A Qualitative Systematic Review of the Impact of Prisoner Suicidal and Self-Harming Behaviour on the Wellbeing of Prison Staff

and

A Secondary Data Analysis of Adverse Childhood Experiences and Hospital Treated Self-Harm

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Foreword

The project originally proposed for the Major Research Project (MRP; Chapter 2) became unfeasible at short notice (30/09/2022) due to unforeseen circumstances outwith the trainee's control. The current project was developed as a result. A link to the original and current project proposals may be found in Appendix 5.

Chapter 1: Systematic Review

A Qualitative Systematic Review of the Impact of Prisoner Suicidal and Self-Harming Behaviour on the Wellbeing of Prison Staff

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Abstract

Background and Aims: Research has shown that prison officers are exposed to high rates of prisoner suicidal behaviour which can result in stark and adverse changes to their mental health. Little is known about how staff cope with these adverse changes and what support they find beneficial and/or would be welcomed. This review aims to explore the qualitative literature on this topic to identify, interpret and synthesise existing studies of prison officers' experiences of prisoner suicidal behaviour, the impact this had on their wellbeing and how they cope.

Method: Four electronic databases (PsyINFO, CINAHL, EMBASE and Medline) were searched in October 2022. Reference list searches were completed. Study characteristics were collected and summarised. Study quality was evaluated using The Critical Appraisal Skills Programme Tool. Thematic synthesis was carried out on included studies.

Results: Seven studies were included in this review. Study quality was variable. Four analytical themes were generated from the thematic synthesis (the personal impact, the professional impact, coping strategies at work and at home, and uptake of support).

Conclusion: Prisoner suicidal behaviour can have a long-term impact on prison officers' well-being, particularly in relation to trauma-related difficulties. Prison culture hindered staff uptake of formal support which was low. Staff described feeling embarrassed and/or ashamed, concerned that colleagues would find out or concerned about the confidentiality of support services. Supervision in prisons could be a useful first step to support prison officers.

Keywords: prison, suicide, self-harm, officer, systematic review.

Introduction

Suicide

Suicidal behaviour is a major public health concern and recent research has suggested that there are as many as 703 000 deaths by suicide annually (WHO, 2021). In response to this issue, 'Creating Hope Together: suicide prevention strategy 2022-2032' was launched by the Scottish Government in September 2022. This aimed to improve people's mental health and to reduce suicide rates.

Although not a specific focus of the national suicide prevention strategy, the need to reduce suicidal behaviour in prisons has been highlighted as an important priority area (National Offender Management Service, 2016). This focus is significant as prisoners are 8.6 times more likely to die by suicide compared with the general population (Prison Reform Trust, 2020). Managing the suicidal risk of male prisoners is particularly important, as there are significantly more male prisoners compared to female prisoners (Tyler et al., 2019) and suicidal behaviour in men is often more recurrent and fatal (Callanan & Davis, 2012).

Self-harm

NICE (2022) defines self-harm as deliberate self-injury or self-poisoning, regardless of the intended outcome (e.g. intent to die, emotional release). The relationship between suicide and self-harm is complex. Not everyone who self-harms will attempt or complete suicide and vice versa (Sivertsen et al., 2019). However, half of the prisoners who die by suicide have a recorded history of self-harm (Fazel et al., 2008; Fazel et al., 2016; Humber et al., 2013). In prison populations suicide attempts have been associated with a history of self-injury (Favril et al., 2020). Self-harm is highly prevalent and often follows repeated incidents within prison populations (Jenkins et al., 2005).

How suicidal behaviour is managed in prisons

The prevalence of suicide and self-harm by prisoners highlights how important it is for prisons to manage suicidal behaviour as effectively as possible. However, research findings have shown that prison staff don't feel adequately supported when managing suicidal behaviours as they feel under-qualified and under-resourced (Sweeney et al., 2018). In addition to this, Slade et al. (2019) found that staff often feel blamed by management and/or society when prisoners engage in suicidal behaviour. This is often compounded by internal feelings of guilt or shame that prison officers have if they were not able to intervene effectively. Put simply, suicidal behaviour has been shown to impact prison officers wellbeing.

Wellbeing and Mental Health

Dodge et al. (2012) highlighted that despite an increasing amount of research into the area of wellbeing, there is still currently no consensus as to its definition. Dodge et al. (2012) proposed that wellbeing be defined as "when individuals have the psychological, social and physical resources they need to meet a particular psychological, social and/or physical challenge. When individuals have more challenges than resources, the see-saw dips, along with their wellbeing, and vice-versa" (Dodge et al. 2012, p230). Research has indicated that the wellbeing of prison staff is often challenged due to challenging work demands such as high workloads, low support, exposure to risk including violence and aggression and suicidal behaviour (Crawley 2004; Finney et al., 2013).

Effects of prison suicidal behaviour on prison officers' mental health

Slade et al. (2019), in a commissioned report, synthesised the available research of the impact of suicidal behaviour on staff and patients within inpatient and prison settings. They found that exposure to suicidal behaviour in these settings was high and resulted in wide ranging effects on staff such as high levels of anxiety, reduced professional confidence, ongoing intrusive memories and high levels of emotional salience in relation to the incident. Borrill and Hall (2006) reported that prison officers who encountered self-inflicted deaths in custody experienced stark changes to their mental health such as long standing flashbacks and high levels of distress. Other research has shown that trauma-related difficulties such as re-experiencing and emotional dysregulation are prevalent in prison officers (Wright et al., 2006).

This is extremely concerning in a prison environment as trauma-related difficulties have been linked to compassion fatigue and burnout (Diaconescu, 2015). An emerging evidence base indicates compassion fatigue and burnout in staff are associated with an impaired ability to assess and manage risk (Collins & Long, 2003). Taken together, these findings highlight the need for a robust support system for officers managing suicidal behaviours in prison.

Staff support

Staff support after being involved in an incident of suicidal behaviour varies from prison to prison. It can include post-incident debrief, involvement with occupational health or time off work (Kinman et al., 2016). However, post-incident support is generally considered poor by prison officers and the available research has indicated that there is minimal uptake of available support (Barry, 2020; Kinman et al., 2016). The culture within the prison environment often precludes officers from accessing available support as they feel discouraged or ashamed to do so (Marzano & Adler, 2007). Indeed, Slade et al. (2019) recommended that staff should be supported in enabling emotional

expression through supervision and that prisons need to be aware that many aspects of their culture have a damaging impact on prison staff.

The current review

Given the unique culture within prisons, a review focusing on the impact that prisoner suicidal behaviour has on prison staff would be beneficial. Therefore, this review aims to update and extend Slade et al.'s (2019) review in relation to the impact that prisoner suicidal behaviour has on prison officers and the ways in which they currently cope. This could help inform institutions about the wellbeing of officers, inform clinical practice and provide new insights into useful future research. Qualitative research allows an in depth exploration of a person's experience. Flemming et al. (2019) highlighted that qualitative synthesis is a valuable tool to guide complex interventions within complicated systems, creating an audit trial and highlighting patterns in the available data. To the author's knowledge, there is no systematic qualitative review focusing on prison officers' experience of prisoner suicidal behaviour and their experience of support and strategies used for coping with such challenges. Given the unique, complex and extreme nature of prison environments (Kinman et al., 2016) this would be a reasonable tool to allow for a detailed examination of the impact of prisoner suicidal behaviour and could be used to inform specifically tailored support for prison officers.

This review has defined suicidal behaviour in line with the NICE (2022) definition of self-harm (deliberate self-injury or self-poisoning, regardless of the intended outcome (e.g. intent to die, emotional release)). This includes attempted and completed suicide, and self-harm without suicidal intent (e.g. cutting, burning, head banging or hitting, ingesting or inserting objects, drinking harmful substances such as bleach or breaking bones purposefully).

Research Questions

This study addressed two questions:

Primary Question: What impact does prisoner suicidal behaviour have on prison officers' wellbeing?

Secondary Question: How do prison officers' cope with prisoner suicidal behaviour and the impact it has on their wellbeing?

Method

Initially, a search of Prospero: International prospective register of systematic reviews, was completed to check the originality of the review aims and questions. This was done by searching only for 'prison' and 'suicide' which yielded 3 papers. Of relevance was Slade et al. (2019) which

included a review of exposure to suicide and suicidal behaviour in prison and inpatient settings. This review aims to build on the findings of Slade et al. (2019) by focusing solely on prison officers in prison settings. The 'Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)' (Page et al., 2021) guidelines were followed. The review protocol was registered with PROSPERO International Prospective Register of Systematic Reviews (CRD42022354657).

Search Strategy

Initially a 'scoping search' was carried out to determine the feasibility of the review using the search terms specified in Slade et al. (2019) which consisted of three main strands. However, a preliminary search was undertaken, and the results did not yield expected papers that were referenced in the Slade et al. (2019) review, despite being available in the searched databases (this was confirmed through individual searches of study titles). As using the three search strands narrowed the findings too much, the search strategy was adapted. This resulted in two main subject areas (prison officers and suicidal behaviours) being explored in the search strategy. Following this, key words were identified. The search terms (see below) were reviewed by a specialist librarian to check that they were sensitive enough to capture relevant studies. Synonyms were used and words truncated if required.

Slade et al. (2019) reviewed 27 studies published between 1976 and 2017. It was hoped that the current review would capture literature published after this. For the current review, a systematic review of the literature was carried out on the 28th of October 2022. Due to the specificity of participants, settings and methodology, no date limitations were added. Four electronic databases (PsyINFO, CINAHL, EMBASE and Medline) were accessed via OVID and EBSCOHost search engines and searched to retrieve articles. A detailed description of the search terms and electronic searches is included in the appendices (please see Appendix 1).

Inclusion Criteria

- Studies that include a mix of staff groups (e.g. healthcare and prison staff)
- Prison officers working with male and/or female prisoners
- Studies where staff response to suicidal behaviour of prisoners is part of the research even if it is not a specified primary aim of the research
- All qualitative study types with recognised research methodologies
- Primary literature (containing novel research data)

• Published articles in professional journals and/or scholarly books

• No limitation on country of research

• No date limitations

Exclusion Criteria

• Mixture of prisoners and staff as research participants

• Studies not written in English

Due to the limited amount of research in this area studies were included if they had a mixture of staff groups (e.g. NHS and prison staff). Studies were also included even if the primary aim of the research was not in relation to the effects of prisoner suicidal behaviour on staff. For example, if the journal article specified suicidal behaviour as part of the stressors of the job and went on to discuss the impact of overall stressors and/or coping strategies to manage this it was included. Studies that included prison officers working in male/female prisons were included as there were so few studies that it was not possible to narrow the inclusion criteria further. This was the case for the country of research and date of publication.

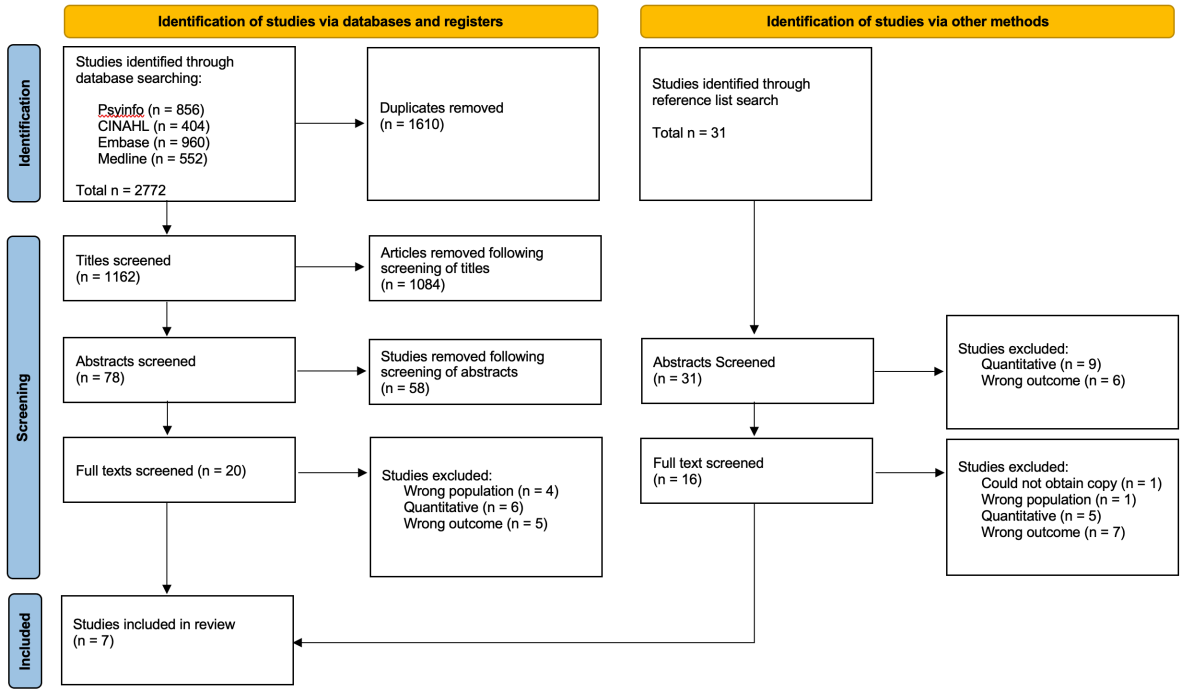

Figure 1 Adapted Prisma (2020) Flow Chart of Study Selection Process

Study Selection

See Figure 1 for illustration of search process. The potential studies (n = 2772) were transferred to a reference management system (RefWorks). Duplicates were removed (n = 1610), and titles and abstracts of the remaining studies (n = 1162) were screened against the inclusion/exclusion criteria. The remaining studies (n = 20) were compared in full to the inclusion/exclusion criteria which resulted in 5 studies being included. Articles identified through reference list searching (n = 31) were screened via abstracts and then the remaining (n = 16) were full text screened. This yielded a further 2 studies bringing the total number of studies in the review to 7.

A second reviewer (a Trainee Clinical Psychologist, JV) screened 10% of titles and abstracts and the full text (50%) of the remaining studies against the inclusion/exclusion criteria to increase reliability. These checks were made independently of the initial judgement of the primary researcher and a random sample was selected. Two studies were discussed in depth until both reviewers reached a 100% consensus on all included/excluded articles.

Quality Assessment

The Critical Appraisal Skills Programme Tool (CASP, 2022) is a validated ten-item checklist (please see Appendix 2). It is used to evaluate the methodology of a qualitative study's strengths and weaknesses. It is used to assess possible bias that could affect the findings of studies. The CASP tool was utilised as it is appropriate for novice researchers (Long, French & Brooks, 2020) and is focused on qualitative methods.

The second rater (JV) rated a sample of papers (n=4) using the CASP tool and discussions were had until a complete consensus was reached. These ratings were made independently of the initial judgement of the primary researcher and a random sample was selected. Quality appraisal in this review was not to exclude studies which were rated of low quality but to keep quality in mind whilst interpreting the findings. Studies were rated as having low (0-3), medium (4-6) or high (7-10) quality depending on how many items were rated as present on the CASP tool. This is not a standard scoring procedure, it was developed by the primary researcher and therefore as not standardised is a possible limitation of this review.

