Childhood Trauma and Self-Concept Clarity: The Role of Specificity and Integration of Self-Defining Memories

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Word Count

Section	Main text	Appendices (including references, figures and tables)	Total
Abstract	284	-	284
Literature Review	7951	15,998	23,949
Empirical Paper	7522	9041	16,563
Critical Appraisal	3802	1671	5474
Ethics section	4418	3431	7849
Total	23,977	30,141	54,118

Abstract

Self-Concept Clarity is "the extent to which the contents of an individual's self-concept (e.g. perceived personal attributes) are clearly and confidently defined, internally consistent, and temporally stable" (Campbell et al., 1996, p.1). This thesis aimed to explore the relationship between childhood trauma and self-concept clarity. Self-defining memories are autobiographical memories of a specific event which feel vivid, evoke strong emotion, and are related to a person's core goals and conflicts. This thesis also aimed to explore the ability to recall self-defining memories from childhood in specific detail (specificity) and make meaning from such events (integration). More specifically, this thesis explored whether these cognitive skills influenced self-concept clarity.

Section one presents a systematic literature review which aims to synthesise quantitative literature investigating the relationship between self-concept clarity and self-harm, including mediating and moderating variables investigated in this pathway. Self-harm thoughts, urges or behaviours were included, with or without suicidal intent. Several databases were searched for peer-reviewed papers published in scientific journals. Eighteen studies met eligibility criteria for inclusion. The findings and discussion are presented in this section. Section two presents an empirical study which aimed to investigate the relationship between childhood trauma and self-concept clarity with adult participants. Furthermore, this study aimed to explore whether specificity or integration from self-defining memory narratives mediated the relationship between childhood trauma and self-concept clarity. Participants were recruited online via social media and online forums using a snowballing method. The study was completed as an online survey. The findings and discussion are presented in this section. Section three presents the critical appraisal, which offers interpretations of the review and study findings, addresses strengths and limitations, suggests clinical applications of the findings, and provides recommendations for further research.

Declaration

This thesis presents research undertaken for the Doctorate in Clinical Psychology at the Division of Health Research, Lancaster University. I confirm that the research presented in this thesis is my own and has not been submitted for any other academic award.

Acknowledgements

I would like to express huge gratitude to the people who gave their free time to take part in the study. I hope the findings have helped further understanding of the impact that childhood trauma may have on self-concept clarity and highlighted important avenues of exploration. Also, I would like to thank those who supported study recruitment on social media. I would also like to thank Shaping Our Lives and the Mental Health Forum for supporting study advertisement.

I would like to give huge thanks to my supervisor, Bill Sellwood, for all the supervision during these years. It has been a great opportunity to learn from your research expertise, which has helped shape my approach to developing, conducting and critically evaluating research. I would also like to thank John Barbrook, our departmental Faculty Librarian, for his guidance in developing the search strategy and search terms for the systematic literature review. Also, I would like express my appreciation to Rachel Holden, for giving her time to assist with quality appraisal and self-defining memory scoring.

Finally, I would like to thank my family and friends for all their support. I am hugely grateful for my mum, who took care of my daughter so that I could complete this thesis. I also give thanks to my mum and dad, for always providing me with the best opportunities they could. I would also like to express enormous gratitude to my fiancé for supporting me to complete this thesis. Lastly, I thank my wonderful daughter, who is my motivation in everything I do.

Contents

Section One: Literature Review

The Relationship Between Self-Concept Clarity and Self-Harm: A Systematic Literature Review

Melanie Taylor

Prepared in accordance with author guidance for *Archives of Suicide Research*

Abstract

Objective: This review synthesised quantitative literature investigating the relationship between self-concept clarity (SCC) and self-harm, including mediating and moderating variables investigated in this pathway. **Method:** Articles were identified through systematic searching of several databases and relevant data was extracted. Peer-reviewed research published in scientific journals were eligible for inclusion. **Results:** Eighteen studies met eligibility criteria for inclusion and was of mixed quality. Findings suggest a significant relationship between SCC and self-harm within adolescent, university and clinical samples. Longitudinal study findings with adolescents suggest low SCC predicts future self-harm engagement, though some findings suggest a bidirectional relationship. Furthermore, several interpersonal variables (e.g. attachment, parenting, relationship quality) and intrapersonal variables (e.g. Behavioural Activation System, self-blame) may play a significant role in the pathway. **Conclusions:** Findings suggest SCC influences self-harm engagement and requires further investigation. Further longitudinal research is needed with diverse samples to establish direction of causality. Longitudinal research findings suggest secure attachment and greater relationship quality with parents and peers may be reduce vulnerability to self-harm for adolescents with low SCC.

Keywords: Self-concept, identity, self-perception, self-harm, self-injury, NSSI.

Highlights

- All studies ($N = 18$) found a significant association between low SCC and self-harm engagement.
- Low SCC influences future self-harm severity in adolescence, though this relationship may be bidirectional.

- Several interpersonal (e.g. maternal attachment, maternal and peer relationships) and intrapersonal variables (e.g. self-blame, personality style) may significantly influence the relationship between low SCC and self-harm engagement.

Introduction

Self-harm involves the deliberate infliction of damage to bodily tissue, for purposes not deemed appropriate social or cultural practice, and can include many behaviours, such as cutting, burning, or hitting the self (Nock, 2010). Many terms and definitions have been applied to describe self-harm (Gratz, 2003). The term non-suicidal self-injury (NSSI) is often used to distinguish self-harm without suicidal intent from that with suicidal intent, due to proposed phenomenological differences. For example, depression, self-denigration, anhedonia and impulsivity, are much more prevalent for individuals reporting suicidal behaviour than NSSI (Grandclerc et al., 2016; Stewart et al., 2017). However, establishing suicidal intent accompanying a self-harm act can be difficult, given the level of ambiguity or ambivalence individuals can experience regarding their life or death at these moments (Gratz, 2003). Furthermore, NSSI and suicide attempt are highly comorbid in adolescents, with 50% of non-clinical, 70% of clinical inpatient, and 20% of community samples who report self-harm, also reporting suicide attempt (Brausch & Gutierrez, 2010; Muehlenkamp & Gutierrez, 2007; Nock et al., 2006). Approximately 40% of adolescents engaging in NSSI have experienced suicidal ideation, 22 to 25% have made a plan, and 12 to 14% have made a suicide attempt (Voss et al., 2020). Therefore, self-harm irrespective of suicidal intent will be included in this review.

In 2014, lifetime prevalence of self-harm in the United Kingdom was 6.4% (McManus et al., 2019) and approximately 17% globally (Gillies et al., 2018). From 2015 to 2020, the global lifetime prevalence of NSSI in adolescents was 20% with variation cross-culturally (Lucena et al., 2022), indicating an increasing trajectory. Self-harm is a global health concern and many factors increase vulnerability, such as childhood abuse, mental health problems, bullying, trauma, alcohol or substance use, poor family and peer relationships, lower socioeconomic status, lower IQ, identifying as a sexual minority, and

emotion dysregulation (Mars, Heron, Crane, Hawton, Kidger, et al., 2014; McEvoy et al., 2023; Wang et al., 2022). Self-harm during adolescence, especially with suicidal intent, is associated with adverse outcomes in adulthood, such as mental health problems, substance use, and chronic self-harm of increasing severity (Mars, Heron, Crane, Hawton, Lewis, et al., 2014). Self-harm engagement also increases risk of future suicide attempts, the mechanisms for which require exploration (Klonsky et al., 2013; Mars et al., 2019). Therefore, factors which may increase vulnerability to or be protective from self-harm must be investigated, to develop preventative support or interventions.

Adolescence and emerging adulthood are crucial times for exploration and development of the self and identity (Erikson, 1963; Schwartz et al., 2011). Erikson proposed a multidimensional model of identity development, including ego identity; considered a coherent, organised representation of the self (Schwartz, 2001). Identity synthesis or identity confusion are purported as two potential outcomes of identity development undertaken during adolescence (Erikson, 1968). The terms fully synthesised identity or high identity synthesis refer to having a clearly defined sense of self, and a stable, consistent, and reliable way of processing information related to the self. Identity confusion refers to a sense of being unable to enact and maintain lasting commitments to life changes, and a lack of purpose and direction in life, causing unstable, changing, and conflicting self-concept. Self-concept clarity (SCC) is "the extent to which the contents of an individual's self-concept are clearly and confidently defined, internally consistent, and temporally stable" (Campbell et al., 1996, p. 1). SCC, identity synthesis and identity confusion all refer to the organisation of self-concept rather than the content of beliefs about the self (Schwartz et al., 2011). There is consensus that SCC and identity synthesis or confusion are highly similar, if not the same construct (Schwartz et al., 2011; Schwartz et al., 2017). Therefore, in this review, they are considered the same concept and these terms, commonly found in the

literature, are used interchangeably. Erikson (1950) and Campbell et al. (1996) claimed an internally consistent sense of self is necessary to living an agentic, self-directed, and purposeful life (Schwartz et al., 2017).

McAdams (2001) proposed that to develop SCC, one integrates past, present, and future selves into an evolving, meaningful, personal life narrative, as a dynamic, iterative process throughout the lifespan, a skill which likely improves with age (Pasupathi & Mansour, 2006). Those high in identity synthesis make choices and enact consistent behaviours, enabling others to reliably predict one's behaviour. Successful identity development is considered the extent to which identity synthesis prevails over identity confusion (Erikson, 1950). Identity synthesis and confusion are not polar opposites, as individuals can experience good levels of synthesis whilst simultaneously experiencing some confusion (Schwartz et al., 2017). Therefore, adolescents may not have fully synthesised identities and likely present with some identity confusion. Experiencing some confusion about self-concept may be adaptive, as it facilitates openness to learning from new experiences and incorporating new knowledge to further develop and integrate self-concept throughout life (Marcia, 2002). SCC is fundamental to personal identity and can indicate the success of identity development (Schwartz et al., 2011).

Disturbance to SCC development could be an explanatory mechanism for self-harm onset. There is a well-established association between self-harm and a range of mental health problems, such as depression (McEvoy et al., 2023; Wang et al., 2022), panic and post-traumatic stress disorder (Bentley et al., 2015), psychosis (Cucchi et al., 2016; Lorentzen et al., 2022), eating disorders (Cucchi et al., 2016) and borderline personality disorder (Reichl & Kaess, 2021). Low SCC is also associated with mental health problems, including internalising problems such as depression and anxiety (Schwartz et al., 2012), psychosis (Evans et al., 2015) and eating disorders (Ali & Keel, 2023; Bardone-Cone et al., 2020).

Individuals with psychosis, eating disorder or borderline personality disorder are at much greater risk of experiencing identity or self-disturbances (Conneely et al., 2021; Verschueren et al., 2018; Verschueren et al., 2017). Furthermore, identity disturbance and self-harm are two characteristics of borderline personality disorder (American Psychiatric Association, 2013), a population found to experience low SCC (Roepke et al., 2011; Vater et al., 2015), evidencing that self-harm may develop or be exacerbated in those with low SCC. Self-harm could serve to relieve distressing emotions or negative affect experienced in relation to the self or identity (Edmondson et al., 2016; Taylor et al., 2018).

Self-harm onset typically occurs during adolescence, and peaks in prevalence during adolescence and emerging adulthood, signifying that disruption to identity development may increase vulnerability to self-harm engagement (Verschueren et al., 2020). Identity development is a relational process (Erikson, 1968). Secure attachment and supportive parental relationships, particularly during adolescence, may have crucial roles in SCC development (Becht et al., 2017). Correlational study findings suggest that parental and peer relationship difficulties, lack of family and social support, and peer victimisation are associated with adolescent self-harm (Adrian et al., 2011; Baetens et al., 2015; Baiden et al., 2017; Claes et al., 2010; Giletta et al., 2012; Nemati et al., 2020; Wan et al., 2019). Furthermore, longitudinal study findings suggest poor family functioning and support, attachment difficulties, harsh parenting, and peer relationship difficulties could increase susceptibility to future NSSI engagement (Cassels et al., 2018; Victor et al., 2019). Therefore, it is possible SCC development could be disturbed via various mechanisms involving social isolation, disrupted attachment and relationship difficulties, which in turn, influences commencement or exacerbation of self-harm.

However, causality is unclear, as some evidence tentatively suggests self-harm could cause detriments to parental and peer relationships, rendering adolescents unable to receive

the relational support necessary for SCC development, resulting in impairment. Experiencing shame following NSSI may influence withdrawal from others, impairing social relationships, and exacerbating negative thoughts and feelings towards the self (Gratz, 2003; Sheehy et al., 2019). Longitudinal study findings suggest NSSI engagement may predict interpersonal relationship stress and peer relationship problems among females (Burke et al., 2015; Lundh, et al., 2011). Furthermore, adolescents experiencing identity and relational difficulties may seek relationships with peers who self-harm, due to a shared sense of identity and belonging, and to receive support in managing identity-related distress (Jarvi et al., 2013; You et al., 2013). However, this likely exposes such adolescents with low SCC to social reinforcement, encouraging self-harm engagement, which could potentially perpetuate SCC disturbance. NSSI may also possibly provide a foundation for identity development for individuals with low SCC. Qualitative research findings tentatively suggest that being a *self-injurer* could serve as a basis for SCC, becoming an integral component in defining the self (Breen et al., 2013). Self-harm scarring could also have ongoing repercussions to one's SCC, as it may be detrimental to one's self-perception and relationships with others (Bachtelle & Pepper, 2015; Brown et al., 2022; Lewis & Mehrabkhani, 2016). Approximately 55% of those who engage in NSSI retain permanent scarring from the behaviour (Burke et al., 2016). The majority of those with scars from self-harm worry about concealing scarring from others and themselves, which may be due to fears of being stigmatised by others and other negative interpersonal repercussions (Brown et al., 2022; Burke et al., 2020). Therefore, individuals who have engaged in NSSI may be motivated to isolate themselves or feel disconnected, by trying to hide injuries from family and friends, to avoid a negative response (Gratz, 2003).

Based on the evidence outlined, it is beneficial to identify if there is a relationship between SCC and self-harm. Previous research indicates a relationship is likely, though to date, no systematic review to examine this has been conducted. As outlined, causality is

unclear, and it is crucial to understand how self-harm and SCC may influence each other. Therefore, the aim of this review was to synthesise the quantitative literature investigating the relationship between SCC and self-harm.

Method

Inclusion and exclusion criteria

Studies were included if published in a scientific peer-reviewed journal, used any quantitative design, measured SCC and self-harm in line with previously stated definitions, and measured the relationship between the two. The author reviewed each SCC measure and individual items. To be eligible for inclusion, 75% of measure items, at minimum, were required to measure SCC, in line with the review definition (encompassing highly similar concepts, such as identity synthesis or confusion). Therefore, if measure items could not be accessed, the paper was excluded. Furthermore, self-harm measures could include thoughts, intent, or behaviour, with or without suicidal intent.

Grey literature, abstract only papers, and conference posters were eliminated. Papers were excluded if the full paper was unavailable in English. Studies measuring identity-related constructs that were not SCC (e.g. self-esteem, self-efficacy, self-concept, identity, identity distress, gender identity, sexual identity, racial identity) were eliminated. Studies measuring constructs such as suicidal ideation, rather than self-harm, were eliminated. There were no limits on demographics or publication date.

Search strategy

This review was conducted in line with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009). The search terms are summarised in Table 1. Searches were conducted through EBSCO (PsychINFO, CINAHL plus, PsychArticles, Academic Search Ultimate and MEDLINE) and Web of

Science databases on 16th March 2024. Searches of title, abstract and subject terms using Boolean operators were conducted for literature published since their inception. Forwards and backwards citation index searching, using Google Scholar, was conducted with the remaining papers, on 29th March 2024. This review was registered with PROSPERO (ID: CRD42024524036). A meta-analysis could not be conducted due to the great heterogeneity across studies, regarding sample demographics, designs and measurement.

