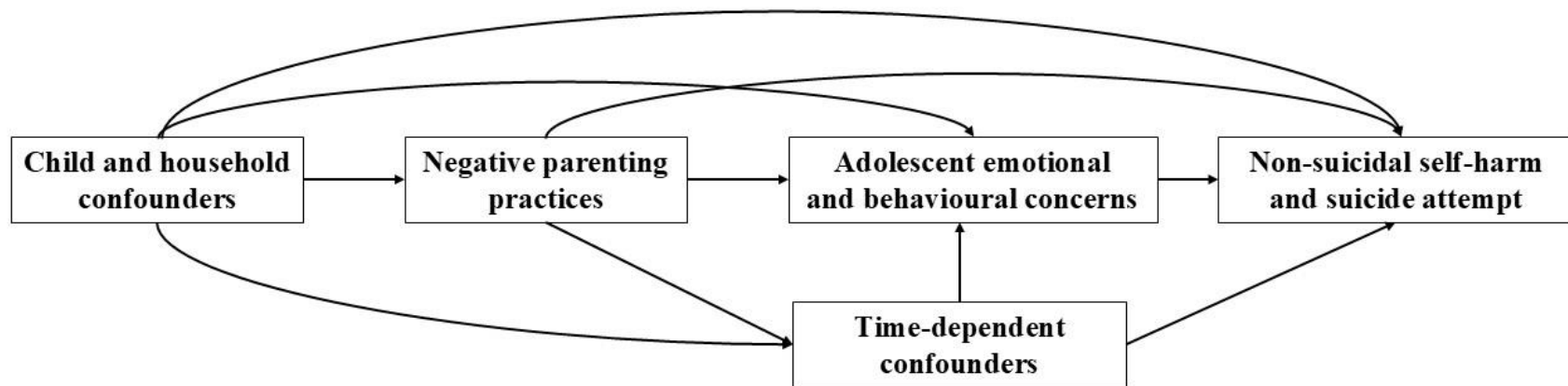


Figure. Directed acyclic graph (DAG) of the hypothesized causal effects of negative parenting practices and adolescent emotional and behavioural concerns on adolescent non-suicidal self-harm and suicide attempt. Adolescent emotional and behavioural concerns consist of internalizing and externalizing symptoms. Time-dependent confounders include adolescent substance use and physical activity.

Table 1. Study measures.				
	Ascertainment age	Measure	Reporter(s)	Scoring
Exposures				
Harsh parenting practices	3, 5, 7 years	Straus's Conflict Tactics Scale	Main respondent*	Median split of continuous average exposure (range: 1-15) to parent/caregiver smacking, shouting, or telling off when naughty
Withdrawal parenting practices	3, 5, 7 years	Straus's Conflict Tactics Scale	Main respondent	Median split of continuous average exposure (range: 1-15) to parent/caregiver ignoring, taking away treats, or sending to bedroom/chair when naughty
Mediator				
Adolescent emotional and behavioural health	11 years	Strengths and Difficulties Questionnaire (SDQ)	Main respondent and teacher	Quartiles of continuous measure of total difficulties (range: 0-35)
Outcomes				
Any self-harm	14, 17 years	Single question	Adolescent	Presence or absence (referent) of any self-harm (non-suicidal or suicidal) at age 14 or 17
Type of self-harm	14, 17 years	Multiple items	Adolescent	Absence of self-harm at age 14 and 17 (referent), non-suicidal self-harm at age 14 only, non-suicidal self-harm at age 17 only, non-suicidal self-harm at 14 and 17 years (self-harm maintenance), and (ever) suicide attempt (17 years)
Household confounders				
Parental/caregiver age	3 years	Single question	Main and partner† respondents	Continuous (range: 17-59.5 years)
Parental/caregiver education	3 years	Single question	Main and partner respondents	Bachelor of Arts equivalent or higher versus other (e.g., secondary education, overseas qualification only [referent])
Low income	3 years	Single question	Main respondent	Family income <£22,000 versus ≥£22,000 (referent)

Parental/caregiver immigrant	3 years	Single question	Main and partner respondents	Whether respondent born outside the UK versus inside the UK (referent)
Biological parents in household	3 years	Single question	Main respondent	Whether biological parent(s) are not in household (e.g., divorced, deceased) versus living in household (referent)
Grandparents in household	3 years	Single question	Main respondent	Whether maternal or paternal grandparent is living in the household versus not (referent)
Number of children in household	3 years	Single question	Main respondent	Number of children in the household (range: 1-13) organized as one child (survey child respondent [referent]), two children, or three+
Main parent/caregiver depression/anxiety diagnosis	3 years	Single question	Main respondent	Whether ever diagnosed with depression and/or serious anxiety versus not (referent)
Parental/caregiver psychological distress	3 years	Kessler Psychological Distress (K6) Scale	Main and partner respondents	Presence of psychological distress (K6 score ≥ 13) versus not (referent)
Parental/caregiver general health	3 years	Single question	Main and partner respondents	Presence of fair/poor, good, or excellent (referent) general health
Parental/caregiver longstanding illness	3 years	Single question	Main and partner respondents	Presence of longstanding illness versus not (referent)
Household substance use exposure	3 years	Multiple items	Main and partner respondents	Presence of household substance use exposure (any or all: currently smokes cigarettes/cigars/pipes, uses recreational drugs occasionally or regularly, consumes alcohol 5+ times a week) versus not (referent)
Household interpersonal violence exposure	3 years	Single question	Main and partner respondents	Partner ever used force in the relationship versus not (referent)
Child confounders				
Sex	3 years	Single question	Main respondent	Female or male (referent)
Age	3 years	Single question	Main respondent	Continuous (range: 2.80-4.52 years)

Visible minority	3 years	Single question	Main respondent	Visible minority (e.g., Pakistani and Bangladeshi, Indian, Black or Black British) or not (referent)
Longstanding illness	3 years	Single question	Main respondent	Any longstanding health condition(s) versus not (referent)
Emotional and behavioural health of the child	3 years	Strengths and Difficulties Questionnaire (SDQ)	Main respondent	Continuous measure of total difficulties (range: 0-30)
Time-dependent confounders				
Adolescent substance use	11 years	Multiple items	Adolescent	Presence or absence (referent) of ever consuming an alcoholic beverage or trying a cigarette
Physical activity	11 years	Single question	Adolescent	Frequency plays sports or active games indoors or outdoors most days versus not (referent)
* Denotes main parent/caregiver, most often the biological mother. † Denotes partner parent/caregiver, most often the biological father.				

Table 2. Descriptive characteristics of the sample.						
	Total sample (n=8,287) % (nunweighted)	Combined self-harm (n=2,857) % (nunweighted)	NSSH at age 14 (n=472) % (nunweighted)	NSSH at age 17 (n=1,006) % (nunweighted)	NSSH maintenance (n=402) % (nunweighted)	Suicide attempt (n=633) % (nunweighted)
<i>Exposures (ages 3-7)</i>						
Harsh parenting practices— <i>M (SE)</i>	8.60 (0.03)	8.63 (0.04)	8.63 (0.12)	8.52 (0.06)	8.82 (0.12)	8.64 (0.10)
Yes	51.3 (4,173)	51.5 (1,457)	49.7 (236)	49.4 (486)	57.4 (214)	51.9 (341)
No	46.7 (3,914)	46.8 (1,347)	48.2 (226)	48.7 (496)	42.5 (187)	46.3 (282)
Missing	2.0 (200)	1.7 (53)	2.1 (10)	1.9 (24)	<1 (1)	1.8 (10)
Withdrawal parenting practices— <i>M (SE)</i>	7.92 (0.03)	8.06 (0.05)	7.91 (0.11)	7.87 (0.07)	8.36 (0.14)	8.14 (0.11)
Yes	50.2 (4,048)	53.0 (1,462))	51.8 (246)	48.7 (476)	59.7 (222)	54.3 (335)
No	47.7 (4,037)	45.4 (1,341)	46.1 (216)	49.4 (505)	40.2 (179)	43.9 (288)
Missing	2.1 (202)	1.7 (54)	2.1 (10)	1.9 (25)	<1 (1)	1.8 (10)
<i>Mediator (age 11)</i>						
Adolescent emotional and behavioural health— <i>M (SE)</i>	6.88 (0.09)	7.85 (0.16)	7.26 (0.36)	6.74 (0.22)	7.44 (0.39)	9.16 (0.34)
Quartile 1 (bottom 25 th oile)	27.2 (2,310)	21.6 (654)	22.0 (125)	25.3 (265)	26.3 (103)	17.2 (111)
Quartile 2	27.7 (2,326)	26.7 (783)	30.8 (135)	30.9 (308)	26.2 (118)	21.9 (153)
Quartile 3	22.0 (1,818)	22.9 (665)	23.7 (109)	22.5 (226)	22.2 (96)	23.0 (144)
Quartile 4 (top 25 th oile)	20.1 (1,551)	25.8 (663)	20.7 (86)	18.2 (175)	24.0 (79)	35.3 (207)
Missing	3.0 (282)	3.1 (92)	2.8 (17)	3.2 (32)	1.4 (6)	2.6 (18)
<i>Child confounders (age 3)</i>						
Sex						
Female	51.5 (4,324)	63.4 (1,858)	62.4 (306)	53.1 (564)	76.4 (316)	67.4 (440)
Male	48.5 (3,963)	36.6 (999)	37.6 (166)	46.9 (442)	23.6 (86)	32.6 (193)
Age— <i>M (SE)</i>	3.13 (0.004)	3.13 (0.01)	3.12 (0.01)	3.13 (0.01)	3.12 (0.01)	3.14 (0.01)
Missing	<1 (3)	<1 (1)	0 (0)	<1 (1)	0 (0)	0 (0)
Visible minority						
Yes	13.5 (1,400)	10.6 (367)	11.6 (68)	12.5 (142)	7.1 (41)	9.7 (75)

No	86.0 (6,848)	88.9 (2,473)	87.7 (401)	86.6 (856)	92.1 (359)	90.3 (557)
Missing	<1 (39)	<1 (17)	<1 (3)	<1 (8)	<1 (4)	<1 (1)
Emotional and behavioural health	9.34 (0.10)	9.69 (0.15)	9.41 (0.23)	9.10 (0.19)	9.39 (0.31)	10.37 (0.30)
Missing	5.9 (545)	5.2 (169)	4.3 (23)	5.3 (63)	4.6 (20)	5.1 (39)
Longstanding illness						
Yes	14.7 (1,184)	16.2 (445)	13.6 (59)	15.1 (148)	18.5 (65)	20.9 (124)
No	84.6 (7,053)	83.1 (2,393)	86.1 (411)	84.2 (850)	80.6 (334)	78.6 (506)
Missing	<1 (50)	<1 (19)	<1 (2)	<1 (8)	<1 (3)	<1 (3)
Household confounders (age 3)						
Parental/caregiver age— <i>M (SE)</i>	33.24 (0.14)	32.77 (0.19)	33.18 (0.35)	33.86 (0.25)	33.07 (0.42)	31.87 (0.34)
Missing	<1 (4)	<1 (2)	0 (0)	<1 (1)	0 (0)	<1 (1)
Parental/caregiver education						
Bachelor's degree+	42.1 (3,756)	38.4 (1,213)	38.2 (201)	49.4 (508)	43.4 (190)	29.5 (217)
<Bachelor's degree	57.7 (4,507)	61.4 (1,634)	61.8 (271)	50.4 (494)	56.5 (211)	70.2 (413)
Missing	<1 (24)	<1 (10)	0 (0)	<1 (4)	<1 (1)	<1 (3)
Low income						
Yes	40.7 (3,302)	45.9 (1,241)	44.4 (204)	37.1 (362)	42.4 (165)	56.3 (329)
No	45.7 (3,821)	41.3 (1,243)	41.5 (205)	49.6 (502)	45.9 (189)	32.6 (231)
Missing	13.6 (1,164)	12.8 (373)	14.1 (63)	13.3 (142)	11.7 (48)	11.1 (73)
Parental/caregiver immigrant						
Yes	15.3 (1,540)	12.2 (425)	13.6 (70)	15.1 (175)	10.1 (53)	10.5 (84)
No	84.2 (6,710)	87.3 (2,418)	86.3 (401)	84.6 (827)	89.4 (347)	88.8 (545)
Missing	<1 (37)	<1 (14)	<1 (1)	<1 (4)	<1 (2)	<1 (4)
Biological parent(s) not household resident						
Yes	18.9 (1,278)	25.0 (571)	20.5 (84)	17.3 (144)	22.3 (69)	31.9 (160)
No	81.1 (7,009)	75.0 (2,286)	79.5 (388)	82.7 (862)	77.8 (333)	68.1 (473)
Grandparents in household						
Yes	4.0 (352)	3.9 (107)	2.8 (15)	2.8 (36)	3.4 (17)	4.6 (25)
No	96.0 (7,935)	96.1 (2,750)	97.2 (457)	97.2 (970)	96.6 (385)	95.4 (608)

Number of children in household						
Single child	24.2 (1,976)	27.4 (769)	25.6 (114)	26.6 (270)	27.0 (109)	24.4 (162)
Two children	47.3 (3,881)	44.7 (1,293)	46.4 (220)	49.1 (487)	44.6 (185)	42.4 (271)
Three+	28.5 (2,430)	27.9 (795)	28.0 (138)	24.3 (249)	28.4 (108)	33.3 (200)
Main parent/caregiver depression/anxiety diagnosis						
Yes	28.9 (2,218)	35.6 (941)	27.4 (123)	30.6 (284)	31.8 (127)	44.2 (268)
No	70.5 (6,026)	63.9 (1,899)	72.3 (347)	68.9 (716)	67.7 (273)	55.1 (361)
Missing	<1 (43)	<1 (17)	<1 (2)	<1 (6)	<1 (2)	<1 (4)
Parental/caregiver psychological distress						
Yes	3.8 (291)	5.3 (138)	4.7 (18)	3.5 (34)	2.8 (13)	8.4 (47)
No	87.2 (7,115)	86.9 (2,470)	88.7 (420)	87.0 (868)	91.3 (364)	84.2 (532)
Missing	9.0 (881)	7.8 (249)	6.6 (34)	9.6 (104)	6.0 (25)	7.3 (54)
Parental/caregiver general health						
Fair/poor	24.8 (2,024)	28.9 (816)	23.9 (108)	24.6 (257)	26.1 (106)	37.1 (239)
Good	57.1 (4,773)	55.3 (1,586)	58.7 (274)	57.5 (570)	59.2 (234)	47.9 (311)
Excellent	17.6 (1,450)	15.4 (441)	17.1 (88)	17.5 (174)	14.2 (60)	14.4 (80)
Missing	<1 (40)	<1 (14)	<1 (2)	<1 (5)	<1 (2)	<1 (3)
Parental/caregiver longstanding illness						
Yes	33.8 (2,762)	37.5 (1,049)	33.7 (159)	34.3 (349)	38.7 (152)	43.3 (269)
No	65.7 (5,489)	62.2 (1,797)	66.2 (312)	65.3 (652)	60.8 (248)	56.5 (363)
Missing	<1 (36)	<1 (11)	<1 (1)	<1 (5)	<1 (2)	<1 (1)
Household substance use exposure						
Yes	49.6 (3,816)	57.4 (1,538)	57.2 (248)	52.7 (508)	51.5 (198)	63.0 (372)
No	44.2 (3,861)	38.1 (1,172)	40.5 (204)	41.1 (433)	44.9 (190)	33.3 (233)
Missing	6.2 (610)	4.6 (147)	2.3 (20)	6.3 (65)	3.6 (14)	3.7 (28)
Household interpersonal violence exposure						
Yes	9.0 (697)	9.7 (273)	11.0 (48)	9.1 (94)	10.3 (39)	10.5 (66)

No	65.9 (5,620)	61.1 (1,848)	66.0 (317)	66.6 (689)	65.9 (282)	55.2 (375)
Missing	25.1 (1,970)	29.1 (736)	23.0 (107)	24.3 (223)	23.8 (81)	34.3 (192)
<i>Time-dependent confounders (age 11)</i>						
Adolescent substance use						
Yes	14.0 (993)	18.5 (452)	16.6 (72)	15.5 (131)	19.1 (64)	22.3 (124)
No	82.2 (6,976)	77.5 (2,292)	79.5 (381)	81.2 (839)	76.4 (323)	74.5 (485)
Missing	3.8 (318)	3.9 (113)	3.9 (19)	3.3 (36)	4.6 (15)	3.2 (24)
Adolescent physical activity						
Most days	55.5 (4,711)	48.3 (1,421)	49.8 (242)	51.7 (528)	51.0 (202)	43.8 (283)
<Most days	42.6 (3,409)	50.3 (1,387)	49.0 (223)	47.3 (463)	48.0 (194)	54.8 (338)
Missing	1.9 (167)	1.3 (49)	1.2 (7)	1.0 (15)	1.0 (6)	1.5 (12)
Note. Combined self-harm includes self-harm with and without suicidal intent. NSSH = non-suicidal self-harm. %ile = percentile.						