Thematic Synthesis

Data from the included studies was extracted. This included author/s, year, country, number of participants, type and frequency of suicidal behaviour, type of prison, participant occupation, years of occupation in prison, data collection method, analysis and core themes.

Three approaches were examined when deciding on the type of approach to use for this review (thematic synthesis, framework synthesis and meta-ethnography). Framework synthesis requires there to be a pre-existing theory guiding the review (Flemming et al., 2019), therefore it was deemed not suitable. Meta-ethnography is complex and requires a highly experienced research team (Flemming et al., 2019). Therefore, due to the limited research experience of the primary researcher it was not utilised. Thematic synthesis was selected as it has been used in previous systematic reviews to synthesise the results of qualitative studies (Campbell et al., 2016; Dennison et al., 2019). Flemming et al. (2019) highlighted that this type of synthesis is a valuable tool to guide complex interventions within complicated systems, creating an audit trial and highlighting patterns in the available data.

This review followed the training provided by the Cochrane Training Website (please see Appendix 3) and the steps outlined by Thomas and Harden (2008) which included a three stage process: (1) line-by-line coding and mapping onto a database; (2) developing descriptive themes by grouping together codes; and (3) generating analytic themes from the descriptive themes that summarise the key messages of the research, grounded in the current review aims and questions (Nicholson et al., 2016).

Reflexivity Statement

The primary reviewer is a white, middle class, Trainee Clinical Psychologist with experience of working in forensic settings and as such was exposed to prisoners who had engaged in suicidal behaviour as well as officers that had been effected by same. This will undoubtedly have an impact on opinions, views and interpretation of available research. Although a second reviewer was used to validate the inclusion/exclusion of articles, and supervision was utilised to discuss and modify themes as required, the epistemological stance of the researcher cannot be ignored in the interpretation, analysis and write up of the results.

Results

In the following sections, the findings are presented as follows: first, the characteristics of the included articles. Second, the research quality of each study using the CASP tool. Finally, the results of the thematic synthesis is described.

Study Characteristics

Please see Appendix 3 for full breakdown of study characteristics (includes further information on types of exposure to suicidal behaviour, years of service and study aims). Table 1 summarises the study characteristics of the seven included studies. Two studies were conducted in the Republic of

Ireland (Barry 2017; 2020) and the remaining five in the United Kingdom (Dennard et al., 2021; Marzano et al., 2015; Short et al., 2009; Sweeney et al., 2018; Walker et al., 2017). Semi-structured interviews were used in all of studies with the exception of one (Dennard et al., 2021) which used written responses to open ended questions. All studies used thematic analysis. Overall, there was a higher number of male participants compared to female (25(28%) female; 58(72%) male). The frequencies and the breakdown of staff (i.e., prison vs healthcare staff) can be found together in Table 1. A range of themes was identified and documented regardless of relevance to the reviews aims.

Table 1 Samples & Clinical Characteristics Including Original Study Aims & Core Themes

Study	Authors (Year), & Country	Sample & Clinical Characteristics	Data Collection Method & Analysis	Core Themes
S1	Barry, (2017) Republic of Ireland	**N**=14 (n = 12 prison staff; n = 2 retired prison staff) **Gender:** NR **Prison(s):** Unclear 'Irish Prison Service'	Semi-structured interviews & thematic analysis	1.Working on autopilot 2.The need to keep up appearances 3. Impact on work 4. Impact on personal life 5. Moving between two worlds
S2	Barry, (2020) Republic of Ireland	**N**=17 (n = 15 prison staff; n = 2 retired prison staff) **Gender:** 16 male & 1 female **Prison(s):** Participants worked in 9 of the 14 prisons in the Republic of Ireland	Semi-structured interviews & thematic analysis	1. Managing emotion during the emergency response 2. Managing emotion in the immediate aftermath 3. Humour 4. Empathy 5. Longer term managing emotions and finding support 6. Finding support at work 7. Protecting the home from spill over
S3	Dennard et al. (2021) United Kingdom	**N**=74 (N = not recorded to maintain confidentiality estimated 60-70% prison staff and the rest civilian staff) **Gender:** NR **Prison(s):** Category B remand male prison.	Written responses to 4 open ended questions that were anonymous and added to a ballot box & thematic analysis	1. The challenging nature of the work 2. Interactions with prisoners 3. Staff interactions 4. Inadequate resources 5. Staff support and development 6. Coping strategies

Study	Authors (Year), & Country	Sample & Clinical Characteristics	Data Collection Method & Analysis	Core Themes
S4	Marzano et al. (2015) United Kingdom	**N**=30 (n = 15 prison staff; n = 15 healthcare staff) **Gender:** 15 prison staff (5 female, 10 male) 15 healthcare staff (6 female, 9 male) **Prison(s):** South East England, male prison	Semi-structured interviews & thematic analysis	1. Prolific self-harmers draining limited resources 2. Subverted power relations and role expectations 3. Switching off
S5	Short et al. (2009) United Kingdom	**N**=13 (n = 8 prison staff; n = 5 healthcare staff) **Gender:** 5 male & 8 female **Prison(s):** North England, female prison	Semi-structured interviews & thematic analysis	1. Staff perceptions of why the women self-harm 2. Labelling of self-harm 3. The implications of labelling 4. The occupational environment that the prison staff work in and how it affects their attitudes. 5. Staff attitudes to balancing role demands, staff training, and support.
S6	Sweeney et al. (2018) United Kingdom	**N**=9 (N = 9/9 prison officers) **Gender:** 8 male & 1 female **Prison(s):** Category B male prison in Yorkshire	Semi-structured interviews & thematic analysis	1. Prison officer culture limiting support 2. Feeling underqualified 3. Being under resourced 4. Minimising negative emotions 5. Positivity in relation to intervening effectively in situations
S7	Walker et al. (2017) United Kingdom	**N**=14 (n = 11 prison staff; n = 3 healthcare staff) **Gender:** 10 male & 4 female **Prison(s):** 3 prison sites, closed category for female adults in England.	Semi-structured interviews & thematic analysis	1. Coping in the prison 2. Coping on the job 3. Coping away from prison 4. Future training to cope with the job

Note: NR = not reported in study, N/A = not applicable to research inclusion/exclusion criteria or aims.

Quality Assessment Ratings

Please see Appendix 4 for Table of quality appraisals. Two studies were rated as medium quality and the remaining five as high quality. Many of the studies failed to provide full information on participant recruitment. It was often not clear how or why participants had been approached, why some had not been approached and why, and why some did not want to take part. Barry (2017) and Barry (2020) both recruited from the Irish Prison Service. It is unclear from the published papers whether the same participants had taken part in both studies. If they had, this could result in some themes receiving unwarranted emphasis.

In all but one study (Dennard et al., 2021) it was unclear whether researchers had considered their own biases and judgements when developing their research and interpreting the findings. Three studies had not fully documented ethical considerations.

Results of Thematic Synthesis

Synthesis of the seven included studies resulted in the development of four analytical themes and thirteen descriptive themes were created from the thematic synthesis. Please refer to Figure 2. They are listed below and will be discussed in order, firstly exploring the impact prisoner suicidal behaviour has on prison officers before moving on to a synthesis of coping strategies that prison officers used.

A description of the analytical themes and descriptive themes is outlined below with participants' quotes denoted by "double quotation marks" and authors' quotes denoted by 'single quotation marks'.

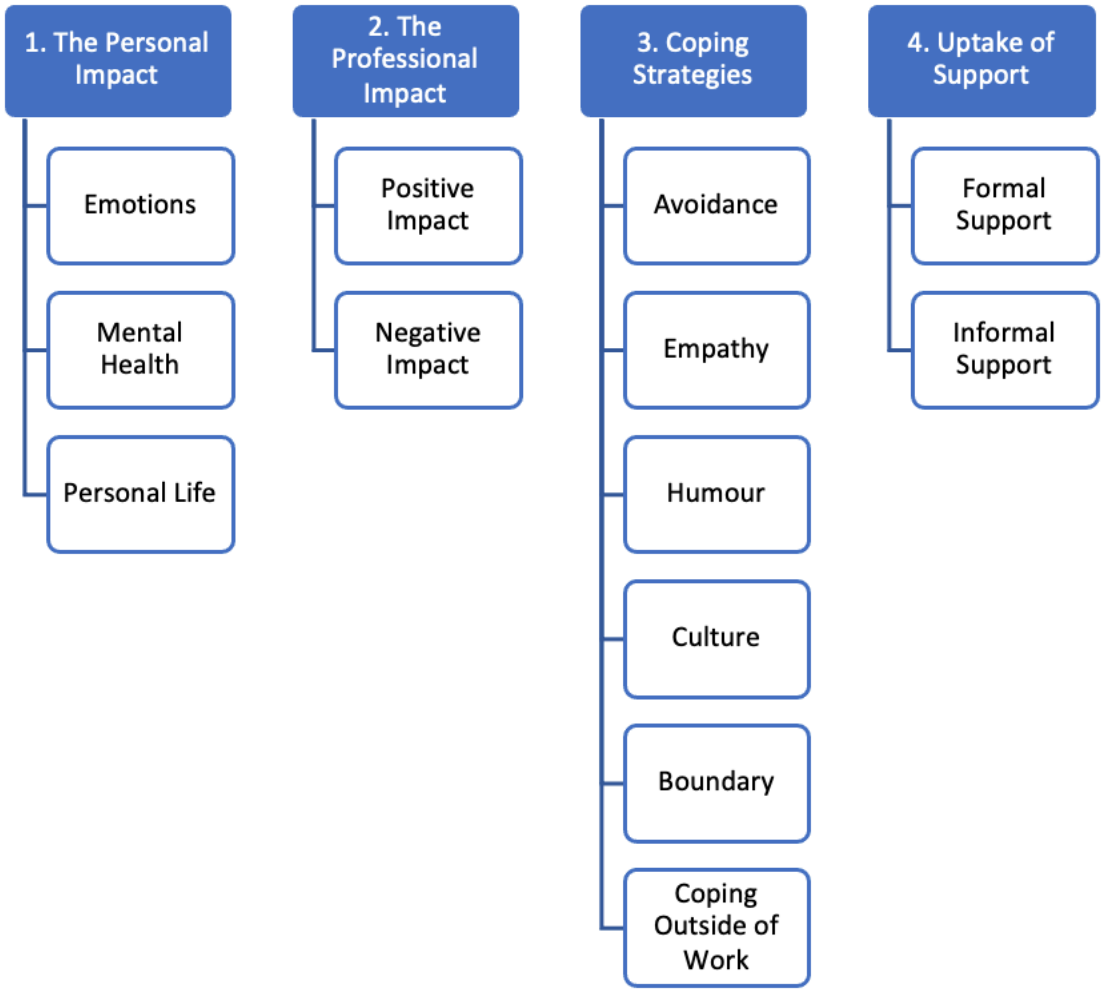

Figure 2 Hierarchy of Analytical Themes and Descriptive Themes.

The personal impact

As illustrated below the personal impact of prisoner suicidal behaviour on staff wellbeing was extensive and was a key analytical theme which was comprised of three descriptive themes: The emotional reactions, mental health difficulties and effect on their personal lives.

Emotions

This theme was generated to group the varied emotional responses that prison staff had when faced with suicidal or self-harming behaviour. Prison staff described feeling useless, hopeless, confused as well as greatly frustrated. For example, in Marzano et al.'s (2015) study of prison officers, the authors concluded:

'All but two participants described their experience of working with prisoners who repeatedly self-harm as challenging, draining, stressful, and frustrating, at times infuriatingly so' (Marzano et al., 2015, p 246).

Staff frustration was often in relation to the time-consuming nature of self-harm. This could lead to resentment of the individual, management, and societal structures, as officers didn't think prison was the right place to care for these individuals (Marzano, et al., 2015; Short et al., 2009; Walker et al., 2017). To this end, one officer stated:

"Because she's done this you won't be able to do that or three jobs for somebody else, so its time constraints, time consuming and yes, I suppose a little bit resentful and that sounds awful, and I probably wouldn't say it to anybody else but that's sometimes how you feel." (Short et al., 2009, p417).

Officers described the feelings of frustration and confusion being heightened as many staff had experienced suicidal behaviour being used as a threat or a form of blackmail (Marzano, et al., 2015; Short et al., 2009; Sweeney et al., 2018). For example, one officer said:

"My honest view is that most staff see self-harm as some sort of cry for help or some sort of manipulative gesture and that … the serious self-harm they are definitely in need of some sort of support, but there's a huge swath of people who staff think use the ACCT system to manipulate." (Sweeney et al., 2018, p474)

These feelings had an impact on staff members' stress levels, at work and at home.

Mental Health

Mental health was described in general terms in two studies (Barry et al., 2020; Dennard et al., 2021). For example, a trend highlighted in one study was:

'The frequency and intensity of distressing interactions also appeared to impact negatively on the mental well-being of staff' (Dennard et al., 2021, p139).

More specifically, a range of trauma related difficulties was described in most studies (Barry 2017; Barry 2020; Marzano et al., 2015; Sweeney et al., 2018; Walker et al., 2017). For example, flashbacks, nightmares, sleep disturbance, avoidance, rumination, and impact on relationships with others were all mentioned. The following quotes illustrate the high degree and seriousness of trauma symptoms reported by officers:

'Difficulty with visual memories of deaths was a prominent issue, particularly for those who dealt with a suicide by hanging. These participants described experiencing strong visual flashbacks or having trouble with depictions of suicide in film and television.' (Barry, 2020, p7)

"They [prison staff] used to phone me up at home in floods of tears because they kept hearing a prisoner chewing through her skin, and that's all they could hear." (Walker et al., 2017, p819)

Barry (2017;2020) described how participants reported associations with certain places in the prisons and would avoid these to stop flashbacks or intrusive memories. Night shifts were regarded as a high-risk time for suicidal behaviour and prison officers' reported changes to their attitudes to these e.g. they would try to avoid them or be more alert during them, participating in higher levels of checking behaviour to ensure safety measures were in place (Barry, 2017).

Personal Life

Overall, the existing research only touches on the impact that the subsequent mental health impact has on personal lives, mainly in the form of acknowledging sleep difficulties and avoidance of specific films and television series (Barry 2017; Barry 2020; Marzano et al., 2015; Sweeney et al., 2018). Officers in Marzano et al. (2015) spoke of the negative effect that prisoner suicidal behaviour had on mental health and the subsequent impact this had on their relationships at home:

'Five officers describing flashbacks and nightmares about self-harm, "taking it home", and sometimes taking it out on their family' (Marzano et al., 2015, p248).

One officer in Barry (2017) disclosed that he avoided seeing objects around necks after responding to a death in custody. He said:

"you can ask the children at home, nothing goes around their necks now, nothing…I don't even like scarves on their necks". (Barry, 2017, p59).

The Professional Impact

Similar to the personal impact that prisoner suicidal behaviour has on prison staff, the professional impact was also extensive and emerged as a key analytical theme consisting of two descriptive themes: the negative impact (which was the most widespread) and the positive impact.

Negative Impact

Participants in all studies with the exception of Dennard et al. (2021) described a range of negative impacts at work such as feelings of uncertainty, responsibility, blame and isolation.