FIGURE 1 ABOUT HERE

TABLE 1 ABOUT HERE

Quality Appraisal

The Effective Public Health Practice Project (EPHPP) Quality Assessment Tool for Quantitative Studies (Thomas et al., 2004) was utilised for quality appraisal, which is reliable and suitable for assessing non-randomised studies (Deeks et al., 2003). Studies are assessed on eight dimensions: selection bias, confounders, blinding, data collection, withdrawals and drop-outs, and intervention. These dimension ratings determine the global rating for each study: weak (two or more weak scores), moderate (one weak score), or strong (no weak scores). As in previous systematic reviews (Butchart et al., 2017; Spain et al., 2018), the intervention domain was removed as no intervention studies were included. The original form was slightly adapted to suit the studies included in this review (see Appendix B), which is preferable to removing several dimensions, as this would compromise validity of the global rating. For example, with four dimensions removed, the study requires weak ratings for 50% of dimensions to receive a weak global rating, rather than 25% originally.

The author completed quality appraisal for all papers and a second reviewer independently quality appraised a random selection of five papers (over 25%). The two

appraisers had an initial agreement on 82% of items. Appraisers discussed discrepancies and came to an agreement on all other items. Ratings for each paper can be found in Table 2. No papers were excluded based on quality appraisal. Quality ratings were primarily used to weigh the evidence arising from each paper and contributed to the synthesis regarding weight of evidence. Additionally, the overall pattern of ratings was used to highlight consistent strengths and weaknesses across the literature with a view to appraising the collective evidence and provide potential direction for future developments.

TABLE 2 ABOUT HERE

Results

Study Characteristics

Study characteristics data can be found in Table 3. Most papers ($N = 13$) used a cross-sectional design. Five papers used a longitudinal design, including three using correlational analyses, (Buelens et al., 2023; Gandhi et al., 2019; Gu et al., 2024), one prospective study (Gandhi et al., 2017), and one using repeated time series with ecological momentary assessment (Scala et al., 2018). The final paper used a case-control matched pairs design (Gandhi et al., 2021a). Four papers conducted studies using overlapping participant datasets (Gandhi, Claes, et al., 2016; Gandhi, Luyckx, Maitra, et al., 2016; Gandhi et al., 2017; Gandhi et al., 2019).

TABLE 3 ABOUT HERE

Study quality

The statistical analyses were deemed appropriate for all papers, though this does not influence the global rating. Four studies received a global rating of strong, seven received a rating of moderate, and seven were rated weak. Weak ratings were typically received due to cross-sectional study design, lack of randomisation in participant recruitment and selection, and unevidenced validity and reliability of NSSI measures. Strengths included controlling for confounding variables between groups or in analyses, selecting reliable and valid self-report measures, and having good attrition rates in longitudinal studies.

Participant characteristics

Data were reported from 10,526 participants[1]. Approximately 56% of participants were female[2] and age ranged from 11 to 65 years old. Nine papers studied samples of high school students; seven from Belgium (Buelens et al., 2023; Claes et al., 2014; Gandhi, Claes, et al., 2016; Gandhi, Luyckx, Goossens, et al., 2016; Gandhi, Luyckx, Maitra, et al., 2016; Gandhi et al., 2017; Gandhi et al., 2019), and two from China (Gu et al., 2024; Gu et al., 2020). Four papers studied large samples of university students; three from the USA (Kaufman et al., 2015; Kruzan et al., 2022; Lear & Pepper, 2016) and one from Sweden (James et al., 2023). Two papers studied clinical samples of female eating disorder patients in Belgium, and patients with either borderline personality disorder or anxiety disorder in the USA, respectively (Claes et al., 2015; Scala et al., 2018). One paper compared female patients with eating disorder or borderline personality disorder with female high school students (Luyckx et al., 2015), and another compared psychiatric patients with medical

[1] The actual total is slightly larger than this figure, as the author could not identify the number of Indian students from the Gandhi et al. (2021a) study, who also participated in the Gandhi et al. (2021b) study. Therefore, to be conservative, the Indian students from the second study were not counted in this figure.

[2] This does not include the paper by Kruzan et al. (2022), as sufficient demographic data is not reported.

students in India (Gandhi et al., 2021b). Another study used data from the same sample of medical students, along with Indian social studies students, and compared them with a Belgian sample matched on age and gender (Gandhi et al., 2021a)[3].

There was great variation in NSSI engagement. Chinese adolescents (Gu et al., 2020) demonstrated much higher prevalence than Belgian counterparts (Claes et al., 2014; Gandhi, Claes, et al., 2016; Gandhi, Luyckx, Maitra, et al., 2016; Gandhi et al., 2017; Gandhi et al., 2019; Luyckx et al., 2015), and NSSI prevalence was much higher in university students from the USA (Kruzan et al., 2022) than India (Gandhi et al., 2021b). Regarding clinical samples, Belgian patients with borderline personality or eating disorder showed much higher prevalence and severity of NSSI (Claes et al., 2015; Luyckx et al., 2015), whereas the Indian clinical sample, who did not have these disorders, had lower prevalence (Gandhi et al., 2021b). Clinical samples also reported a much greater number of NSSI methods used than non-clinical samples (Claes et al., 2015; Luyckx et al., 2015). Some samples had significant sex differences in NSSI prevalence, frequency and versatility, with females at greater risk than males (Buelens et al., 2023; Gandhi, Claes, et al., 2016; Gandhi, Luyckx, Goossens, et al., 2016; Gandhi et al., 2017; Gu et al., 2024). However, others found no significant sex differences (Claes et al., 2014; Gandhi et al., 2021a, 2021b; Scala et al., 2018). There may be some cultural difference in NSSI method (Claes et al., 2014; Gandhi et al., 2021a; Gu et al., 2020).

Self-concept clarity measures

Eleven studies used the identity subscale of Erikson's Psychosocial Stage Inventory (EPSI; Rosenthal et al., 1981), reporting findings on the dimensions of identity synthesis

[3] In the Gandhi et al. (2021) paper, the authors advised that the Belgian dataset was derived from four existing datasets, collected from 2012 to 2016. However, the review author could not identify the previous papers these data were reported in.

and/or identity confusion. Three studies used the twelve-item Self-Concept Clarity Scale (SCCS; Campbell et al., 1996) to report a SCC score (Gu et al., 2024; Kruzan et al., 2022; Lear & Pepper, 2016). One study used a single item from the SCCS to assess momentary SCC in the relationship with self-harm urge (Scala et al., 2018). The Self-Concept Integration Measure (SCIM; Kaufman et al., 2015) was used in three studies. The subscales used for the SCIM varied slightly between studies. Kaufman et al. (2015) reported findings based on four subscales: disturbed identity, consolidated identity, identity commitment and lack of identity. However, two other studies (Gandhi et al., 2021b; James et al., 2023) reported findings based on three subscales identified from factor analysis: consolidated identity, disturbed identity and lack of identity.

Self-harm measures used

A range of self-report measures were used to assess self-harm. One study investigated the urge to self-harm (Scala et al., 2018) and the remainder investigated NSSI-related variables ($N = 17$). Lifetime NSSI or twelve-month NSSI refers to reporting at least one act of NSSI during one's lifetime or the previous year, respectively. Frequency refers to the number of NSSI acts reported. Versatility refers to the number of NSSI methods used (e.g. cutting, scratching, or biting). Claes et al. (2014) administered the five-item NSSI subscale from the Self Harm Inventory (Sansone et al., 1998) to assess lifetime NSSI. Kaufman et al. (2015) used the Deliberate Self-Harm Inventory to assess frequency, severity, duration, and type of injury. Lear and Pepper (2016) administered the Inventory of Statements About Self-Injury to assess NSSI frequency, and Kruzan et al. (2022) used two items from this to measure past year NSSI frequency and methods used.

Five studies administered variations of the Self-Injury Questionnaire-Treatment Related (SIQ-TR; Claes & Vandereycken, 2007) to assess lifetime prevalence of seven NSSI

methods and applicability of eighteen NSSI functions (Claes et al., 2015; Gandhi et al., 2021a, 2021b; Gandhi, Luyckx, Goossens, et al., 2016; Luyckx et al., 2015). Two of these studies also used a dichotomous single question to statistically analyse lifetime NSSI in relation to SCC (Gandhi et al., 2021a, 2021b), an approach commonly used in research (Muehlenkamp et al., 2012)

Other studies utilised unstandardised methods. Gandhi, Luyckx, Maitra, et al. (2016) used a single question to dichotomously measure lifetime and twelve-month NSSI. Three other studies used this approach, but also asked if participants had engaged in seven NSSI methods (Gandhi, Claes, et al., 2016; Gandhi et al., 2017; Gandhi et al., 2019). Gu et al. (2020) also assessed past twelve-month frequency of NSSI by assessing seven NSSI methods. It was unspecified in the papers if these measurements of seven NSSI methods mirrored the SIQ-TR domain. Buelens et al. (2023) used a single question to dichotomously assess twelve-month NSSI and created their own follow-up questions to assess NSSI disorder symptom severity, matching the wording as closely as possible to the DSM-5 NSSI disorder symptom criteria (American Psychiatric Association, 2013). One study assessed lifetime NSSI for various methods (James et al., 2023), and another assessed NSSI frequency for various methods during the previous six months (Gu et al., 2024), though neither specified details of the measure.

The relationship between self-concept clarity and self-harm

High school samples

Extracted data including findings and effect sizes can be found in Table 4. All studies identified significant relationships between NSSI and SCC ($N = 9$). Four studies found a significant negative relationship between identity synthesis and lifetime NSSI, with small to

medium effect (r = -.10 to -.34; Claes et al., 2014; Lucykx et al., 2015; Gandhi, Claes, et al., 2016; Gandhi, Luyckx, Maitra, et al., 2016[4]). Five studies reported a significant positive relationship between identity confusion and lifetime NSSI (r = .23 to .41; Claes et al., 2014; Luyckx et al., 2015; Gandhi, Claes, et al., 2016, Gandhi, Luyckx, Maitra, et al., 2016), and frequency (r = .32; Gu et al., 2020), with small to medium effect. Furthermore, regression models across two studies showed identity confusion, but not identity synthesis, was a significant predictor of lifetime NSSI, more so than age, gender, depression, anxiety, personality, and effortful control (Claes et al., 2014). These findings suggest lower SCC in adolescence is associated with increased vulnerability to NSSI engagement.

Two studies investigated NSSI functions in relation to identity synthesis and confusion. Lucykx et al. (2015) assessed three NSSI functions derived from exploratory factor analysis findings by Claes et al. (2015): autonomic positive reinforcement (to create a desired internal state), autonomic negative reinforcement (to reduce unwanted or aversive internal states), and social negative reinforcement (to escape unwanted or aversive social situations or demands). Autonomous negative, and autonomous positive reinforcement functions were associated with lower identity synthesis (r = -.26 to -.28), and greater identity confusion (r = .29 to .39), with a medium effect (Lucykx et al., 2015). Contrastingly, Gandhi, Claes, et al. (2016) revealed only two functions from factor analysis: intrapersonal and interpersonal functions. Lower identity synthesis (r = -.44) and greater identity confusion (r = .51) were significantly associated with intrapersonal functions, with medium to large effect. Neither study found a significant relationship for social or interpersonal functions. These findings suggest adolescents with low SCC are more likely to

[4] Gandhi, Claes, et al. (2016) reported correlational findings from same participant sample in study as Gandhi, Claes, Goosens, et al. (2016) and Gandhi et al. (2017). Therefore, only the first study was reported.

use NSSI for purpose of emotion regulation, either to reduce negative or increase positive emotions.

Two longitudinal studies found a bidirectional relationship between SCC and NSSI (Gandhi et al., 2017; Gu et al., 2024). Gu et al. (2024) found greater NSSI frequency predicted low SCC six months later, though low SCC also predicted greater NSSI frequency six months later. Furthermore, Gandhi et al. (2017) found lower identity synthesis and higher identity confusion predicted NSSI one year later, and NSSI predicted lower identity synthesis and higher identity confusion one year later, with a small effect. Participants were divided into four independent groups: no NSSI history, NSSI onset, NSSI cessation, or maintenance of NSSI. The maintenance group reported significantly lower identity synthesis and higher identity confusion, suggesting higher SCC may protect adolescents from future NSSI engagement, and NSSI engagement may impair self-concept development and integration. However, other findings were conflicting. Identity synthesis significantly increased for the maintenance group, but not other groups, one year later. The authors suggested that forming an identity centred around self-injury (Breen et al., 2013) may, in the short-term, facilitate integration of self-concept in adolescents with disturbance. However, identity synthesis improvements may simply be due to increase in age (Erikson, 1968).

Another longitudinal study measured SCC and NSSI at three timepoints with one-year intervals (Buelens et al., 2023). DSM-5 NSSI disorder criteria were subsequently applied to form three independent groups based on symptom severity at each timepoint. Participants reported greater identity confusion and lower identity synthesis as symptom severity increased. Greater identity confusion predicted onset of NSSI one year later at both intervals. Greater identity synthesis predicted a reduction in symptoms one year later at the first, but not second interval. This suggests greater identity confusion may increase vulnerability to NSSI engagement, and higher identity synthesis could aid reduction in NSSI severity.

Ten variables were investigated in the pathway between SCC and NSSI, including: peer and maternal trust, peer alienation, maternal and peer attachment, Behavioural Inhibition System, sociotropy and autonomy, rumination, and emotional abuse. Peer trust was not a significant mediator (Gandhi, Claes, et al., 2016). Identity confusion, but not identity synthesis, fully mediated the relationship between both sociotropy and autonomy with lifetime NSSI (Gandhi, Luyckx, Goossens, et al., 2016). Sociotropy and autonomy are personality styles, the former reflecting great preoccupation with interpersonal relationships, and the latter reflecting preoccupation with self-definition, independence and personal achievement at the expense of relationships (Beck, 1983). Another study (Gandhi, Luyckx, Maitra, et al., 2016) investigated the Behavioural Inhibition System (Gray, 1990). This is involved in temperamental regulation, responsive to cues of threat and non-reward, and when activated, triggers anxiety that may inhibit approach behaviour in response to negative consequences. Identity synthesis, but not identity confusion, partially mediated the relationship between Behavioural Inhibition System scores and lifetime NSSI. In another study, identity confusion partially mediated the association between emotional abuse and NSSI (Gu et al., 2020), and rumination was a significant moderator, strengthening the effects of emotional abuse.

Gandhi, Claes, et al. (2016) found peer alienation partially mediated the relationship between identity synthesis (but not confusion) and lifetime NSSI, suggesting peer alienation may increase vulnerability to NSSI by suppressing self-concept integration. Identity synthesis and identity confusion also fully mediated the relationship between maternal trust and maternal alienation, with lifetime NSSI. Gandhi et al., (2019) reported findings from a longitudinal study of the same participant sample. Further data was collected at two timepoints one year apart. The relationship between maternal attachment at T1 (timepoint) and NSSI at T3, was fully mediated by identity synthesis and identity confusion at T2.

However, the relationship between NSSI at T1 and maternal attachment at T3, was not mediated by identity variables at T2. This indicates a causal relationship; low SCC influences future NSSI, but NSSI does not affect future SCC. The same mediational pathways were also found for peer attachment, but would not converge, whereas the pathway for maternal attachment remained a good fit. Therefore, a supportive maternal relationship may reduce likelihood of NSSI by supporting development of SCC.

Harsh parenting includes many harsh behaviours, feelings, and attitudes towards children, including physical, verbal, and psychological aggression, and well as coercive or controlling behaviours (Wang, 2019). Basic psychological needs frustration refers to the chronic frustration individuals feel when their basic psychological needs are unmet (Chen et al., 2015). In a longitudinal study, data were collected at three timepoints, six months apart. Basic psychological needs frustration at T2 mediated the relationship between harsh parenting at T1 and NSSI frequency at T3, only when SCC was low (Gu et al., 2024). Higher SCC weakened the relationship between basic psychological needs frustration and NSSI. This suggests a causal pathway; when basic psychological needs were unmet, adolescents with low SCC were more prone to engage in NSSI, whereas those with high SCC were buffered against the impact of needs frustration on NSSI.