Table 3. Harsh and withdrawal parenting practices and risk of combined self-harm (with and without suicidal intent) (n=8,287).				
	Model 1* RR (95% CI)	Model 2† RR (95% CI)	Model 3‡ RR (95% CI)	Model 4§ RR (95% CI)
<i>Harsh parenting</i>				
Harsh parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	0.99 (0.92, 1.07)	0.96 (0.90, 1.04)	0.96 (0.90, 1.04)	0.97 (0.90, 1.06)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th ile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.23 (1.11, 1.36)	1.21 (1.09, 1.34)	1.22 (1.07, 1.39)
Quartile 3		1.30 (1.16, 1.44)	1.27 (1.14, 1.41)	1.33 (1.17, 1.52)
Quartile 4 (top 25 th ile)		1.55 (1.39, 1.74)	1.49 (1.33, 1.67)	1.57 (1.38, 1.79)
<i>Withdrawal parenting</i>				
Withdrawal parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	1.10 (1.02, 1.19)	1.07 (0.99, 1.16)	1.08 (1.00, 1.16)	1.08 (1.00, 1.18)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th ile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.22 (1.10, 1.36)	1.20 (1.08, 1.33)	1.17 (1.02, 1.33)
Quartile 3		1.28 (1.15, 1.43)	1.26 (1.13, 1.40)	1.31 (1.14, 1.49)
Quartile 4 (top 25 th ile)		1.53 (1.37, 1.71)	1.47 (1.31, 1.64)	1.49 (1.31, 1.70)
* Total effect of harsh and withdrawal parenting practices (ages 3-7), respectively, on adolescent self-harm at 14/17 years. These traditional regression models included adjustment for child and household confounders. † Traditional regression with exposure (parenting practice), child and household confounders, and the mediator (adolescent emotional and behavioural concerns). ‡ Traditional regression with exposure (parenting practice), child and household confounders, the mediator (adolescent emotional and behavioural concerns), and time-dependent confounders. § Marginal structural (causal) model.				

¶ %ile = percentile.

Table 4. Harsh parenting practices and risk of non-suicidal self-harm and suicide attempt (n=7,943).				
	Model 1* OR (95% CI)	Model 2† OR (95% CI)	Model 3‡ OR (95% CI)	Model 4§ OR (95% CI)
Harsh parenting				
<i>Non-suicidal self-harm at age 14 only</i>				
Harsh parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	0.99 (0.77, 1.26)	0.94 (0.74, 1.21)	0.95 (0.74, 1.21)	0.99 (0.75, 1.31)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th oile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.60 (1.15, 2.22)	1.56 (1.13, 2.17)	1.43 (0.99, 2.07)
Quartile 3		1.54 (1.13, 2.10)	1.49 (1.10, 2.03)	1.44 (0.99, 2.11)
Quartile 4 (top 25 th oile)		1.86 (1.26, 2.75)	1.78 (1.20, 2.63)	1.79 (1.17, 2.72)
<i>Non-suicidal self-harm at age 17 only</i>				
Harsh parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	0.92 (0.78, 1.09)	0.89 (0.75, 1.06)	0.90 (0.76, 1.06)	0.90 (0.74, 1.10)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th oile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.37 (1.10, 1.72)	1.34 (1.07, 1.68)	1.44 (1.10, 1.90)
Quartile 3		1.42 (1.14, 1.78)	1.38 (1.10, 1.73)	1.48 (1.13, 1.96)
Quartile 4 (top 25 th oile)		1.39 (1.06, 1.82)	1.33 (1.01, 1.76)	1.58 (1.15, 2.16)
<i>Non-suicidal self-harm at ages 14 and 17</i>				
Harsh parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	1.31 (1.03, 1.67)	1.25 (0.98, 1.59)	1.24 (0.97, 1.59)	1.28 (0.98, 1.66)

Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th %ile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.13 (0.80, 1.60)	1.10 (0.78, 1.57)	1.04 (0.70, 1.55)
Quartile 3		1.25 (0.89, 1.77)	1.21 (0.86, 1.71)	1.16 (0.78, 1.73)
Quartile 4 (top 25 th %ile)		2.09 (1.46, 2.99)	1.98 (1.38, 2.84)	1.78 (1.18, 2.70)
<i>Suicide attempt (age 17)</i>				
Harsh parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	1.03 (0.77, 1.22)	0.89 (0.71, 1.13)	0.89 (0.70, 1.13)	0.95 (0.73, 1.22)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th %ile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.29 (0.92, 1.82)	1.25 (0.89, 1.76)	1.22 (0.81, 1.81)
Quartile 3		1.89 (1.38, 2.58)	1.80 (1.30, 2.47)	1.97 (1.31, 2.95)
Quartile 4 (top 25 th %ile)		2.99 (2.10, 1.57)	2.78 (1.96, 3.96)	2.61 (1.76, 3.87)
* Total effect of harsh parenting practices (ages 3-7) on adolescent self-harm at 14/17 years. This traditional regression model included adjustment of child and household confounders. † Traditional regression with harsh parenting, child and household confounders, and the mediator (adolescent emotional and behavioural concerns). ‡ Traditional regression with harsh parenting, child and household confounders, the mediator (adolescent emotional and behavioural concerns), and time-dependent confounders. § Marginal structural (causal) model. ¶ %ile = percentile.				

Table 5. Withdrawal parenting practices and risk of non-suicidal self-harm and suicide attempt (n=7,943).				
	Model 1* OR (95% CI)	Model 2† OR (95% CI)	Model 3‡ OR (95% CI)	Model 4§ OR (95% CI)
Withdrawal parenting				
<i>Non-suicidal self-harm at age 14 only</i>				
Withdrawal parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	1.25 (0.99, 1.58)	1.20 (0.96, 1.52)	1.22 (0.96, 1.53)	1.14 (0.88, 1.47)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th oile)¶		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.57 (1.13, 2.18)	1.53 (1.10, 2.13)	1.27 (0.88, 1.83)
Quartile 3		1.51 (1.11, 2.06)	1.46 (1.07, 1.99)	1.43 (0.97, 2.10)
Quartile 4 (top 25 th oile)		1.79 (1.22, 2.64)	1.71 (1.16, 2.53)	1.58 (1.06, 2.36)
<i>Non-suicidal self-harm at age 17 only</i>				
Withdrawal parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	0.98 (0.82, 1.16)	1.04 (0.81, 1.14)	0.97 (0.81, 1.15)	0.98 (0.80, 1.20)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th oile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.37 (1.09, 1.71)	1.33 (1.07, 1.67)	1.38 (1.06, 1.81)
Quartile 3		1.41 (1.13, 1.75)	1.36 (1.09, 1.70)	1.53 (1.16, 2.02)
Quartile 4 (top 25 th oile)		1.37 (1.05, 1.79)	1.32 (1.00, 1.73)	1.52 (1.11, 2.07)
<i>Non-suicidal self-harm at ages 14 and 17</i>				

Withdrawal parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	1.45 (1.14, 1.85)	1.39 (1.09, 1.78)	1.41 (1.10, 1.81)	1.40 (1.06, 1.86)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th %ile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.12 (0.79, 1.59)	1.09 (0.77, 1.55)	0.98 (0.66, 1.46)
Quartile 3		1.25 (0.89, 1.77)	1.21 (0.86, 1.70)	1.12 (0.75, 1.68)
Quartile 4 (top 25 th %ile)		2.06 (1.44, 2.96)	1.96 (1.37, 2.81)	1.51 (0.99, 2.32)
<i>Suicide attempt (age 17)</i>				
Withdrawal parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	1.20 (0.94, 1.54)	1.14 (0.89, 1.45)	1.16 (0.90, 1.49)	1.15 (0.90, 1.48)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th %ile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.28 (0.91, 1.79)	1.23 (0.72, 1.73)	1.08 (0.73, 1.60)
Quartile 3		1.85 (1.35, 2.54)	1.76 (1.27, 2.43)	1.73 (1.13, 2.49)
Quartile 4 (top 25 th %ile)		2.89 (2.03, 4.11)	2.68 (1.88, 3.81)	2.37 (1.62, 3.46)
* Total effect of withdrawal parenting practices (ages 3-7) on adolescent self-harm at 14/17 years. This traditional regression model included adjustment of child and household confounders. † Traditional regression with withdrawal parenting, child and household confounders, and the mediator (adolescent emotional and behavioural concerns). ‡ Traditional regression with withdrawal parenting, child and household confounders, the mediator (adolescent emotional and behavioural concerns), and time-dependent confounders. § Marginal structural (causal) model. ¶ %ile = percentile.				

eAppendix 1. Supplementary materials

eMethods

Calculation of the stabilized inverse probability of censoring (IPCW) weight

We fitted two regression models: (1) a logistic regression to obtain the predicted probability of being lost to follow-up (1) versus not (0), with the lost to follow-up flag as the outcome and no predictors (i.e., numerator for weight), and, (2) a logistic regression with the lost to follow-up flag as the outcome and two household measures hypothesized to be related to attrition (depression/anxiety diagnosis of the main parent/caregiver respondent [most often the biological mother] and household low income status) as the predictors (i.e., denominator for weight). Each regression was fitted within each $m=54$ dataset. Dividing the numerator by the denominator produced the IPCW weight.

Calculation of the stabilized inverse probability of treatment (IPTW) weights

We fitted four regression models to obtain the predicted probabilities for the weights: (1) a logistic regression with the exposure as the outcome and no predictors (i.e., numerator for weight 1), (2) a logistic regression with the exposure as the outcome and the child and household confounders as the predictors (i.e., denominator for weight 1), (3) a multinomial logistic regression with the mediator as the outcome and the exposure as the sole predictor (i.e., numerator for weight 2), and, (4) a multinomial logistic regression with the mediator as the outcome and all predictors: exposure, child and household confounders, and the time-dependent confounders (i.e., denominator for weight 2). Each regression was fitted within each $m=54$ dataset. After the division of the respective numerator by the denominator, we multiplied weight 1 * weight 2 to obtain the overall model-specific IPTW weight. As recommended,¹ the

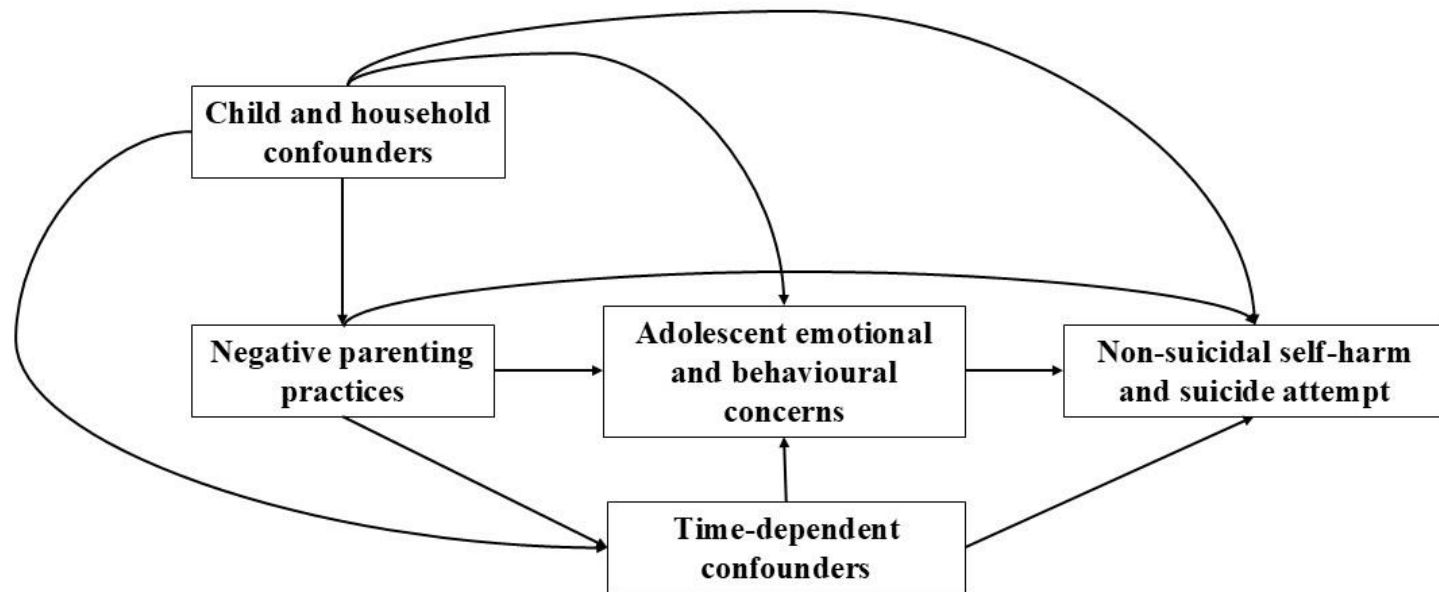
regressions used to calculate the IPTW weights accounted for the complex sampling design of the Millennium Cohort Survey (MCS) by using the respective survey weight.