One officer said:

"Nobody wants to get entirely involved in such a situation. Just in case that person tries and hang themselves. Nobody wants to be taken to the coroner's inquest, and, you know, ehm, you know,

possibly being blamed for what happened, during the period of the person cutting themselves. So you tend to be quite isolated." (Marzano et al., 2015, p248)

Barry (2017) described how officers would respond automatically and instinctively during an emergency response and that it was something that could only be learned on the job. However, others reported that they often didn't know how to respond to suicidal behaviour (Marzano et al., 2015; Short et al., 2009). Sweeney et al. (2018) highlighted how prison officers felt there was badly communicated and inconsistent guidance from management and the prison organisation. Staff in three studies indicated concerns about being held responsible for prisoner suicidal behaviour. They reported this could lead to others not getting involved and subsequent isolation (Marzano et al., 2015; Short et al., 2009; Sweeney et al., 2018).

Participants in Short et al. (2009) described how a lack of resources in prison resulted in obstacles to preventative measures and adequate responses and staff described symptoms of burnout resulting in tensions between prison and healthcare staff. Some participants openly rejected the idea that their job included a caring role (Short et al., 2009; Marzano et al., 2015) as can be seen by the excerpt below:

'Implicit within many accounts was the idea that becoming desensitized to self-harm did not mean having no thoughts or feelings about it, but potentially becoming intolerant of self-harmers, angry, cynical, or blasé. Comments such as 'if you are going to do it, do it properly' (David, officer), 'it's your own skin, so do whatever you like' (Kevin, officer), 'pull yourself together' (Luke, officer), and 'YOU ARE A MAN, for god's sake…just deal with it' (Norma, officer) were not uncommon. Although this may have been a way of coping, some other participants questioned its implications for prisoners and staff.' (Marzano et al., 2015, p249)

Positive Impact

However, two studies (Barry, 2020; Sweeney et al., 2018) reported a positive impact on officers' working lives as can be seen in the following excerpt:

'Eight interviewees highlighted positive emotions including pride and achievement after successfully intervening in an incident. These positive emotions then reinforced why participants came into the Prison Service and bolstered their commitment to the job.' (Sweeney et al., 2018, p476)

Participants also highlighted how this experience could go on to soften the lines between prison officer and prisoner, creating feelings of purpose and unification for all. Officers also reported being

able to utilise their own personal experiences of suicidal to support prisoners (Barry, 2020; Sweeney et al., 2018).

Coping Strategies at Work and at Home

The next section will explore the different coping mechanisms that officers utilise. There was a range of coping styles and behaviours and as such this developed into a main analytical theme consisting of six descriptive themes (avoidance, empathy, humour, culture, boundaries and coping out with work).

Avoidance

A range of practical and mental avoidance strategies was mentioned across all studies with the exception of Short et al. (2009). Barry (2017; 2020) described how avoidance, on the one hand, appeared to be required as the prison needed to get back to business as an operational necessity. Barry (2017) outlined how suicidal behaviour immediately affects the atmosphere of the prison with prisoners being immediately unsettled. They described staff fearing further incidents and a belief that returning to normality could reduce the risk of further incidents. However, others described this as a source of frustration as they would have appreciated time to debrief and talk about an incident (Barr, 2020). The balance between caring for staff and balancing the operational demands of the prison was described as a source of conflict for managers (Walker et al., 2017).

Avoiding thinking about such incidents was seen as a necessity to continue with the work at hand and for staff to protect their own well-being. One officer stated:

“It’s horrible. And when you think back about it you can feel it sort of like in your head going. You’re tempted to block that side out. You have all these little cupboards where you push things away and you let them go and you box that off” (Sweeney et al., 2018, p476).

Barry (2017) and Barry (2020) described how feelings should not be expressed, for example, a trend reported in Barry (2020 was as follows:

‘Participants' accounts of their experiences of the deaths of prisoners reveal a professional expectation of a tightly controlled emotional display during the emergency response. Most believed that this was necessary for operational reasons, and advocated for emotional neutrality and detachment as a means of ‘getting on with the job':’ (Barry, 2020, p4)

Empathy

Participants in Barry (2017) and Barry (2020) described empathy as being acceptable as it was a human reaction to such an event. However, it required a degree of restraint, or it could lead to suspicion and potentially rejection from other staff. One officer said:

"It's important that you say it the right way. I mean, if you start coming out and saying, 'God, I feel so sad about that, that's awful.' I just think that's the wrong way to say it, because you could be perceived, and with some degree of understanding, people would think, 'Is he for the birds or what? He's in the Prison Service." (Barry, 2020, p6)

Humour

Four studies cited humour as a means of coping (Barry 2017; Barry 2020; Marzano et al., 2015; Sweeney et al., 2018). Barry (2017) mentions black humour as a defence mechanism and a way of decompressing. Barry (2020) described humour as a means of opening up conversation about the incident with unwritten rules in relation to the degree of black humour:

'Between staff, these boundaries were enforced by those in supervisory or management roles, who would moderate humorous exchanges with individuals and in groups.' (Barry, 2020, p6)

Culture

The majority of studies highlighted issues with the culture of prisons influencing prison officers' ability to cope (Barry 2017; Barry 2020; Marzano et al., 2015; Sweeney et al., 2018; Walker et al., 2017). Overall, it was described to have a profound effect on individuals expressing and acknowledging their feelings after an incident of suicidal behaviour as can be seen by the extract below:

'All but one participant referred to prison officers having a distinct culture in which emotions have no place and are therefore not spoken about to maintain an image of machismo.' (Sweeney et al., 2018, p472).

Barry (2017) described this as allowing humour to adhere to an image of stoicism and masculinity that was deeply embedded in the culture of the service. Participants in Walker et al. (2017) reported their psychological well-being suffering as a result and all participants in Sweeney et al. (2018) stated that the culture requires to be challenged and officers supported to express themselves.

Boundaries

The boundary between work and home seemed to serve as an important strategy for participants to leave work behind (Barry 2017; Barry 2020). Participants in Barry (2017) described the physical journey as transformative and a means of preparing themselves to enter back into their personal world. One officer in Barry (2020) described the need for boundaries to protect his family:

"My father was a prison officer. But I only found out what happened on a day-to-day basis when I joined up. He never spoke about it. And I never tell my wife anything about our work. I never speak about deaths, never open my mouth to her. She doesn't need to know about that." (Barry, 2020, p8)

Coping Outside of Work

Dennard et al. (2021) and Walker et al. (2017) referenced positive coping strategies such as talking, exercise, socialising and listening to music. However, it should be noted that the information derived from Dennard et al. (2021) was not exclusively in relation to suicidal behaviour but the overall stresses of the prison officer role.

There was also reference to negative coping strategies. For example, some participants acknowledged staff turning to alcohol to cope (Dennard et al., 2021; Marzano et al., 2015), and perhaps more concerning, staff self-harm (Marzano et al., 2015).

Uptake of Support

As illustrated below the types of support offered was varied and subsequent opinions of support was wide-ranging. The content derived from this developed into a key analytical theme consisting of two descriptive themes: Formal and informal support.

Formal Support

All studies referenced that the uptake of formal support was low or non-existent. Participants in Walker et al. (2017) and Sweeney et al. (2018) described their reservations being that difficult situations were an expected part of their role and/or knowing the care team. One officer said:

"Like I said we have the care team but I would never ever use the care team in my life because … there are people in the care team that do talk. Credit to them they've gone and done the course but they do talk you know. You go to a member of the care team and breakdown … I know if I did it would be round the jail within minutes." (Sweeney et al., 2018, p473).

Walker et al. (2017) highlighted that formal support was more readily accepted when it was offered out with prison by phone. Some participants cited that this allowed them to keep it private from

other officers, who may perceive them as not being able to cope with expected parts of the prison officer role. Participants in Sweeney et al. (2018) and Walker et al. (2017) expressed the wish for supervision and thorough debriefs to reflect on incidents. Three studies highlighted that the most useful support would be higher levels of staffing which would allow them to support prisoners more adequately to reduce suicidal behaviour, respond more effectively and be able to support each other more (Dennard et al., 2021; Marzano et al., 2015; Sweeney et al., 2018).

Informal Support

Three studies explored the usefulness of informal support (Barry 2018; Barry 2020; Walker et al., 2017). Types of informal support ranged from sharing and swapping stories of suicidal behaviour (Barry 2020) to informal time out for a cigarette or cup of tea (Walker et al., 2017). Participants in (Walker et al., 2017) highlighted the benefit of having supportive relationships in the team and either talking to someone one on one or as a group.

Summary

In order to illustrate the extent of common themes, Table 2 was generated to record what studies provided data on each of the descriptive and analytical themes. This allows investigation of whether the results depend heavily on a minority of studies, the absence of which would change the findings of this review significantly. Table 2 shows that analytical themes were generated from at least 6/7 studies which highlights that the absence of one of two studies would not significantly change the findings. Variation of total input of studies for descriptive themes highlights areas of potential future research which will be discussed in the next section of this review.

Table 2 Summary of descriptive themes and the studies that provided data on this topic.

Study No	Author & Date	Descriptive Themes												
		Emotions	MH	Personal	Positive	Negative	Avoidance	Empathy	Humour	Culture	Boundary	Coping	Formal	Informal
		Analytical Themes												
		The Personal Impact			The Professional Impact		Coping Strategies						Uptake of Support	
1	Barry, (2017)		✓	✓		✓	✓	✓	✓	✓	✓		✓	✓
2	Barry, (2020)		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
3	Dennard et al. (2021)	✓	✓				✓				✓	✓	✓	
4	Marzano et al. (2015)	✓	✓	✓		✓	✓		✓	✓		✓	✓	
5	Short et al. (2009)	✓				✓							✓	
6	Sweeney et al. (2018)	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	
7	Walker et al. (2017)	✓	✓			✓	✓			✓		✓	✓	✓
Total Input of Studies per Descriptive Theme		5/7	6/7	4/7	2/7	6/7	6/7	2/7	4/7	5/7	4/7	4/7	7/7	3/7
Total Input of Studies per Analytical Theme		7/7			6/7		6/7						7/7	

Discussion

This review investigated the impact prisoner suicidal behaviour has on prison officers' wellbeing. Secondary to this, it investigated how prison officers cope with these incidents in their professional and personal lives.

What Impact Does Prisoner Suicide Have on Prison Officers' Wellbeing?

The studies synthesised in this review highlighted the extensive personal impact of prisoner suicidal behaviour on staff wellbeing. Overall, participants described feeling useless, hopeless, and frustrated, which adds to previous research in this area (Wilstrand et al., 2007). A range of trauma-related difficulties was described by participants. This is in keeping with previous research that had indicated high levels of trauma-related difficulties in prison staff (Wright et al., 2006). Further research should be done on the severity and extent of these difficulties to establish clinical need and

better inform potential policy. Quality assessment regarding participant recruitment was often scored poorly in the included studies. Too often, it was unclear why or how prison officers were approached. It is possible that those struggling the most were not asked to take part or felt too embarrassed to. Due to this limitation, we cannot gauge whether the officers included in the study are representative of this population or not. In line with previous research (Crawley, 2002), participants reported trauma-related difficulties having a knock-on effect on their personal lives, with one participant citing that they could take it out on their spouse, but further specificity is lacking.

Some participants were able to identify a positive impact on their professional lives; namely feelings of pride and achievement if they had successfully intervened in an incident. Others cited that an incident of suicidal behaviour softened the lines between prisoners and themselves. However, as this was only identified in two studies, further research needs to be done to draw firm conclusions in this area.

Overall, participants described feeling uncertain about how to respond to suicidal behaviour and scared of being held responsible. This resulted in staff feeling isolated, frustrated and experiencing symptoms of burnout. This finding is validated by previous research (Slade et al., 2019). The research conducted since Slade et al. (2019)'s review (Barry 2020; Sweeney et al., 2018; Dennard et al., 2021) bolster the previous findings of the prominent impact that it can have on prison officers' mental health and adds to this research by highlighting the difficulties prison officers experience regarding burnout and compassion fatigue (Barry 2020; Sweeney et al., 2018; Dennard et al., 2021). How staff could be protected against these difficulties should be explored in further research as staff do not utilise the current support offered (Barry 2020; Sweeney et al., 2018). A new finding from this review is that prison staff would be open to supervision (Sweeney e al., 2018; Walker et al., 2017).

How Do Prison Officers Cope?

To cope with the challenges that are associated with prisoner suicidal behaviour, a range of coping strategies was used by officers. Avoidance was identified as a helpful strategy both during and in the immediate aftermath (Barry, 2020). However, previous research which has shown that although avoidance is frequently used as a coping strategy it is associated with poorer mental health outcomes in emergency responders (Arble & Arnetz, 2017). Unfortunately, many described avoidant coping as being a deeply embedded part of prison culture as expressing emotions is not acceptable (Barry 2017; Barry 2020; Sweeney et al., 2018). This could potentially have an impact on prisoners and staff alike, as not talking can lead to feelings of entrapment, a core element of suicidal behaviour (O'Connor & Kirtley, 2018). Staff engaging in self-harm was also noted as a negative

coping strategy (Marzano et al., 2015), though it is unclear whether this was specifically in relation to prisoner suicidal behaviour. More research should urgently be done to determine the strength and relationship of this relationship.

Other negative coping strategies (e.g. alcohol) were also highlighted. A range of positive coping skills such as exercise, cooking, travelling, reading, socialising and taking time for themselves was identified by participants. It should be noted that the majority of this information came from the Dennard et al. (2017) study which asks about how participants cope with the overall demands of the job. However, arguably this increases generalisability of findings.

In keeping with previous research (Slade et al., 2019) uptake of formal staff support is low which some participants attributed to the culture of the prison and the pressure to maintain an image of stoicism. The implications of the latter are discussed further in the clinical implications section of this review. In contrast to Slade et al. (2019) the results highlight that external formal support (e.g. telephone calls from the support team out with the prison setting) would be welcomed. As the culture of a workplace can be slow to change, this could be a useful avenue to explore.

Strengths and Limitations

This is a comprehensive synthesis that followed the Prisma (2020) guidelines for the process of conducting and reporting a systematic review. A synthesis of the available research allows us to generalise findings across multiple studies and gain an understanding of gaps in the literature. Another strength is that a second-rater (JV) assessed a percentage of the included studies and quality assessed a percentage to minimise the risk of bias.

However, a single researcher defined the inclusion/exclusion criteria, completed the searches, and completed the coding and analysis part of this review which renders this review susceptible to bias. The constricted focus of the review questions and the restrictions of the inclusion and exclusion criteria (particularly in relation to the inclusion of qualitative studies only) could have resulted in potentially important findings being missed.

This systematic review only included published studies, however, there may have been important findings within 'grey literature' (e.g. unpublished dissertations or reports) that were not included. Inclusion of the latter could have potentially minimised publication bias and maximised inclusivity (Paez, 2017).