TABLE 4 ABOUT HERE

University samples

One study found low SCC is significantly associated with greater past year NSSI frequency (r = .25; Kruzan et al., 2022). Furthermore, James et al. (2023) reported that disturbed identity (r = .19), lack of identity (r = .34) and overall SCIM score (r = .30) has significant positive associations with lifetime NSSI. Consolidated identity (r = -.28) had a

significant negative relationship with lifetime NSSI. Kaufman et al. (2015) found participants with NSSI history reported significantly lower SCC, less consolidated identity, and greater lack of identity than those without NSSI history. These findings suggest that as SCC increases, vulnerability to NSSI engagement reduces, with a small to medium effect.

Lear and Pepper (2016) conducted several regression models indicating that lower SCC is a significant predictor of lifetime NSSI (with a small effect) and NSSI versatility (with a large effect), when controlling for negative affect and emotion dysregulation. Lower SCC also significantly predicted NSSI frequency with a large effect, when controlling for negative affect, but not emotion dysregulation. Emotion dysregulation did not mediate the relationship between SCC and NSSI (Lear & Pepper, 2016). Gandhi et al. (2021b) found lifetime NSSI was associated with greater identity disturbance and lower identity consolidation. There was no relationship between lack of identity and lifetime NSSI. There may be cross-cultural differences in the relationship between SCC and NSSI. Gandhi et al. (2021a) found lifetime NSSI was significantly more likely for participants with very low identity synthesis and very high identity confusion, but this was a much stronger effect for Belgian participants, and quite a weak effect for Indian participants.

One study investigated body regard and self-blame in relation to SCC and NSSI. Body regard refers to attitudes towards and experiences with the body (Muehlenkamp & Brausch, 2012). Self-blame partially mediated the relationship between low SCC and past year NSSI frequency (Kruzan et al., 2022). Body regard moderated the mediational effect of self-blame, and the direct effect of low SCC on past year NSSI frequency. The indirect effect of low SCC through self-blame on NSSI was strongest when body regard was low, moderate at average levels of body regard, and non-significant when body regard was high, suggesting high body regard buffers the mediational effects of self-blame coping on NSSI. However, effect sizes were small.

Clinical patients

Two studies reported correlational findings for lifetime NSSI with two female samples: one with eating disorder (Claes et al., 2015), and another with borderline personality or eating disorder (Lucykx et al., 2015). Only Claes et al. (2015) investigated versatility in relation to SCC. Greater identity confusion (r = .29 to .32) and lower identity synthesis (r = -.34 to -.43) were significantly associated with lifetime NSSI in both studies. Greater identity confusion (r = .32) and lower identity synthesis (r = -.43) were significantly associated with versatility. Furthermore, patients with NSSI history reported significantly higher identity confusion and lower identity synthesis than those without history (Claes et al., 2015).

Gandhi et al. (2021b) investigated a clinical sample, without borderline personality or eating disorder. Greater identity disturbance and less identity consolidation was associated with lifetime NSSI. There was no relationship between the lack of identity subscale and lifetime NSSI. In contrast with high school samples, regression models found lower identity synthesis, but not higher identity confusion, predicted lifetime NSSI (Claes et al., 2015; Luyckx et al., 2015). The findings suggest lower SCC is associated with increased vulnerability to NSSI, and of greater severity.

Two studies investigated identity synthesis and confusion in relation to three NSSI functions: autonomic positive reinforcement, autonomic negative reinforcement, and social negative reinforcement. Lower identity synthesis (r = -.34 to .42) and higher identity confusion (r = .29 to .34) were significantly associated with autonomous negative reinforcement only, with medium effect (Claes et al., 2015; Luyckx et al., 2015). Only one study used a longitudinal method, which used ecological momentary assessment. In borderline personality and anxiety disorder patients, self-harm urges were significantly more likely in moments when SCC was low and negative affect was high, with a large effect (Scala et al., 2018).

Discussion

This review aimed to synthesise findings regarding the relationship between SCC and self-harm, including the influence of other variables investigated in this pathway. Studies using alternative terms for SCC (e.g. identity synthesis or confusion) were included. A systematic search identified eighteen papers for inclusion which investigated NSSI ($N = 17$) and the urge to self-harm ($N = 1$).

Review findings

SCC (or momentary SCC) was significantly associated with NSSI (or the urge to self-harm) in all studies. In high school and university student samples, low SCC was significantly associated with history of NSSI engagement and greater frequency of NSSI, with a small to medium effect. Effect sizes were stronger for Belgian samples of female borderline personality and eating disorder patients (Claes et al., 2015; Lucykx et al., 2015). Low SCC was significantly associated with history of NSSI engagement and versatility in these samples, with a medium effect. However, in an Indian clinical sample, absent of borderline personality or eating disorder patients, the relationship between low SCC and increased likelihood of NSSI history was weak (Gandhi et al., 2021b). It is unclear if this difference reflects higher NSSI prevalence in Belgium than in India, or psychiatric differences.

Findings from two studies also suggested identity confusion may be greater, and more detrimental to adolescents, whereas difficulties with identity synthesis may be greater and more detrimental to female psychiatric patients (Claes et al., 2014; Lucykx et al., 2015). Findings regarding NSSI functions were in line with review findings by Taylor et al. (2018). Female patients with low SCC were more likely to use NSSI for autonomic negative reinforcement functions (Claes et al., 2014; Lucykx et al., 2015). This encompasses aims to

avoid or suppress negative emotions, feeling of emptiness, a feeling of confusion or aimlessness, painful images or memories, and suicidal thoughts. However, in addition to these functions, adolescents with low SCC were more likely to use NSSI for autonomic positive reinforcement (Gandhi, Luyckx, Goossens, et al., 2016; Luyckx et al., 2015). Surprisingly, low SCC was not associated with using NSSI for interpersonal or social functions. However, only three studies investigated NSSI functions in relation to SCC, so findings must be treated tentatively.

There were conflicting findings regarding causality in the relationship between SCC and NSSI. Findings from one longitudinal study suggested that high identity confusion predicted NSSI onset in adolescents one year later, and greater identity synthesis predicted a reduction in NSSI-disorder symptoms (Buelens et al., 2023). However, whether NSSI predicted identity synthesis or confusion was not examined, meaning a bidirectional relationship cannot be discounted. Similarly, Scala et al. (2018) found momentary low SCC predicted the subsequent urge to self-harm when negative affect was high. However, whether the urge to self-harm predicted SCC was not assessed. Furthermore, two other longitudinal studies with adolescents identified a bidirectional relationship, suggesting that low SCC increases vulnerability to future NSSI engagement, but also, NSSI disrupts SCC development (Gandhi et al., 2017; Gu et al., 2024). In contrast, a fifth longitudinal study found low SCC increases vulnerability to future NSSI engagement, but NSSI does not influence future SCC (Gandhi et al., 2019). This study infers a unidirectional casual pathway, in which adolescents with SCC disturbance are at greater risk of commencing NSSI. Moreover, supporting SCC development in adolescence could be protective, reducing vulnerability to NSSI engagement. However, conclusions regarding causality cannot be drawn due to the inconsistency in these findings and they should be treated tentatively.

Several other variables were significant in the relationship between SCC and NSSI, which may offer further understanding of the pathway mechanism. Attachment and relationship quality were important factors in adolescence across several studies. High sociotropy or autonomy, severe emotional abuse, low maternal trust, and alienation from mother and peers, were all associated with greater risk of NSSI engagement when SCC was disturbed (Gandhi, Claes, et al., 2016; Gandhi, Luyckx, Goossens, et al., 2016). Additionally, longitudinal findings suggest poor maternal attachment, harsh parenting, and frustration at basic psychological needs being unmet, may have a causal role in NSSI onset or severity (Gandhi et al., 2019; Gu et al., 2024). These findings suggest that disturbance to attachment and relationships may increase adolescents' vulnerability to engaging in NSSI by disrupting SCC development. Therefore, supporting SCC development in adolescence may help prevent NSSI onset for those who have experienced parental and peer relationship difficulties. Moreover, a personality style involving preoccupation with using interpersonal relationships to form basis of self-worth, or preoccupation with independence at the expense of interpersonal relationships, may increase vulnerability to engaging in NSSI by impairing development of SCC. These findings align with previous evidence, suggesting the potential importance of family support, secure attachment, and supportive peer relationships in reducing vulnerability to NSSI engagement (e.g. Cassels et al., 2018; Victor et al, 2019; Wan et al., 2022). Consistent, responsive, and warm caregiving may facilitate identity development in children, whereas inconsistent, cold, unresponsive, and harsh caregiving could facilitate mistrust, shame, and identity confusion in children (Erikson, 1968).

NSSI could also possibly be detrimental to attachment and relationships due to shame, and stigmatisation from others (Brown et al., 2022; Burke et al., 2020; Gratz, 2003; Lundh, Wåndby-Lundh, et al., 2011) and influence negative thoughts and feelings towards the self (Gratz, 2003; Sheehy et al., 2019). Adolescents who self-harm could become socially

isolated, losing the relational support needed for developing SCC, further increasing vulnerability to NSSI engagement. However, few studies investigated attachment and relationships with regards to SCC and NSSI. Therefore, causality is uncertain, and conclusions cannot confidently be drawn.

Other studies investigated intrapersonal processes. Chronic anxiety induced in adolescents by the Behavioural Inhibition System may disrupt SCC development, increasing the likelihood of NSSI for emotion regulation (Gandhi, Luyckx, Maitra, et al., 2016). Low SCC was associated with increased NSSI severity in university students, which was partially explained by self-blame (Kruzan et al., 2022). Furthermore, more negative attitudes and experiences towards the body, increased vulnerability to NSSI engagement for those with low SCC. This suggests high body regard could buffer the effects of low SCC on NSSI, but the effect sizes were very small. However, more investigation is needed to determine if the influence of body regard is of clinical significance, for example, with clinical populations (e.g. eating disorders). Low momentary SCC influenced the urge to self-harm when experiencing high negative affect for patients with borderline personality and anxiety disorder (Scala et al., 2018). Further research is needed to understand potential cognitive or affective mechanisms which increase vulnerability to self-harm in those with low SCC.

Strength, limitations and recommendations

Only eighteen studies, with eleven completely separate samples, investigated the relationship between SCC and self-harm, two of which did not aim to research the relationship between SCC and self-harm, but rather, aimed to assess the validity of the SCIM (James et al., 2023; Kaufman et al., 2015). Most studies were deemed moderate to strong quality, though a large portion were rated as weak, indicating that research of greater methodological quality is required. Furthermore, most studies (N = 15) had large samples

and two had adequate sample sizes (Claes et al., 2015; Lear & Pepper, 2016), providing sufficient power. However, the sample size assessed by Scala et al. (2018) was low ($N = 54$), and the rate of self-harm urges reported by participants was very low (borderline personality disorder = 3.02%; anxiety disorder = 0.51%), preventing in-depth analysis regarding intensity of the urge. Perhaps there was a selection bias of more euthymic participants, though there is no information regarding this. Although, the use of ecological momentary assessment to investigate the influence of low momentary SCC on self-harm urge in real time, identified a large predictive effect (Scala et al., 2018).

Measures of SCC were reliable and valid: the SCCS has good internal consistency and test-retest reliability (Campbell et al., 1996); the EPSI has adequate to high internal consistency and sufficient construct validity (Rosenthal et al., 1981); and the SCIM has good internal consistency and test-retest reliability, and adequate validity with adolescents (Bogaerts et al., 2021) and university students (Kaufman et al., 2015). Furthermore, some self-harm measures were also reliable and valid. The Self-Harm Inventory has shown adequate test-retest reliability and excellent internal consistency with adult populations (Sansone & Wiederman, 2015); the Deliberate Self-Harm Inventory has high internal consistency, and adequate validity and test-retest reliability (Gratz, 2001); Self-Injury Questionnaire-Treatment Related (SIQ-TR) has good validity, and moderate to very good reliability (Claes & Vandereycken, 2007). However, several measures of self-harm were not standardised, with limited evidence of reliability and validity.

Several issues arose regarding the assessment of self-harm. Multiple item or behaviour checklists measuring NSSI have found nearly twice as high average lifetime prevalence than a single item with a dichotomous response (Muehlenkamp et al., 2012). This is almost three times for twelve-month prevalence. To assess NSSI, three studies used results from a single dichotomous question and to statistically analyse the relationship with SCC

(Gandhi et al., 2021a, 2021b; Gandhi, Luyckx, Maitra, et al., 2016), though the majority used multiple item questionnaires (Buelens et al., 2023; Claes et al., 2014; Claes et al., 2015; Gu et al., 2024; Gu et al., 2020; James et al., 2023; Kaufman et al., 2015; Kruzan et al., 2022; Lear & Pepper, 2016; Luyckx et al., 2015). Underreporting of NSSI with single-items, or overreporting of NSSI with multiple-item measures could potentially have influenced findings (Muehlenkamp et al., 2012). Adolescents may interpret items assessing NSSI differently to how researchers intend, raising concerns regarding assessment validity. For this reason, Muehlenkamp et al. (2012) recommended development of a gold standard measure of self-harm, with follow-up interview, due to problems with bias and reliance on self-report.

Many included studies only used lifetime NSSI prevalence (and twelve-month prevalence within longitudinal studies) in statistical analyses regarding the relationship between SCC and self-harm ($N = 13$). One study used lifetime frequency (Lear & Pepper, 2016), two used past year frequency (Gu et al., 2020; Kruzan et al., 2022), one used past six-month frequency (Gu et al., 2024), and two used versatility in analysing the relationship with SCC (Claes et al., 2015; Lucykx et al., 2015). The relationship between SCC and versatility demonstrated stronger effect sizes, as versatility may indicate NSSI severity. Three studies examined the relationship between functions of NSSI and SCC (Gandhi, Luyckx, Goossens, et al., 2016; Luyckx et al., 2015). Several studies collected other data regarding NSSI, such as duration and lethality of methods used, but their relationship with SCC was not reported.

There can be great variation in NSSI severity within samples according to frequency, methods chosen, and lethality. For example, Lear and Pepper (2016) reported a huge range from one to 2235 NSSI episodes, with methods ranging from one to eight. The recency and frequency of self-harm, lethality of method, and requirement of medical support for injuries, are examples of factors which could provide richer information to help understand the relationship with SCC. This information was lacking and requires further exploration.

Interpretation of variation in effect sizes between studies and populations is limited by the lack of information regarding mental health symptom severity in all samples.

Furthermore, important confounders were not controlled. The mean age of NSSI onset varied across samples; onset for adolescents ranged from approximately 12.8 to 13.7 years old (Gandhi, Luyckx, Goossens, et al., 2016; Luyckx et al., 2015), students in India were 16.6 years old (Gandhi et al., 2021b), clinical patients in Belgium were 17.3 years old (Claes et al., 2015; Luyckx et al., 2015), and clinical patients in India were 15.2 years old (Gandhi et al., 2021b). No study controlled for age of onset in analyses, despite findings that earlier age of onset predicts increased NSSI frequency, severity, and versatility (Muehlenkamp et al., 2019).

Aforementioned in this review, there is great comorbidity between NSSI and suicide attempt in adolescents, and NSSI is a strong predictor of future suicide attempt (Brausch & Gutierrez, 2010; Klonsky et al., 2013; Mars et al., 2019; Muehlenkamp & Gutierrez, 2007; Nock et al., 2006; Voss et al., 2020). Ascertaining the degree of suicidal intent during a self-harm episode is difficult, and individuals can engage in a combination of self-harm acts with or without suicidal intent. No study investigating NSSI measured or controlled for suicide-related variables. Controlling for suicide-related variables is recommended, to explain whether there is a specific relationship between SCC and NSSI, or if this is part of a larger pathway between SCC and suicidal behaviour.