Final stabilized inverse probability of treatment and censoring (IPTCW) weight

The three-way product of the weights (IPCW * IPTW * respective MCS survey weight) defined our final IPTCW weight(s), with the inclusion of the MCS survey weights considered the most robust approach.¹

References

1. Ridgeway G, Kovalchik SA, Griffin BA, Kabeto MU. Propensity Score Analysis with Survey Weighted Data. *Journal of Causal Inference*. 2015;3(2):237-249. doi:10.1515/jci-2014-0039



eFigure. Causal diagram of the hypothesized causal effects of negative parenting practices and adolescent emotional and behavioural concerns on adolescent non-suicidal self-harm and suicide attempt. Adolescent emotional and behavioural concerns consist of internalizing and externalizing symptoms. Time-dependent confounders include adolescent substance use and physical activity.

eTable 1. Adolescent emotional and behavioural health (age 11 mediator) by reporter (parent versus teacher).						
Adolescent emotional and behavioural health	Total sample (n=8,287) % (n_{unweighted})	Combined self-harm (n=2,857) % (n_{unweighted})	NSSH at age 14 (n=472) % (n_{unweighted})	NSSH at age 17 (n=1,006) % (n_{unweighted})	NSSH maintenance (n=402) % (n_{unweighted})	Suicide attempt (n=633) % (n_{unweighted})
Parent report*						
Quartile 1 (bottom 25 th oile)	25.6 (2,195)	21.2 (629)	19.6 (108)	25.7 (266)	21.3 (86)	19.7 (121)
Quartile 2	24.9 (2,114)	23.3 (699)	28.4 (131)	24.1 (254)	25.4 (115)	18.1 (126)
Quartile 3	22.2 (1,847)	22.0 (646)	21.7 (105)	24.2 (230)	23.1 (99)	21.1 (136)
Quartile 4 (top 25 th oile)	24.3 (1,849)	30.5 (791)	27.5 (111)	22.9 (224)	28.7 (96)	38.6 (232)
Missing	3.0 (282)	3.1 (92)	2.8 (17)	3.2 (32)	1.4 (6)	2.6 (18)
Teacher report†						
Quartile 1 (bottom 25 th oile)	17.7 (1,307)	15.7 (422)	15.8 (74)	19.7 (174)	19.7 (72)	12.4 (72)
Quartile 2	19.2 (1,445)	18.3 (487)	25.9 (102)	19.0 (175)	17.9 (68)	16.4 (100)
Quartile 3	14.3 (1,038)	14.4 (366)	15.7 (60)	15.2 (132)	12.5 (52)	13.1 (81)
Quartile 4 (top 25 th oile)	14.6 (995)	17.1 (402)	14.9 (64)	13.9 (115)	17.4 (52)	19.9 (105)
Missing	34.2 (3,502)	34.5 (1,180)	27.7 (172)	32.3 (410)	32.5 (158)	38.1 (275)
Note. Combined self-harm includes self-harm with and without suicidal intent. NSSH = non-suicidal self-harm.						
* The range of parent-reported adolescent emotional and behavioural health was 0-36.						
† The range of teacher-reported adolescent emotional and behavioural health was 0-33.						

eTable 2. Harsh and withdrawal parenting practices and risk of combined self-harm (with and without suicidal intent) with parent-only report of adolescent emotional and behavioural concerns (n=8,287).

	Model 1* RR (95% CI)	Model 2† RR (95% CI)	Model 3‡ RR (95% CI)	Model 4§ RR (95% CI)
<i>Harsh parenting</i>				
Harsh parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	0.99 (0.92, 1.07)	0.97 (0.90, 1.04)	0.97 (0.90, 1.04)	0.97 (0.89, 1.06)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th oile)¶		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.13 (1.01, 1.26)	1.11 (0.99, 1.23)	1.12 (0.98, 1.29)
Quartile 3		1.18 (1.07, 1.31)	1.16 (1.05, 1.29)	1.16 (1.01, 1.33)
Quartile 4 (top 25 th oile)		1.46 (1.31, 1.64)	1.40 (1.25, 1.57)	1.47 (1.29, 1.68)
<i>Withdrawal parenting</i>				
Withdrawal parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	1.10 (1.02, 1.19)	1.08 (1.00, 1.16)	1.08 (1.00, 1.17)	1.09 (1.00, 1.19)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th oile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.12 (1.00, 1.25)	1.09 (0.98, 1.22)	1.10 (0.96, 1.26)
Quartile 3		1.17 (1.05, 1.29)	1.15 (1.03, 1.27)	1.14 (0.99, 1.31)
Quartile 4 (top 25 th oile)		1.44 (1.29, 1.61)	1.37 (1.23, 1.54)	1.41 (1.24, 1.62)

* Total effect of harsh and withdrawal parenting practices (ages 3-7), respectively, on adolescent self-harm at 14/17 years. These traditional regression models included adjustment for child and household confounders.

† Traditional regression with exposure (parenting practice), child and household confounders, and the mediator (adolescent emotional and behavioural concerns).

‡ Traditional regression with exposure (parenting practice), child and household confounders, the mediator (adolescent emotional and behavioural concerns), and time-dependent confounders.

§ Marginal structural (causal) model.
¶ %ile = percentile.

eTable 3. Harsh parenting practices and risk of non-suicidal self-harm and suicide attempt with parent-only report of adolescent emotional and behavioural concerns (n=7,943).				
	Model 1* OR (95% CI)	Model 2† OR (95% CI)	Model 3‡ OR (95% CI)	Model 4§ OR (95% CI)
Harsh parenting				
<i>Non-suicidal self-harm at age 14 only</i>				
Harsh parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	0.99 (0.77, 1.26)	0.94 (0.73, 1.20)	0.94 (0.73, 1.21)	1.01 (0.77, 1.34)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th oile)¶		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.61 (1.12, 2.31)	1.56 (1.09, 2.26)	1.47 (1.01, 2.15)
Quartile 3		1.43 (0.99, 2.07)	1.39 (0.96, 2.01)	1.29 (0.88, 1.88)
Quartile 4 (top 25 th oile)		2.03 (1.38, 3.00)	1.92 (1.30, 2.84)	1.81 (1.19, 2.74)
<i>Non-suicidal self-harm at age 17 only</i>				
Harsh parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	0.92 (0.78, 1.09)	0.90 (0.76, 1.06)	0.90 (0.76, 1.07)	0.90 (0.74, 1.10)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th oile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.07 (0.87, 1.31)	1.04 (0.85, 1.28)	1.01 (0.76, 1.35)
Quartile 3		1.26 (0.91, 1.60)	1.22 (0.96, 1.56)	1.19 (1.02, 1.88)
Quartile 4 (top 25 th oile)		1.36 (1.04, 1.78)	1.29 (0.98, 1.70)	1.38 (1.02, 1.88)
<i>Non-suicidal self-harm at ages 14 and 17</i>				
Harsh parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)

High	1.31 (1.03, 1.67)	1.24 (0.98, 1.58)	1.24 (0.98, 1.58)	1.18 (0.89, 1.54)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th %ile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.31 (0.93, 1.82)	1.27 (0.91, 1.78)	1.38 (0.90, 2.12)
Quartile 3		1.42 (1.02, 1.99)	1.37 (0.98, 1.92)	1.34 (0.87, 2.06)
Quartile 4 (top 25 th %ile)		2.05 (1.43, 2.94)	1.92 (1.34, 2.75)	1.94 (1.24, 3.04)
<i>Suicide attempt (age 17)</i>				
Harsh parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	1.03 (0.77, 1.22)	0.92 (0.72, 1.16)	0.92 (0.72, 1.16)	0.98 (0.66, 1.46)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th %ile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		0.95 (0.67, 1.33)	0.91 (0.64, 1.28)	0.98 (0.66, 1.46)
Quartile 3		1.21 (0.90, 1.63)	1.16 (0.86, 1.58)	1.26 (0.85, 1.87)
Quartile 4 (top 25 th %ile)		2.17 (1.59, 2.98)	1.97 (1.43, 2.70)	2.13 (1.46, 3.12)
* Total effect of harsh parenting practices (ages 3-7) on adolescent self-harm at 14/17 years. This traditional regression model included adjustment of child and household confounders. † Traditional regression with harsh parenting, child and household confounders, and the mediator (adolescent emotional and behavioural concerns). ‡ Traditional regression with harsh parenting, child and household confounders, the mediator (adolescent emotional and behavioural concerns), and time-dependent confounders. § Marginal structural (causal) model. ¶ %ile = percentile.				

eTable 4. Withdrawal parenting and risk of non-suicidal self-harm and suicide attempt with parent-only report of adolescent emotional and behavioural concerns (n=7,943).				
	Model 1* OR (95% CI)	Model 2† OR (95% CI)	Model 3‡ OR (95% CI)	Model 4§ OR (95% CI)
Withdrawal parenting				
<i>Non-suicidal self-harm at age 14 only</i>				
Withdrawal parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	1.25 (0.99, 1.58)	1.20 (0.95, 1.51)	1.21 (0.96, 1.53)	1.16 (0.89, 1.50)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th oile)¶		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.57 (1.09, 2.26)	1.53 (1.06, 2.21)	1.44 (0.97, 2.12)
Quartile 3		1.39 (0.96, 2.02)	1.35 (0.93, 1.95)	1.26 (0.86, 1.86)
Quartile 4 (top 25 th oile)		1.96 (1.33, 2.87)	1.84 (1.25, 2.72)	1.70 (1.13, 2.57)
<i>Non-suicidal self-harm at age 17 only</i>				
Withdrawal parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	0.98 (0.82, 1.16)	0.96 (0.81, 1.14)	0.97 (0.82, 1.15)	1.00 (0.81, 1.22)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th oile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.06 (0.86, 1.30)	1.03 (0.84, 1.27)	1.04 (0.78, 1.39)
Quartile 3		1.25 (0.98, 1.59)	1.21 (0.95, 1.54)	1.20 (0.90, 1.61)
Quartile 4 (top 25 th oile)		1.34 (1.03, 1.75)	1.27 (0.97, 1.67)	1.40 (1.03, 1.91)
<i>Non-suicidal self-harm at ages 14 and 17</i>				

Withdrawal parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	1.45 (1.14, 1.85)	1.40 (1.09, 1.78)	1.43 (1.10, 1.81)	1.33 (1.00, 1.78)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th %ile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		1.30 (0.93, 1.81)	1.27 (0.91, 1.77)	1.36 (0.87, 2.11)
Quartile 3		1.42 (1.01, 1.98)	1.37 (0.98, 1.91)	1.25 (0.80, 1.95)
Quartile 4 (top 25 th %ile)		2.04 (1.42, 2.93)	1.90 (1.33, 2.73)	1.72 (1.07, 2.75)
<i>Suicide attempt (age 17)</i>				
Withdrawal parenting practices				
Low	1 (ref)	1 (ref)	1 (ref)	1 (ref)
High	1.20 (0.94, 1.54)	1.16 (0.90, 1.49)	1.18 (0.92, 1.53)	1.19 (0.93, 1.54)
Adolescent emotional and behavioural concerns				
Quartile 1 (bottom 25 th %ile)		1 (ref)	1 (ref)	1 (ref)
Quartile 2		0.93 (0.66, 1.31)	0.89 (0.63, 1.25)	0.83 (0.56, 1.24)
Quartile 3		1.18 (0.87, 1.61)	1.14 (0.86, 1.55)	1.15 (0.78, 1.71)
Quartile 4 (top 25 th %ile)		2.10 (1.54, 2.87)	1.89 (1.38, 2.60)	1.88 (1.30, 2.74)
* Total effect of withdrawal parenting practices (ages 3-7) on adolescent self-harm at 14/17 years. This traditional regression model included adjustment of child and household confounders. † Traditional regression with withdrawal parenting, child and household confounders, and the mediator (adolescent emotional and behavioural concerns). ‡ Traditional regression with withdrawal parenting, child and household confounders, the mediator (adolescent emotional and behavioural concerns), and time-dependent confounders. § Marginal structural (causal) model. ¶ %ile = percentile.				

eTable 5. Sensitivity analysis examining the total effect of continuously measured harsh and withdrawal parenting practices and risk of combined self-harm (with and without suicidal intent), non-suicidal self-harm, and suicide attempt.					
	Model 1 (Series)	Model 2 (Series)			
	Combined self-harm RR (95% CI)	Non-suicidal self-harm at age 14 only OR (95% CI)	Non-suicidal self-harm at age 17 only OR (95% CI)	Non-suicidal self-harm at ages 14 and 17 OR (95% CI)	Suicide attempt OR (95% CI)
<i>Type of negative parenting practice</i>					
Harsh parenting	1.01 (0.99, 1.03)	1.03 (0.95, 1.11)	0.98 (0.94, 1.03)	1.11 (1.03, 1.19)	1.02 (0.95, 1.08)
Withdrawal parenting	1.03 (1.01, 1.05)	1.03 (0.97, 1.09)	1.01 (0.97, 1.05)	1.16 (1.09, 1.24)	1.05 (0.99, 1.11)
Note. Models for harsh and withdrawal parenting practices were conducted separately. Combined self-harm (outcome 1) was modelled using a Poisson regression. Type of self-harm (e.g., non-suicidal self-harm at age 14 only) was modelled using a multinomial logistic regression. These traditional regression models included adjustment for child and household confounders.					

eTable 6. Sensitivity analysis examining the controlled direct effect of harsh and withdrawal parenting practices and risk of combined self-harm (with and without suicidal intent), non-suicidal self-harm, and suicide attempt using alternative levels of truncation (0.5th percentile and 99.5th percentile) of the stabilized inverse probability of treatment and censoring weights.

	Model 1 (Series)	Model 2 (Series)			
	Combined self-harm RR (95% CI)	Non-suicidal self-harm at age 14 only OR (95% CI)	Non-suicidal self-harm at age 17 only OR (95% CI)	Non-suicidal self-harm at ages 14 and 17 OR (95% CI)	Suicide attempt OR (95% CI)
<i>Harsh parenting</i>	0.98 (0.89, 1.06)	1.00 (0.75, 1.32)	0.90 (0.74, 1.10)	1.28 (0.97, 1.68)	0.95 (0.73, 1.22)
Adolescent emotional and behavioural concerns					
Quartile 1 (bottom 25 th oile)*					
Quartile 2	1.21 (1.05, 1.39)	1.45 (1.00, 2.10)	1.45 (1.09, 1.91)	1.03 (0.68, 1.55)	1.20 (0.79, 1.81)
Quartile 3	1.32 (1.15, 1.52)	1.46 (1.00, 2.13)	1.49 (1.12, 1.97)	1.15 (0.77, 1.74)	1.95 (1.28, 2.97)
Quartile 4 (top 25 th oile)	1.55 (1.35, 1.79)	1.80 (1.18, 2.74)	1.58 (1.14, 2.18)	1.77 (1.16, 2.71)	2.56 (1.71, 3.85)
<i>Withdrawal parenting</i>	1.09 (1.00, 1.20)	1.15 (0.89, 1.50)	1.00 (0.81, 1.22)	1.43 (1.07, 1.91)	1.17 (0.90, 1.52)
Adolescent emotional and behavioural concerns					
Quartile 1 (bottom 25 th oile)					
Quartile 2	1.15 (1.00, 1.33)	1.29 (0.89, 1.87)	1.39 (1.05, 1.84)	0.99 (0.66, 1.49)	1.05 (0.69, 1.61)
Quartile 3	1.29 (1.12, 1.48)	1.44 (0.97, 2.13)	1.52 (1.14, 2.04)	1.12 (0.74, 1.70)	1.64 (1.07, 2.49)
Quartile 4 (top 25 th oile)	1.49 (1.29, 1.71)	1.63 (1.07, 2.47)	1.57 (1.13, 2.17)	1.52 (0.98, 2.38)	2.28 (1.52, 3.44)
Note. Marginal structural models for harsh and withdrawal parenting practices were estimated separately. Combined self-harm was modelled using a Poisson regression. Type of self-harm (e.g., non-suicidal self-harm at age 14 only) was modelled using a multinomial logistic regression. * %ile = percentile.					