Other limitations relate to the sample itself, for example, due to the low number of studies, some were included despite being a mix of staff. As stated previously, it was unclear whether there was an

overlap in included participants in Barry (2017) and Barry (2020), which could have overemphasised views and subsequently altered the development of themes and conclusions drawn from the research. Contrary to this, the studies utilised a range of prisons that housed a range of male/female prisoners. While the overall quality of the studies was moderate to high, participant recruitment was often not adequately reported, and it is unclear whether prison officers are adequately represented in the findings of the studies. All of the included studies were exclusively UK/IRE study samples, therefore there may have been cultural influences that affected the study participants responses that could not be identified in this review. The experiences of participants, beliefs and meaning they attributed to suicidal behaviour could be different depending on culture and country of origin, which could have influenced findings. Finally, every prison has its unique culture, which could affect the applicability of findings.

Clinical Implications

This review highlights the negative impact that prisoner suicidal behaviour has on prison officers, namely, trauma-related difficulties. More support for prison officers is required and exploration of alternative options (e.g. trauma therapy) may be useful. While avoidance is an understandable coping strategy, particularly when emotional expression is discouraged and choices for formal support is limited, it is likely feeding into longer term mental health difficulties and poorer wellbeing. Supervision within teams may be useful as a first step to increase staff members' ability to talk about their feelings and reactions to prisoner suicidal behaviour and may be an initial step in reshaping the prison culture to allow for more emotional expression and unity in responding to individual cases of suicidal behaviour.

Recommendations for Future Research

Slade et al. (2019) outlined that future research should be transparent and record and differentiate between the types of exposure to suicidal behaviour (e.g. suicide attempt, death by suicide) that participants had experienced as this could provide important information on specific effects and outcomes. Future research should aim to be more transparent with participant recruitment and how this could influence the findings. There was often missing information in the write up of the published studies which affects the reliability of the available research. Due to the sparsity of research in this area, further exploration into the effects of prisoner suicide on prison officers ought to be explored. Qualitative research focused on the usefulness of supervision in prisons within the context of suicidal behaviour would be beneficial.

Conclusion

In conclusion, prisoner suicidal behaviour can have varied long-term impact on prison officers' well-being. More information is required to fully understand this impact and the quality of the current available literature is varied. While informal support through humour and talking to colleagues can be helpful, the culture of a prison can be a barrier to staff accessing support should they require it.

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Chapter 2: Major Research Project

Adverse Childhood Experiences and Hospital Treated Self-Harm: A secondary data analysis in the context of the Integrated Motivational-Volitional model of suicidal behaviour.

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Plain Language Summary

Background: Suicide and self-harm are major public health concerns. Adverse childhood experiences (ACEs) have been linked to a number of poor physical and mental health outcomes including suicide risk. Research has shown there is a link between higher number of ACEs, poorer mental health and a higher likelihood of engaging in suicidal behaviour. More research needs to be done to better understand the nature of the relationship between ACEs and suicide risk so that interventions can be tailored.

Aims: We aimed to explore the differences in demographics between ACE groups (0-3 and 4+) and associations between key psychological variables (e.g. defeat, entrapment). In addition, we aimed to investigate whether emotion regulation, entrapment or defeat acted as a bridge between ACEs and self-harming behaviours. Finally, we explored whether social support and negative life events affect the strength and/or direction of the relationship between ACEs and self-harming behaviour.

Methods: This project used data from a 2018 study of 190 participants who were admitted to two hospitals in Glasgow via the Emergency Department following an episode of self-harm. All participants completed a number of psychosocial measures after they were deemed medically fit by the clinical team. Statistical tests were then used to explore the study aims and questions.

Results: Analyses revealed expected associations between the variables with the exception of negative life events. As such, negative life events were excluded from further analyses. A range of analyses (for defeat, emotion regulation and entrapment) was undertaken to investigate whether defeat, emotion regulation and entrapment explained the relationship between ACEs and self-harm and whether social support strengthened the relationship between ACEs and self-harm. None of these analyses yielded statistically significant findings. The results showed that emotion regulation, entrapment and defeat did not act as bridges between ACEs and self-harming behaviour and the relationship between ACEs and self-harm was not strengthened or weakened by social support.

Practical Applications: ACEs have a widespread impact on people's lives. The factors tested in this study cannot account for the mechanisms or conditions underpinning the association between ACEs and self-harm. Additional research is necessary to understand the association between ACEs and self-harm.

Abstract

Background: Suicide and self-harm are major public health concerns and these behaviours have been linked to exposure to Adverse Childhood Experiences (ACEs). We selected different factors from The Integrated Motivational Volitional (IMV) model of suicidal behaviour to try to identify the mechanisms and conditions associated with this relationship.

Objective: The relationship between ACEs and self-harm was investigated by examining differences between groups (ACEs 0-3 and 4+), associations between ACEs and psychological variables, and finally by exploring the mechanisms and conditions that could explain this relationship.

Participants and Setting: This is a secondary data analysis using data from Cleare et al. (2018). The study consisted of 190 participants who were admitted to two hospitals in Glasgow following an episode of self-harm and who completed psychosocial measures.

Methods: Univariate binary logistic regression, correlations, mediation and moderation analyses were used to explore the study aims.

Results: Correlation analysis showed that ACEs were significantly associated with all psychological variables except for life events. Adjusted (gender and intent to die) mediation analyses and moderation analyses were undertaken. No results yielded statistical significance.

Conclusion: ACEs have a widespread impact on people's lives. The factors tested in this study cannot account for the mechanisms or conditions underpinning the association between ACEs and self-harm. Additional research is necessary to understand the association between ACEs and self-harm.

Keywords: Adverse childhood events, self-harm, suicide.

Introduction

Suicide and self-harm

Both suicide and self-harm continue to be major public health concerns (World Health Organisation (WHO), 2014). Some research has indicated that there are as many as 703 000 deaths by suicide annually (WHO, 2021). Self-harm is defined as "intentional self-poisoning or injury, irrespective of the apparent purpose" (NICE, 2022). It is a strong predictor of future suicidal behaviour, irrespective of suicidal intent (Hawton & van Heeringen, 2009). Indeed, prior research has also shown that the best predictor of a suicide attempt is a history of suicidal behaviour or repeated self-harm (Chan et al., 2016). Moreover, Cooper et al. (2005) found that individuals who are admitted to hospital for self-harm were 30 times more likely to die by suicide when compared to the general population.

The factors that lead to both suicide and self-harm are complex and often involve a complicated interaction between social, biological and psychological influences, specific to the individual (O'Connor & Kirtley, 2018). Most people who self-harm will not go on to attempt or die by suicide, and not all people who attempt or die by suicide have previously engaged in self-harm (Sivertsen et al., 2019). It is unclear, however, why some people repeatedly engage in self-harm, whereas others do so only once but some research suggests a role for adverse childhood experiences (ACEs; Turecki et al., 2019).

ACEs and self-harm

ACEs are negative experiences that occur in childhood and include exposure to domestic violence, abuse, neglect, parental separation, or exposure in the home to mental health problems, substance abuse, suicide or self-harm, imprisonment (Bellis et al., 2014; Cleare et al., 2018). Exposure to ACEs is relatively common; for example, Hughes et al. (2016) showed that almost half of respondents in England had experienced at least one ACE, and just under 10% had experienced four or more.

Exposure to ACEs has been linked to a variety of harmful consequences including difficulties in mental health and/or physical health, substance abuse, relationship difficulties, suicide, and self-harm (Bellis et al., 2014). Exposure to four or more ACEs was a major risk factor for many health conditions such as substance misuse, mental health problems and physical health problems (Hughes et al., 2017). Cleare et al. (2018) demonstrated an association between repeated self-harm and a high number of ACEs. Research from the US has highlighted the link between increased number of ACEs, an increase in mental health problems and then a further increase in the likelihood of suicidal behaviour (Kalmakis & Chandler, 2015).

Although there has been research from the US, there has been little research on the relationship between ACEs and suicide risk conducted in Scotland. This research may be particularly important as Scotland has persistent social and health inequalities (Cowley et al., 2016), and higher rates of suicidal and self-harming behaviour than England and Wales (O'Connor et al., 2018). This study therefore uses a Scottish dataset (Cleare et al., 2018) to investigate these links further.

As repeat self-harm has been shown to be associated with a higher number of ACEs (Cleare et al., 2018), the aim of the present study is to investigate the factors which may influence the relationship between ACEs and suicidal behaviour. However, this study will be guided by a predominant theoretical model of suicidal behaviour.

The Integrated Motivational-Volitional (IMV) model of suicidal behaviour

Models of suicidal behaviour have been developed to understand the complicated and multi-factored pathways to this behaviour (Hennings, 2020; Mann & Rizk, 2020; O'Connor & Kirtley, 2018). One of these is the Integrated-Motivational Volitional (IMV) model of suicide (O'Connor & Kirtley, 2018). The IMV model is summarised in Figure 3. This model was initially developed to understand suicidal behaviour; however, it can also be used in reference to self-harm, regardless of suicidal intent (O'Connor et al., 2012).

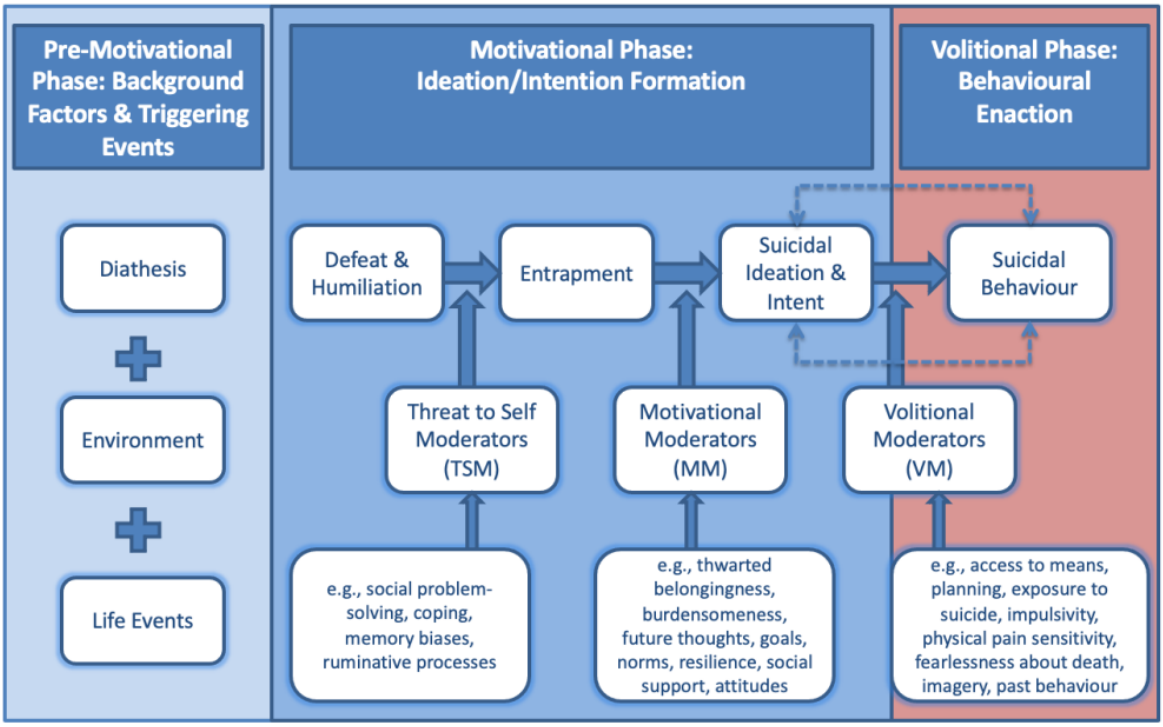


Figure 3 The Integrated-Motivational-Volitional model of suicidal behaviour (O'Connor & Kirtley, 2018).

The model is divided into three phases: pre-motivational, motivational, and volitional. The pre-motivational phase outlines individual vulnerabilities that might render an individual more susceptible to suicidal behaviour e.g. genetics, life events and environment (O'Connor & Kirtley, 2018). ACEs lie in the pre-motivational phase of the model and, as previously stated, there is increasing evidence that high numbers of ACEs have a detrimental effect on physical and mental wellbeing (Bellis et al., 2014). ACEs can be background factors and/or triggering events that render a person more likely to develop suicidal thoughts and behaviour in the future (Cleare et al., 2018; O'Connor & Kirtley, 2018). Therefore, investigating ACEs specifically is crucial to understanding suicidal thoughts and behaviour.

The motivational phase of the IMV model outlines psychological processes that can lead to the development of suicidal thoughts and/or intention. An individual experiencing high levels of defeat may go on to develop feelings of entrapment, that in turn may develop into thoughts of suicide. The model proposes that an individual can move back and forward on this path depending on moderating factors (O'Connor & Kirtley, 2018).

In the IMV model, the transition from defeat to entrapment is moderated by 'threat to self' moderators e.g. coping skills such as emotion regulation. Entrapment can be internal or external in nature (O'Connor & Kirtley, 2018). Gilbert & Allan, (1998) defined internal entrapment being related to the self-e.g. "I feel trapped inside me" and external entrapment being related to factors out with the self-e.g. "I see no way out of my current situation". Motivational moderators (e.g. social support) influence whether feelings of entrapment develop into suicidal ideation.

The final stage of the model, the volitional phase, proposes that volitional moderators (e.g. access to means) influences whether suicidal thoughts transitions into suicidal behaviour (O'Connor & Kirtley, 2018). We use our understanding of the IMV model to suggest factors which may mediate or moderate the link between number of ACEs and repeated self-harm.

Understanding the relationship between ACEs and repeated self-harm: the role of mediation and moderation

In research, it is important not only to investigate whether an effect exists but to understand the mechanisms that create the effect and the contingencies for that effect to take place (Hayes & Rockwood 2017). Mediation analysis proposes that the independent variable affects the mediating variable, which then affects the dependent variable (Hayes & Rockwood 2017). A moderating variable can alter the strength and direction of an effect between the independent and dependent variable (Demos et al., 2017). We know there is a relationship between repeated number of ACEs and self-harm (Cleare et al., 2018) but we know little about what influences that link and what conditions are required for that effect to take place.

Potential factors which may mediate/moderate the relationship between repeated ACEs and self-harm

Drawing from the IMV model we selected five variables as potential mediators and moderators. Specifically, we wanted to investigate whether emotion regulation, defeat and entrapment would mediate the association between ACEs and self-harm and whether social support and negative life events would moderate the association between ACEs and self-harm.

Prior research has shown that people who have engaged in repeated self-harm have poor emotional regulation skills (Gratz & Gunderson 2006) and significantly higher levels of defeat and entrapment (Rasmussen et al., 2009; Russell, Rasmussen, & Hunter 2016) compared to those who have engaged in self-harm for the first time. Therefore, it is possible that emotional regulation, defeat and entrapment are potential mediators between self-harm and ACEs.

Prior research has shown that people engaging in repeated self-harm have lower levels of social support than those who have engaged in self-harm for the first time (Rasmussen et al., 2009). As social support is a moderating factor in the IMV model it would be interesting to test whether it moderates the relationship between ACEs and self-harm.

Finally, we look at an additional pre-motivational factor. While ACEs are negative life events that have happened in childhood, we want to investigate the effect of negative life events in the past 6 months. Negative life events have been shown to be linked to suicide and self-harming behaviours (Rowe et al., 2013). It would be interesting to investigate whether negative life events moderates the relationship between ACEs and self-harm.

These variables were selected as they are key factors in the IMV model of suicidal behaviour (O'Connor & Kirtley, 2018) and because this data was not utilised in the original study (Cleare et al., 2018).