Conclusions

This review has highlighted a significant relationship between SCC and self-harm, worthy of further investigation. SCC disturbance appears to significantly increase vulnerability to engagement in self-harm. This has been particularly demonstrated with adolescent samples. However, there is also evidence that engagement in self-harm may

impair SCC. Additional longitudinal research is required to explore causality in the relationship between SCC and NSSI, due to conflicting findings and a possible bidirectional pathway. Few studies have been conducted with unique samples, and a large portion of studies were rated as low quality. Therefore, the review findings must be treated tentatively. The development of better-quality methods for assessing self-harm and SCC is required, due to a reliance on self-report. Further research investigating the role of several potentially important intrapersonal factors (e.g. temperament) and interpersonal factors (e.g. attachment, relationship quality) is necessary, due to the evidence suggesting they could have significant role in the onset or exacerbation of NSSI by impairing SCC. Furthermore, more research is needed with different population samples (e.g. older adults, mental health disorder, geographical location, ethnicity, culture, sexual identity) to assess between-group differences and generalisability.

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Table 1

Search Terms

String	Search Terms
String 1	"Self-concept clarity" OR "clarity of self-concept" OR "self-concept integration" OR "identity" OR "self-perception" OR "perception of self" OR "self-representation" OR "representation of self" OR "selves"
String 2	AND "Self-injur*" OR "self-harm*" OR "self-mutilat*" OR "injur* to self" OR "harm* to self" OR "NSSI" OR "DSH" OR "parasuicid*"

PRISMA diagram

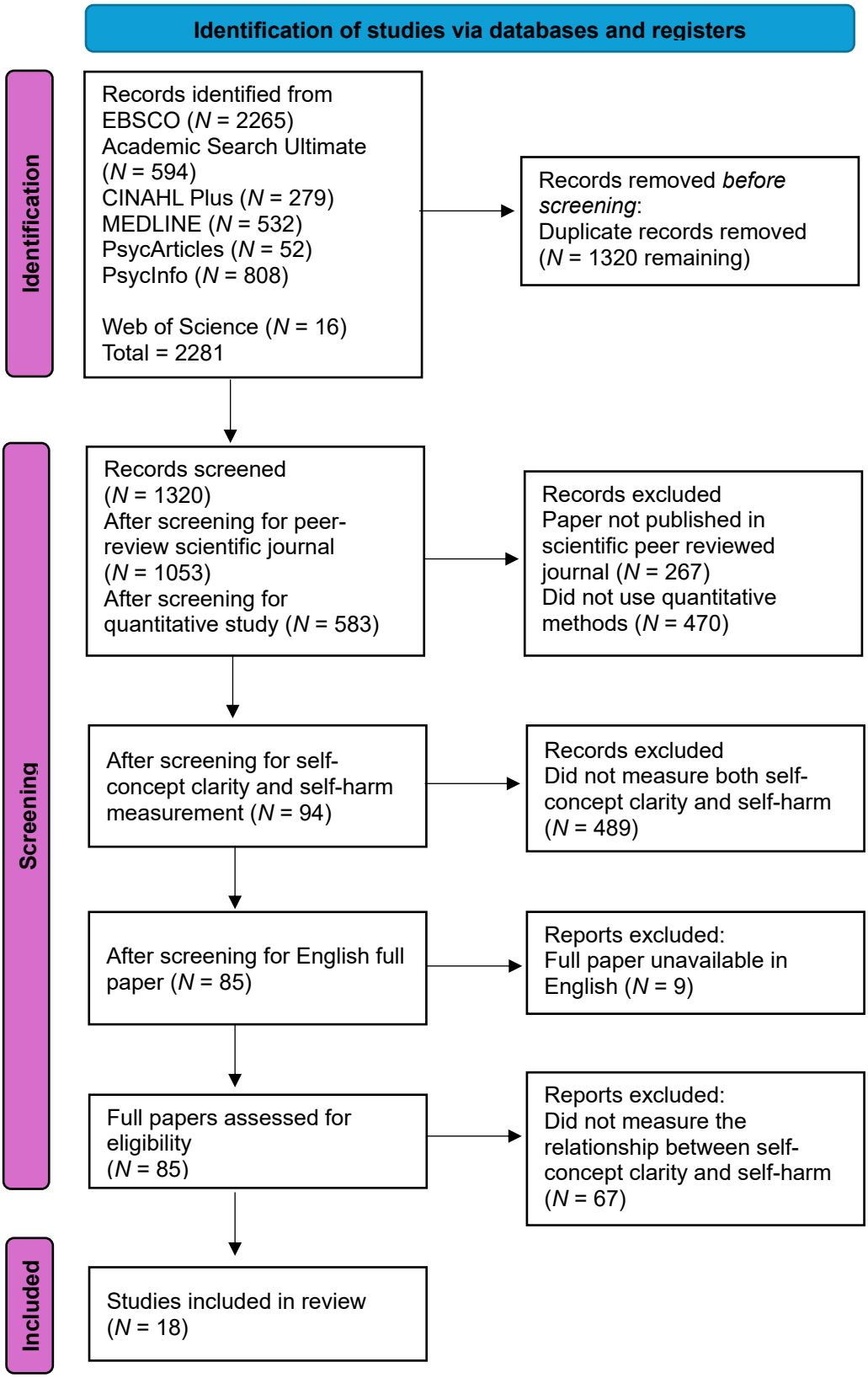

Figure 1. PRISMA diagram of full systematic search

Table 2

Quality appraisal for each paper using Effective Public Health Project Quality Assessment Tool for Quantitative Studies

Study	Selection Bias	Study Design	Confounders	Blinding	Data method collection	Withdrawals and dropouts	Global Rating
Claes et al. (2014)	Moderate	Weak	Strong	Moderate	Strong	Moderate	Moderate
Claes et al. (2015)	Moderate	Weak	Weak	Moderate	Strong	Moderate	Weak
Kaufman et al. (2015)	Moderate	Weak	Moderate	Moderate	Strong	Moderate	Moderate
Luyckx et al. (2015)	Moderate	Weak	Strong	Moderate	Strong	Moderate	Moderate
Gandhi, Claes, et al. (2016)	Weak	Weak	Strong	Moderate	Weak	Moderate	Weak
Gandhi, Luyckx, Maitra, et al. (2016)	Weak	Weak	Moderate	Moderate	Strong	Moderate	Weak

Study	Selection Bias	Study Design	Confounders	Blinding	Data method collection	Withdrawals and dropouts	Global Rating
Gandhi, Luyckx, Goosens et al. (2016)	Moderate	Weak	Moderate	Moderate	Strong	Moderate	Moderate
Lear & Pepper (2016)	Moderate	Weak	Moderate	Moderate	Strong	Moderate	Moderate
Gandhi et al. (2017)	Weak	Moderate	Moderate	Moderate	Weak	Moderate	Weak
Scala et al. (2018)	Moderate	Moderate	Strong	Moderate	Strong	Strong	Strong
Gandhi et al. (2019)	Moderate	Moderate	Moderate	Moderate	Strong	Moderate	Strong
Gu et al. (2020)	Strong	Weak	Strong	Moderate	Strong	Moderate	Moderate
Gandhi et al. (2021a)	Moderate	Moderate	Strong	Moderate	Strong	Moderate	Strong

Study	Selection Bias	Study Design	Confounders	Blinding	Data method collection	Withdrawals and dropouts	Global Rating
Gandhi et al. (2021b)	Moderate	Weak	Weak	Moderate	Strong	Moderate	Weak
Kruzan et al. (2022)	Weak	Weak	Moderate	Moderate	Strong	Moderate	Weak
Buelens et al. (2023)	Moderate	Moderate	Moderate	Moderate	Weak	Strong	Moderate
James et al. (2023)	Weak	Weak	Weak	Moderate	Weak	Moderate	Weak
Gu et al. (2024)	Moderate	Moderate	Strong	Moderate	Strong	Strong	Strong

Table 3

Study Characteristics

Author	Location	Design	Sample and demographics	Measures	Procedure
Claes et al. (2014)	Belgium	Cross-sectional	High school students. *N* = 532; females = 25.8%; males = 74.2%. M_{age} = 15.1; *SD* = 1.85; range = 12-21 years. M_{age} females = 14.83; *SD* = 1.73. M_{age} males = 15.21; *SD* = 1.88.	• Identity subscale of EPSI • Five NSSI items from the Self-harm Inventory • Child Depression Inventory.	Recruited participants in four high schools. Questionnaires completed at school.
Claes et al. (2015)	Belgium	Cross-sectional	Female inpatients and outpatients seeking treatment for ED. *N* = 99 (AN-R = 20.2%; AN-BP = 16.2%; BN = 41.4%; BED = 22.2%). M_{age} = 27.75; *SD* = 9.26.	• Identity subscale of Erikson's Psychosocial Stage Inventory • SIQ-TR • Hospital Anxiety and Depression Scale.	Patients accessing ED treatment were invited to participate. Diagnostic interviews for ED conducted and used to assign participants to a group. Questionnaires were then completed.
Kaufman et al. (2015)[a]	USA	Cross-sectional.	Undergraduate psychology students; *N* = 536, demographic information not obtained for 170 participants due to error. Females = 23%. M_{age}= 23.10; *SD* = 5.67; range = 18-65 years. Caucasian = 85.3 %; Asian = 5.4 %; Pacific Islander = 0.5%; African American = 1.8%; Hispanic =	• SCIM • Deliberate Self-Harm Inventory • Difficulties in Emotion Regulation Scale	Participants accessed online survey through university to complete self-report measures. Received credit for participation.

Author	Location	Design	Sample and demographics	Measures	Procedure
			6.3%; Native American = 0.2%; other/unspecified race = 0.5%.		
Luyckx et al. (2015)	Belgium	Cross-sectional	Two female samples. Sample one: high school students; *N* =348. Belgian nationality =98%. Sample two: psychiatric patients; *N* =131. ED diagnosis = 61.07%, BPD diagnosis = 39.93%. Belgian nationality = 97%.	• Identity subscale of EPSI • SIQ-TR	Sample one recruited from six high schools. Questionnaires completed in school. Sample two completed questionnaires and returned them to their therapist.
Gandhi, Claes, et al. (2016)	Dutch speaking part of Belgium	Cross-sectional	High school students; *N* = 528. Females = 50.4%. M_{age} = 15.0; *SD* = 1.84; range = 11-19 years. Belgian nationality = 95.5 %.	• Identity subscale of EPSI • Single question to assess lifetime prevalence of NSSI: "Have you ever engaged in self-injury without an intent to die?" • Self-report measure to assess lifetime prevalence of seven NSSI methods. • Inventory of Peer and Parent Attachment	Participants recruited through school. Completed questionnaires at school. Received movie ticket for participation.
Gandhi, Luyckx, Maitra, et al. (2016)	Flemish speaking part of Belgium	Cross-sectional	High school students; *N* =4 01. Females = 51%. M_{age} = 16.6, *SD* = 0.96, range = 14-19 years. Belgian = 97.5%.	• Identity subscale of EPSI • Modified SIQ-TR. Single question to assess lifetime prevalence of NSSI: "Have you ever injured yourself on purpose without an intent to die?" • Personal Style Inventory	Participants recruited from three high schools. Questionnaires completed at school.

Author	Location	Design	Sample and demographics	Measures	Procedure
Gandhi, Luyckx, Goosens, et al. (2016)	Dutch speaking part of Belgium	Cross-sectional	High school student; *N* =5 28. Females = 50.4%. M_{age} = 15, *SD* = 1.84, range = 11-19 years.	• Identity subscale of EPSI • Single question used to measure lifetime prevalence of NSSI: "Have you ever injured yourself on purpose without an intent to die?" • Behavior Inhibition System and Behavior Activation System Scales (BISBAS), to measure individual differences in regulative temperament (effortful control).	Participants recruited through high school. Questionnaires completed at school. Received a movie ticket for participation.
Lear & Pepper (2016)	Western university, USA	Cross-sectional	Two university student groups. • NSSI: lifetime history of at least one NSSI: *N* = 69; female= 85.51%; M_{age} = 19.57; *SD* = 1.62; range = 18-24 years; White/non-Hispanic = 87.0%. • No-NSSI: no history of NSSI: *N* = 77; female = 81.82%; M_{age} = 19.08; SD = 1.44; range = 17 to 24 years; White/non-Hispanic = 92.2%.	• SCCS. • Inventory of Statements About Self-Injury to assess frequency of 12 self-injury behaviours. • Difficulties in Emotion Regulation Scale. • Positive and Negative Affect Schedule	Recruited from university student pool. Participants screened for lifetime frequency of NSSI to determine group allocation. The other questionnaires were then completed online. Participants granted course credits.
Gandhi et al. (2017)	Dutch speaking part of Belgium	Longitudinal	High school students. • At T1: *N* = 528; females = 50.4%; M_{age} = 15; *SD* = 1.84, range = 11-19 years; Belgian nationality = 95.5%. • At T2: *N* = 380 (retention rate = 72.07%); females = 52.4%.	• Identity subscale of EPSI • At T1, assessed lifetime prevalence of NSSI using a single question: "Have you ever injured yourself on purpose without an intent to die?".	Participants were recruited by convenience sampling from high schools. Two data collection timepoints: T1 at start of the study, and T2,

Author	Location	Design	Sample and demographics	Measures	Procedure
			M_{age} = 14.3, *SD* = 1.68, range = 12-19 years. Participants who left the study at T2 were significantly older, as these individuals had most likely finished school.	• At T2, new cases of NSSI were identified using a single item question: "In the past 12 months, have you deliberately injured yourself without an intent to die?". • Assessed lifetime prevalence at T1 and 12-month prevalence at T2, of seven NSSI methods.	one year later. Questionnaires completed in school. If participants had completed school or left, they were sent an email to complete measures online. Participants received movie ticket.
Scala et al. (2018)	Pennsylvania, USA	Longitudinal time series	Two groups of psychiatric outpatients: *N* = 54; females = 87%; males = 13%; heterosexual = 69%; white = 85%; single = 50%. • BDP diagnosis: *N* = 36; females = 33; males = 3. M_{age} = 34.20; *SD* = 12.39. • Anxiety disorder diagnosis: *N* = 18; females = 14; males = 4. M_{age} = 26.06; *SD* = 7.60. The BPD group was significantly older than the anxiety group ($t(51.59) = 2.96$)***. No significant differences in gender, ethnicity, sexuality, or relationship status between groups.	• Field assessment used a single item from the SCCS: "Right now, I have a clear sense of who I am and what I am." • Assessed self-injury urge using single item asking whether participants had thought of engaging in self-harm since the last prompt or following a recent social interaction. Participants asked to rate the urge intensity. • Participants rated level of negative affect.	Recruited from community mental health centre. Potential participants screened for eligibility using semi-structured interviews. Participants were allocated to BPD or anxiety groups using this. Participants then completed baseline self-report assessments. Researchers used ecological momentary assessment to gather data from participants living as usual, in the community for 21 days. Field