CHAPTER 4

The relationship between family dynamics and help-seeking and disclosure of adolescent self-harm and suicidality: a population-representative study

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Article Preface

Collectively, the earlier presented studies of this dissertation demonstrate that prospectively measured family dynamics precede self-harm and suicidality (suicidal ideation and attempt) before age 20 years (Chapter 2), and that this relationship may be considered causal (Chapter 3). Regarding the latter, using causal inference methods that enable the closest approximation to a randomized controlled trial when randomization is not feasible (e.g., for ethical reasons in the present context), we demonstrated that family dynamics of negative parenting practices continue to transmit a causal effect on self-harm after accounting for the hypothesized mediator, emotional and behavioural concerns in earlier adolescence. A remaining knowledge gap is whether, among adolescents already engaging in self-harm or experiencing suicidality, family dynamics can facilitate or act as a barrier to help-seeking and disclosure. Identifying factors that may promote or hinder help-seeking-related behaviours is clinically relevant, as help-seeking for self-harm and suicidality is reported to be low. To address this third knowledge gap, this article examines the cross-sectional relationships between family dynamics, defined as parenting practices and family dysfunction, and disclosure and online help-seeking among adolescents (14-17 years) who engage in non-suicidal self-harm and/or experience suicidal ideation.

Author Contributions

I conceptualized the study, developed the analytic plan, conducted the statistical analyses, prepared the initial draft manuscript, and revised the manuscript in response to feedback from all

co-authors, submitted the manuscript for publication, and addressed all feedback during the peer review stage. The supplementary materials begin on page 213.

ABSTRACT

Background: Few studies have explored the potential for family dynamics to hinder or promote help-seeking and disclosure behaviours among adolescents who self-harm or experience suicidality. We sought to examine whether family dynamics may influence self-harm-related disclosure to parents or other family members and online help-seeking.

Methods: We identified youths, 14-17 years, in the 2014 Ontario Child Health Study (OCHS) who self-reported past-year suicidal ideation (with or without a suicide plan or past suicide attempt[s]) and/or non-suicidal self-harm. The OCHS is a provincially representative, cross-sectional survey. The person most knowledgeable about the adolescent, usually the mother, reported family dynamics: family dysfunction and positive and negative parenting practices. We used logistic regression to generate adjusted odds ratios.

Results: A total of 359 adolescents positively endorsed past-year suicidal ideation and/or non-suicidal self-harm. Disclosure and help-seeking were common ($\geq 67.3\%$ and $\geq 25.6\%$, respectively). Adolescents experiencing suicidal ideation and greater family dysfunction were more likely to share their suicidal thoughts with non-family compared to not telling anyone (OR=1.09, 95%CI:1.01,1.18) and were less likely to tell their parents or other family members about their suicidal thoughts when compared to non-family such as teachers, partners, or friends (OR=0.82, 95%CI:0.71,0.94). Positive parenting was not associated with any form of disclosure or online help-seeking for non-suicidal self-harm or suicidal ideation. As adolescent exposure to negative parenting increased, so did the likelihood that they would seek help online for their suicidal thoughts (OR=1.22, 95%CI:1.08,1.37). Sensitivity analyses replicated or were very similar to findings from the main models.

Conclusion: We found that negative family dynamics were related to reduced sharing of suicidal thoughts with parents or other family members and greater online help-seeking. Our findings suggest that the importance of negative family dynamics to disclosure and support-seeking for adolescent suicidality may be under-recognized.

Keywords: family dynamics, parenting practices, family functioning, help-seeking, disclosure, adolescents, self-harm, suicidal ideation

INTRODUCTION

Adolescence is a developmental period comprised of important biological and emotional changes.¹ It is also a period of elevated risk for mental health concerns.² Globally, engagement in non-suicidal self-harm, defined as deliberate bodily harm (e.g., skin cutting) but without the intent to die,³ is the most prevalent form of child (21.9%)⁴ and adolescent (19.5%)⁵ self-harm behaviour. Suicidal ideation is also common in childhood (7.5%)⁴ and adolescence (14.2%)⁵. As a collection of risk factors, self-injurious thoughts and behaviours increase the risk of future suicide attempts⁶ and mental disorders.⁷ Further, adolescent intentional self-harm presentation at emergency departments is rising.⁸ Over an approximately 8-year period (2009 to 2017), hospital presentations for intentional self-harm in Ontario, Canada, increased by 135%, putting substantial demand on finite resources.⁸ Increasing use of emergency services for acute self-harm has also been observed in Australia⁹ and the United States.¹⁰ Persons who self-harm are frequent users of emergency department services,¹¹ and adolescents who self-harm are more likely to have shorter duration between recurrent self-harm-related hospital visits, die by suicide, and have greater associated healthcare costs.¹²

Approximately 33-50% of adolescents who engage in self-harm do not seek support¹³ until they require urgent care. Among those who reach out to others, informal supports such as family and friends are more frequently relied on than more formal resources (e.g., mental health professionals).¹³ The potential use of the internet as another recovery resource is complicated, but it can be used in a positive context for self-harm-related disclosure and help-seeking.^{13,14} In a recent review, positive relationships with pertinent adults in one's life (e.g., parents and teachers) were identified as help-seeking facilitators for general adolescent mental health concerns.¹⁵ However, few studies focused on relationship quality as a facilitator, and none addressed family

functioning,¹⁵ such as the family's everyday ability to work cohesively and communicate.¹⁶ An Australian study¹⁷ explored positive parenting practices and observed that parental authoritativeness and social support were associated with initial intentions to seek professional mental health support but not later help-seeking behaviour.

There is a need to identify factors that may promote help-seeking among young persons who engage in self-harm.¹³ Some interventional research suggests that targeting the family unit is a means to reduce self-harm.^{18,19} However, it is unknown whether everyday family dynamics, such as family functioning and parenting practices, may promote help-seeking and disclosure. Identifying familial factors that may impede or encourage seeking support could be used to inform first-line, preventative public mental health aid. Using a provincially representative sample of adolescents in Ontario experiencing self-harming thoughts and behaviours, our study objectives were to examine relationships between family functioning and parenting practices (positive and negative) with self-harm-related disclosure and online help-seeking. We hypothesized that greater exposure to family dysfunction and negative parenting practices would be associated with a reduced likelihood of self-harm-related disclosure and online help-seeking. In comparison, greater exposure to positive parenting practices would be associated with an increased likelihood of self-harm-related disclosure and online help-seeking.

METHODS

Data source, setting, and study population

The 2014 Ontario Child Health Study (OCHS) is a cross-sectional, provincially representative epidemiological study of Ontarians between 4-17 years (n=10,802).²⁰ The sampling frame was the 2014 Canada Child Tax Benefit, with the sample selected using complex survey methods (stratification and clustering) and simple random sampling.²⁰ Data were

collected in person from October 2014-September 2015 by trained Statistics Canada interviewers, and the overall response rate was 50.8%.²⁰ The person most knowledgeable about the surveyed child(ren) was most often the mother (88.3%).²⁰

Youths aged 14-17 (n=2,910) self-reported on sensitive items such as past-year non-suicidal self-harm (deliberately harming oneself without intending to kill oneself) and suicidal ideation (seriously considering killing oneself) (Supplementary **eTable 1**). The sample for this study included those who positively endorsed past-year non-suicidal self-harm and/or suicidal ideation (n=359).

Measures

Exposures: family dynamics

The person most knowledgeable about the child reported on family dynamics: family dysfunction (primary exposure) and parenting practices (secondary exposure). Family dysfunction was measured using the 12-item general functioning subscale of the McMaster Family Assessment Device.¹⁶ The subscale provides an overall index of everyday family functioning (e.g., “making decisions is a problem for our family”²¹) and was initially validated in the 1983 OCHS.¹⁶ Higher scores reflect greater family dysfunction. Parenting practices were assessed using items selected or adapted from the Parent Behavior Inventory²² and the Parenting Scales of the National Longitudinal Survey of Children and Youth.^{23,24} Both positive (e.g., “I listen to [child’s] ideas and opinions”) and negative (e.g., “whether I enforce or do not enforce a rule depends on my mood”) parenting practices over the past six months were assessed using five items, with higher scores more reflective of the respective parenting style. Cronbach’s alpha (α) for the family dynamics measures suggests adequate internal consistency (family functioning

$\alpha=0.87$; positive parenting $\alpha=0.84$; negative parenting $\alpha=0.77$).²⁴ The correlations (r) among the family dynamics measures were in the expected directions (family dysfunction-negative parenting: 0.25, family dysfunction-positive parenting: -0.32, and negative-positive parenting practices: -0.09).

Outcomes: disclosure and help-seeking behaviour

Participants who positively endorsed non-suicidal self-harm or suicidal ideation were asked to report whether they disclosed to anyone, potentially up to 9 different persons (e.g., “parent or other family member”, “friend or partner”), that they had harmed themselves or were experiencing suicidal ideation (Supplementary eTable 1). We classified respondents as having disclosed their self-harm and/or suicidal ideation if they positively endorsed having disclosed to ≥ 1 person over the past 12 months. We also created a specific disclosure outcome, categorizing respondents as having disclosed to a parent/family member versus a non-family person. Respondents who engaged in non-suicidal self-harm or suicidal ideation were also asked about their online help-seeking behaviour (Supplementary eTable 1). Specifically, respondents were asked whether they had looked for help online in the past 12 months to stop harming themselves or to stop thinking about taking their life (yes/no).

Sociodemographic characteristics

We adjusted for several individual- and family-level confounders known to be associated with the exposures and/or outcomes. We controlled for adolescent age (14-15 [referent]/16-17 years) and sex (male [referent]/female). At the family level, we adjusted for low income (no [referent]/yes), educational attainment of the person most knowledgeable about the child (<secondary school [referent], certificate/diploma, and Bachelor's degree or higher), and family

structure: two-parent biological/adopted family (no [referent]/yes). Our low-income measure was based on whether the family's before-tax income was above or below the 2013 Statistics Canada low-income cutoff.²⁵ A two-parent biological/adopted family structure indicates whether the adolescent resides with married or common-law parents where all children in the household are biological to or adopted by both members of the partner couple.²⁶

Statistical analyses

Chi-square tests of independence were used for descriptive comparisons. In the main analyses, we used logistic and multinomial logistic regression. Since disclosure and help-seeking were highly prevalent (>10%), we conducted sensitivity analyses using modified Poisson regression modelling to estimate the prevalence ratio (PR). We report both the odds ratio (OR) and PR with their corresponding 95% confidence intervals (95%CI). To obtain provincially representative estimates, we employed survey weights to account for unequal selection probability; weights were adjusted for non-response.²⁰ For unbiased variance estimation, we used Statistics Canada-derived bootstrap weights²⁰ with a Fay adjustment factor for the mean bootstrap method.²⁷ All sample sizes reported are unweighted, while percentages are weighted unless otherwise noted. Missing data across all measures was minimal (n=17) and considered within acceptable limits (<5%_{unweighted}). We retained n=342 for analyses, and the analytic sample size varied according to the model due to valid skip patterns (e.g., to be queried regarding online help-seeking for non-suicidal self-harm, a respondent must have positively endorsed self-harm). Logistic and Poisson regression analyses were conducted in SAS (v. 9.4; SAS Institute Inc, Cary, North Carolina) and STATA 15.0 (StataCorp LLC, College Station, TX), respectively.

We conducted a series of sensitivity analyses. The first consisted of adjustment for two additional confounders: child race (Minority or White participant [referent]) and the presence of

≥1 health-professional diagnosed long-term health conditions (e.g., allergies, asthma) (yes/no [referent])). Chronic health conditions were included because they could uniquely impact family dynamics and disclosure and help-seeking behaviours for related mental health concerns, a potential result of healthcare monitoring of the long-term physical health condition. The additional confounders were not included in the primary models because their inclusion, in some cases, would cause us to violate the standard rule of thumb for the minimum ratio of outcome events to predictors (10:1).²⁸ While the analytic sample was small by epidemiological standards, requiring us to be mindful of the events:predictors ratio, it is because we restricted study inclusion to participants who positively endorsed self-harm and/or suicidal ideation. Second, to assess the robustness of our findings to missingness, we employed multiple imputation by chained equations (MICE)²⁹ using $m=10$ imputed datasets, selected based on the proportion of missing and imputation diagnostics: relative increase in variance and the fraction of missing information. All exposures and confounders were included in the imputation model. We did not impute study outcomes; the missingness for these measures was nominal, and exact frequencies could not be released under Statistics Canada data privacy release guidelines. We introduced interaction terms with sex and age (e.g., exposure*sex) for statistically significant ($P<0.05$) relationships consistent across most models, and assessed model fit using a likelihood ratio test.

Consent, standard approvals, and data access

The person most knowledgeable provided informed consent. The University of Ottawa Research Ethics Board (File #H-10-21-7520) approved this study. Statistics Canada approved the study protocol before the investigators were granted data access. Data is publicly available to users with authorized projects through the National Research Data Centres program.³⁰

RESULTS

Participant characteristics

Most adolescents were 16-17 years (55.8%) and female (68.5%), while just over half lived in a two-parent biological/adopted family (50.6%) (Supplementary eTable 2). More participants reported engaging in non-suicidal self-harm (70.6%) than experiencing suicidal ideation (66.5%), and just over a third reported both (37.0%) (Supplementary eTable 3). Disclosure and help-seeking were highly prevalent (Table 1). Of note, disclosure was more prevalent for adolescents who engaged in non-suicidal self-harm (75.6%) than for those who experienced suicidal ideation (67.3%), while seeking help online was more common for adolescents who experienced suicidal ideation (32.8%) than for those who engaged in non-suicidal self-harm (25.6%). While there was variability in the prevalence of disclosure and online help-seeking between females and males (Table 1), there were no statistically significant differences for non-suicidal self-harm or suicidal ideation ($P_s > 0.05$).

Associations between family dynamics and disclosure and help-seeking

Family dysfunction was not associated with overall disclosure of non-suicidal self-harm and suicidal ideation or online help-seeking (Table 2). However, there was some evidence to suggest that family dysfunction may be associated with online help-seeking for suicidal ideation, though the finding was inconsistent (Table 2). In specific disclosure models (Table 3), greater family dysfunction was associated with an increased likelihood of suicidal ideation disclosure to non-family compared to not telling anyone (OR=1.09, 95%CI:1.01,1.18). In restricted models where disclosure to non-family was the referent, increasing family dysfunction was associated with a reduced likelihood of suicidal ideation disclosure to parents or other family members

when compared to non-family (OR=0.82, 95%CI:0.71,0.94). Poisson and logistic regression models generally agreed, with PR estimates attenuated in magnitude, as expected.