Study aims

This study aims to increase understanding of the relationship between ACEs and self-harm, by investigating the role of emotion regulation, entrapment, defeat, life events and social support. To address this aim the following research questions were addressed.

1. To what extent are emotion regulation, defeat, entrapment, social support, negative life events and self-harm associated with ACEs?
2. Do any of the following factors mediate the relationship between ACEs and self-harm: emotion regulation, entrapment, defeat?
3. Do either of the following factors moderate the relationship between ACEs and self-harm: social support, negative life events?

Informed by the IMV model, and prior research, the following hypotheses were tested:

1. Defeat would mediate the relationship between the number of ACEs and self-harm.
2. Entrapment would mediate the relationship between the number of ACEs and self-harm.
3. Emotion regulation would mediate the relationship between the number of ACEs and self-harm.
4. Social support would moderate the relationship between the number of ACEs and self-harm.
5. Negative life events would moderate the relationship between the number of ACEs and self-harm.

Materials and Methods

Participants

Cleare et al. (2018) recruited patients who had been admitted to two hospitals in Glasgow via Emergency Departments following an episode of self-harm. Participant recruitment took place between the 20th of April 2016 and the 31st of August 2017. Please see Tables 3 and 4 (adapted from

Cleare et al., 2018) for full breakdown of participant demographics. The inclusion/exclusion criteria were as follows:

Inclusion

- 18+ years
- Assessed by liaison psychiatry after a self-harm episode
- Self-harm with and without intent to die

Exclusion

- Unable to give informed consent
- Prisoners
- Acutely aggressive
- Acutely psychotic

Procedure

Potential participants in Cleare et al. (2018) were identified by Liaison Psychiatry who initially assessed whether the patient met medical fitness to participate. If so, they were asked if they would be prepared to meet with the researcher to find out more about the research. If they said yes, the researcher met with the patient in the hospital, provided more information about the research, answered any questions and gained informed consent as appropriate. Participants were made aware that engaging in the research was optional and that refusing to participate would not interfere with current or future treatment. Participants were invited to complete a range of psychological and psychosocial measures (see below and Appendix 6). Participants could complete these on their own or the researchers could read the questions aloud with participants responding verbally or through response cards. The administration of the measures was done by members of the research team.

Ethics and Research Governance

This project is a cross-sectional analysis of an existing dataset (Cleare et al., 2018). The author gained access to the dataset through affiliation with the Suicidal Behaviour Research Laboratory where the data were securely stored. It was confirmed with NHS GG&C Research Development that the present research remained within the scope of the original study and therefore it was agreed to add the clinical psychology trainee (KM) to the ethics approval.

Measures

Please see Appendix 6 for full list of scales.

Demographics

Demographics (for example age and gender) were gathered from the participants and from their medical records.

Scales

Self-harm History

Cleare et al. (2018) adapted The Adult Psychiatric Morbidity Survey (AMPS; McManus, 2016) to assess frequency of self-harm and suicide attempts. An example of a question is "Have you ever harmed yourself without wanting to die, by taking an overdose of tablets or in some other way?" Participants are asked how often in their life and over the last 12 months that they have done so. The current study used 3 items from this history; whether they were a first time or repeat self-harmer, how many times they had self-harmed in their lifetime (without wanting to die) and in relation to their current episode of self-harm did they intend to kill themselves.

Adverse Childhood Experiences (ACEs)

This was assessed using the Adverse Childhood Experiences Questionnaire (ACE Questionnaire; Felitti et al., 1998) which looks at exposure to negative life events during childhood (<18 years). It examines whether there has been a history of verbal, sexual, physical abuse and/or neglect alongside maternal abuse, parental separation, and substance abuse in the family home, mental illness or parental incarceration. A lower score on this scale indicates lower numbers of ACEs. Felitti et al. (1998) found 4 ACEs had a huge influence on health outcomes. Cleare et al. (2018) subsequently divided the ACEs scores into two groups (0-3 and 4+). In the current study ACEs is used as a continuous variable and has not been divided with the exception of demographic information.

Life Events

Life events were assessed by a 19-item scale (Cleare et al., 2018) that assessed a range of negative life events such as separation, abuse, illness and asks participants if they have experienced this in the last 6 months or more than 6 months ago or never. A lower number on this scale indicates lower numbers of negative life events. To differentiate between negative life events and ACEs the data retrieved and used in this analysis was life events in the last 6 months.

Entrapment

Entrapment was measured using the Entrapment Scale Short Form (E-SF; De Beurs et al., 2020) a 4-item questionnaire which is rated on a 5 Likert-type scale. Example item is "I want to get away from myself" and responses range from *Not at all like me* to *Extremely like me*. A lower number on this scale indicates lower levels of feelings of entrapment. It is shown to have good reliability and validity (De Beurs et al., 2020; Griffiths et al., 2015). Cronbach's alpha in the current study was adequate (α = 0.68).

Defeat

Defeat was measured using the Defeat Short Scale (D Scale; Griffiths et al., 2015). This scale has 2 questions (e.g. "I feel that I have given up"). Participants are asked to rate responses on a 5-point Likert-type scale from *Never* to *Always*. A lower number on this scale indicates lower levels of defeat. It is shown to have high internal consistency (Griffiths et al., 2015). Cronbach's alpha in the current study was good (α = 0.85).

Emotion Regulation

The Difficulties in Emotion Regulation Scale Short Form (DERS-SF; Kaufman et al., 2015), is a 16-item scale. Questions include *"When I am upset, I believe that I'll end up feeling very depressed"* measured against a 5 Likert-type scale ranging from *Almost never* to *Almost always*. Lower scores on the scale indicate an ability has better levels of emotional regulation, whereas higher scores indicate that a person has poorer emotion regulation skills. It is well validated (Kaufman et al., (2016) and Cronbach's alpha in the current study was good (α = 0.88).

Social Support

This was assessed using the Enhancing Recovery in Coronary Heart Disease (ENRICHD) Social Support Inventory (Mitchell et al., 2003), a 7-item scale. Questions include "Is there someone available to give you good advice about a problem?" using a 5 Likert-type scale ranging from *None of the time* to *All of the time*. Lower levels on this scale indicates lower levels of perceived social support. It is shown to be a reliable and valid measure (Vaglio et al., 2004). Cronbach's alpha in the current study was good (α = 0.85).

Statistical Analysis

As this was a secondary data analysis using data from Cleare et al. (2018) a power analysis was not run for this study. Statistical analyses were conducted using SPSS (version 27). Moderation and mediation analyses were undertaken using the Hayes (2018) PROCESS macro for SPSS.

To answer questions 1, 2 and 3, the self-harm data was used as a continuous variable and included current episode, 1-2 episodes of self-harm previously, 3-4 episodes of self-harm previously and 5+ episodes of self-harm.

Firstly, correlation analyses were conducted to check for correlation between all scale items (e.g. defeat, entrapment). Analyses were completed using Pearson's r.

Finally, as gender distribution and intent to die was significantly different between the self-harm groups in Cleare et al., (2018); adjusted mediation models are used to test hypotheses that emotion

regulation, entrapment and defeat mediate the relationship between the number of ACEs and self-harming behaviour. Therefore, the indirect effect between ACEs and self-harming behaviour, through each prospective mediator, is the channel of interest that will be examined. An adjusted moderation analyses (controlling for gender and intent to die) was run for social support (see correlation section for explanation regarding exclusion of negative life events in this study). As the hypotheses are exploratory, the level of significance was set at $p<.05$.

Missing Data

Cleare et al. (2018) ran a missing data analysis. Participants were excluded if they did not complete the ACEs measure or the self-harm items. If participants answered less than 75% of an individual measure, they were omitted from the analysis of that scale. This study used the same cut off for scale measures. Cleare et al. (2018) carried out a missing value analyses and the results indicated that there was no pattern associated with the missing scale data, therefore the missing data was corrected using Expectation-Maximisation replacement methods. Data were not replaced for the self-harm or ACE items.

Results

Participant Characteristics

Cleare et al. (2018) reported that initially 573 individuals were assessed by Liaison Psychiatry as potentially eligible. 220 were discharged prior to being seen by the researchers. A further 120 individuals were not asked to participate as it was deemed inappropriate (e.g. due to care plans). 35 individuals did not wish to take part. Overall, 198 individuals consented to take part in Cleare et al. (2018). The completion of outcome measures rule applied by Cleare et al. (2018) was applied to this study, specific to the self-harm items used in the analysis. This resulted in a total of 190 participants in the overall analysis for this study.

Table 3 outlines participants demographics and scores on the measures utilised in this study. In brief, out of the 190 participants, the age range was between 18-74 years (mean = 36, SD = 13). 128 (67%) were female and 60 (32%) were male and 2(1%) other (1 participant did not answer and another identified as intersex). The sample was mainly white (n = 183, 96%) and heterosexual (n = 162, 85%). The majority of participants reported intent to die in relation to their current self-harm episode (n = 124, 65%). Regarding self-harm episodes; 25 (17%) participants reported 1-2 previous episodes of self-harm, 45 (30%) reported 3-4 previous episodes and 77 (54%) reported 5 or more episodes.

Table 3 - Participant demographic characteristics

	Number Or Score (%)	Mean	Standard Deviation
Age	Range (18-74 years)	36	13
Gender: Female	128 (67%)		
Male	60(32%)		
Other	2 (1%)		
Ethnicity: White	183 (96%)		
Other	7 (4%)		
Sexuality: Heterosexual	62 (85%)		
Other	28 (15%)		
Intent To Die: Yes	124 (65%)		
No	66 (35%)		
Self-Harm Episode: 1-2	25 (17%)		
3-4	45 (30%)		
5+	77 (54%)		
ACE Group: Total	190	4	3
0-3	83 (43%)		
4+	107 (56%)		
Emotion	183	54	14
Entrapment	186	10	4
Defeat	185	6	2
Social Support	184	19	7
Negative Life Events	188	2	2

Note: other = other response and no response

Correlations Between Variables

The correlations between all study variables are represented in Table 4. All paired factors except for life events and all other factors, self-harm episodes and all other factors, social support and emotion regulation were found to be statistically significant. As the correlations for life events did not reach statistical significance, we cannot gauge whether there was a correlation. As such, this variable was not tested further in the moderation analyses. Although the same is true for self-harm, as this was the outcome variable for the study, it was agreed to test this in further analyses.

Table 4 Correlation matrix for all scale variables used in the study

	Defeat	Emotion	Entrapment	Life Events	Support	Self-Harm
ACEs	.259**	.244**	.306**	.06	-.238**	-.035
Defeat		.553**	.446**	.097	-.153*	-.047
Emotion			.562**	.106	-.150	.000
Entrapment				.104	-.270**	-.063
Life Events					-.113	-.064
Support						.003

ACEs = Adverse Childhood Experience, Emotion = Emotion Regulation, Life Events = Negative Life Events In The Last 6 Months, Support = Social Support. Defeat And Entrapment Are Not Abbreviated.

** Correlation Is Significant At The 0.01 Level (2-Tailed).

* Correlation Is Significant At The 0.05 Level (2-Tailed).

Mediation Analysis

Emotion regulation, entrapment and defeat were investigated to explore their mediating effect between ACEs and self-harming behaviours. Gender and intent to die were controlled for in all mediation analyses.

Adjusted mediation model of ACEs and self-harming behaviour mediated by emotion regulation (Figure 4 Panel A).

Mediation analysis was performed to assess the mediating role of emotion regulation in the relationship between ACEs and self-harm. The results (see Figure 4, Panel A) revealed the total effect of ACEs on self-harm was not significant (β = -.016, SE = .022, t = -.706, *p* = .481, CI = -.06 - .028). The

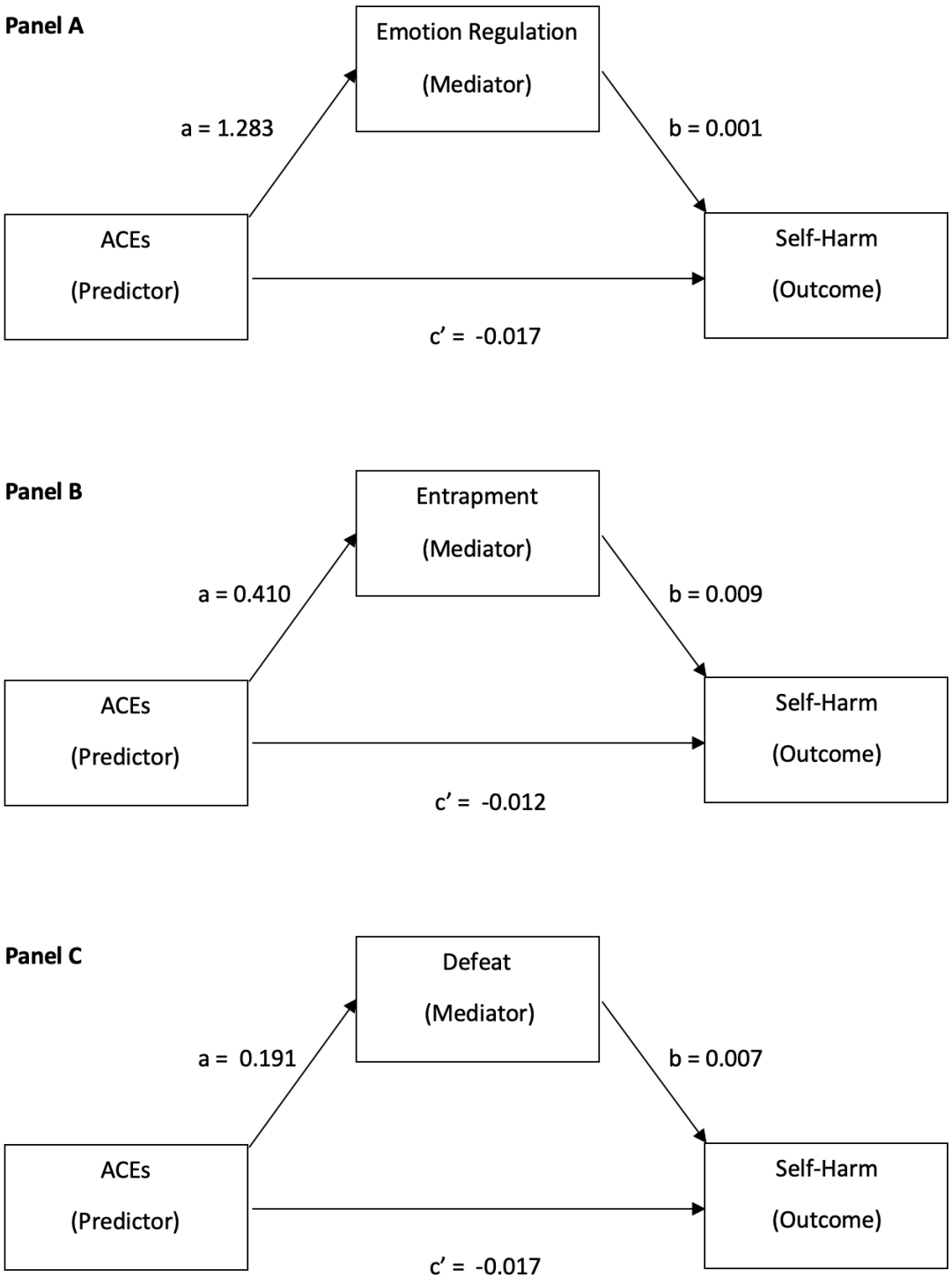
direct effect of ACEs on emotion regulation (path a) was significant (β = 1.283, SE = 0.374, t = 3.424, CI= 0.542 – 2.024, *p* = 0.001). The direct effect of emotion regulation on self-harm (path b) was not significant (β = 0.001, SE = 0.005, t = 0.184, CI = -0.009 – 0.011, *p* = 0.855). The direct effect of ACEs on self-harm (path c') was not significant (β = -0.017, SE = 0.023, t = -0.727, CI = -0.063 - 0.029, *p* = 0.481). The indirect effect of ACEs on self-harm due to levels of emotion regulation was not significant (β = 0.001, SE = 0.006, CI = -0.012 – 0.013).