Author	Location	Design	Sample and demographics	Measures	Procedure
					assessments were conducted using electronic surveys on a smartphone. The phone made random prompts to participants during a 12-hour waking period.
Gandhi et al. (2019)	Dutch speaking part of Belgium	Longitudinal	High school students. Three timepoints for collecting data. • At T1: $N = 528$; females = 50.4%; $M_{age} = 15.0$, $SD = 1.85$. • At T2: $N = 384$; females = 52.7%; $M_{age} = 15.5$, SD = 1.68. • At T3: $N = 326$, females = 54.9%; $M_{age} = 16.3$, SD = 1.65. Attrition rate at T2 from T1 = 27.3%. Attrition rate at T3 from T1 = 39.9%.	• At T2, Identity subscale of EPSI • At T1, lifetime prevalence of NSSI was assessed using a single question: "Have you ever engaged in self-injury without an intent to die?" • At T2 and T3, 12-months prevalence of NSSI was assessed using a single question: "In the past 12 months, have you deliberately injured yourself without an intent to die?" • Inventory of Peer and Parent Attachment was administered at all three timepoints.	Participants recruited in schools. Questionnaires completed in school. Those who had completed or left school were contacted by email to take part. Participants were given a movie ticket for participation. Timepoints occurred at one year intervals.
Gu et al. (2020)	Guangzhou, China	Cross-sectional	Sample comprised of junior high school students: $N = 949$. Females = 50.9%. $M_{age} = 13.35$; $SD = 1.02$; range = 11-16 years.	• Identity subscale of Erikson's Psychosocial Stage Inventory. • Self-report measure to assess NSSI which asked participants: "In the past one year, have you engaged in the following behaviours to deliberately harm	Participants were recruited from two junior high schools. Random cluster sampling was used to choose three classes in each grade of each

Author	Location	Design	Sample and demographics	Measures	Procedure
				yourself but without suicidal intent?" This included seven different NSSI behaviours (self-cutting, burning, biting, punching, scratching skin, inserting sharp objects in the nail or skin, and banging the head or other parts of the body against the wall). Participants rated frequency of occurrence. • Child Psychological Abuse and Neglect Scale. • Ruminative Response Scale	school. Questionnaires were completed in school.
Gandhi et al. (2021a)	Mumbai, India. Belgium.	Case-control matched pairs design	Study comprised of two participant samples which were matched based on age and gender: $N = 138$ for each sample; females = 57.2%. • Belgian sample • Indian sample: medical and social science students .	• Identity subscale of EPSI. Bayesian confirmatory factor analysis indicated a three-factor model: Confusion, Integration and Self-knowledge. • Self-report measure to assess lifetime prevalence of NSSI with a single question: "Have you ever engaged in self-injury without an intent to die?" Further assessment of seven NSSI methods, age of onset, functions of NSSI and body parts injured.	Indian medical student data collected in person at college. No reward for participation. Indian social science student data collected by sending email with link to electronic survey, inviting them to take part. Received gift voucher for participation.
Gandhi et al. (2021b)	Mumbai, India	Cross-sectional comparison of clinical and non-	Two groups. Psychiatric patients: $N = 100$; females = 47.0%; $M_{age} = 34.76$, $SD = 12.76$, range = 17–70 years.	• SCIM • Modified SIQ-TR. Lifetime prevalence of NSSI assessed using single question: "Have you ever injured yourself on purpose	Samples recruited using nonprobablity sampling. Clinical sample recruited from the inpatient and

Author	Location	Design	Sample and demographics	Measures	Procedure
		clinical groups	A non-clinical group of medical students: $N = 120$; females = 51.7%; $M_{age} = 19.7$, $SD = 2.16$, range = 17–28 years).	without intent to die?" If yes, participants asked to indicate if they engaged in seven NSSI methods. Assessed age of NSSI onset, body parts commonly injured, and 18 functions of NSSI.	outpatient psychiatry department of public hospital. Non-clinical group completed questionnaires in college.
Kruzan et al. (2022)	Midwest region of USA	Cross-sectional	Undergraduate university students: $N = 1906$. Demographic data is not reported in this table, as the authors reported demographic figures prior to removal of 152 data sets (deemed invalid or had too many missing responses).	• SCCS • Two items from section one of the Inventory of Statements About Self-Injury were used to assess past year frequency of NSSI, and methods used. • Self-blame subscale of Cognitive Emotion Regulation Questionnaire. • Body Regard Scale. • Depression Anxiety Stress- short Form.	Email sent to random sample of 5500 students inviting them to complete a study with a link to online survey. Opportunity to win a $5 Amazon voucher.
Buelens et al. (2023)	Flanders, Belgium	Longitudinal	High school students. Three timepoints of data collection. Expectation Maximization algorithm was used which resulted in a final sample at all three timepoints ($N = 1552$) Females= 54.5%. • At T1: $M_{age} = 14.41$; $SD = 1.77$ • At T2: $M_{age} = 15.42$; $SD = 1.77$ • At T3: $M_{age} = 16.42$, $SD = 1.78$	• Identity subscale of EPSI • Past year NSSI prevalence was assessed using single question: "Have you engaged in self-injury without the intent to die in the past year?". If yes, participants responded to questions assessing the six NSSI disorder criteria as described in the DSM-5, with the wording of these questions	Participants were recruited from eight schools. Measures administered at all three timepoints at one-year intervals. Questionnaires completed in school. Those absent or who left school were sent an email to take part.

Author	Location	Design	Sample and demographics	Measures	Procedure
			• Demographic data is not featured in this table, as authors reported demographic figures for the participant sample prior to using this algorithm, which affected the final included sample demographics.	matching the DSM-5 criteria as closely as possible.	Participants received a movie ticket. Participants were assigned to a group based on NSSI measure responses: no-NSSI for past 12 months; subthreshold-NSSI (NSSI featured in past 12 months but without meeting all DSM-5 criteria); and NSSI disorder (met all DSM-5 criteria).
James et al. (2023)	Lund University, Sweden	Cross-sectional	University students: N =1500. Females = 68.3%; males = 28.3%; other = 2.5%; undisclosed gender = 0.9%. M_{age} = 26.37; SD = 7.57. Born in Sweden = 86.5%; born in a Nordic country = 2.6%; born outside a Nordic country = 10.7%.	• SCIM • Self-report measure assessing lifetime prevalence various NSSI methods.	Participants divided into two groups: lifetime history or no history of NSSI.
Gu et al. (2024)	Guangdong Province, China	Longitudinal	High school students. Data collected at three timepoints. • At T1: N = 786; females = 52.0%; M_{age} = 13.27, SD = 0.74 • At T2: N = 748; females = 53.1% • At T3: N = 694; females = 53.6%	• At T1, used Harsh Parenting Scale. • At T1 and T3, used self-report measure to assess frequency of engagement in seven NSSI behaviours during the past 6 months. • At T2, used Chinese version of SCCS.	Data was collected from one high school, at three timepoints at six-month intervals. Loss of participants between timepoints was mainly due to students transferring to other schools or

Author	Location	Design	Sample and demographics	Measures	Procedure
			Attrition rate from T1 to T2 = 4.8%. Attrition rate from T1 to T3 = 11.7%.	• At T2, used 12-item Basic Psychological Need Frustration subscale from the Chinese version of the Basic Psychological Need Satisfaction and Frustration Scale. This includes three dimensions: autonomy needs frustration, relationship needs frustration, and competence needs frustration.	being absent from school on the day of assessment. Participants were given a small gift after each wave of data collection..

Note. Abbreviations: *N*= number of participants, SD = standard deviation, NSSI= non-suicidal self-injury, M_{age}= Mean age, EPSI= Erikson's Psychosocial Stage Inventory, SIQ-TR = Self-Injury Questionnaire-Treatment Related, ED = eating disorder, AN-R = anorexia nervosa-restrictive type, AN-BP = anorexia nervosa- binge-eating/purging type, BN = bulimia nervosa, BED = binge eating disorder, T1= Timepoint 1, T2 = Timepoint 2, T3 = Timepoint 3, DSM 5 = Diagnostic and Statistical Manual of Mental Disorders Fifth Edition, SCIM= Self-Concept and Identity Measure, SCCS= Self-Concept Clarity Scale.

Note [a]. Two studies were reported in this paper by Kaufman and colleague (2015); only study one is relevant and reported in this review.

Table 4

Study methods of data analyses and relevant findings

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	**Relationship between Self-Concept Clarity and Self-Harm**
Claes et al. (2014)	• Spearman's Rho correlational analyses. • Hierarchical Logistic Regression. Predictors: identity confusion and identity synthesis; outcome: Prescence/absence of lifetime NSSI; controls: age, gender, and depression.	• 26.5% (N = 141) had engaged in at least one NSSI method. • Participants who reported lifetime NSSI: 48.9% had engaged in one, 33% had engaged in two, 11.3% in three, and 6.3% in four or more methods. M_{age} NSSI onset= 11.56; SD= 2.87; range= 3-16 years. • Almost 18% (N = 95) of adolescents engaged in head banging, 12.2% (N = 65) hitting oneself, 8.1% (N = 43) scratching oneself, 5.5% (N = 29) cutting oneself, and 3.9% (N = 21) burning oneself. • No significant gender differences in NSSI.	• NSSI scores were significantly positively correlated with identity confusion [r = .23; p <.01], and significantly correlated with identity synthesis [r = -.10; p <.05]. • Identity confusion significantly predicted lifetime NSSI** [Exp (B) = 1.132]. This model, with identity synthesis and confusion, explained 2.6% more of the variance (Nagelkerke R^2 = 12.2%) than with age, gender, and depression alone (Nagelkerke R^2 = 9.6%). Identity synthesis did not significantly predict lifetime NSSI.
Claes et al. (2015)	• MANOVA. IVs: ED subtypes (AN-R; AN-BP; BN; BED), and lifetime presence/absence of NSSI; DVs: identity	• No significant age difference between ED subtypes. • 58.6% (N = 58) had engaged in at least one type of NSSI during their lifetime; no significant	• Main effects of the presence/absence of lifetime NSSI on identity synthesis and confusion were significant [Wilk's lambda = 0.825, F(2,89) = 9.425]***. Patients who had engaged in NSSI reported significantly higher identity confusion

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	Relationship between Self-Concept Clarity and Self-Harm
	confusion and identity synthesis. • Correlation analyses • Exploratory Factor Analysis to reduce 18 NSSI functions. • Hierarchical Logistic Regression. Predictors: identity synthesis and identity confusion; outcome: lifetime presence/absence of NSSI; controls: age, anxiety and depression.	differences between ED subtypes. • Number of NSSI methods: 8.6% engaged in one; 22.4% engaged in two, 17.2% engaged in three, four and five; 15.5% engaged in six; 1.7% engaged in seven. • NSSI methods: 39.4% engaged in superficial cutting, 39.4% in severe cutting, 37.4% in scratching until bleeding, 32.3% in bruising/hitting oneself, 28.3% in head banging, 19.2% in burning oneself, 18.2% in picking oneself. • Body parts injured: Arms, hands, and fingers (82.8%); belly, torso, and thighs (34.5%); injured legs, feet, and toes (32.8%); head and neck (13.8%); genitals and breasts (8.6%). • Gay, lesbian, bisexual and queer identifying participants had significantly higher rates of NSSI [$\chi^2(1) = 5.55$]*, significantly higher identity confusion [$F(1,96) = 7.45$]***,	[F(1,90) = 7.45)** and significantly lower identity synthesis [$F(1,90) = 18.79$)***, compared with those who had never engaged in NSSI. The main effect of ED subtype, and interaction between ED subtype and NSSI were nonsignificant. • Identity confusion was significantly positively correlated ($r = .32$)** and identity synthesis was significantly negatively correlated ($r = -.43$)** with the total number of NSSI methods used. • Exploratory factor analysis revealed three functions factors: automatic positive reinforcement (NSSI created a desired internal state); automatic negative reinforcement (NSSI reduced unwanted or aversive internal states); social negative reinforcement (NSSI made it possible for the patient to escape from unwanted or aversive social situations or demands). • Identity confusion was significantly positively correlated ($r = .34$)***, and identity synthesis was significantly negatively correlated with ($r = -.34$)*** with automatic negative reinforcement functions of NSSI. • Identity synthesis significantly predicted lower likelihood of engagement in NSSI during lifetime*** [Exp (B) = .13]. This

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	**Relationship between Self-Concept Clarity and Self-Harm**
		and significantly lower identity synthesis [$F(1,96) = 4.59$]*. • M_{age} NSSI onset = 17.27; $SD = 7.64$.	model, with identity synthesis and confusion, explained 15% more of the variance (Nagelkerke $R^2 = 39\%$) than with age, gender, and depression alone (Nagelkerke $R^2 = 24\%$). Identity confusion did not significantly predict lifetime NSSI.
Kaufman et al. (2015)[a]	One-way ANOVAs: IVs; presence/absence of lifetime NSSI; DVs: SCIM total score and SCIM subscales scores.	34.14% (N=183) reported history of at least one engagement in NSSI.	Participants with lifetime history of NSSI reported higher SCIM total scores, [$F(1, 535) = 6.40$, $\eta^2 = .01$]***, Consolidated Identity scores [$F(1, 535) = 6.12$, $\eta^2 = .01$]***, and Lack of Identity scores [$F(1, 535) = 18.91$, $\eta^2 = .03$]***, than those who had never engaged in NSSI.
Luyckx et al. (2015)	• MANOVA. IVs: adolescent group or psychiatric patient group; DVs: Identity synthesis, identity confusion, anxiety, depression, and personality (Big Five Personality traits, perfectionism, and effortful control scores); covariate: age. • Spearman's Rho correlational analyses (using categorical variable;	• 20.7% of adolescents and 64.9% of patients (ED = 51.2%; BPD = 86.3%) had lifetime history of NSSI. • 6.9% of adolescents and 35.1% of patients were engaging in NSSI at time of data collection. • Methods of NSSI: 9.2% of adolescents and 17.6% of patients had engaged in one; 5.5% of adolescents and 23.5% of patients had engaged in two; 2.9% of adolescents and 17.6% of patients had engaged in three; 2.9% of adolescents and	• Adolescents reported significantly higher identity synthesis [F =53.60, $\eta^2 = .10$]*** and significantly lower identity confusion [F = 51.38, $\eta^2 = .10$]*** than patients. • Lifetime NSSI was significantly negatively correlated with identity synthesis for adolescents (r =-.34***) and patients (r =-.42***). • Lifetime NSSI was significantly positively correlated with identity confusion for adolescents (r = .41)*** and patients (r = .29)**. • Adolescent sample – Identity synthesis did not significantly predict lifetime NSSI.