Positive parenting was not associated with any form of disclosure or online help-seeking for non-suicidal self-harm or suicidal ideation (Tables 4-5). One association emerged for negative parenting practices, with greater negative parenting associated with an increased likelihood of online help-seeking for suicidal ideation (OR=1.22, 95%CI:1.08,1.37). Otherwise, negative parenting practices were not statistically related to disclosure or online help-seeking behaviours (Tables 4-5). Findings were consistent between Poisson and logistic regression models.

Sensitivity analyses

Sensitivity analyses (Supplementary eTables 4-7) adjusted for child race (Minority: 22.3%, White: 77.7%) and presence of long-term health conditions (Yes: 32.4%, No: 67.6%) mainly yielded similar findings to the main models. The same was true for the multiple imputation results (Supplementary eTables 4-7). There was no consistent evidence of interactions with sex and age.

DISCUSSION

Using a provincially-representative, population-based survey, we examined relationships between family dysfunction and parenting practices and disclosure and help-seeking behaviours for adolescent non-suicidal self-harm and suicidal ideation. More specifically, we sought to determine whether negative and positive family dynamics experienced at ages 14-17 may influence self-harm and suicidality-related disclosure to parents or other family members and online help-seeking. Overall, our findings suggest that youth living within more negative family

environments comprised of family dysfunction and negative parenting practices may be more reluctant to disclose their suicidal thoughts to their parents or other family members and may be more inclined to seek help online for themselves.

While we observed relationships between negative family dynamics and suicidal thoughts, no associations emerged for non-suicidal self-harm. Youth experiencing suicidal ideation may be more likely to disclose their thoughts or seek help online than their self-harm counterparts because of the distressing nature of their thoughts. Psychological distress and suicidal ideation have both been documented to be high among online mental health help-seekers (77% and 75%, respectively).³¹ In contrast, in some cases, youth engaging in non-suicidal self-harm may be less inclined to seek help or disclose their experiences because they perceive the self-harm as a helpful coping strategy, something they do not wish to end. To this end, a systematic review of self-reported reasons for non-suicidal self-harm revealed that self-harm can be viewed as a positive experience, in addition to serving other means, such as managing emotions.³² Reasons for self-harm to be viewed positively include the behaviours being perceived as gratifying or comforting to the self-injurer.³² Motivations for self-harm and suicidality are complex, and differences in the functions they serve may have affected our findings.

Contrary to previous work, which suggests lower rates of disclosure among adolescents,^{13,33} we observed high rates of disclosure for both non-suicidal self-harm and suicidal ideation. However, disclosure to non-family was more common than telling one's parent(s) or another family member, a finding substantiated in our regression modelling. As family dysfunction increased, youth experiencing suicidal ideation were more likely to disclose their suicidal thoughts to non-family than not tell anyone and were less likely to disclose to

parents/family than non-family. This pattern of findings aligns with other work demonstrating that peer-based social support increases with age among adolescents experiencing suicidal ideation,³⁴ though we should note that disclosure to peers was one category of other persons included in our operationalization of non-family. Regardless, disclosure to non-family may represent an important first step on a recovery journey (acknowledgement and sharing). The high prevalence of disclosure within our sample could be explained by the beneficial influence of population-level mental health anti-stigma campaigns (e.g., a Canada-wide campaign that commenced in September 2010)³⁵ that have also been speculated to have led to increased care seeking, ultimately increasing utilization rates of acute services.⁸ Consistent with earlier studies, we observed that help-seeking was less common than disclosure, suggesting that the behaviours may functionally differ.³³ Help-seeking is often conceptualized as a purposeful behaviour intended to solicit support, whereas disclosure may occur without help-seeking intent.³³ Online help-seeking, as captured by the present study, may represent a more formal willingness or readiness on behalf of the youth to want to get well, especially in the context of negative family dynamics where perhaps they feel they have less support and may need to be self-directed. In line with this, we observed robust relationships between negative parenting practices and online help-seeking for suicidal ideation and an inconsistent association for family dysfunction.

The family environment is a commonly identified way to help young persons who self-harm.³⁶ Specific suggestions on ways parents can help children after they have engaged in non-suicidal self-harm include offering more emotional support, reducing conflict, and engaging in family-orientated leisure-time activities.³⁶ These identified themes of how the family environment can be leveraged to support a child post-self-harm are the same features of positive and negative parenting practices and family functioning included in this study. These are also

aspects of the family environment that have been longitudinally implicated in the onset of adolescent suicidality.³⁷ Kingsbury et al³⁷ identified prospective, direct relationships between harsh but not positive parenting practices and the onset of suicidal ideation and attempt at ages 14-15. Thus, addressing family dynamics could also have more upstream impact, expanding their utility beyond post-self-harm support. Our demonstrated associations between higher levels of family dysfunction and a reduced likelihood of disclosure to parents or other family members for suicidal ideation suggests that reducing conflict and discord within the family, thereby increasing family functioning, may lead to increased sharing of suicidal thoughts, supporting youth suggestions to minimize conflict and improve communication as a means to help post-self-harm.³⁶ Negative family dynamics may represent an under-considered barrier to disclosing self-harm and suicidal thoughts to individuals who may be in the best situation to facilitate professional help-seeking: parents and family.

Finally, we did not observe any relationships suggesting a link between positive parenting strategies and disclosure or online help-seeking. The unobserved associations agree with another study that found that positive parental authoritativeness and social support did not longitudinally predict future help-seeking behaviour for general mental health concerns.¹⁷ We should note that both positive and negative parenting practices were not related to the disclosure of self-harm or suicidal thoughts. Disclosure behaviours can serve multiple purposes, such as seeking peer validation,³³ thus, the absence of statistical associations in the present study could be explained by heterogeneity in the outcome. Unfortunately, there is limited literature on the function or intention behind self-harm disclosure,³³ and the OCHS did not capture information on the motivation behind this behaviour. Considering the observed associations between family dysfunction and disclosure, we may also conclude that family functioning may have a greater

impact on a child's willingness to share information. Unlike parenting practices, family functioning captures the everyday functioning of the entire family unit, including aspects of communication and acceptance, such as feeling accepted for who they are, being able to discuss fears or concerns, and expressing feelings.¹⁶ Family dysfunction may represent a chronic daily stressor for adolescents, which could deter them from sharing personal information with their parent/caregiver, especially when it pertains to sensitive mental health concerns. Negative aspects of the family environment may be most influential in affecting disclosure and help-seeking behaviours for serious mental health concerns of adolescent suicidality.

Limitations and future advancements

While the overall survey response rate was low (50.8%), it reflects current population-based survey challenges.³⁰ To highlight survey administration challenges, a recent comparable national survey of similar-aged peers had a much lower (41.3%) response rate.³⁸ The low response rate may have affected statistical power. This concern may be exacerbated here since study inclusion was further restricted to participants who were surveyed about sensitive items such as self-harm (14-17 years) and who positively endorsed self-harm and/or suicidal ideation. Our potential selection bias concerns were mitigated by using the OCHS sampling weights, which were adjusted for non-response.³⁰

Another limitation is that our disclosure outcome did not differentiate between self-disclosure and discovery, a key distinction noted in the literature.³³ In the present study, youth reported whether they had told anyone. They were not explicitly asked to indicate whether this was a voluntary sharing of information or whether they were forced to acknowledge their behaviours because someone else noticed something (e.g., self-inflicted injury) or their self-harm required medical attention. However, the discovery of the self-harm is likely somewhat mitigated

in this context because participants were asked whether they told anyone rather than being asked if anyone *knew* about their self-harm (with or without the adolescent voluntarily communicating). Although, parental awareness of child self-harm may have affected the measurement of our exposures. When a parent is aware of their child's self-harm, ratings of family dysfunction are higher.³⁹ Though when compared to adolescent reports, parental ratings of family dysfunction are lower regardless of whether the parent is aware of the self-harm.³⁹ Thus, compared to the potential for adolescent self-report, we expect parental awareness and recall bias to have minimal impact on exposure ascertainment. It is also possible that parental awareness of self-harm may destabilize the family environment, affecting family discord and conflict.⁴⁰ Undoubtedly, an advancement of future work would be to assess relationships prospectively, capturing measurement of family dynamics before the onset of self-harm or suicidal thoughts. Finally, because the general functioning subscale of the McMaster Family Assessment Device¹⁶ was used, we could not explore which aspects of family dysfunction (e.g., impairments in affective responsiveness) were most relevant.

Conclusion

Adolescents exposed to negative family dynamics, specifically family dysfunction and negative parenting practices, may be less inclined to disclose their suicidal thoughts to parents and family and instead be more likely to look for help online. While help-seeking online may yield beneficial results, navigating the internet and obtaining professional support as an adolescent may be challenging. Well-maintained, evidence-based online resources for support-seeking youth are urgently needed; however, parents and family may be some of the best facilitators of professional help-seeking and integral to adolescent recovery. A reduced willingness to disclose severe mental health concerns to these individuals could potentially

prevent their support until acute care is required. Identifying family-level factors that may encourage help-seeking could lead to their incorporation as part of mental health promotion strategies to mitigate self-harm recurrence or prevent suicide attempts. At the very least, mental health literacy campaigns should have active components on what to do when someone discloses or seeks support for their self-harm or suicidal ideation. The role of negative family dynamics as a barrier to mental health support-seeking may be overlooked.

Data access: Data is publicly available to users with authorized projects through Statistics Canada's Research Data Centres program: <https://www.statcan.gc.ca/en/microdata/data-centres>.

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Table 1. Prevalence of disclosure and online help-seeking among adolescents engaging in non-suicidal self-harm and/or experiencing suicidal ideation in the 2014 Ontario Child Health Study (n=342).

	Overall		Females		Males	
	Non-suicidal self-harm	Suicidal ideation	Non-suicidal self-harm	Suicidal ideation	Non-suicidal self-harm	Suicidal ideation
	%	%	%	%	%	%
Any disclosure	75.6	67.3	74.6	64.6	78.5	71.8
Specific disclosure						
Told no one	24.4	32.7	25.4	35.4	21.5	28.2
Told non-family	51.3	52.5	51.6	55.2	50.4	47.9
Told parent/family	24.3	14.8	22.9	9.4	28.1	23.9
Sought help online	25.6	32.8	26.8	37.8	22.1	24.4

Table 2. Relationship between family dysfunction and disclosure and online help-seeking among young persons who engaged in non-suicidal self-harm and/or experienced suicidal ideation (n_{analytic} range: 198-342).

Family dysfunction						
Outcome	OR	95% CI	<i>P</i>	PR	95% CI	<i>P</i>
Disclosure						
Non-suicidal self-harm (NSSH)	1.05	0.98, 1.13	0.166	1.01	1.00, 1.03	0.161
Suicidal ideation (SI)	1.06	0.98, 1.15	0.134	1.02	0.99, 1.04	0.136
NSSH and/or SI	1.06	0.99, 1.12	0.084	1.01	1.00, 1.02	0.060
Online help-seeking						
Non-suicidal self-harm	0.96	0.91, 1.02	0.211	0.97	0.93, 1.02	0.207
Suicidal ideation	1.08	1.00, 1.17	0.059	1.05	1.00, 1.09	0.034
NSSH and/or SI	1.02	0.96, 1.09	0.513	1.01	0.97, 1.06	0.498

Note. Statistically significant findings ($P<0.05$) appear in bold. Models were adjusted for adolescent age, sex, low family income, educational attainment of the person most knowledgeable about the child, and family structure (two-parent biological/adopted family).

Table 3. Relationship between family dysfunction and person-specific disclosure of non-suicidal self-harm and/or suicidal ideation (n_{analytic} range: 124-252).

Family dysfunction						
Specific disclosure	OR	95% CI	<i>P</i>	PR	95% CI	<i>P</i>
<i>Nominal disclosure</i>						
<i>models^a</i>						
Non-suicidal self-harm						
No one	1.00	(REF)		1.00	(REF)	
Non-family	1.06	0.98, 1.14	0.126	1.02	1.00, 1.04	0.113
Parent/ family	1.03	0.94, 1.14	0.511	1.02	0.97, 1.07	0.353
Suicidal ideation						
No one	1.00	(REF)		1.00	(REF)	
Non-family	1.09	1.01, 1.18	0.033	1.03	1.00, 1.06	0.042
Parent/ family	0.93	0.82, 1.06	0.263	0.98	0.90, 1.06	0.543
<i>Restricted disclosure</i>						
<i>models^b</i>						
Non-suicidal self-harm						

Non-family	1.00	(REF)		1.00	(REF)	
Parent/ family	0.97	0.89, 1.06	0.497	0.98	0.93, 1.03	0.452
Suicidal ideation						
Non-family	1.00	(REF)		1.00	(REF)	
Parent/ family	0.82	0.71, 0.94	0.004	0.87	0.80, 0.95	0.001

Note. Statistically significant findings ($P<0.05$) appear in bold. Models were adjusted for adolescent age, sex, low family income, educational attainment of the person most knowledgeable about the child, and family structure (two-parent biological/adopted family).

^aWe conducted multinomial logistic regression models where the odds ratio (OR) is reported. Where the prevalence ratio (PR) is reported, we conducted separate modified Poisson regression models when modelling the PR for “non-family” and “parent/family”, using disclosure to “no one” as the referent category (i.e., binary models).

^bRestricted to disclosure to non-family (referent) or parent/ family.

Table 4. Relationship between positive and negative parenting practices and disclosure and online help-seeking among young persons who engaged in non-suicidal self-harm and/or experienced suicidal ideation (n_{analytic} range: 206-349).

Outcome	Positive parenting						Negative parenting					
	OR	95% CI	<i>P</i>	PR	95% CI	<i>P</i>	OR	95% CI	<i>P</i>	PR	95% CI	<i>P</i>
Disclosure												
Non-suicidal self-harm (NSSH)	1.03	0.90, 1.19	0.655	1.01	0.97, 1.05	0.670	1.13	0.96, 1.33	0.152	1.03	0.99, 1.07	0.166
Suicidal ideation (SI)	1.08	0.93, 1.24	0.313	1.02	0.97, 1.08	0.342	1.01	0.90, 1.14	0.860	1.00	0.97, 1.04	0.876
NSSH and/or SI	1.04	0.93, 1.17	0.502	1.01	0.98, 1.04	0.526	1.03	0.91, 1.16	0.665	1.01	0.98, 1.03	0.663
Online help-seeking												
Non-suicidal self-harm	1.15	0.95, 1.39	0.155	1.11	0.96, 1.28	0.153	1.06	0.92, 1.22	0.444	1.04	0.94, 1.15	0.428
Suicidal ideation	0.94	0.79, 1.12	0.501	0.96	0.87, 1.07	0.464	1.22	1.08, 1.37	0.001	1.11	1.05, 1.18	<0.001
NSSH and/or SI	0.96	0.82, 1.13	0.628	0.97	0.88, 1.08	0.623	1.10	0.99, 1.22	0.076	1.06	1.00, 1.12	0.052

Note. Statistically significant findings ($P < 0.05$) appear in bold. Models were adjusted for adolescent age, sex, low family income, educational attainment of the person most knowledgeable about the child, and family structure (two-parent biological/adopted family).