Adjusted mediation model of ACEs and self-harming behaviour mediated by entrapment (Figure 4 Panel B).

Mediation analysis was performed to assess the mediating role of entrapment in the relationship between ACEs and self-harm. The results (see Figure 4, Panel B) revealed the total effect of ACEs on self-harm was not significant (β = -0.016, SE = 0.022, t = -0.707, CI = -0.0598 - 0.0283, *p* = 0.481).The direct effect of ACEs on entrapment (path a) was significant (β=0.410, SE=0.113, t = 3.631, CI= 0.187 – 0.633, *p* < 0.001). The direct effect of entrapment on self-harm (path b) was not significant (β=-0.009, SE=0.017, t = -0.555, CI= -0.043 - 0.024, *p* = 0.58). The direct effect of ACEs on self-harm (path c') was not significant (β = -0.012, SE=0.023, t = -0.511, CI= -0.058 - 0.034, *p* = 0.61). The indirect effect of ACEs on self-harm due to levels of entrapment was not significant (β = -0.004, SE = 0.007, CI = -0.02 – 0.008).

Adjusted mediation model of ACEs and self-harming behaviour mediated by defeat (Figure 4 Panel C).

Mediation analysis was performed to assess the mediating role of defeat in the relationship between ACEs and self-harm. The results (see Figure 4, Panel C) revealed the total effect of ACEs on self-harm was not significant (β = -0.016, SE = 0.022, t = -0.707, CI = -0.0598 - 0.0283, *p* = 0.481).The direct effect of ACEs on defeat (path a) was significant (β = 0.191, SE = 0.053, t = 3.589, CI = 0.086 - 0.297, *p* = 0.001). The direct effect of defeat on self-harm (path b) was not significant (β = 0.007, SE = 0.036, t = 0.021, CI = -0.063 - 0.078, *p* = 0.836). The direct effect of ACEs on self-harm (path c') was not significant (β = -0.017, SE = 0.036, t = -0.735, CI = -0.063 - 0.029, *p* = 0.464).The indirect effect of ACEs on self-harm due to levels of defeat was not significant (β = 0.001, SE = 0.001, CI = -0.013 - 0.017).



Note: a, b & c' = direct effect paths as measured by the regression co-efficient and noted as β in the write up.

Figure 4 Mediating effects of emotion regulation, entrapment and defeat on ACEs and self-harm

Moderation Analysis

Social support was investigated to explore its moderating effects between ACEs and self-harming behaviour. Gender and intent to die were controlled for in this analysis.

Moderation analysis of ACEs and self-harming behaviour moderated by social support

The overall model indicated that roughly 10% variance in self-harm was due to ACEs, social support and the interaction between the two ($F(5, 135) = 3.241$, $p = .009$, $R^2 = .102$). ACEs did not have a significant effect on self-harm ($\beta = -.014$, $t(135) = -.617$, $p = .538$). Social support did not have a significant effect on self-harm ($\beta = -.003$, $t(135) = -.282$, $p = .779$). The interaction of these variables was not significant ($\beta = -.002$, $t(135) = -.537$, $p = .592$) which indicates that social support did not significantly moderate between ACEs and self-harming behaviour when controlled for gender and intent to die.

Unplanned Analysis

Mediation and moderation models were adjusted for gender and suicidal intent in the above analyses. In mediation analyses ACEs were associated with the mediator, but the mediators were not associated with self-harm and ACEs were not associated with self-harm. The absence of a direct effect between ACEs and self-harm, in particular, is unexpected here. As suicidal intent is strongly associated with self-harm repetition (OR =2.5 with repeated self-harm in the preliminary analyses conducted by Cleare et al., 2018) it is possible that adjusting for suicidal intent will account for a significant amount of variation in the mediation and moderation models. To help with interpretation it was decided to run and report alternative analyses which are unadjusted for suicidal intent (but controlled for gender) to see if this would aid in interpreting some of these unexpected findings. This approach was also followed for moderation analyses.

Mediation and Moderation Analysis Adjusted for Gender Only

Emotion regulation, entrapment and defeat were investigated to explore their mediating effect between ACEs and self-harming behaviours. Gender only was controlled for in all mediation analyses. These results did not yield statistical significance. Social support was investigated to explore its moderating effect between ACEs and self-harming behaviours. Gender was controlled for in this analysis also. None of the results yielded statistical significance. Please see Appendix 7 for the results of the mediation and moderation analyses.

Discussion

The aim of this research was to study what conditions and mechanisms could explain the relationship between ACEs and self-harm. To do so three research questions were addressed.

The first question aimed to investigate the degree to which different measures were associated with ACEs. Correlation analyses highlighted that ACEs was significantly associated with all scale variables with the exception of negative life events. As all participants were in hospital following an episode of self-harm this may be because they all had precipitating factors that have resulted in the current episode. It may indicate that negative life events in adulthood do not have the same negative impact as negative life events in childhood, however, this would need to be tested in further research.

The second question explored potential mediating factors between ACEs and self-harm. The results indicated that defeat, emotion regulation and entrapment were not mediators of this relationship. the absence of mediation could be explained in relation to the stage of the IMV model within which the proposed mediators would sit. Defeat, emotion regulation and entrapment all lie in the motivational phase of the IMV model of suicide (O'Connor & Kirtley, 2018). As participants in in this study had all been admitted to hospital following an episode of self-harm (Cleare et al., 2018), they may have already reached the volitional stage of the IMV model rendering it more difficult to investigate motivational phase mediation.

Interestingly, the relationship between ACEs and self-harm in all the mediation analyses (when controlled for intent to die and in the unplanned analyses where intent to die was not controlled for) was not significant. This conflicts with prior research. Cleare et al. (2018) found that in this sample, participants who reported 4+ ACEs were more likely to be in the repeat self-harm group compared to the first. The difference in findings may be because of problems with accuracy in relation to estimating the number of times a person has previously self-harmed. This is discussed in more detail in the next section.

The third research question investigated moderating factors between ACEs and self-harm. Social support did not moderate the relationship between the number of ACEs and self-harming behaviour. This is in line with previous research. Tham et al. (2020) found that although social support was protective between stressful life events and hopelessness, it did not moderate the relationship between adverse life events and a history of self-harm. They hypothesised that a reason for this may be that perceptions of social support is a key component in the suicide pathway (Šedivy et al., 2017) whereas Tham et al. (2020) had looked at objective measures (e.g. whether participants were married, living alone etc). As the current study assessed perception of social support, these results

could indicate that although social support is a key component in the suicide risk pathway it is not the case for self-harming behaviour. Moreover, Šedivy et al. (2017) was an ecological study and the participants recruited had not attempted suicide but rather these numbers were generated from regional suicide death rates. One potential explanation for the lack of observed moderation effect in this study is that the participants in the current study had already reached the volitional phase of the model, whereas a moderating effect of social support on ACEs and self-harm may only be observable in the motivational phase.

Limitations and Future Research

As stated by Cleare et al. (2018) the data used in this study are cross sectional, and therefore, this hinders the ability to draw firm conclusions in terms of causes and effects. A limitation of the data in general was in relation to the number of times participants had self-harmed. Many answers were coded as 5+ and potentially missed a high number of individuals with higher levels of self-harm. Potentially people who self-harmed more frequently were not captured in the analysis and it may be harder to accurately estimate how many times they have self-harmed if they are a frequent self-harmer. Moreover, those who had self-harmed for the first time were coded as 1 episode, when they may self-harm multiple times in the future.

A further limitation of the study is that it only involved participants who were admitted to hospital following an episode of self-harm. Self-harm that is severe enough to require medical attention is considered to be the tip of the iceberg, with much higher numbers of unreported or untreated self-harm below the metaphorical water line (Hawton et al., 2012). Therefore, these findings may not be representative of the majority of people who self-harm.

There was a limited sample size which meant that subgroup analysis by gender and intent to die vs no intent to die could not be carried out in this study. Not differentiating between these two groups may mean that important differences in the populations and resulting target interventions were missed.

Further Research

Given the high number of ACEs in the tested population it may be prudent for future research to determine whether there are current trauma symptoms in participants and whether this is a mediating/moderating factor. Lastly, while we need to be careful not to insinuate that people who self-harm are at risk of harming others, it cannot be disputed that self-harm is an inherently violent act to the self. Abrams & Gordon (2003) concluded in their sample of young women that self-harm was a response to trauma and internalised anger. Therefore, given the high number of ACEs and the

majority of this sample being female, it may be useful to examine anger and attitudes towards violence within this sample, to see if internalisation of anger and/or violence is a mediating or moderating factor in relation to ACEs and self-harm.

Clinical Implications

The mechanisms behind the association between ACEs and self-harm require further exploration. Nonetheless, we know that there is a link; therefore, clinicians need to keep in mind the extensive impact of ACEs when working with vulnerable individuals.

Conclusion

In conclusion, although the IMV model was a useful framework in which to test out mediators and moderators of the relationship between ACEs and self-harm behaviour, we need to explore additional factors in future research. The factors tested in this study could not account for the mechanisms or conditions that may explain the association between ACEs and self-harm. More research needs to be carried out to explain this relationship and target future interventions.

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Appendices

Appendix One: Search Strategies

The basic search terms used to retrieve articles were:

"prison* or prison officer* or correction? officer* or prison guard or jail guard or prison personnel or officer or warden or prison staff or prison service or offender or custodial care*"

AND

"suicidal behavio? or suicide or self-harm or risk to self or self-inflicted death or workplace adversity or death in custody or parasuicide or automutiliation or auto mutilation or selfimmolation or self immolation or self-immolation or self poisoning or self-poisoning or suicidal ideation or drug overdose or suicide attempt or attempted suicide or completed suicide"

These were adapted depending on keywords used in different databases and required exclusions, please see below for extensive search history of all databases. Reference lists were searched and forwards-backwards citations of articles were fully assessed against the inclusion/exclusion criteria. This was also completed for Slade et al. (2019)'s review.

Database: Embase 1947-Present, updated daily

- Search Strategy:
- ---
- 1 (prison* or prison officer* or correction? officer* or prison guard or jail guard or prison personnel or officer or warden or prison staff or prison service or offender or custodial care*).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word] (68913)
- 2 correctional staff/ (105)
- 3 1 or 2 (68931)
- 4 (suicidal behavio? or suicide or self-harm or risk to self or self-inflicted death or workplace adversity or death in custody or parasuicide or automutiliation or auto mutilation or selfimmolation or self immolation or self-immolation or self poisoning or self-poisoning or suicidal ideation or drug overdose or suicide attempt or attempted suicide or completed suicide).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword heading word, floating subheading word, candidate term word] (188506)
- 5 suicidal behavior/ (17887)

- 6 detention/ or prisoner/ or custody/ or prison/ (41047)
- 7 5 and 6 (221)
- 8 4 or 7 (188506)
- 9 3 and 8 (3343)
- 10 limit 9 to (english and (adult <18 to 64 years> or aged <65+ years>)) (1458)
- 11 limit 9 to (embryo <first trimester> or infant <to one year> or child <unspecified age> or preschool child <1 to 6 years> or school child <7 to 12 years> or adolescent <13 to 17 years>) (625)
- 12 10 not 11 (1101)
- 13 conference.so,pt. (5362596)
- 14 12 not 13 (960)
-
- **********

Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions <1946 to October 27, 2022>

- Search Strategy:
- --
- 1 (prison* or prison officer* or correction? officer* or prison guard or jail guard or prison personnel or officer or warden or prison staff or prison service or offender or custodial care*).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms] (43291)
- 2 correctional staff/ (0)
- 3 1 or 2 (43291)
- 4 (suicidal behavio? or suicide or self-harm or risk to self or self-inflicted death or workplace adversity or death in custody or parasuicide or automutiliation or auto mutilation or selfimmolation or self immolation or self-immolation or self poisoning or self-poisoning or suicidal ideation or drug overdose or suicide attempt or attempted suicide or completed suicide).mp. [mp=title, book title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms] (119698)
- 5 Self-Injurious Behavior/ or Suicide, Attempted/ or Suicide/ (67771)
- 6 detention/ or prisoner/ or custody/ or prison/ (25879)
- 7 5 and 6 (990)
- 8 4 or 7 (119751)
- 9 3 and 8 (1845)
- 10 limit 9 to (english language and ("young adult (19 to 24 years)" or "adult (19 to 44 years)" or "young adult and adult (19-24 and 19-44)" or "middle age (45 to 64 years)" or "middle aged (45 plus years)" or "all aged (65 and over)" or "aged (80 and over)")) (893)

- 11 limit 10 to "all child (0 to 18 years)" (341)
- 12 10 not 11 (552)
-
- **********

Top of Form

Friday, October 28, 2022 2:34:00 PM

#	Query	
S10	S7 AND S8	404
S9	S7 AND S8	407
S8	(MH "Adult")	1,258,493
S7	S3 AND S6	1,162
S6	S4 OR S5	49,951
S5	(MH "Suicide") OR (MH "Suicide, Attempted")	27,456
S4	suicidal behavio? or suicide or self-harm or risk to self or self-inflicted death or workplace adversity or death in custody or parasuicide or automutiliation or auto mutilation or selfimmolation or self immolation or self-immolation or self poisoning or self-poisoning or suicidal ideation or drug overdose or suicide attempt or attempted suicide or completed suicide	49,951
S3	S1 OR S2	43,802

S2	(MH "Correctional Facilities Personnel")	490
S1	prison* or prison officer* or correction? officer* or prison guard or jail guard or prison personnel or officer or warden or prison staff or prison service or offender or custodial care*	43,708

Bottom of Form

Database: APA PsycInfo <1806 to October Week 4 2022>

Search Strategy:

---

1 (prison* or prison officer* or correction? officer* or prison guard or jail guard or prison personnel or officer or warden or prison staff or prison service or offender or custodial care*).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] (52588)

2 (suicidal behavio? or suicide or self-harm or risk to self or self-inflicted death or workplace adversity or death in custody or parasuicide or automutiliation or auto mutilation or selfimmolation or self immolation or self-immolation or self poisoning or self-poisoning or suicidal ideation or drug overdose or suicide attempt or attempted suicide or completed suicide).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures, mesh word] (78041)

3 1 and 2 (2016)

4 limit 3 to ("300 adulthood <age 18 yrs and older>" or 320 young adulthood <age 18 to 29 yrs> or 340 thirties <age 30 to 39 yrs> or 360 middle age <age 40 to 64 yrs> or "380 aged <age 65 yrs and older>" or "390 very old <age 85 yrs and older>") (1073)

5 limit 3 to (100 childhood <birth to age 12 yrs> or 120 neonatal <birth to age 1 mo> or 140 infancy <2 to 23 mo> or 160 preschool age <age 2 to 5 yrs> or 180 school age <age 6 to 12 yrs> or 200 adolescence <age 13 to 17 yrs>) (278)

6 4 not 5 (894)

7 limit 6 to english language (856)

****

Appendix Two: Critical Appraisal Skills Programme Checklist

The CASP checklist can be found at https://casp-uk.net/images/checklist/documents/CASP-Qualitative-Studies-Checklist/CASP-Qualitative-Checklist-2018.