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	**Relationship between Self-Concept Clarity and Self-Harm**
	presence/absence of lifetime NSSI). • Hierarchical logistic regressions conducted for both adolescent and psychiatric patient samples. Predictors: step 1; age, personality (Big Five Personality traits, perfectionism, and effortful control scores), anxiety and depression, step 2; identity synthesis and identity confusion (included in separate models due to high intercorrelation); outcome; presence/absence of lifetime NSSI • Pearson's correlational analyses.	41.2% of patients had engaged in four. • 5.6% of adolescents and 38.8% of patients with lifetime history of NSSI had sought help for injuries. • Adolescent M_{age} NSSI onset = 12.8; *SD* = 1.85; range 5–16 years. Patient M_{age} NSSI onset = 17.28; *SD* = 7.61; range 6–50 years. • With age controlled as a covariate, patients scored significantly higher in identity confusion and lower in identity synthesis than adolescents [$F(11, 452) = 9.31$, $\eta^2 = .19$]***.	– Identity confusion significantly predicted increased likelihood of lifetime engagement in NSSI [Exp (B) = 3.05]**, and the model explained 41% of the variance (Nagelkerke $R^2 = .41$). Identity confusion explained additional variance above and beyond other included predictors. • Patient sample – Identity synthesis significantly predicted a decreased likelihood of lifetime NSSI [Exp (B) = .34]*. The model explained 38% of the variance (Nagelkerke $R^2 = .38$). Identity synthesis explained additional variance above and beyond other included predictors. – Identity confusion in the regression model did not significantly predict lifetime NSSI. • Functions of NSSI[b] -In adolescents, identity synthesis was significantly negatively correlated with autonomous negative reinforcement ($r = -.28$)* and autonomous positive reinforcement ($r = -.26$)*. Identity confusion was significantly positively correlated with autonomous negative reinforcement ($r =$

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	Relationship between Self-Concept Clarity and Self-Harm
			.39)** and autonomous positive reinforcement (*r* = .28)*.. -In patients, NSSI, identity synthesis was significantly negatively correlated with autonomous negative reinforcement (*r* = −.34)** and identity confusion was significantly positively correlated with autonomous negative reinforcement (*r* = .34)**.
Gandhi, Claes, et al. (2016)	• Spearman's Rho correlational analyses • Mediation analyses using bootstrap procedure. Predictors: trust and alienation dimensions of adolescent to mother/peer relationship; outcome: lifetime NSSI; mediators: identity synthesis and identity confusion; controls: age and gender.	• Lifetime prevalence of NSSI= 14.2 % (females = 10.4%; males = 3.8%). Females were significantly more likely to have engaged in NSSI [$\chi^2(1) = 18.28$]***. • 3% were engaging in NSSI at time of data collection. • Males M_{age} NSSI onset =12.3; *SD* = 2.28. Females M_{age} NSSI onset = 13.6; *SD* = 1.70. • Almost 48% of those who had engaged in NSSI used only one, 17.3% used two and three, 12% used four or more methods. • 25.45% of females engaging in NSSI used scratching, 52.73% used carving, 58.18% used cutting, 7.27% used hitting or	• Identity confusion was significantly positively correlated with lifetime NSSI (*r* = .29)*** and identity synthesis was significantly negatively correlated with lifetime NSSI (*r* = -.29)***. • Identity synthesis and identity confusion did not significantly mediate the relationship between peer trust and lifetime NSSI. • There was a significant indirect effect of peer alienation on lifetime NSSI via identity synthesis (B = −.199, SE = .088, 95 % CI [−.418; −.071]) and identity confusion (B = −.105, SE = .058, 95 % CI [−.262; −.020]). • There was a significant indirect effect of peer alienation on lifetime NSSI via identity synthesis (B = .312, SE = .120, CI [.113; .584]. The association between peer alienation and lifetime NSSI was partially mediated by identity synthesis. The indirect effect of peer alienation on lifetime NSSI via

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	**Relationship between Self-Concept Clarity and Self-Harm**
		bruising, 5.45% used burning, 20% used pricking with sharp objects, 14.55% used head banging. • 25% of males engaging in NSSI used scratching, 45% used carving, 20% used cutting, 40% used hitting or bruising, 15% used burning, 15% used pricking with sharp objects, 50% used head banging. • Females were significantly more likely to use cutting [$\chi^2(1) = 8.57$]* • Males were significantly more likely to use hitting or bruising [$\chi^2(1) = 11.69$]* and head banging [$\chi^2(1) = 10.11$]*.	identity confusion was non-significant (B = .180, SE = .160, 95 % CI [−.116; .519]). • There was a significant indirect effect of maternal trust on lifetime NSSI via identity synthesis (B = −.222, SE = .086, 95 % CI [−.427; −.087]) and identity confusion (B = −.176, SE = .082, 95 % CI [−.348; −.033]). The association between maternal trust and lifetime NSSI was fully mediated by identity synthesis and identity confusion. • There was a significant indirect effect of maternal alienation on lifetime NSSI through identity synthesis (B = .288, SE = .112, 95 % CI [.109; .555]) and identity confusion (B = .331, SE = .136, 95 % CI [.086; .632]). The association between maternal alienation and lifetime NSSI was fully mediated by identity synthesis and identity confusion.
Gandhi, Luyckx, Maitra, et al. (2016)	• Spearman's Rho correlational analyses • Exploratory factor analysis to reduce 18 function items of NSSI to a smaller number of factors. • Mediation analyses using bootstrap procedure. Predictors: identity	• 16.5% had engaged in NSSI (*N* = 66): females=10.6% (N = 42); males = 5.8% (*N* = 23). • Females were significantly more likely to have engaged in NSSI than males [$\chi^2(1) = 10.11$, $p = .016$]. • Females were significantly more likely to use scratching [$\chi^2(1) = 5.13$]* and males were	• Identity synthesis was significantly negatively correlated with lifetime NSSI (*r* = -.26)*** and identity confusion was significantly positively correlated with lifetime NSSI (*r* = .32)***. • Exploratory factor analysis revealed two functions of NSSI: 'automatic' (self-reinforcement i.e. behaviour maintained through intrapersonal functions) and 'social'

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	**Relationship between Self-Concept Clarity and Self-Harm**
	synthesis and identity confusion; outcome: lifetime NSSI; controls: age and gender.	significantly more likely to use headbanging [$\chi^2(1) = 9.62$]***. • M_{age} NSSI onset = 13.68; *SD* =1.61.	functions (i.e. behaviour maintained through interpersonal functions). • Identity synthesis was significantly negatively correlated with automatic functions ($r = -.44$)*** and identity confusion was significantly positively correlated with automatic functions ($r = .51$)***. There was no correlation with social functions. • The indirect effect of sociotropy on lifetime NSSI via identity synthesis was not significant (B= 0.259, S.E.= 0.182, 95% CI [− 0.068; 0.653]). • The indirect effect of sociotropy on lifetime NSSI via identity confusion was significant (B= 0.662, S.E.= 0.276, 95% CI [0.169; 1.255]). The association between sociotropy and lifetime NSSI was fully mediated by identity confusion. • The indirect effect of autonomy on lifetime NSS via identity synthesis was not significant (B= 0.271, S.E.= 0.184, 95% CI [−0.069; 0.652]). • The indirect effect of autonomy on lifetime NSSI via identity confusion was significant (B= 0.508, S.E.= 0.244, 95% CI [0.039; 0.997]). The association between autonomy

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	Relationship between Self-Concept Clarity and Self-Harm
			and lifetime NSSI was fully mediated by identity confusion.
Gandhi, Luyckx, Goosens et al. (2016)	• Pearson's correlational analyses • Moderated mediation analyses performed using a modified version of the piece-meal approach. Predictors: Behaviour Inhibition System (BIS) score, Behaviour Activation System (BAS) score [comprising of Flight Freezing Fight System (FFFS) and anxiety subscales][c], and BISBAS (effortful control) scores; outcome: lifetime NSSI; mediators: identity synthesis and identity confusion.	• Lifetime prevalence of NSSI = 14.2%; females =10.4%; males = 3.8%. • Females had a significantly higher lifetime prevalence of NSSI than males [χ^2 = 18.28).***	• Identity confusion was significantly positively associated with lifetime NSSI (r = .31)*** and identity synthesis was significantly negatively associated with lifetime NSSI (r = −.33)***. • There was a significant indirect effect of BIS on lifetime NSSI via identity synthesis (B = 0.164, S.E. = 0.065, 95% CI [0.060; 0.318]). Therefore, the association between BIS and lifetime NSSI was partially mediated by identity synthesis. • The indirect effect of BIS on lifetime NSSI via identity confusion (B = 0.151, S.E. = 0.094, 95% CI [−0.039; 0.341]) was not significant..
Lear & Pepper (2016)	Lifetime NSSI frequency data was markedly skewed and kurtotic, so required a smoothing procedure, following transformation	• In the NSSI group, lifetime frequency of NSSI ranged from 1 to 2,235 episodes (M = 165.94; SD = 364.52; Median = 45.00). 15.9% (N = 11) reported a lifetime frequency of	• First model: Negative affect was a significant predictor of SCC, accounting for 22% of the variance (R^2= .275)**. Lifetime NSSI remained a statistically significant predictor of SCC (β = −.241; $sr2$ = .056)***, independent of negative affect, with a small

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	Relationship between Self-Concept Clarity and Self-Harm
	using a natural logarithm to normalise the data. Five hierarchical linear regression analyses: • First predictor block: Negative affect; second predictor block: Group membership (Lifetime NSSI/No-NSSI); outcome: SCC. • First predictor block: Negative affect; second predictor block: SCC; outcome: log transformation variable of NSSI frequency. • First predictor block: Negative affect; second predictor block: SCC; outcome: NSSI versatility. • First predictor block: Emotion dysregulation; second predictor block: SCC; outcome: log transformation variable of NSSI frequency	fewer than five episodes. Following log transformation of variable: $M = 3.65$; $SD = 1.73$. • NSSI ranged from 1 to 8 total methods, with an average of 3.08 methods (Median = 2.0; SD = 2.11). • No statistically significant differences in demographic variables between the NSSI group and the No-NSSI group were detected, and no significant associations between demographic variables and SCC.	effect size. Therefore, lifetime NSSI was associated with reduced SCC. The full model was statistically significant [$F(2,136)= 33.60$]*** and accounted for 33.1% of the variance ($R^2= .331$). Lifetime NSSI increased the variance account for by the model 5.6% ($\Delta R^2 = .056$)**. • Second model: Negative affect was not a significant predictor of lifetime NSSI frequency. After controlling for negative affect, SCC was a statistically significant predictor ($\beta = -.532$; $sr2 = .201$)***, with a large effect size, and increased the variance accounted for by the model by 20.1% ($\Delta R^2= .201$)***. The full model was statistically significant [($F(2,66) = 8.77$]***, accounting for approximately 21% of the variance ($R^2 = .210$). • Third model: Negative affect did not significantly predict NSSI versatility. SCC was a statistically significant predictor of NSSI versatility ($\beta = -.57$; $sr2 = .234$)***, and increased the variance accounted for by the model by 23.4% ($\Delta R^2 = .234$)***. The full model was statistically significant [$F(2, 66) = 13.05$]*** and accounted for 28.3% of the variance ($R^2 = .283$). • Fourth model: Emotion dysregulation significantly predict NSSI frequency***,

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	Relationship between Self-Concept Clarity and Self-Harm
	• First predictor block: Emotion dysregulation; second predictor block: SCC; outcome: NSSI versatility.		accounting for 18.6% of the variance R^2 = .186). SCC did not significantly predict NSSI frequency (β = −.380; *sr*2 = .047), though was close to meeting threshold for significance (p = .07). The full model was statistically significant [$F(2, 57) = 8.68$]***, accounting for 23.3% of the variance (R^2 = .233). • Fifth model: Emotion dysregulation significantly predicted NSSI frequency***, accounting for 21.3% of the variance (R^2 = .213). SCC significantly predicted NSSI frequency (β = −.459; *sr*2 = .069)*, and fully accounted for the unique variance initially explained by emotion dysregulation, rendering emotion dysregulation nonsignificant in the final model. The full model was significantly significant [$F(1, 58) = 13.26$]***, accounting for 28.2% of the variance (R^2 = .282). SCC significantly increased the variance initially explained by emotion dysregulation by 6.9% (ΔR^2 = .069)*. Post-hoc regression analysis found emotion dysregulation did not have a significant indirect effect on the relationship between SCC and NSSI versatility.
Gandhi et al. (2017)	• Participants were assigned, based on reported NSSI	• AT T1, lifetime prevalence of NSSI = 14.2%; females = 20.8%; males = 7.7%. This was	• Identity synthesis at T1 significantly negatively predicted NSSI at T2 (β= -.24)*, and NSSI at T1 significantly negatively

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	**Relationship between Self-Concept Clarity and Self-Harm**
	engagement at each timepoint: Control (no history of NSSI), cessation (stopped engaging in NSSI), onset (NSSI started during study), or maintenance (continued NSSI throughout). • Cross-lagged analyses using structural equation modelling. Variables: lifetime NSSI/no-NSSI at T1 and T2; controls: Age and gender. • Mixed design ANCOVA. IVs: Control/cessation/ onset/maintenance group; DVs: Identity synthesis and identity confusion; covariates: Age and gender. Post-hoc comparisons of estimated marginal means with Bonferroni's correction.	significantly higher for females than males [$\chi^2(1) = 18.28$)***. • At T1, 48% of participants who reported NSSI had used one method, 17.3% had used two, 17.3% had used three, and 12% used four or more. Females reported significantly higher use of severe cutting [$\chi^2(1) = 8.57$)*, whereas males reported significantly more head banging [$\chi^2(1) = 10.11$)* and hitting or bruising oneself [$\chi^2(1) = 11.69$]*. • AT T2, 7.7% reported NSSI during the past 12 months (females= 5.3%; males= 2.4%), which was significantly higher for females [$\chi^2(1) = 3.36$]**. • At T2, 10.1% of females and 5.0% of males were engaging in NSSI at time of data collection. • AT T2, females were significantly more likely to use cutting [$\chi^2(1) = 5.73$]*, whereas males were significantly more likely to use head banging [$\chi^2(1)= 6.77$]*.	predicted identity synthesis at T2 (β = -.22)***. Identity confusion at T1 significantly positively predicted NSSI at T2 (β = .21)*, and NSSI at T1 positively predicted identity confusion at T2 (β = .07)*. Effect sizes were small. • There was no significant main effect of time both identity synthesis and identity confusion. There was a main effect of group membership for identity synthesis [$F(3,368) = 18.72$, $\eta_p^2 = 0.13$)*** and identity confusion [$F(3, 368) = 15.30$, $\eta_p^2 = 0.11$]*** (considered medium effect sizes). At T1, the maintenance group reported significantly lower identity synthesis than the control***, cessation, and onset groups***. The maintenance group also reported significantly higher identity confusion than control***, cessation***, and onset*** groups. At T2, the maintenance group reported significantly lower identity synthesis*** and significantly higher identity confusion*** than the control group. • The time x group membership interaction was significant for identity synthesis [$F(1,368) = 4.18$, $p = .017$, $\eta_p^2 = 0.22$) but not identity confusion (considered a large effect size). The maintenance group showed a significant increase in identity synthesis

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	**Relationship between Self-Concept Clarity and Self-Harm**
		• At T2, during the past 12 months, 83.9% had never engaged in NSSI (*N* =319; control group); 8.4% had engaged in NSSI only at T1 (*N* = 32; cessation group); 2.8% had engaged in NSSI only at T2 (*N* = 9; onset group); and 5.3% had engaged in NSSI at both T1 and T2 (*N* = 20; maintenance group).	from T1 to T2 (p = .038), but there was no significant change for control, onset and cessation groups.
Scala et al. (2018)	• Generalised linear multilevel modelling used to conduct logistic regression in a multilevel framework. Due to low number of self-harm urge reports, could not reliably analyse data regarding the intensity of urges. Therefore, it was dichotomised to become presence/absence of an urge. Negative affect was dichotomised around the median score. • First model. Predictor: momentary SCC;	• BPD group at baseline had significantly lower SCC than the anxiety group [t(31.97) = -2.23, p = .033). • BPD group reported self-harm urges on 78 out of 2587 occasions (3.02%). Anxiety group only reported self-harm urges on 6 out of 1181 occasions (0.51%). • On average, participants completed 93.72 of the 126 possible prompted surveys, resulting in an acceptable compliance rate (74%) that did not differ between groups. Self-harm urges were reported in	• Lower momentary SCC significantly predicted a greater likelihood of having subsequent self-harm urges with a large effect size (β = −.95, z = −3.21)***, but momentary negative affect did not. • The interaction between momentary SCC and negative affect was significant with a large effect size (β = −1.27, z = −2.04, p= .04). In moments when negative affect was low, the effect of momentary SCC in predicting self-harm urges was not significant (β = -8.3, z= -1.70, p= .09). However, in moments when negative affect was high, low momentary SCC predicted a higher likelihood of having subsequent self-harm urges (β = −1.56, z = −3.60)***.