Table 5. Relationship between positive and negative parenting practices and person-specific disclosure of non-suicidal self-harm and/or suicidal ideation (n_{analytic} range: 130-255).

		Positive parenting					Negative parenting					
Specific disclosure	OR	95% CI	<i>P</i>	PR	95% CI	<i>P</i>	OR	95% CI	<i>P</i>	PR	95% CI	<i>P</i>
<i>Nominal disclosure models^a</i>												
Non-suicidal self-harm												
No one	1.00	(REF)		1.00	(REF)		1.00	(REF)		1.00	(REF)	
Non-family	1.08	0.92, 1.27	0.355	1.02	0.96, 1.09	0.462	1.09	0.92, 1.30	0.334	1.03	0.97, 1.08	0.356
Parent/ family	0.96	0.79, 1.15	0.635	0.99	0.90, 1.10	0.897	1.21	1.00, 1.47	0.050	1.09	1.00, 1.18	0.050
Suicidal ideation												
No one	1.00	(REF)		1.00	(REF)		1.00	(REF)		1.00	(REF)	
Non-family	1.08	0.92, 1.28	0.352	1.03	0.97, 1.10	0.323	1.01	0.90, 1.15	0.823	1.00	0.97, 1.04	0.845
Parent/ family	1.05	0.89, 1.25	0.567	1.04	0.91, 1.20	0.557	1.00	0.87, 1.14	0.969	0.96	0.86, 1.08	0.520
<i>Restricted disclosure models^b</i>												
Non-suicidal self-harm												

Non-family	1.00	(REF)		1.00	(REF)		1.00	(REF)		1.00	(REF)	
Parent/ family	0.88	0.72, 1.07	0.212	0.93	0.84, 1.03	0.167	1.13	0.97, 1.32	0.125	1.07	0.97, 1.17	0.189

Suicidal ideation

Non-family	1.00	(REF)		1.00	(REF)		1.00	(REF)		1.00	(REF)	
Parent/ family	0.99	0.79, 1.23	0.894	0.99	0.86, 1.15	0.932	0.98	0.84, 1.14	0.774	0.97	0.87, 1.09	0.586

Note. Models were adjusted for adolescent age, sex, low family income, educational attainment of the person most knowledgeable about the child, and family structure (two-parent biological/adopted family).

^aWe conducted multinomial logistic regression models where the odds ratio (OR) is reported. Where the prevalence ratio (PR) is reported, we conducted separate modified Poisson regression models when modelling the PR for “non-family” and “parent/family”, using disclosure to “no one” as the referent category (i.e., binary models).

^bRestricted to disclosure to non-family (referent) or parent/ family.

eAppendix 1. Supplementary tables

eTable 1. Study-specific mental health questions from the 2014 Ontario Child Health Study (2014 OCHS).	
Measure name	Survey questions¹
Non-suicidal self-harm	“Sometimes people deliberately harm themselves but they do not mean to take their life. In the past 12 months, did you ever deliberately harm yourself but not mean to take your life?” – “Yes” – “No”
Suicidal ideation	“In the past 12 months, did you ever seriously consider taking your own life or killing yourself?” – “Yes” – “No”
Disclosure of non-suicidal self-harm	“In the past 12 months, did you tell any of the following people that you harmed yourself?” 1. “parent or other family member” (yes/no) 2. “friend or partner” (yes/no) 3. “teacher or other adult at school” (yes/no) 4. “doctor, nurse or mental health professional (e.g., psychologist, social worker, counsellor)” (yes/no) 5. “someone on a phone helpline or crisis hotline” (yes/no) 6. “someone on the internet” (yes/no) 7. “a minister, priest, rabbi, Imam, or other spiritual leader” (yes/no) 8. “naturopath, herbalist or alternative practitioner” (yes/no) 9. “I told someone else” (yes/no)
Disclosure of suicidal ideation	“In the past 12 months, did you ever tell any of the following people that you were seriously considering taking your own life or killing yourself?” 1. “parent or other family member” (yes/no) 2. “friend or partner” (yes/no) 3. “teacher or other adult at school” (yes/no) 4. “doctor, nurse or mental health professional (e.g., psychologist, social worker, counsellor)” (yes/no) 5. “someone on a phone helpline or crisis hotline” (yes/no) 6. “someone on the internet” (yes/no) 7. “a minister, priest, rabbi, Imam, or other spiritual leader” (yes/no) 8. “naturopath, herbalist or alternative practitioner” (yes/no) 9. “I told someone else” (yes/no)
Online help-seeking for non-suicidal self-harm	“In the past 12 months, did you ever look for help on the internet to stop harming yourself?” – “Yes” – “No”

Online help-seeking for suicidal ideation	“In the past 12 months, did you ever look for help on the internet for ways to stop thinking about taking your own life?” – “Yes” – “No”
Reference 1. Ontario Child Health Study. 2014 Ontario Child Health Study Adolescent Questionnaire (Ages 14-17). Published online July 2014. Accessed December 6, 2023. https://ontariochildhealthstudy.s3.amazonaws.com/uploads/2014OCHS_Adolescent_14-17YRS_July2014.pdf	

eTable 2. Characteristics of adolescents 14-17 years in the 2014 Ontario Child Health Study who reported non-suicidal self-harm and/or suicidal ideation (n=342).

Characteristic	%
Age	
14-15 years	44.2
16-17 years	55.8
Sex	
Male	31.5
Female	68.5
Low income	
No	82.7
Yes	17.3
Parental education	
<Secondary school	21.2
Certificate/diploma	55.9
≥Bachelor degree	22.8
Intact family	
No	49.4
Yes	50.6

eTable 3. Self-harm and suicidal ideation characteristics of adolescents engaging in non-suicidal self-harm and/or experiencing suicidal ideation in the 2014 Ontario Child Health Study (n=342).

	%
Non-suicidal self-harm (nssh)	70.6
Frequency of nssh	
One time	42.5
More than once	57.5
Most common forms of nssh	
Self-cutting or scratching	84.6
Other	12.4
Suicidal ideation	66.5
Suicide plan	48.0
Suicide attempts	
One time	29.1
More than once	25.1
Combined nssh and suicidal ideation	37.0

eTable 4. Relationship between family dysfunction and disclosure and online help-seeking among young persons who engaged in non-suicidal self-harm and/or experienced suicidal ideation.						
	Family dysfunction					
	Additional confounders ^a			Multiple imputation		
Outcome	OR	95% CI	<i>P</i>	PR	95% CI	<i>P</i>
Disclosure						
Non-suicidal self-harm (NSSH)	1.05	0.97, 1.14	0.215	1.01	1.00, 1.03	0.155
Suicidal ideation (SI)	1.06	0.97, 1.15	0.212	1.02	0.99, 1.04	0.158
NSSH and/or SI	1.05	0.99, 1.12	0.109	1.01	1.00, 1.03	0.094
Online help-seeking						
Non-suicidal self-harm	0.94	0.88, 1.01	0.093	0.97	0.93, 1.02	0.296
Suicidal ideation	1.08	1.00, 1.18	0.060	1.05	1.00, 1.09	0.049
NSSH and/or SI	1.02	0.95, 1.09	0.563	1.01	0.97, 1.05	0.571
Note. Statistically significant findings ($P<0.05$) appear in bold. Models were adjusted for adolescent age, sex, low family income, educational attainment of the person most knowledgeable about the child, and family structure (two-parent biological/adopted family). ^aAdditionally adjusted for child race and the presence of long-term health conditions (n_{analytic} range: 188-318).						

eTable 5. Relationship between family dysfunction and person-specific disclosure of non-suicidal self-harm and suicidal ideation.

	Family dysfunction					
	Additional confounders ^a			Multiple imputation		
Specific disclosure	OR	95% CI	<i>P</i>	PR	95% CI	<i>P</i>
<i>Nominal disclosure models^b</i>						
Non-suicidal self-harm						
No one	1.00	(REF)		1.00	(REF)	
Non-family	1.07	0.99, 1.15	0.094	1.02	1.00, 1.04	0.120
Parent/ family	1.02	0.91, 1.15	0.746	1.02	0.97, 1.08	0.338
Suicidal ideation						
No one	1.00	(REF)		1.00	(REF)	
Non-family	1.08	0.99, 1.18	0.070	1.03	1.00, 1.06	0.062
Parent/ family	0.92	0.80, 1.05	0.226	0.98	0.91, 1.05	0.530
<i>Restricted disclosure models^c</i>						
Non-suicidal self-harm						
Non-family	1.00	(REF)		1.00	(REF)	
Parent/ family	0.96	0.86, 1.06	0.388	0.98	0.93, 1.03	0.481
Suicidal ideation						
Non-family	1.00	(REF)		1.00	(REF)	
Parent/ family	0.82	0.72, 0.95	0.006	0.88	0.81, 0.95	0.002

Note. Statistically significant findings ($P < 0.05$) appear in bold. Models were adjusted for adolescent age, sex, low family income, educational attainment of the person most knowledgeable about the child, and family structure (two-parent biological/adopted family).

^aAdditionally adjusted for child race and presence of long-term health conditions (n_{analytic} range: 118-233).

^bWe conducted multinomial logistic regression models where the odds ratio (OR) is reported. Where the prevalence ratio (PR) is reported, we conducted separate modified Poisson regression models when modelling the PR for “non-family” and “parent/family”, using disclosure to “no one” as the referent category (i.e., binary models).

^cRestricted to disclosure to non-family (referent) or parent/ family.

eTable 6. Relationship between positive and negative parenting practices and disclosure and online help-seeking among young persons who engaged in non-suicidal self-harm and/or experienced suicidal ideation.												
	Positive parenting						Negative parenting					
	Additional confounders ^a			Multiple imputation			Additional confounders ^a			Multiple imputation		
Outcome	OR	95% CI	<i>P</i>	PR	95% CI	<i>P</i>	OR	95% CI	<i>P</i>	PR	95% CI	<i>P</i>
Disclosure												
Non-suicidal self-harm (NSSH)	1.01	0.89, 1.16	0.854	1.01	0.97, 1.05	0.773	1.08	0.91, 1.29	0.389	1.04	1.00, 1.08	0.069
Suicidal ideation (SI)	1.08	0.94, 1.25	0.271	1.02	0.97, 1.07	0.438	0.97	0.86, 1.09	0.607	1.01	0.98, 1.04	0.597
NSSH and/or SI	1.03	0.93, 1.16	0.561	1.01	0.98, 1.04	0.645	1.01	0.89, 1.15	0.867	1.01	0.99, 1.04	0.375
Online help-seeking												
Non-suicidal self-harm	1.15	0.95, 1.39	0.163	1.10	0.95, 1.26	0.192	1.06	0.92, 1.21	0.447	1.05	0.94, 1.17	0.380
Suicidal ideation	0.94	0.81, 1.09	0.417	0.96	0.86, 1.06	0.433	1.22	1.07, 1.39	0.002	1.12	1.06, 1.19	<0.001
NSSH and/or SI	0.94	0.81, 1.09	0.430	0.98	0.88, 1.08	0.663	1.10	0.99, 1.22	0.076	1.07	1.00, 1.13	0.049
Note. Statistically significant findings ($P<0.05$) appear in bold. Models were adjusted for adolescent age, sex, low family income, educational attainment of the person most knowledgeable about the child, and family structure (two-parent biological/adopted family). ^a Additionally adjusted for child race and presence of long-term health conditions (n_{analytic} range: 195-325).												

eTable 7. Relationship between positive and negative parenting practices and person-specific disclosure of non-suicidal self-harm and suicidal ideation.

	Positive parenting						Negative parenting					
	Additional confounders ^a			Multiple imputation			Additional confounders ^a			Multiple imputation		
Specific disclosure	OR	95% CI	<i>P</i>	PR	95% CI	<i>P</i>	OR	95% CI	<i>P</i>	PR	95% CI	<i>P</i>
<i>Nominal disclosure models^b</i>												
Non-suicidal self-harm												
No one	1.00	(REF)		1.00	(REF)		1.00	(REF)		1.00	(REF)	
Non-family	1.05	0.89, 1.24	0.540	1.02	0.96, 1.08	0.539	1.06	0.88, 1.28	0.552	1.03	0.98, 1.09	0.265
Parent/ family	0.91	0.75, 1.10	0.326	0.98	0.89, 1.08	0.711	1.16	0.93, 1.43	0.185	1.10	1.02, 1.20	0.018
Suicidal ideation												
No one	1.00	(REF)		1.00	(REF)		1.00	(REF)		1.00	(REF)	
Non-family	1.09	0.92, 1.28	0.318	1.03	0.97, 1.09	0.407	0.97	0.85, 1.10	0.643	1.01	0.97, 1.05	0.580
Parent/ family	1.06	0.87, 1.30	0.564	1.02	0.90, 1.16	0.723	0.98	0.84, 1.13	0.750	0.97	0.87, 1.09	0.652
<i>Restricted disclosure models^c</i>												
Non-suicidal self-harm												
Non-family	1.00	(REF)		1.00	(REF)		1.00	(REF)		1.00	(REF)	
Parent/ family	0.85	0.67, 1.08	0.185	0.93	0.85, 1.03	0.170	1.10	0.94, 1.28	0.243	1.07	0.97, 1.18	0.184
Suicidal ideation												
Non-family	1.00	(REF)		1.00	(REF)		1.00	(REF)		1.00	(REF)	
Parent/ family	0.99	0.76, 1.30	0.966	0.99	0.86, 1.14	0.885	1.01	0.86, 1.18	0.951	0.97	0.86, 1.09	0.613

Note. Statistically significant findings ($P < 0.05$) appear in bold. Models were adjusted for adolescent age, sex, low family income, educational attainment of the person most knowledgeable about the child, and family structure (two-parent biological/adopted family).
^aAdditionally adjusted for child race and the presence of long-term health conditions (n_{analytic} range: 123-236).
^bWe conducted multinomial logistic regression models where the odds ratio (OR) is reported. Where the prevalence ratio (PR) is reported, we conducted separate modified Poisson regression models when modelling the PR for “non-family” and “parent/family”, using disclosure to “no one” as the referent category (i.e., binary models).
^cRestricted to disclosure to non-family (referent) or parent/ family.

CHAPTER 5

DISCUSSION

The overarching objectives of this doctoral work were to determine whether family dynamics of parenting practices and family functioning lead to the development of self-harming thoughts and behaviours in childhood and adolescence, and whether family dynamics influence help-seeking-related behaviours of disclosure and online help-seeking among adolescents already engaging in self-harm or experiencing suicidality. In Chapter 1, several knowledge gaps were outlined: (1) no known synthesis of the available literature on the prospective relationships between parenting practices and family functioning and self-harming thoughts and behaviours in childhood and adolescence, (2) whether exposure to family dynamics are causal antecedents to self-harm and suicidality in adolescence, and (3) whether family dynamics may impede or encourage help seeking among adolescents who engage in self-harm or experience suicidality. The identified knowledge gaps are addressed in Chapters 2 to 4, respectively. Altogether, this body of work demonstrates that family dynamics play a role in the development of self-harming thoughts, behaviours, and associated help-seeking behaviours among children and adolescents. Family dynamics may be leveraged to improve mental health in the short term among youth experiencing mental distress and in the long term to enhance population-level mental health among children and youth. The implications of this work as it applies to clinical practice, public health policy and practice, and future research are discussed below.