It is reproduced here in full.

CASP
Critical Appraisal Skills Programme

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Summertown Pavilion, Middle Way Oxford OX2 7LG

CASP Checklist: 10 questions to help you make sense of a Qualitative research

How to use this appraisal tool: Three broad issues need to be considered when appraising a qualitative study:

- Are the results of the study valid? (Section A)
- What are the results? (Section B)
- Will the results help locally? (Section C)

The 10 questions on the following pages are designed to help you think about these issues systematically. The first two questions are screening questions and can be answered quickly. If the answer to both is "yes", it is worth proceeding with the remaining questions. There is some degree of overlap between the questions, you are asked to record a "yes", "no" or "can't tell" to most of the questions. A number of italicised prompts are given after each question. These are designed to remind you why the question is important. Record your reasons for your answers in the spaces provided.

About: These checklists were designed to be used as educational pedagogic tools, as part of a workshop setting, therefore we do not suggest a scoring system. The core CASP checklists (randomised controlled trial & systematic review) were based on JAMA 'Users' guides to the medical literature 1994 (adapted from Guyatt GH, Sackett DL, and Cook DJ), and piloted with health care practitioners.

For each new checklist, a group of experts were assembled to develop and pilot the checklist and the workshop format with which it would be used. Over the years overall adjustments have been made to the format, but a recent survey of checklist users reiterated that the basic format continues to be useful and appropriate.

Referencing: we recommend using the Harvard style citation, i.e.: *Critical Appraisal Skills Programme (2018). CASP (insert name of checklist i.e. Qualitative) Checklist. [online] Available at: URL. Accessed: Date Accessed.*

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Paper for appraisal and reference:

Section A: Are the results valid?

1. Was there a clear statement of the aims of the research?

Yes ☐
Can't Tell ☐
No ☐

HINT: Consider
- what was the goal of the research
- why it was thought important
- its relevance

Comments:

2. Is a qualitative methodology appropriate?

Yes ☐
Can't Tell ☐
No ☐

HINT: Consider
- If the research seeks to interpret or illuminate the actions and/or subjective experiences of research participants
- Is qualitative research the right methodology for addressing the research goal

Comments:

Is it worth continuing?

3. Was the research design appropriate to address the aims of the research?

Yes ☐
Can't Tell ☐
No ☐

HINT: Consider
- if the researcher has justified the research design (e.g. have they discussed how they decided which method to use)

Comments:

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4. Was the recruitment strategy appropriate to the aims of the research?

Yes ☐
Can't Tell ☐
No ☐

HINT: Consider
- If the researcher has explained how the participants were selected
- If they explained why the participants they selected were the most appropriate to provide access to the type of knowledge sought by the study
- If there are any discussions around recruitment (e.g. why some people chose not to take part)

Comments:

5. Was the data collected in a way that addressed the research issue?

Yes ☐
Can't Tell ☐
No ☐

HINT: Consider
- If the setting for the data collection was justified
- If it is clear how data were collected (e.g. focus group, semi-structured interview etc.)
- If the researcher has justified the methods chosen
- If the researcher has made the methods explicit (e.g. for interview method, is there an indication of how interviews are conducted, or did they use a topic guide)
- If methods were modified during the study. If so, has the researcher explained how and why
- If the form of data is clear (e.g. tape recordings, video material, notes etc.)
- If the researcher has discussed saturation of data

Comments:

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6. Has the relationship between researcher and participants been adequately considered?

Yes ☐
Can't Tell ☐
No ☐

HINT: Consider
- If the researcher critically examined their own role, potential bias and influence during (a) formulation of the research questions (b) data collection, including sample recruitment and choice of location
- How the researcher responded to events during the study and whether they considered the implications of any changes in the research design

Comments:

Section B: What are the results?

7. Have ethical issues been taken into consideration?

Yes ☐
Can't Tell ☐
No ☐

HINT: Consider
- If there are sufficient details of how the research was explained to participants for the reader to assess whether ethical standards were maintained
- If the researcher has discussed issues raised by the study (e.g. issues around informed consent or confidentiality or how they have handled the effects of the study on the participants during and after the study)
- If approval has been sought from the ethics committee

Comments:

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8. Was the data analysis sufficiently rigorous?

Yes ☐
Can't Tell ☐
No ☐

HINT: Consider
- If there is an in-depth description of the analysis process
- If thematic analysis is used. If so, is it clear how the categories/themes were derived from the data
- Whether the researcher explains how the data presented were selected from the original sample to demonstrate the analysis process
- If sufficient data are presented to support the findings
- To what extent contradictory data are taken into account
- Whether the researcher critically examined their own role, potential bias and influence during analysis and selection of data for presentation

Comments:

9. Is there a clear statement of findings?

Yes ☐
Can't Tell ☐
No ☐

HINT: Consider whether
- If the findings are explicit
- If there is adequate discussion of the evidence both for and against the researcher's arguments
- If the researcher has discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst)
- If the findings are discussed in relation to the original research question

Comments:

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Section C: Will the results help locally?

10. How valuable is the research?

HINT: Consider

- If the researcher discusses the contribution the study makes to existing knowledge or understanding (e.g. do they consider the findings in relation to current practice or policy, or relevant research-based literature
- If they identify new areas where research is necessary
- If the researchers have discussed whether or how the findings can be transferred to other populations or considered other ways the research may be used

Comments:

Appendix 3 Full Study Characteristics Table

Table 5 Study characteristics table in full

Study	Authors (Year), & Country	Sample & Clinical Characteristics (including degree of exposure to suicidal behaviour)	Data Collection Method & Analysis	Study Aims and Core Themes
S1	Barry, (2017) Republic of Ireland	**N**=14 (n = 12 prison staff; n = 2 retired prison staff) **Cause of death:** included a mixture of suicide, homicide, drug related death, natural causes **Multiple or single incident of death:** 10 = multiple 4 = single **Self-harm (SH):** NR Multiple or single incident of **SH: NR** **Gender:** NR **Length of service:** 5-34 years, average = 23.86 **Prison(s):** Unclear 'Irish Prison Service'	Semi-structured interviews & thematic analysis	**Aims:** 1. Officers' approaches to dealing with deaths in custody. 2. How emotions are expressed. 3. The impact of officers' experiences of deaths in custody at work and home Themes: 1.Working on autopilot 2.The need to keep up appearances 3. Impact on work 4. Impact on personal life 5. Moving between two worlds

Study	Authors (Year), & Country	Sample & Clinical Characteristics (including degree of exposure to suicidal behaviour)	Data Collection Method & Analysis	Study Aims and Core Themes
S2	Barry, (2020) Republic of Ireland	**N**=17 (n = 15 prison staff; n = 2 retired prison staff) **Cause of death:** included a mixture of suicide, homicide, drug related death, natural causes **Multiple or single incident of death:** 13 multiple & 4 single **Self-harm (SH):** NR **Multiple or single incident of SH:** NR **Gender:** 16 male & 1 female **Length of service:** NR **Prison(s):** Participants worked in 9 of the 14 prisons in the Republic of Ireland	Semi-structured interviews & thematic analysis	**Aims**: 1. How do prison officers' cope with their emotional responses in the face of a death in custody. 2. How do they manage this in the immediate aftermath and longer term? Themes: 1. Managing emotion during the emergency response 2. Managing emotion in the immediate aftermath 3. Humour 4. Empathy 5. Longer term managing emotions and finding support 6. Finding support at work 7. Protecting the home from spill over

Study	Authors (Year), & Country	Sample & Clinical Characteristics (including degree of exposure to suicidal behaviour)	Data Collection Method & Analysis	Study Aims and Core Themes
S3	Dennard et al. (2021) United Kingdom	**N**=74 (N = not recorded to maintain confidentiality estimated 60-70% prison staff and the rest civilian staff) **Cause of death:** NR **Multiple or single incident of death:** NR **Self-harm (SH):** NR **Multiple or single incident of SH:** NR **Gender:** NR **Length of service:** NR **Prison(s):** Category B remand male prison.	Written responses to 4 open ended questions that were anonymous and added to a ballot box & thematic analysis	**Aims:** 1.Allow staff to share challenges they experience at work. 2. To explore what type of support staff think would be beneficial. 3. Discuss aspects of the job they like. Themes 1. The challenging nature of the work 2. Interactions with prisoners 3. Staff interactions 4. Inadequate resources 5. Staff support and development 6. Coping strategies

Study	Authors (Year), & Country	Sample & Clinical Characteristics (including degree of exposure to suicidal behaviour)	Data Collection Method & Analysis	Study Aims and Core Themes
S4	Marzano et al. (2015) United Kingdom	**N**=30 (n = 15 prison staff; n = 15 healthcare staff) **Cause of death:** N/A **Multiple or single incident of death:** N/A **Self-harm (SH):** Recorded **Multiple or single incident of SH:** Both **Gender:** 15 prison staff (5 female, 10 male) 15 healthcare staff (6 female, 9 male) **Length of service:** Prison staff: 18 months – 22 years, average = 10.1 Health care staff: 10 months – 10 years, average = 3.67 **Prison(s):** South East England, male prison	Semi-structured interviews & thematic analysis	**Aims:** 1.What are the experiences, opinions and reactions of prison staff working with adult male prisoners who repeatedly self-harm. 2. How do they cope with this? 3. What coping methods do they have? 4. What is the impact? Themes 1. Prolific self-harmers draining limited resources 2. Subverted power relations and role expectations 3. Switching off

Study	Authors (Year), & Country	Sample & Clinical Characteristics (including degree of exposure to suicidal behaviour)	Data Collection Method & Analysis	Study Aims and Core Themes
S5	Short et al. (2009) United Kingdom	**N**=13 (n = 8 prison staff; n = 5 healthcare staff) **Cause of death:** N/A **Multiple or single incident of death:** N/A **Self-harm (SH):** Recorded **Multiple or single incident of SH:** Both **Gender:** 5 male & 8 female **Length of service:** Prison staff: 3 months –10 years, average = 3.5years **Prison(s):** North England, female prison	Semi-structured interviews & thematic analysis	**Aims:** 1. What is staff attitudes to prisoner self-harm, how is it labelled by staff and how does this affect the development of staff Themes 1. Staff perceptions of why the women self-harm 2. Labelling of self-harm 3. The implications of labelling 4. The occupational environment that the prison staff work in and how it affects their attitudes. 5. Staff attitudes to balancing role demands, staff training, and support.

Study	Authors (Year), & Country	Sample & Clinical Characteristics (including degree of exposure to suicidal behaviour)	Data Collection Method & Analysis	Study Aims and Core Themes
S6	Sweeney et al. (2018) United Kingdom	**N**=9 (N = 9/9 prison officers) **Cause of death:** Unclear used suicidal behaviour which encompassed a range of suicidal and self-harming behaviour with and without intent to die. No mention of frequency. **Multiple or single incident of death:** NR **Self-harm (SH):** See above. **Multiple or single incident of SH:** NR **Gender:** 8 male & 1 female **Length of service:** NR **Prison(s):** Category B male prison in Yorkshire	Semi-structured interviews & thematic analysis	**Aims:** 1. What is the experience of a prison officer after an incident of suicide related behaviour. 2. What coping do they use? 3. What impact does this have on their personal and professional lives? 4. To explore what support is available to prison officers post incident. Themes 1. Prison officer culture limiting support 2. Feeling underqualified 3. Being under resourced 4. Minimising negative emotions 5. Positivity in relation to intervening effectively in situations

Study	Authors (Year), & Country	Sample & Clinical Characteristics (including degree of exposure to suicidal behaviour)	Data Collection Method & Analysis	Study Aims and Core Themes
S7	Walker et al. (2017) United Kingdom	**N**=14 (n = 11 prison staff; n = 3 healthcare staff) **Cause of death:** N/A **Multiple or single incident of death:** N/A **Self-harm (SH):** Recorded **Multiple or single incident of SH:** multiple **Gender:** 10 male & 4 female **Length of service:** 1-28 years, average = 14 years **Prison(s):** 3 prison sites, closed category for female adults in England.	Semi-structured interviews & thematic analysis	**Aims:** 1. Increase the understanding of the effects that repetitive female self-harm has on staff in prisons on their personal and professional lives Themes 1. Coping in the prison 2. Coping on the job 3. Coping away from prison 4. Future training to cope with the job

Appendix Three: Cochrane Training Link

Thematic Synthesis | Cochrane Training

https://training.cochrane.org/resource/thematic-synthesis

Appendix Four: Quality Assessment Ratings of Included Studies (CASP, 2022)

Table 6 Quality Assessment Ratings of Included Studies (CASP, 2022)

STUDY	AUTHORS (YEAR)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	TOTAL
S1	Barry (2017)	Y	Y	Y	?	Y	N	N	?	?	?	6/10
S2	Barry (2020)	Y	Y	Y	N	?	N	?	Y	?	?	6/10
S3	Dennard et al. (2021)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	10/10
S4	Marzano et al. (2015)	Y	Y	Y	?	?	N	Y	Y	Y	Y	8/10
S5	Short et al.(2009)	Y	Y	Y	?	Y	?	?	Y	Y	Y	8.5/10
S6	Sweeney et al. (2018)	Y	Y	Y	Y	Y	N	Y	?	?	Y	8/10
S7	Walker et al.(2017)	Y	Y	Y	?	Y	N	Y	Y	Y	Y	8.5/10

Abbreviations: Y = Yes (good quality); ? = Unclear quality; N = No (low quality); Q1 = Aims are plainly stated; Q2 = Qualitative methods appropriate; Q3 = Appropriate research design; Q4 = Recruitment strategy appropriate; Q5 = Suitability of data collection methods; Q6 = Consideration given to participant and researcher relationship; Q7 = Ethical considerations; Q8 = Thoroughness of data analysis; Q9 = clear statement of findings; Q10 = Is research valuable. Total score is comprised of Yes = 1 point, ? = 0.5 point, N = 0 point.

Appendix Five: Project Proposals

Originally Proposed MRP, which was abandoned 30/09/2022: https://osf.io/93en7/

Current MRP (Chapter 2 of this document): https://osf.io/c3ru8/

Appendix Six: Questionnaires Used in Original Study

Order 1 (Raa-Ders) Participant ID: _____

Date: _____

Participant information

Age:	
Ethnicity:	
Relationship status:	
Working status:	
Gender identity:	
Sexual orientation:	
Living arrangements:	
Education:	

Additional notes:

PHQ-9

Over the past 2 weeks, how often have you been bothered by any of the following problems?