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	Relationship between Self-Concept Clarity and Self-Harm
	outcome: self-harm urges; control: self-harm urge in previous survey. • Second model. Predictor: momentary negative affect; outcome: self-harm urges; control: self-harm urge in previous survey. • Third model. Predictors: momentary SCC and momentary negative affect; outcome: self-harm urges; control: self-harm urge in previous survey. • Fourth model. Predictors: Momentary SCC, momentary negative affect and diagnostic group; outcome: self-harm urges; control: self-harm urge in previous survey.	only 84 of the 3768 surveys (2%). These 84 reports came from 17 participants (BPD N = 14; anxiety N= 3). • For participants that reported self-harm urges, there was no difference in SCC between groups. After adjusting for group size, the BPD group were 5.66 times more likely to report momentary SCC of ≤ 20/100 (N =234) and 5.17 times more likely to report SCC ≤ 10/100 (N = 102).	• When SCC was low and negative affect was high, the likelihood or having subsequent self-harm urges was higher than when momentary SCC was high, and negative affect was either high (β = -1.56, z = -3.60)*** or low (β = -.73, z = -1.96, p= .05). • When SCC was low, there were no differences in the likelihood of having subsequent self-harm urges between moments when negative affect was low and moments when negative affect was high (β = -.57, z = -1.28, p = .20). • There were no differences in the likelihood of having self-harm urges between moments when negative affect was low and SCC was low, moments when negative affect was low and SCC was high, and moments when negative affect was high and SCC was high. Thus, the likelihood of having self-harm urges was specifically elevated in moments that SCC was low and negative affect was high. • The three-way interaction between momentary SCC, momentary negative affect and diagnostic group was not significant (β = -16.83, z = -1.04, p = .30), and the two-way interaction between momentary SCC and negative affect did not differ by group.

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	Relationship between Self-Concept Clarity and Self-Harm
Gandhi et al. (2019)	• Cross-lagged mediation modelling with bootstrap procedure: tested two bidirectional indirect effects as authors expected bidirectional association between attachment and NSSI. Age and gender were control variables. • First indirect effect assessed: Predictors: T1 maternal attachment and peer attachment; outcome: T3 NSSI; mediators: T2 identity synthesis and T2 identity confusion. • Second indirect effect assessed: Predictors: T1 NSSI; outcomes: maternal attachment and peer attachment; mediators: identity synthesis and identity confusion. • Parallel process LGCM mediation modelling to assess within-person	Non-participation at T2 was not associated with engagement or non-engagement in NSSI at T1.	• The first model (maternal attachment → identity synthesis → NSSI) was a good fit (χ^2 = 168.54, df = 105)**. The indirect effect of maternal attachment at T1 on NSSI at T3, through identity synthesis at T2, was significant as the CI did not include zero (coefficient = -.13, CI [-.35; -.01]. However, the indirect effect of NSSI at T1 on maternal attachment at T3 through identity synthesis at T2 was not significant as the 95% CIs included zero (coefficient = .00, CI [-.01; 01]). • The second model (maternal attachment → identity confusion → NSSI) was a good fit (χ^2 = 170.38, df = 104)***. The indirect effect of maternal attachment at T1 on NSSI at T2 through identity synthesis was significant (coefficient = -.09, CI [- .24, -.002]. However, the indirect effect of NSSI at T1, on maternal attachment at T3, through identity confusion at T2 was not significant (coefficient = .00, CI [-.02, 00]. • The third model (peer attachment → identity synthesis → NSSI) was a good fit (χ^2 = 258.26, df = 99)***. The indirect effect of peer attachment at T1 on NSSI at T3 through identity synthesis at T2 was significant (coefficient = -.47, CI [-.1.01, -.13]. However, the indirect effect of NSSI at T1 on

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	Relationship between Self-Concept Clarity and Self-Harm
	variability. IVs: maternal attachment and peer attachment; outcome: NSSI; mediators: identity synthesis and identity confusion.		peer attachment at T3 through identity synthesis was not significant (coefficient= .00, CI [-.02, 00]). • The fourth model (peer attachment → identity confusion → NSSI) was a good fit (χ^2 = 254.20, df = 97)***. The indirect effect of peer attachment at T1 on NSSI at T3 through identity confusion at T2 was significant (coefficient = -.48, CI [-1.03; -.04]. However, the indirect effect of NSSI at T1 on peer attachment at T3 through identity confusion at T2 was not significant (coefficient = .00, CI [-.01; .00]. • The LGCM mediation models for peer attachment did not converge (peer attachment → identity synthesis/confusion → NSSI). Peer and maternal attachment models were trimmed by removing non-significant pathways, retaining the slopes. Peer attachment models still did not converge. • The first model (maternal attachment → identity synthesis → NSSI) was a good fit (χ^2 = 113.92, df = 108)*. The indirect effect through the slopes in this pathway was significant (coefficient = -.782 CI [-55.06; -1.77], indicating that the slope of identity synthesis mediated the association between the slopes of maternal attachment and NSSI.

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	Relationship between Self-Concept Clarity and Self-Harm
			• The second model (maternal attachment → identity confusion → NSSI) was a good fit (χ^2 = 124.68, df = 81)*. The indirect effect through the slopes in this pathway was significant (coefficient = -1.21, CI [-.854, -.15], indicating that the slope of identity confusion mediated the association between the slopes of maternal attachment and NSSI.
Gu et al. (2020)	• Mediation analysis • Predictor; emotional abuse, outcome; average NSSI score, mediator; identity confusion, controls; age, gender, only child status, place of residence • Moderated mediation analysis: tested if rumination impacted the indirect effect of identity confusion.	• 38.9% (*N* = 369) reported NSSI. Of those participants, 35.0% (*N* = 129) used one and 65.0% (*N* = 240) used at least two methods. • Biting was the most prevalent method (62.3%, *N* = 230), followed by scratching skin (58.8 %, *N* = 217), self-cutting (33.6 %, *N* = 124), banging the head or other parts of the body against the wall (17.6%, *N* = 65), punching (14.1%, *N* = 52), inserting sharp objects into the nail or skin (14.1%, *N* = 52), and burning (5.7 %, *N* = 21). • There were no significant gender difference in identity synthesis, identity confusion or NSSI scores.	• Identity confusion was significantly positively correlated with NSSI (*r* = .32)*** with a medium effect. • Identity confusion partially mediated the association between emotional abuse and NSSI (indirect effect = 0.07, SE = 0.01, 95% CI [0.05, 0.10]). The mediation effect accounted for 19.0% of the total effect (β = 0.37, SE = 0.03, 95% CI [0.31, 0.43]). • Rumination significantly moderated the impact of emotional abuse on identity confusion (β = 0.07, SE = 0.03)*** and NSSI (β = 0.07, SE = 0.03, *p*< .05). • Tests of simple slopes showed rumination strengthened the effects of emotional abuse on identity confusion and NSSI. Conditional indirect effects were calculated, revealing that the indirect effect of identity confusion on NSSI was stronger for adolescents with high levels of rumination (indirect effect =

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	Relationship between Self-Concept Clarity and Self-Harm
			0.08, SE = 0.02, 95% CI [0.05, 0.12] than for those with low levels of rumination (indirect effect = 0.05, SE = 0.01, 95% CI [0.03, 0.08]. The index of moderated mediation was significant (β = 0.02, SE = 0.01, p <.05), further indicating that rumination strengthened the mediating effect of identity confusion in the association between emotional abuse and NSSI.
Gandhi et al. (2021a)	• Chi square tests. IV: Indian/Belgian group; DVs: NSSI methods and body parts injured. • Mann-Whitney U test. IV: Indian/Belgian group; DV: 18 NSSI functions. False Discovery Rate technique to control for inflation of Type 1 error due to multiple testing. Discrete event history analysis method to see if distribution of age of NSSI onset significantly differed between two groups. • Three separate binomial logistic regression-based	• No significant difference in past 12-month NSSI prevalence between Indian and Belgian groups. • NSSI methods: Significant difference in scratching (India $N = 4$; Belgium $N = 12$; $\chi^2(1) = 5.524$, p = .019), cutting (India $N = 1$; Belgium $N = 12$; $\chi^2(1) = 11.997$, $p = .001$), and head banging (India $N = 17$; Belgium $N = 8$, $\chi^2(1) = 5.695$, $p = .17$). There were no significant differences in carving (India $N = 10$; Belgium $N = 11$), hitting or bruising (India $N = 9$; Belgium $N = 16$), burning (India $N = 1$; Belgium $N = 5$), and pricking with sharp objects (India $N = 6$; Belgium $N = 6$).	Identity confusion significantly positively predicted lifetime NSSI (B = 1.43, SE = .31, Wald = 21.57, df=1)***. The association between confusion and lifetime NSSI was moderated by nationality (B = -1.34, SE = .39, Wald = 11.67, df = 1, $p = .001$). Integration significantly negatively predicted lifetime NSSI (B = -1.08, SE = .27, Wald = 16.43, df = 1)***. The association between integration and lifetime NSSI was moderated by nationality (B = .84, SE = .37, Wald = 5.2, df = 1, $p = .023$). Self-knowledge significantly predicted lifetime NSSI (B = -1.07, SE = .298, Wald = 13.012, df = 1)***. Nationality did not moderate the association between self-knowledge and lifetime NSSI. Predicted probability plots (95% CI) suggest the strength of the association between identity confusion and lifetime NSSI appeared to be

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	**Relationship between Self-Concept Clarity and Self-Harm**
	moderation models. Predictors: confusion/integration/ self-knowledge; lifetime NSSI. Using the delta method, plotted 25% CIs around the differences between predicted probability of NSSI between groups for various values of each identity variable; investigated values of identity variables that were associated with significant differences in the predicted probability of lifetime NSSI between groups.	• There were no significant differences in body parts injured: head and neck (India *N* = 13; Belgium *N* = 5), arms, hands, fingers and nails (India *N* =17; Belgium *N* = 15), torso, belly and buttocks (India *N* = 4; Belgium *N* = 6), legs, feet and toes (India *N* = 2; Belgium *N* = 4), breast and genitals (India *N* = 0; Belgium *N* = 0) • Peak age of onset between at 16–18 years (peak at 17) in the Indian sample; peak age of onset peaked between the ages of 14–16 years (peak at 15) in Belgian sample.	relatively weak in the Indian sample. In contrast, the association between identity confusion and NSSI was much stronger in the Belgian sample; the probability of lifetime NSSI increased almost exponentially to more than .80 as the degree of identity confusion achieved its maximum score. Difference in the predicted probability of lifetime NSSI between the two countries was significant only for very low values of identity integration. Even with the low values of the integration scores, the predicted probability of lifetime NSSI was significantly higher in the Belgian compared to the Indian sample.
Gandhi et al. (2021b)	• Chi-squared tests. -IV: Clinical/non-clinical group; DV: Lifetime NSSI. -IV: Male/female; DV: lifetime NSSI -IV: Male/female; DV: NSSI methods • Mann-Whitney *U* tests. IV: clinical/non-clinical	• 17% of clinical sample and 21% of non-clinical sample reported lifetime history of NSSI. • 5% of clinical sample and 4.17% of non-clinical sample had engaged in NSSI within the past year. • Lifetime NSSI and present NSSI did not significantly differ	• The initial model had a poor fit to the data. Removing covariates significantly improved the fit (PPP = .158; 95% CI [11.212, 29.693]. The pathways from the three SCIM subscales to NSSI were set equal across clinical and non-clinical groups. The fit of the unconstrained model was only slightly better than the constrained model without covariates, indicating there was no variation in the path coefficients by group. Therefore,

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	**Relationship between Self-Concept Clarity and Self-Harm**
	group; DV: 18 NSSI functions • MANCOVA. IV: clinical/non-clinical group; DV: SCIM subscales; covariates: age and gender. • Multigroup path analysis in structural equation modelling with Bayesian estimation procedure due to small sample size. Predictors: consolidated identity, disturbed identity and lack of identity; outcome: lifetime NSSI; covariates: age and gender.	between clinical and nonclinical samples or between genders in both samples. • Clinical group M_{age} NSSI onset = 15.19, range = 9-25 years; non-clinical group M_{age} NSSI onset = 16.62, range = 13-19 years. No significant difference between groups. • MANCOVA showed significant difference between clinical and non-clinical groups in SCIM subscale scores [Wilks' Lambda=.914, $F(3,211)$ = 5.118, η_p^2= .068, p = .002]. Clinical group reported significantly lower consolidated identity [($F(1,214)$ = 8.003, η_p^2 = .036, p = .005), and significantly higher disturbed identity [$F(1,214)$ = 11.834, η_p^2 = 0.53, p = .001] and lack of identity scores [$F(1,214)$ = 12.885; η_p^2 = .057)*** than the non-clinical group.	the fully constrained model was chosen as the final model best fitting the data. The full constrained model had a PSR of 1.001 indicating adequate convergence was achieved. • In clinical and nonclinical groups, the association between consolidated identity and NSSI was found to be negative and statistically significant (unstandardised β = -.287, posterior SD = .120, 95% credibility interval [-.521, -.051]) [estimates were significantly different from zero]. That is, as the level of consolidated identity increased, the probability of engaging in NSSI reduced. • The associations between disturbed identity and NSSI were found to be positive and significant (unstandardised β= .278, posterior SD = .072, 95% credibility interval [.032; .520]. Associations between the lack of identity and NSSI were found to be nonsignificant in both the samples [unstandardised β = .128, posterior SD = .103, credibility interval [-0.79, .325].
Kruzan et al. (2022)	• Bivariate correlational analyses. • Moderated mediation analysis with bootstrap	• 23.5% (N = 448) engaged in NSSI the previous year. M frequency of NSSI reported = 3.69; SD = 2.58; range = every	• SCC was significantly positively correlated with past year NSSI frequency (r = .248)*** , suggesting that lower SCC is associated

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	**Relationship between Self-Concept Clarity and Self-Harm**
	procedure. Predictor: self-concept clarity; outcome: NSSI past year frequency; moderator: body regard, mediator: self-blame coping style; covariate: depression, anxiety and stress score.	day (5.8%) to once in the past year (19.7%).	with increased NSSI (as researchers reversed the SCCS scores). • Self-blame coping partially mediated the association between poor SCC and past year NSSI frequency (β = 0.056, SE = 0.02, 95% CI [0.026, 0.089]), explaining 10.7% of the variance in NSSI. Poor SCC retained a significant, though reduced, main effect on past year NSSI frequency (β = 0.225, SE = 0.06, t = −3.82, 95% CI [0.110, 0.341])*** with the self-blame as a mediator in the model. • Body regard moderated the mediational effect of self-blame as well as the direct effect of poor SCC on past year NSSI frequency. The full model was significant [F(6, 1899) = 43.19]***, explaining 12.01% of variance in NSSI. The interaction of body regard and self-blame was significant (β = −0.163, SE = 0.07, p < .02, 95% CI [−0.291, −0.034]). The indirect effect of poor SCC through self-blame on NSSI was strongest when body regard was low (β = 0.086, SE = 0.024, 95% CI [0.040, 0.137]), moderate at average levels of body regard (β = 0.053, SE = 0.015, 95% CI [0.025, 0.086]), and non-significant at high body regard (β = 0.021, SE = 0.018, 95% CI: −0.015, 0.057), suggesting that high body regard buffers the

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	Relationship between Self-Concept Clarity and Self-Harm
			mediational effects of self-blame coping on NSSI. • The interaction between poor SCC and body regard in predicting past year NSSI frequency was also significant (β = −0.274, SE = 0.09, *t* = −3.018, *p* < .01, 95% CI: −0.452, 0.096). Also, poor SCC was associated with higher past year NSSI frequency when body regard was low (β = 0.384, SE = 0.084, 95% CI [0.218, 0.549]) or average (β = 0.225, SE = 0.063, 95% CI [0.102, 0.348]) but not when body regard was high (β = 0.066, SE = 0.080, 95% CI [−0.090, 0.222]), suggesting that high body regard protects against the negative effects of poor SCC on NSSI. • The covariate also contributed a unique, significant effect on NSSI (β = 0.234, SE = 0.04, 95% CI [0.161, 0.307]) within the full model.
Buelens et al. (2023)	• χ2 statistic and cross-tabulations. (M)ANOVA or Welch F-statistic with post-hoc tests. • Sankey diagram to show shifts between NSSI groups over time.	• Participants who could be assigned to an NSSI group at all timepoints: final *N* = 1552 (no-NSSI group = 87.46%; subthreshold-NSSI group = 5.50%; NSSI-D group = 7.05%). • At T1, those who had not self-harmed in the previous 12	• At each timepoint, the no-NSSI group reported significantly lower identity confusion and higher identity synthesis compared to subthreshold-NSSI and NSSI-D groups. The subthreshold-NSSI group reported significantly less identity confusion (at T1 and T2), more identity synthesis (at T1 and T2), than the NSSI-D group.