5.1 SUMMARY OF MAIN FINDINGS

Here in Chapter 5, the main findings from each thesis study and the key findings from this overall body of work are summarized.

5.1.1 Family dynamics and child and adolescent self-harm and suicidality: a systematic review and meta-analysis.

This review¹ is presented in Chapter 2 and is, to our knowledge, the first to summarize the prospective, longitudinal evidence on the relationship between family dynamics and self-harm and suicidality in children and adolescents. Studies were eligible if they followed a cohort of children or adolescents (before 20 years) from a general population, community, or school-based setting for a minimum of one year. Narratively, we summarized 38 studies comprising 101,879 children and adolescents. The included studies examined positive and negative family dynamics in relation to self-harming thoughts and behaviours. None of the studies captured by our review addressed thoughts of non-suicidal self-harm; thus, our review outcomes were non-suicidal self-harm, suicidal ideation, suicide attempt, and non-specific self-harm (i.e., indistinguishable non-suicidal self-harm and/or suicide attempt based on how the outcome was ascertained).

Quantitatively, we synthesized 24 studies and found that exposure to negative parenting was associated with a 29% greater likelihood of combined self-harm and suicidal ideation, and a 46% greater likelihood of non-suicidal self-harm. Similarly, family dysfunction was prospectively associated with a 29% greater likelihood of combined self-harm and suicidality, and a 70% greater likelihood of non-specific self-harm. There were no relationships for positive parenting practices, suggesting a potential ceiling effect. The primary takeaway of this study is that

negative family dynamics of negative parenting practices and family dysfunction appear to precede self-harm and suicidality among children and adolescents.

5.1.2 Negative parenting practices and adolescent non-suicidal self-harm and suicide attempt: causal inference in a population-based birth cohort.

The second study of this thesis, presented in Chapter 3, was informed by the first (review) study.¹ For the present study, we used a large, population-based birth cohort of children born across the United Kingdom (the Millennium Cohort Study: n=10,681) to conduct, to our knowledge, the first study to use causal inference methodology (i.e., marginal structural models) to link family dynamics with self-harm in adolescence. Specifically, our findings were that negative parenting practices in early childhood (measured across 3, 5, and 7 years) appear to lead to the onset and maintenance of non-suicidal self-harm in adolescence (14 to 17 years). On a more granular level, we found that both harsh (e.g., shout, smack) and withdrawal (e.g., ignoring the child or sending them to their room) parenting practices exert total effects on non-suicidal self-harm maintained across adolescence; however, using causal inference methodology coupled with traditional thresholds for statistical significance, only a controlled direct effect persisted for withdrawal parenting practices.

These findings indicate that after accounting for other forms of early-life adversity, including adverse childhood experiences (e.g., exposure to interpersonal violence), the potential for reverse causality (that greater emotional and behavioural concerns in early childhood [age 3] elicit greater negative family dynamics), the influence of multi-informant reports in effort to minimize measurement error and misclassification, and after blocking the intermediary effect of emotional and behavioural concerns in adolescence (age 11), that the negative effect of harsh

parenting on non-suicidal self-harm may entirely or mainly be prevented by intervening in adolescence to address emotional and behavioural concerns (i.e., internalizing and externalizing symptoms). In contrast, the negative effect of withdrawal parenting practices was not prevented, suggesting that other intermediaries (e.g., emotional dysregulation) require intervention in adolescence to prevent the onset and maintenance of non-suicidal self-harm among those for whom exposure to withdrawal parenting practices can no longer be prevented. Loosening the threshold for statistical evidence, our findings can more broadly be interpreted as: (1) negative parenting (harsh and withdrawal methods) appear to exert a causal effect on non-suicidal self-harm maintained across adolescence, and (2) to prevent the onset of non-suicidal self-harm when the opportunity for exposure prevention has elapsed, addressing emotional and behavioural concerns in addition to other potential mechanisms (e.g., teaching adaptive coping techniques for when the adolescent is emotionally dysregulated) should be strongly considered.

5.1.3 The relationship between family dynamics and help-seeking and disclosure of adolescent self-harm and suicidality: a population-representative study.

The final study of this thesis, presented in Chapter 4, used a provincially representative survey, the 2014 Ontario Child Health Study, to examine how family dynamics may impact disclosure and help-seeking behaviours among adolescents aged 14-17 who self-reported past-year suicidal ideation (with or without a suicide plan or past suicide attempt[s]) and/or non-suicidal self-harm. While support and help-seeking behaviours among adolescents who self-harm² or experience general mental health concerns³ have been thematically synthesized and systematically reviewed, respectively, to our knowledge, the present study is the first to quantitatively investigate the role of family dynamics in promoting or hindering help-seeking behaviours among adolescents with severe mental health concerns of non-suicidal self-harm and suicidal ideation. Our main findings

were that for each one-unit increase in family dysfunction (i.e., discord, conflict, lack of cohesion), adolescents experiencing suicidal ideation were 18% *less likely* to disclose their suicidal thoughts to their parents or other family members when compared to non-family such as teachers, friends, or partners. Consistent with our other work,¹ there was no statistical evidence that positive parenting (e.g., whether the parent listens to the child's ideas and opinions) was a disclosure or help-seeking facilitator for either non-suicidal self-harm or suicidal ideation. We discuss the potential for ceiling effects to have impacted these findings, and those noted above for Study 1 (Chapter 2), in detail below.

On the other hand, for each one-unit increase in exposure to negative parenting practices (e.g., whether the parent's decision to enforce a rule depends on their mood), adolescents experiencing suicidal ideation were 22% *more likely* to look for help online to stop thinking about taking their life. The absence of statistical findings for family dynamics and non-suicidal self-harm-related disclosure and online help-seeking may also be telling, as commented on by Mitchell and Ameis⁴ and noted below. Altogether, the findings of this study suggest that adolescents experiencing severe mental distress and who are exposed to negative family dynamics are more likely to seek help elsewhere (i.e., from other people or online) than from their family.

5.1.4 Overall findings

This thesis demonstrates that negative family dynamics not only play a role in the onset and maintenance of adolescent self-harm but also influence recent help-seeking behaviours among adolescents experiencing self-harm and suicidality. Of all the outcomes studied, non-suicidal self-harm emerged as a particularly salient consequence of exposure to negative family dynamics

in early life (Chapters 2 and 3). The role of positive parenting behaviours was also consistent, but notably unclear (Chapters 2 and 3). Finally, among adolescents who experience suicidal ideation, exposure to negative family dynamics may translate to an increased reliance on sources of support other than family (Chapter 4).

5.2 CLINICAL IMPLICATIONS

Youth presenting for emergent or acute care related to self-harm or suicidality require a support network to promote recovery and to break the negative cycles of their thoughts and behaviours. The findings of this thesis (Chapters 2 and 3) demonstrate that, because of their longitudinal impact, addressing negative family dynamics may ameliorate the risk of self-harm and suicidality. It extends that addressing family dynamics after the onset of self-harm and suicidality may reduce the imminent or short-term risk of these serious mental health outcomes; however, we did not test the effects of a family dynamics-based intervention or prevention initiative in reducing the risk of self-harm and suicidality, thus we cannot be certain. Nevertheless, we may infer that among families presenting with a child with emotional or behavioural concerns, or when parents or caregivers express challenges in addressing their child's emotional or behavioural concerns, guiding the family to minimize a reliance on negative parenting practices (e.g., harsh, punitive, withdrawal methods) and focus on improving family functioning (e.g., ensuring the child is accepted for who they are, enhancing communication and affective responsiveness) will be of benefit to the family as a whole, including as they strive to reduce the risk of future or recurrent self-harm. These recommendations align with recent reviews⁵⁻⁸ that recognize the importance of addressing the family psychosocial environment in pediatric therapy to disrupt cycles of self-harm and suicidality. Despite apparent knowledge gaps,^{5,6,8,9} addressing

the family unit is considered a key therapeutic target of existing and new intensive interventions for child and adolescent self-harm (e.g., in Dialectical Behaviour Therapy¹⁰).

Examining family dynamics in-depth may not only yield clinical insights for informing treatment modalities among adolescents already engaging in self-harm, but it may also provide useful information for those adolescents with elevated emotional and behavioural concerns but no self-harm. Specifically, our work (Chapter 3) indicates that the efficacy of the type of intervention may depend on the kind of negative parenting exposure. Adolescents with emotional and behavioural concerns and exposed to harsh parenting methods before 10 years (i.e., shouting, yelling, telling off) may be able to prevent the onset of non-suicidal self-harm if “behavioural techniques (e.g., behavioural activation, relaxation, social skills training, mindfulness)”¹¹ and “cognitive methods (e.g., problem solving, cognitive restructuring, rational analysis)”¹¹ are taught to alleviate mental health concerns. In contrast, adolescents with emotional and behavioural concerns and exposed to withdrawal parenting practices before 10 years (i.e., sending the child to their room, ignoring, removal of treats) appear to require additional interventional components to prevent non-suicidal self-harm. Among adolescents exposed to withdrawal parenting practices and presenting with elevated emotional and behavioural concerns, teaching skills to assist with emotional dysregulation, distress tolerance, or interpersonal effectiveness¹¹ may be of particular benefit. Thus, engagement in Dialectical Behavioural Therapy (DBT),¹² which is already clinically indicated for adolescents who self-harm or experience suicidal ideation,¹³ may be most strongly recommended as a first-line intervention.

Importantly, this thesis (Chapter 4) also demonstrates that among adolescents who are seriously considering taking their life, better family functioning translates to increased disclosure

to parents or other family members (after taking the inverse of the observed relationships).¹⁴ In other words, adolescents in distress but with better family functioning are more likely to disclose their suicidal thoughts to those people best poised to be able to help them seek professional mental health support: parents and family. Legal guardians, including parents or other caregivers, represent essential gatekeepers to the professional mental healthcare system for children and adolescents. For example, in Ontario, Canada, a child less than twelve years old cannot receive counselling services without parental/guardian consent, nor can such services be provided without parental/guardian consent to a child between twelve and sixteen years if it is deemed that the child lacks capacity for consent.¹⁵ Not to mention, parents and caregivers may have access to financial and other means (e.g., work-related health insurance) to enable children and adolescents to seek private professional mental health services when faced with long waits or are otherwise ineligible (e.g., due to insufficient symptom severity) for limited public health resources outside acute or urgent care.

Ultimately, shifting family dynamics in the immediate future and improving the potential for familial disclosure at any point in the adolescent's journey to improve mental health could lead to a reduction in suicide attempts. At the very least, it may lead to youth experiencing suicidal ideation being no less likely to disclose to parents or other family members compared to non-family, with any disclosure better than experiencing distress in silence. Regardless, failure to therapeutically leverage family dynamics, or the absence of a family dynamics effect either positive or negative (e.g., no statistical evidence of a relationship between family dynamics and non-suicidal self-harm disclosure in Study 3, Chapter 4), may be akin to "leaving potentially modifiable risk factors for suicide unaddressed, and a vital mechanism for support untapped".⁴

5.3 PUBLIC HEALTH IMPLICATIONS

Annually in Canada, there are approximately 4,500 persons who die by suicide, which is approximately 12 persons dying by suicide per day.¹⁶ The number of Canadians who seriously think about suicide every year (840,000)¹⁶ is nearly equal to the entire population of New Brunswick (859,839), and more than 4.5 times the population of Prince Edward Island (180,029).¹⁷ Among adolescents 15-19 years in Canada, suicide is the second leading cause of death after unintentional injuries resulting from accidents, such as motor vehicle collisions or drownings, for example.¹⁸ Recently, Canada has made tremendous strides in suicide prevention initiatives, including the National Suicide Prevention Action Plan (2024 to 2027).¹⁹ Further, Canada has invested \$177 million to bring forward a national suicide crisis helpline (9-8-8),¹⁹ which clearly demonstrates that the Federal Government takes suicide prevention seriously.

From a public health perspective, this thesis (Chapters 2 and 3) demonstrates that negative family dynamics are exposures that may lead to the onset of self-harm and suicidality in adolescence and thus may increase suicide risk. Unfortunately, the importance of negative family dynamics outside adverse childhood experiences is notably absent from Canada's National Suicide Prevention Plan (2024 to 2027).¹⁹ On the other hand, family-level risk and protective factors are noted explicitly in Canada's Suicide Surveillance Indicator Framework.²⁰ The family relationship indicators that are identified¹⁶ are highly relevant to the measurement of family dynamics; however, family dysfunction and negative parenting practices must be directly recognized for their ill effects. To ensure public health resources can be appropriately allocated to preventing the family-level exposures that increase the risk of self-harm and suicidality, we must begin by clearly outlining them, of which negative family dynamics are one.

Our first public health recommendation is that National suicide prevention efforts should **formally recognize** family dynamics as a risk and protective factor for suicide and related behaviours, apart from adverse childhood experiences. As we demonstrate here (Chapter 3), negative parenting practices continue to exert longitudinal effects on non-suicidal self-harm after a robust adjustment of several adverse childhood experiences.

Given their potential for modifiability, everyday family dynamics of parenting practices and family functioning represent an ideal target for primary prevention efforts that seek to reduce the burden of mental health and disorder in the developing child.²¹ In fact, family-focused prevention initiatives, such as the Family Check-Up,²² which focus on parenting practices and aspects of family functioning (e.g., improved problem-solving abilities and communication) within the family unit, have good evidence that they reduce suicide risk.^{23,24} Improving childhood living conditions by addressing social determinants of mental health and disorder, including childhood adversity and negative childhood experiences, is crucial to social justice efforts²¹ and central to health equity.

Parents and caregivers offer childhood experiences and construct the family environments in which the developing child is exposed.²⁵ It is these exposure histories that affect how the child learns to adapt to their environment, and consequently, their mental health.²⁵ This body of doctoral work provides strong evidence that family dynamics lead to the onset of some of the most severe forms of poor mental health. It follows that our second and final public health recommendation is to **develop upstream prevention initiatives** to mitigate early childhood exposure to negative family dynamics of parenting practices and family dysfunction.

Multi-component interventions that target both parenting behaviours and parental mental health can improve early child health outcomes of cognitive (standardized mean difference: 0.19 [0.04 to 0.34]) and socioemotional development (standardized mean difference: 0.26 [0.17 to 0.34]).²⁶ Interventions included in the systematic review and meta-analysis²⁶ were delivered antenatally or during the child's first three years of life. Findings provide support for the ability to change parenting behaviours; narratively, there were overall improvements in positive but not negative parenting practices, but too few studies prevented inclusion in the meta-analysis.²⁶ Other work can assist in addressing remaining knowledge gaps. For example, no matter the interventional focus (e.g., parenting skills, parent-child relationship, parental mental health), parenting interventions can reduce internalizing symptoms of depression and anxiety in children and adolescents,²⁷ and parenting practices can be changed through the delivery of at-risk and universal parenting programs (examples²⁶⁻³⁰). In alignment with the findings presented here (Chapters 2-4), parenting interventions that reduce parental/caregiver reliance on negative parenting while improving the use of positive strategies may return the greatest net benefit to population-level mental health for children and adolescents.