Please circle your answer	**Not at all**	**Several days**	**More than half the days**	**Nearly every day**
1. Feeling little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed or hopeless	0	1	2	3
3. Trouble falling asleep, staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself – or that you're a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or, the opposite- being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

If you checked off any problems, how difficult have those problems made it for you to do your work, take care of things at home, or get alone with other people?	Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult

GAD-7

Over the last 2 weeks, how often have you been bothered by the following problems?

Please circle your answer	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

(For coding: Total Score T _____ = _____ + _____ + _____)

ACE Questionnaire

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household **often**...

   - Swear at you, insult you, put you down, or humiliate you?

   Or

   - Act in a way that made you afraid that you might be physically hurt?

   YES **NO**

2. Did a parent or other adult in the household **often...**

   - Push, grab, slap, or throw something at you?

   Or

   - **Ever** hit you so hard that you had marks or were injured?

   YES **NO**

3. Did an adult or person at least 5 years older than you **ever...**

   - Touch or fondle you or have you touch their body in a sexual way?

   Or

   - Try to or actually have oral, anal, or vaginal sex with you?

   YES **NO**

4. Did you **often** feel that...

   - No one in your family loved you or thought you were important or special?

Or

   - Your family didn't look out for each other, feel close to each other, or support each other?

YES **NO**

5. Did you **often** feel that...

You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?

Or

Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?

YES **NO**

6. Were your parents **ever** separated or divorced?

YES **NO**

7. Was your mother or stepmother:

   - **Often** pushed, grabbed, slapped, or had something thrown at her?

   Or

   - **Sometimes or often** kicked, bitten, hit with a fist, or hit with something hard?

   Or

   - **Ever** repeatedly hit over at least a few minutes or threatened with a gun or knife?

   YES **NO**

8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?

   YES **NO**

9. Was a household member depressed or mentally ill or did a household member attempt suicide? **YES** **NO**
10. Did a household member go to prison? **YES** **NO**

APMS

The next section asks about self-harm and suicide.

1. Have you **EVER THOUGHT of taking your life**, even though you would not actually do it?

NO/YES

{If yes:

How often have you had these thoughts within the last 12 months?

_____

When was the most recent time?_____

Have you **EVER** made an **ATTEMPT to take your life**, e.g. by taking an overdose of tablets or in some other way?

NO/YES

{If yes:

How many suicide attempts have you made in your lifetime? _____

How many times within the last 12 months has this happened?

_____

When was the most recent time?_____

Have you **EVER THOUGHT** about harming yourself without wanting to die, even though you would not actually do it?

NO/YES

{If yes:

When was the most recent time?_____

How often have you had these thoughts within the last 12 months?

_____

Have you **EVER** harmed yourself **without wanting to die**, by taking an overdose of tablets or in some other way?

NO/YES

{If yes:

How many times have you hurt yourself without wanting to die in your lifetime? _____

How many times within the last 12 months has this happened?_____

When was the most recent time?_____

I'm just going to ask you a few questions about the events that have led to you currently being in hospital.

Did you intend to…….(overdose etc)

Yes No Not sure

Did you intend to kill yourself this time? **Yes No Not sure** **{If repeat episode** During any of the previous attempts you mentioned, did you intend to kill yourself? **Yes No Not sure** Apart from today, have you ever received treatment in a hospital following any self-harm?
Has anyone among your close friends ever attempted suicide or deliberately harmed themselves? **YES/NO**
Has anyone among your family ever attempted suicide or deliberately harmed themselves? **YES/NO**

RAA Scale

The following questions concern how you ***generally*** feel in ***important close relationships in your life***. Think about your past and present relationships with people who have been especially important to you, such as family members, romantic partners, and close friends. Respond to each statement in terms of how you ***generally*** feel in these relationships.

Please use the scale below by **circling a number between 1 and 5** using the scale to the right of each statement.

		Not at all characteristic of me				**Very characteristic of me**
1	I find it relatively easy to get close to people.	1	2	3	4	5
2	I find it difficult to allow myself to depend on others.	1	2	3	4	5
3	I often worry that other people don't really love me.	1	2	3	4	5
4	I find that others are reluctant to get as close as I would like.	1	2	3	4	5
5	I am comfortable depending on others.	1	2	3	4	5
6	I don’t worry about people getting too close to me.	1	2	3	4	5
7	I find that people are never there when you need them.	1	2	3	4	5

8	I am somewhat uncomfortable being close to others.	1	2	3	4	5
9	I often worry that other people won't want to stay with me.	1	2	3	4	5
10	When I show my feelings for others, I'm afraid they will not feel the same about me.	1	2	3	4	5
11	I often wonder whether other people really care about me.	1	2	3	4	5
12	I am comfortable developing close relationships with others.	1	2	3	4	5
		Not at all characteristic of me				**Very characteristic of me**
13	I am uncomfortable when anyone gets too emotionally close to me.	1	2	3	4	5
14	I know that people will be there when I need them.	1	2	3	4	5
15	I want to get close to people, but I worry about being hurt.	1	2	3	4	5
16	I find it difficult to trust others completely.	1	2	3	4	5
17	People often want me to be emotionally closer than I feel comfortable being.	1	2	3	4	5

18	I am not sure that I can always depend on people to be there when I need them.	1	2	3	4	5

Mental Images

At times when you are feeling down or distressed, how often do the following mental images pop into your mind? **Please circle one response only per question.**

		None of the time 1	A little of the time 2	Some of the time 3	Most of the time 4	All of the time 5	Rather not say 6
1	Images of a time when you tried to harm yourself in the past	1	2	3	4	5	6
2	Images of yourself planning/preparing to harm yourself or make a suicide attempt	1	2	3	4	5	6
3	Images of what might happen to you if you died	1	2	3	4	5	6
4	Images of what might happen to other people if you died	1	2	3	4	5	6
5	Images of things you were escaping from	1	2	3	4	5	6

6	Images of another (non-suicide related) distressing event that happened to you (e.g., a traumatic event)	1	2	3	4	5	6
7	Images that made you feel safe or better	1	2	3	4	5	6
8	Images that were fleeting/unclear	1	2	3	4	5	6

Life Events

Please answer the following questions about things that may have happened to you. If they have, please indicate your response by placing an "X" over the circle representing if this was in the **last 6 months and/or more than 6 months ago**.
(Select both options if you need to.)

	Yes, in the past 6 months	Yes, more than 6 months ago	No
You yourself suffered a serious illness, injury or assault	○	○	○
A serious illness, injury or assault happened to a close relative	○	○	○
Your parent, child or partner died	○	○	○
A close family friend or another relative (aunt, cousin, grandparent) died	○	○	○
Someone in your family or close friends completed suicide	○	○	○
Someone in your family or close friends attempted suicide	○	○	○
Someone in your family or close friends deliberately harmed themselves without the intention of killing themselves	○	○	○
You had serious relationship problems with your partner	○	○	○
You had a separation due to marital/ relationship difficulties	○	○	○
You had a serious problem with a close friend, neighbour or relative	○	○	○
You became unemployed or you were seeking work unsuccessfully for more than one month	○	○	○
You were fired or made redundant from your job	○	○	○
You were bullied or victimised at work or in some other aspect of your life	○	○	○

You were physically abused	○	○	○

	Yes, in the past 6 months	Yes, more than 6 months ago	No
You were forced (i.e., physically or verbally) to engage in sexual activities against your will	○	○	○
You had a major financial crisis	○	○	○
You had problems with the police or a court appearance	○	○	○
Something you valued was lost or stolen	○	○	○
Has any other distressing event occurred involving you, your family or close friends?	○	○	○

If yes, please tell us what happened in the box below

The E-Scale

For each of the following attitude statements indicate the extent to which you think it represents your own view of yourself. Read each item carefully and circle the number to the right of the statement that best describes **the degree to which each statement is Like You**. Use the scale below. Please do not omit any item.

	Not at all like me 0	**A little bit like me 1**	**Moderately like me 2**	**Quite a bit like me 3**	**Extremely like me 4**
I want to get away from myself	0	1	2	3	4
I feel trapped inside myself	0	1	2	3	4
I feel trapped by other people	0	1	2	3	4
I am in a situation I feel trapped in	0	1	2	3	4

The D-Scale

Below is a series of statements, which describe how people can feel about themselves. Read each item carefully and circle the number to the right of the statement that best describes **how you have felt in the last 7 days**. Use the scale below. Please do not omit any item.

	Never **0**	**Rarely** **1**	**Sometimes** **2**	**Mostly (a lot)** **3**	**Always** **4**
I feel I have sunk to the bottom of the ladder	0	1	2	3	4
I feel that I have given up	0	1	2	3	4

Current Support

Please read the following questions and circle the response that most closely describes your current situation.

1. Is there someone available who you can count on to listen to you when you need to talk?

None of the time	A little of the time	Some of the time	Most of the time	All of the time
1	2	3	4	5

2. Is there someone available to give you good advice about a problem?

None of the time	A little of the time	Some of the time	Most of the time	All of the time
1	2	3	4	5

3. Is there someone available to you who shows you love and affection?

None of the time	A little of the time	Some of the time	Most of the time	All of the time
1	2	3	4	5

4. Is there someone available to help you with daily chores?

None of the time	A little of the time	Some of the time	Most of the time	All of the time
1	2	3	4	5

5. Can you count on anyone to provide you with emotional support (talking over problems or helping you make a difficult decision)?

None of the time	A little of the time	Some of the time	Most of the time	All of the time
1	2	3	4	5

6. Do you have as much contact as you would like with someone you feel close to, someone in whom you can trust and confide?

None of the time	A little of the time	Some of the time	Most of the time	All of the time
1	2	3	4	5

7. Are you currently married or living with a partner?

Yes No

DERS

Please indicate how often you feel each of the following statements apply to you, by circling a number to the right of each statement.

		Almost never	Sometimes	About half the time	Most of the time	Almost always
1	When I'm upset, I feel guilty for feeling that way.	1	2	3	4	5
2	When I'm upset, I feel ashamed with myself for feeling that way.	1	2	3	4	5
3	When I'm upset, I become embarrassed for feeling that way.	1	2	3	4	5
4	When I'm upset, I become angry with myself for feeling that way.	1	2	3	4	5
5	When I am upset, I feel like I am weak.	1	2	3	4	5
6	When I am upset, I believe that I'll end up feeling very depressed.	1	2	3	4	5
7	When I'm upset, I believe that I will remain that way for a long time.	1	2	3	4	5

8	When I'm upset, I believe that wallowing in it is all I can do.	1	2	3	4	5
9	When I am upset, it takes me a long time to feel better.	1	2	3	4	5
10	When I am upset, I believe that there is nothing I can do to make myself feel better.	1	2	3	4	5
11	When I am upset, I know that I can find a way to eventually feel better.	1	2	3	4	5
12	When I'm upset, my emotions feel overwhelming.	1	2	3	4	5
13	When I'm upset, I start to feel very bad about myself.	1	2	3	4	5

DERS-P

Please indicate how often you feel each of the following statements apply to you, by circling a number to the right of each statement.

	Almost never **1**	**Sometimes** **2**	**About half the time** **3**	**Most of the time** **4**	**Almost always** **5**
When I'm happy, I feel guilty for feeling that way.	1	2	3	4	5
When I'm happy, I become scared and fearful of those feelings.	1	2	3	4	5
When I'm happy, I feel ashamed with myself for feeling that way.	1	2	3	4	5
When I'm happy, I become angry with myself for feeling that way.	1	2	3	4	5

Appendix 7 Unplanned Mediation and Moderation analyses

Mediation Analysis

Emotion regulation, entrapment and defeat were investigated to explore their mediating effect between ACEs and self-harming behaviours. Gender was controlled for in all mediation analyses.

In line with previous analyses the direct effect between the predictor (ACEs) and the hypothetical mediators were all significant (please see Tables 7, 8 and 9). However, the direct effect and indirect effect between ACEs and self-harm were not significant in each analyses (please see Tables 7, 8 and 9).

Table 7 Adjusted mediation model (gender only) of ACEs and self-harming behaviour mediated by emotion regulation

Total Effect	**Effect (beta)**	**se**	**t**	**p**	**LLCI**	**ULCI**
ACEs on Self-harm	-.015	.022	-.67	.504	-.059	.029
Direct Effects	**Effect (beta)**	**se**	**t**	**p**	**LLCI**	**ULCI**
Path a (ACEs – Emotion)	1.275	.375	3.397	.001	.533	2.018
Path b (Emotion – Self-harm)	-.000	.005	-.018	.985	-.010	.010
Path c' (ACEs – Self-harm)	-.015	.023	-.636	.526	-.061	.031
Indirect Effect	**Effect (beta)**	**se**	**LLCI**	**ULCI**		
ACEs on Self-harm	-.001	.006	-.014	.012		

Table 8 Adjusted mediation model (gender only) of ACEs and self-harming behaviour mediated by entrapment

Total Effect	**Effect (beta)**	**se**	**t**	**p**	**LLCI**	**ULCI**
ACEs on Self-harm	-.015	.022	-.662	.509	-.059	.029
Direct Effects	**Effect (beta)**	**se**	**t**	**p**	**LLCI**	**ULCI**
Path a (ACEs – Entrap)	.409	.113	3.631	.001	.186	.631
Path b (Entrap– Self-harm)	-.010	.017	-.623	.530	-.044	.023
Path c' (ACEs – Self-harm)	-.011	.023	-.448	.655	-.057	.036
Indirect Effect	**Effect (beta)**	**se**	**LLCI**	**ULCI**		
ACEs on Self-harm	-.004	.007	-.021	.008		

Table 9 Adjusted mediation model (gender only) of ACEs and self-harming behaviour mediated by defeat

Total Effect	**Effect (beta)**	**se**	**t**	**p**	**LLCI**	**ULCI**
ACEs on Self-harm	-.015	.022	-.667	.509	-.059	.029
Direct Effects	**Effect (beta)**	**se**	**t**	**p**	**LLCI**	**ULCI**

Path a (ACEs – Defeat)	.186	.056	3.303	.001	.075	.298
Path b (Defeat – Self-harm)	-.013	.034	-.401	.689	-.080	.053
Path c' (ACEs – Self-harm)	-.012	.023	-.527	.599	-.059	.034
Indirect Effect	**Effect (beta)**	**se**	**LLCI**	**ULCI**		
ACEs on Self-harm	-.002	.007	-.016	.010		

Moderation Analysis

Social support was investigated to explore its moderating effects between ACEs and self-harming behaviour. Gender was controlled for in this analysis.

The overall model indicated that roughly 40% variance in self-harm was due to ACEs, social support and the interaction between the two *(F*(4, 136) = 2.759, *p* = .03, R^2 = .402). ACEs did not have a significant effect on self-harm (β = -.012, *t*(136) = -.56, *p* = .58). Social support did not have a significant effect on self-harm (β = -.003, *t*(136) = -.31, *p* = .757). The interaction of these variables was not significant (β = -.002, *t*(136) = -.581, *p* = .562) which indicates that social support did not significantly moderate between ACEs and self-harming behaviour when controlled for gender.