5.4 LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

This body of work has identified several areas of research worthy of future investigation. First, the systematic review and meta-analysis (Chapter 2) identified that no studies had examined family dynamics in relation to the lesser-studied thoughts of non-suicidal self-harm. As noted in Chapter 1, estimates of the prevalence of thoughts of non-suicidal self-harm are not widely available. Among some estimates available and using a small epidemiological sample of >1,000 participants from Germany, Voss and colleagues³¹ reported the lifetime prevalence among young people 14-21 years as 18%, while another³² that surveyed a large sample (>50,000) of young

Norwegians (18-35 years) pursuing higher education reported a lifetime prevalence of 22.6%. Of note, in the latter study, thoughts of non-suicidal self-harm were the most prevalent form of self-harm-related measures, more prevalent than lifetime suicidal ideation (21%), suicide attempt (4.2%), and non-suicidal self-harm behaviour (19.6%).³² If thoughts of non-suicidal self-harm are a precursor to engagement in non-suicidal self-harm or more serious forms of self-harm (i.e., suicidal thoughts and attempts), future work that identifies whether such thoughts are similarly prospectively predicted by family dynamics may return valuable insight for the prevention of self-harm and suicide both.

We acknowledge that there is a lack of recent estimates of family dynamics in relation to self-harm and suicidality using Canadian data sources. Over the past several years, Statistics Canada has invested considerably in population mental health datasets, such as the longitudinal Canadian Health Survey on Children and Youth (CHSCY).³³ To facilitate national recognition of family dynamics as an independent risk and protective factor for suicide prevention efforts, the international findings (Chapters 2 and 3) contained herein must be replicated in recent Canadian, longitudinal population-based surveys as soon as possible. The previously noted family-level relationship indicators used to inform the Canadian Suicide Surveillance Indicator Framework²⁰ were drawn from a Canadian cross-sectional data source: the 2017/2018 Health Behaviour in School-aged Children Study.³⁴ To strengthen our confidence in conclusions drawn from any future work and expedite our ability to develop effective primary prevention initiatives based on findings stemming from observational studies (i.e., better knowledge translation), we must take steps to improve causal inference.²¹

As it stands, there is some work using the concluded National Longitudinal Survey of Children and Youth (NLSCY)³⁵ and summarized here (Chapter 2), which provides evidence for a

prospective, longitudinal relationship between family dynamics and suicidality.^{36,37} However, it would be of benefit to replicate these findings in more recent cohorts of Canadian children and youth, to aid our understanding of how period and cohort effects may intersect to influence the family dynamics-self-harm and suicidality relationships across time. Taking a step back, if we consider the apparent consistency in observations across countries, time periods, and methodologies (Chapters 2 and 3), we expect findings from more recent Canadian longitudinal surveys to align with the present work. Nonetheless, precise up-to-date estimates can provide a better understanding and assist with population-level resource planning (e.g., prevention initiatives), as applicable. Taken together, an actionable next step is to replicate the present work in recent Canadian longitudinal population-based surveys that adequately capture measures of family dynamics, self-harm, and suicidality. Data sources that may inform this future work include the Quebec Longitudinal Study of Child Development (QLSCD)³⁸ and the Canadian Health Survey on Children and Youth (CHSCY).³³

A notable limitation of the summarized literature (Chapter 2) and a critique of the other studies included here (Chapters 3 and 4) is the reliance on a single informant's report of exposure to family dynamics. The impact of a single informant report may be best understood when considering parenting behaviours. Specifically, parents or caregivers may be more likely to underreport particularly harsh or punitive practices, which may bias estimates towards the null. In the context of the present work, such underreporting may explain the lack of some associations between negative family dynamics and self-harm and suicidality (Chapters 2 and 3). For example, in the systematic review and meta-analysis (Chapter 2), negative parenting practices were not statistically associated with suicidal ideation, and family dysfunction was not statistically associated with suicide attempt. However, the point estimates were in the expected

direction (odds ratios of 1.07 and 1.24, respectively), suggesting a potential pattern of risk. On the other hand, exposure to positive parenting, such as that which is emotionally supportive, may be overreported, diluting potential relationships should they exist. Across all studies of this thesis, there was no statistical evidence that positive parenting was protective against the onset of self-harm and suicidality (Chapters 2 and 3) or facilitated disclosure or online help-seeking (Chapter 4). Statistical power or a lack thereof may have also contributed to the lack of relationships, as positive parenting practices were the least studied measure of family dynamics (Chapter 2). Until we elucidate exactly which positive parenting strategies may promote positive mental health, we can confidently conclude that the detrimental effects of negative parenting behaviours and family dysfunction must first be avoided.

As noted earlier, as part of the field of psychiatric epidemiology's concerted effort to improve population-level mental health and redress mental health inequities, we need to "strengthen causal inference in research on social determinants of mental health".²¹ One such method would be to utilize multi-informant reporting of family dynamics, when available. Using multi-informant reports, including those between partners or caregivers when there is more than one, may reduce some of the bias noted above with a reliance on a single informant's report. As observed in the present thesis (Chapter 3), multi versus single informant reporting exerted differential associations between symptoms of emotional and behavioural health in adolescence (age 11) with later non-suicidal self-harm and suicide attempt (14-17 years). While the observed differences did not affect the overall interpretation of study findings, they highlight the potential for bias and measurement error to affect the precision of study findings, and in turn, the conclusions we draw. The study of multi-informant reports may prove particularly useful as it pertains to children whose time is spent between multiple households. At the individual level,

children living between different residences may be subject to different expectations and, consequently, may need to adapt differently. It is unknown whether the positive effects of one household could buffer the deleterious effects of another. In Canada, as of 2019, 18% of children between the ages of 1 and 17 years had experienced parental divorce or separation.³⁹

Other notable limitations of the existing literature include a lack of a clear consensus on what constitutes adequate adjustment of confounders, which is highly study dependent. As shown here (Chapter 4), when examining mediational pathways, it may be necessary to consider differential adjustment of confounders for each path under consideration (e.g., exposure-outcome and mediator-outcome). The heterogeneity in methodological approaches across studies examining family dynamics in relation to self-harm and suicidality in childhood and adolescence is vast.¹ For example, studies are highly variable in their chosen statistical approaches and the outcome ascertainment timeframe (e.g., self-harm in the past year or past six months). The uniqueness in methodological approaches, coupled with the varied primary or focal variables across studies (e.g., family dynamics and self-harm among adolescents with a minority sexual or gender identity), makes it difficult to advise on which set of confounders may be considered a prerequisite. However, it is reasonable to conclude that key sociodemographic characteristics of the family unit (e.g., two versus single parent/caregiver household, financial insecurity, parental/caregiver educational attainment, race or ethnicity, culture, immigration status) are pertinent to every family dynamics-child mental health relationship.

Careful theoretical consideration of confounders relevant to the study at hand, including whether longitudinal or cross-sectional relationships are being modelled, is required to strengthen the causal evidence base. Justification of confounders should be made transparent, either written in-text or conceptually visualized through aids like directed acyclic graphs

(DAGs).⁴⁰ As a greater number of studies become available, quantitative synthesis via meta-analysis can explore the potential for effect modification by types of confounder adjustment and other factors (e.g., repeated exposure or outcome ascertainment) that may strengthen or weaken existing relationships. The identification of lesser or more influential confounders may also reveal specific facilitators or barriers to the effective implementation of parenting programs.

For example, barriers to shifting parenting behaviours could include cultural norms. What may be considered a culturally normative parenting behaviour to someone may be regarded as taboo or inappropriate to another.²⁵ Cultural practices inform parental/caregiver thoughts of what is acceptable child-rearing behaviour versus not, which directly affects which strategies a parent or caregiver may rely on, in turn influencing the child's early experiences and development.²⁵ Understanding how culture shapes child-rearing is especially relevant to the development and implementation of successful preventive parenting programs in ethnoculturally diverse countries. In Canada, immigrants (i.e., ever or currently a landed immigrant or permanent resident) represent nearly a quarter (23%) of the population,⁴¹ and migratory experiences may carry risks for the child's emotional and behavioural development.⁴² However, parents/caregivers or the family unit may be able to ameliorate any associated negative effects of migratory experiences by offering "parental warmth, cohesive family routines, and good communication".⁴² These findings may similarly extend to other major and minor transitions in a child's life. In the end, there may be some features of parenting practices or the family environment that may represent ideal targets for universal prevention initiatives to promote healthy development and foster positive mental health among children and adolescents, including good communication²⁵

Finally, this thesis would be remiss if it did not address the elephant in the room: why did we not observe a protective role for positive parenting practices comprised of affection, praise, or

emotional support when synthesizing the existing family dynamics-self-harm and suicidality literature (Chapter 2) or in our independent investigation of the role of family dynamics on disclosure and online help-seeking for adolescent self-harm and suicidality (Chapter 4)? It was noted earlier that there may be a potential ceiling effect for positive parenting, whereby many respondents may report high levels of aspects of positive parenting (e.g., praise). In fact, in examining the influence of positive parenting on disclosure and help-seeking behaviours (Chapter 4), there was evidence of a buildup of scores along the highest end of the scale, suggesting a possible ceiling effect. However, after applying common data transformations to correct for the skew, the reported results were unchanged (data not shown).

Examining results of existing interventional work to improve positive parenting indicates that, when measured via self-report questionnaires, positive parenting may already be high at study outset.^{28,43} This finding may explain why, for a common parenting intervention, self-reports of positive parenting may not markedly improve pre-post intervention^{28,43} or statistically differ between the positive parenting intervention and the comparator.⁴⁴ For the latter,⁴⁴ this was an independent investigation of the Triple P-Positive Parenting Program (selected and primary care levels only) conducted in Alberta, Canada, using validated scales employed in the NLSCY and used to inform the operationalization of the parenting constructs used in the systematic review and meta-analysis (Study 1, Chapter 2). If self-reported measures of positive parenting may be prone to ceiling effects, as in Study 3 (Chapter 4), it is possible that current measures do not reflect the full range of positive parenting behaviours, particularly those that may be most relevant to the study of child mental health (e.g., helping a child identify and label their emotions, validating the child's emotions, teaching effective emotional self-regulation when feeling stress or distress).

In fact, apart from the behaviour change methods of parenting interventions noted herein (i.e., those such as the Triple P and Incredible Years programs, that reduce negative parenting strategies while increasing reliance on positive practices⁴⁵), emotion socialization parenting interventions have shown mental health-related promise.⁴⁶ Specifically, these interventions improve parental emotional socialization (e.g., “parental awareness and understanding of emotions”, ability to “communicate understanding and empathy”⁴⁵), improve positive and reduce negative parenting behaviours, while increasing emotional competence in the child (18 months to <7 years), as measured by emotion regulation, emotional expression, and emotion knowledge.⁴⁶ One such program is Tuning in to Toddlers,⁴⁷ which teaches emotion coaching plus additional psychoeducation and parental/caregiver skills development.⁴⁵ Other multi-component parenting/parental mental health interventions may also benefit children’s socioemotional development.²⁶ As a next step, the family dynamics-child and adolescent self-harm literature would benefit from a health economic evaluation. A comprehensive and systematic evaluation could shed insight on prevention/intervention effects by program type (e.g., behaviour change, emotional intelligence-focused, multi-component), cost effectiveness, and net population mental health benefits.

Another key reflection is that who the rater of parenting behaviours is may impact study findings. When considering agreement between different types of parenting measures, parent-reported and observed parenting practices are known to be weakly correlated.⁴⁸ The correlation between parent-reported and observed negative parenting is stronger (Fisher’s z : 0.21) than for positive parenting (Fisher’s z : 0.15).⁴⁸ Still, both depend on questionnaire length, with a greater number of items corresponding to stronger effect sizes between parent-reported and observed measures.⁴⁸ Unfortunately, Hendriks and colleagues⁴⁸ could not provide guidance for the

selection of the best measure to use, which leaves another avenue for future inquiry. It may also be that a more holistic approach to the study of dimensions of parenting behaviours may be required to understand how negative and positive parenting fully interact.

For example, we may reveal statistical evidence of a protective association for positive parenting with self-harm and suicidality if we examine the distribution of positive parenting among those families who similarly engage in high or low levels of negative parenting. Along the same lines, we cannot rule out that the protective effect of positive parenting on mental health may be nonlinear (e.g., quadratic) and that existing scales do not entirely capture the potential dimensionality of positive parenting practices. At the same time, and as already noted, in the study of mental health, what may be considered positive parenting for the promotion of healthy socioemotional development may differ from what is captured via typically used scales (e.g., the extent to which the parent helps the child identify and validate their emotions). However, given that we consistently observed a deleterious effect of negative parenting on adolescent self-harm and suicidality, it is also possible that the true benefit of positive parenting may only be realized in the absence of or at low levels of negative parenting.

Before concluding, it should also be stated that in our attempt to advance the study of family dynamics in relation to self-harm and suicidality, we used systematic and rigorous methods, including a systematic review and meta-analysis (Study 1, Chapter 2), leading causal inference methodological techniques (Study 2, Chapter 3), and conducted population-representative cross-sectional analyses with several sensitivity analyses (Study 3, Chapter 4). In study 2 (Chapter 3), for example, we used propensity score weighting, accounted for reverse causality, and the potential for genetic liability to affect our findings. However, the models that we have presented are still likely overly simplistic. In all likelihood, our causal analysis (Study 2,

Chapter 3) does not adequately account for the potential bidirectional relationships between variables (e.g., between our hypothesized mediator of adolescent emotional and behavioural concerns and adolescent substance use [time-dependent confounder] at age 11) or for the genetic liability of the biological father to influence, and potentially attenuate, study findings. To address these shortcomings, we strongly recommend that future endeavours model the complex relationships common to psychiatric and life-course epidemiology using more sophisticated repeated measures causal inference designs and account for inherited traits from both biological parents. It will be through these advancements that we will develop a clearer understanding of how family dynamics may promote or hinder a developing child's mental health.

5.5 CONCLUSIONS

This thesis addressed three key knowledge gaps: (1) whether family dynamics prospectively predict self-harm and suicidality, (2) whether there is a causal relationship between family dynamics and self-harm, and (3) whether family dynamics may promote or impede disclosure and help-seeking among adolescents engaging in non-suicidal self-harm or experiencing suicidal ideation. The findings of this doctoral work demonstrate that there is a prospective relationship between family dynamics and self-harm and suicidality, the relationship appears causal, and family dynamics influence help-seeking-related behaviours after the onset of self-harm and suicidal ideation.

From a practical and translational perspective, exposure to childhood adversity, as defined by negative family dynamics and negative parenting practices, must be prevented. Public health campaigns should raise awareness of the importance of addressing and minimizing exposure to negative everyday family-level dynamics to improve mental health in childhood and

adolescence. In practice, the consideration of family dynamics as a risk factor for the presentation of self-harm and suicidality is warranted. In summary, this thesis provides rigorous, prospective evidence that intervening to minimize negative family dynamics can prevent the onset of future self-harm and suicidality.

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