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	**Relationship between Self-Concept Clarity and Self-Harm**
	• Multinomial logistic regression. Predictors: age, gender, depression, resilience, trauma and identity synthesis/confusion; outcome: NSSI group membership	months were significantly more likely to be younger ($F(2, 1549) = 3.32$, $p = .036$). This age difference did not persist at T2 or T3. • Females were significantly more likely to be self-harming than males at T1 ($\chi^2(2) = 51.78$)***, T2 ($\chi^2(2) = 53.21$)***, and T3 ($\chi^2(2) = 67.54$)***. • Significantly more males than expected by chance were found to be in the no-NSSI group (ARboys = 6.9), and significantly more girls than expected by chance in the subthreshold- NSSI group (ARgirls = 3.1) and the NSSI-disorder group (ARgirls = 6.3). • Age was significantly associated with a decreased likelihood of belonging to the no-NSSI → NSSI-D category in comparison to belonging to the stable no-NSSI → no-NSSI category from T1→ T2 (B = -0.288, SE = 0.089, Wald $\chi^2(1) = 10.44$, $p = .001$) and T2 → T3	• Identity confusion was significantly associated with an increased likelihood of belonging to the no-NSSI → subthreshold-NSSI category, in comparison to belonging to the stable no-NSSI → no-NSSI category, from T1→ T2 (B = 0.844, SE = 0.350, Wald $\chi2$ (1) = 5.82, $p = .016$) and T2 → T3 (B = 0.820, SE = 0.318, Wald $\chi2$ (1) = 6.63, $p = .010$). Movement from NSSI-D to Subthreshold-NSSI was associated with identity synthesis at T1 → T2 (B = 1.633, SE= 0.573, Wald $\chi2$ (1) = 8.123, p =.004), but not interval at T2 → T3.

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	**Relationship between Self-Concept Clarity and Self-Harm**
		(B = -0.442, SE = 0.130, Wald $\chi^2(1) = 11.54$)***. • Being male was significantly associated with an increased likelihood of belonging to the NSSI-D → no-NSSI category, both at T1→ T2 (B = 2.39, SE = 1.16, Wald $\chi^2(1) = 4.25$, $p = .039$) and T2→T3 (B = 1.60, SE = 0.66, Wald $\chi^2(1) = 5.79$, $p = .016$).	
James et al. (2023)	• Confirmatory factor analysis • Bivariate correlation analyses. Variables: SCIM scores, depression, anxiety, emotion regulation, borderline personality disorder symptoms, NSSI.	None reported	• SCIM score was significantly positively correlated with lifetime NSSI (r =.30, CI [.25-.35])***. • Disturbed Identity was significantly positively correlated with lifetime NSSI (r =.19, CI [.14, -.24])***. • Consolidated Identity was significantly negatively correlated with lifetime NSSI (r = −.28, CI [-.33. −.23])***. • Lack of Identity was significantly positively correlated with lifetime NSSI (r = .335, CI [.29, - .38])***.
Gu et al. (2024)	• Pearson's correlational analyses. • Tested the mediation model with structural equation modelling, and	• Females had significantly higher NSSI frequency scores than males at T1 (r = .11)** and T2 (r = .16)***. Females had	• SCC at T2 was significantly negatively correlated with NSSI frequency at T1 (r = −.27)***. SCC at T2 was significantly, negatively associated with NSSI frequency at T3 (r = −.24)***.

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	Relationship between Self-Concept Clarity and Self-Harm
	the moderated mediation model with latent moderated structural equations. Gender and age at T1 were controlled covariates. • Chi-square test to assess model fit.	significantly lower SCC scores than males (r = -.26)***.	• T2 basic psychological needs frustration played a significant mediating role in the association between T1 harsh parenting and T3 NSSI frequency (mediating effect = 0.09, 95% CI [0.05, 0.14]). This mediation model was a good fit (χ^2 = 32.59, df = 82, CFI = 0.939, TLFI = 0.922, RMSEA = 0.062) and explained 34.1% of the variance in T3 NSSI. • T1 harsh parenting significantly predicted T2 basic psychological needs frustration (β = 0.44)***, and T2 basic psychological needs frustration interacted with T2 SCC in predicting T3 NSSI frequency (β = −0.19)***. The moderated mediation model explained 37.1 % of the variance in T3 NSSI. • Simple slopes tests showed that for adolescents with low SCC (M – 1SD), basic psychological needs frustration at T2 was significantly positively associated with NSSI frequency at T3 (β_{simple} = 0.55, t = 5.24)***. For adolescents with high SCC (M + 1SD), this relationship was nonsignificant (β_{simple} = 0.18, t = 1.94, p > 0.05). Under the condition of low SCC (M – 1SD), the indirect effect of harsh parenting on NSSI via needs frustration was significant (β= 0.24, t = 4.46)***. Under the condition of high SCC (M + 1SD), the indirect effect was of smaller magnitude and nonsignificant (β = 0.08, t = 1.87, p > .05).

Author	Methods of Data Analyses	Relevant Findings	
		Sample characteristics	Relationship between Self-Concept Clarity and Self-Harm
			The moderated mediation index was significant (β = −0.08, *t* = −2.96)***. Thus, SCC weakened the indirect effect of harsh parenting on NSSI via basic psychological needs frustration. A higher level of SCC weakened the relationship between basic psychological needs frustration and NSSI. When their basic psychological needs were blocked, adolescents with low self-concept clarity were more prone to engage in NSSI, whereas those with high self-concept clarity appeared to be buffered against the impact of needs frustration on NSSI.

Note. Gandhi, Claes, et al. (2016) and Gandhi, Lucykx, Goosens, et al. (2016) papers analyse the same participant dataset. Both studies report different effect sizes as they use different methods of correlation analyses.

Abbreviations: *N*= number of participants, *M*= Mean, *SD*= standard deviation, NSSI= non-suicidal self-injury, M_{age}= Mean age, MANOVA= multivariate analysis of variance, IV= independent variable, DV= dependent variable, ED= eating disorder, AN-R= anorexia nervosa- restrictive type, AN-BP= anorexia nervosa- binge-eating/purging type, BN= bulimia nervosa, BED= binge eating disorder, T1= Timepoint 1, T2= Timepoint 2, T3= Timepoint 3, DSM 5= Diagnostic and Statistical Manual of Mental Disorders Fifth Edition, ANCOVA= analysis of covariance, CI= Confidence Interval, PSR= Potential Scale Reduction, PPP= Posterior Predictive P-Value.

Note [a]. Two studies were reported in this paper; only study one is relevant and reported in this review.

Note [b]. When analysing the functions of NSSI, authors in this study used the three factors identified from the previous study by Claes et al. (2015).

Note [c]. In this study, authors use the Behaviour Inhibition System and Behaviour Activation System (BISBAS) scale, as originally developed by Carver and White (1994).

* $p<.05$. ** $p<.01$. *** $p<.001$.

Appendix A: Notes for Contributors

About the Journal

Archives of Suicide Research is an international, peer-reviewed journal publishing high-quality, original research. Please see the journal's Aims & Scope for information about its focus and peer-review policy.
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Updated 28th February 2024

Appendix B: Effective Public Health Public Practice Project – Quality Assessment Tool for Quantitative Studies

Component Ratings

A) Selection Bias

Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1 Very likely
2 Somewhat likely
3 Not likely
4 Can't tell

Q2) What percentage of selected individuals agreed to participate?

1 80-100% agreement
2 60-79% agreement
3 Less than 60% agreement
4 Not applicable
5 Can't tell

RATE THIS SECTION (see dictionary): 1 = Strong 2 = Moderate 3 = Weak

B) Study Design

Indicate the study design.

1 Randomized controlled trial
2 Controlled clinical trial
3 Cohort analytic (two group pre + post)
4 Case-control
5 Cohort [one group pre + post (before and after)]
6 Interrupted time series
7 Other (specify) _____
8 Can't tell

Was the study described as randomized? (If no, go to Component C).

No Yes

If yes, was the method of randomization described? (See dictionary)

No Yes

If yes, was the method appropriate? (See dictionary)

No Yes

RATE THIS SECTION (see dictionary): 1 = Strong 2 = Moderate 3 = Weak

C) Confounders

Q1) a) Were there important differences between groups prior to the analysis? (If not applicable, leave blank and move to part b.)

1 Yes
2 No
3 Can't tell

Q1) b) Were there important confounders which could have influenced effect of the independent variable/predictor on the dependent variable/outcome? (if not applicable, leave blank and move to part D).

1 Yes
2 No
3 Can't tell

The following are examples of confounders:

1 Race
2 Sex
3 Marital status/family
4 Age
5 SES (income or class)
6 Education
7 Health status
8 Pre-intervention score on outcome measure

Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?

1 80 - 100% (most)
2 60 - 79% (some)
3 Less than 60% (few or none)
4 Can't tell

RATE THIS SECTION (see dictionary): 1 = Strong 2 = Moderate 3 = Weak

D) Blinding

Q1) Was (were) the outcome assessor(s) aware of the intervention, exposure status or group membership of participants?

1 Yes
2 No
3 Can't tell

Q2) Were the study participants aware of the research question?

1 Yes
2 No
3 Can't tell

RATE THIS SECTION (see dictionary): 1 = Strong 2 = Moderate 3 = Weak

E) Data Collection Methods

Q1) Were data collection tools shown to be valid?

1 Yes
2 No
3 Can't tell

Q2) Were data collection tools shown to be reliable?

1 Yes
2 No
3 Can't tell

RATE THIS SECTION (see dictionary): 1 = Strong 2 = Moderate 3 = Weak

F) Withdrawals and Drop-Outs

Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

1 Yes
2 No
3 Can't tell
4 Not applicable (i.e. one time surveys or interviews)

Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

1 80 – 100%
2 60 – 79%
3 Less than 60%
4 Can't tell

RATE THIS SECTION (see dictionary): 1 = Strong 2 = Moderate 3 = Weak

G) (Intervention component not included)

H) Analyses

Q3) Are the statistical methods appropriate for the study design?

1 Yes

2 No

3 Can't tell

Global Rating

Component Ratings
Please transcribe the information from the grey boxes on to this page. See dictionary on how to rate this section.

A	Selection Bias	Strong	Moderate	Weak
		1	2	3
B	Study Design	Strong	Moderate	Weak
		1	2	3
C	Confounders	Strong	Moderate	Weak
		1	2	3
D	Blinding	Strong	Moderate	Weak
		1	2	3
E	Data Collection Method	Strong	Moderate	Weak
		1	2	3
F	Withdrawals and Dropouts	Strong	Moderate	Weak
		1	2	3

Global Ratings for This Paper (circle one):

1	Strong	(no weak ratings)
2	Moderate	(one weak rating)
3	Weak	(two or more weak ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

No Yes

If yes, indicate the reason for the discrepancy

1 Oversight
2 Differences in interpretation of the criteria
3 Differences in interpretation of the study

Final decision of both reviewers (circle one):

1 Strong
2 Moderate
3 Weak

Section Two: Empirical Study

The Relationship Between Childhood Trauma and Self-Concept Clarity: The Role of Self-Defining Memories

Melanie Taylor

Prepared in accordance with author guidance for the *Journal of Traumatic Stress*

Abstract

Cross-sectional research findings suggest that traumatic childhood experiences may influence mental health difficulties in adulthood, by disturbing self-concept clarity (SCC) development. Traumatic events may lead to impairment in autobiographical memory (AM) recall and the ability to make meaning from one's experiences. In turn, this may impair SCC development. Therefore, this cross-sectional study investigated whether: 1) childhood trauma exposure is negatively associated with SCC; 2) specificity and integration (meaning making) of self-defining memories (SDMs) mediate this relationship. Adult participants ($N = 152$) in the United Kingdom, with childhood trauma exposure, completed an online survey of self-report measures. Participants were asked to write a SDM narrative from childhood which was coded for specificity and integration. Greater childhood trauma exposure was significantly associated with lower SCC. Younger age, mental health history, and white ethnicity were significantly associated with lower SCC. SDM specificity and integration were not associated with trauma or SCC. Therefore, mediation analyses were not pursued. In a hierarchical regression model, childhood trauma exposure was a significant, negative predictor of SCC, when controlling for age, ethnicity and mental health history. Age and ethnicity remained significant predictors with trauma added to the model, though mental health history was no longer significant. Specificity and integration did not predict SCC. Therefore, greater childhood trauma exposure may influence disturbance to SCC which perseveres into adulthood. However, due to the cross-sectional design, causality cannot be established. Autobiographical memory recall and meaning making ability did not influence this relationship, despite much evidence that these processes are disturbed following trauma and are crucial for SCC development. Therefore, further research with a diverse range of large samples is required.

Keywords: Identity, self-concept, trauma, adverse childhood experiences, autobiographical memory, self-defining memories, autobiographical reasoning.

Introduction

Self-concept refers to a multidimensional, dynamic cognitive schema, which contains self-related knowledge, such as personal traits, values, and autobiographical memories (AMs) about the self (Campbell et al., 1996). Furthermore, it serves as a structure through which to process information in relation to the self. Achieving a coherent and consolidated self-concept is considered a primary goal of identity development (Schwartz, 2001). Self-concept clarity (SCC) refers to the organisation of self-concept, defined as "the extent to which the contents of an individual's self-concept (e.g. perceived personal attributes) are clearly and confidently defined, internally consistent, and temporally stable" (Campbell et al., 1996, p.1). SCC is required to have an agentic and purposeful life, directed by oneself (Schwartz et al., 2017). The organisation of autobiographical memory (AM) is considered fundamental to SCC (Conway & Pleydell-Pearce, 2000). AM refers to the recollection of information about the self, including both specific episodic memories of past events, and general knowledge related to the self and the world.

The process of forming interpretations and making meanings from AMs, known as autobiographical reasoning (Conway & Pleydell-Pearce, 2000), supports development of the self by facilitating integration of past and present experiences into a coherent and meaningful life representation, also considered to be a life story (Habermas & Bluck, 2000; Pasupathi & Mansour, 2006). Adolescence and emerging adulthood are critical times for identity development (Erikson, 1963; Schwartz et al., 2013), though SCC continues to improve with age (Fuentes & Desrocher, 2012; Lodi-Smith & Crocetti, 2017). Furthermore, during childhood, one begins developing the skills of autobiographical reasoning, and narrating a coherent life story, but these abilities develop considerably through adolescence (Pasupathi & Wainryb, 2010). The ability to form a coherent life story is important for successful identity

formation (Habermas & Bluck, 2000; Habermas & de Silveira, 2008) and is fundamental to forming SCC (McAdams, 2001).

AM has been implicated in the development of emotional disorders (Dalgleish & Brewin, 2007). For example, individuals with post-traumatic stress disorder (PTSD) frequently experience distressing, involuntary memories associated with traumatic events (American Psychiatric Association, 2013). An event is deemed traumatic event if it involves a threat of serious harm or risk to the life of oneself or someone close, evokes a high level of distress or fear, overwhelms one's ability to cope, and typically occurs beyond one's control (Mind, n.d.; UK Trauma Council, n.d.). This may include, for example, exposure to abuse, assault, war, natural disaster, serious accident, or bereavement, and may involve witnessing or hearing about such incidents occurring. Individuals with PTSD can experience both intense reliving of the traumatic experience, or the inability to voluntarily recall details of the trauma (Brewin, 2007).

Childhood trauma is a serious public health and social-welfare concern, which systematic reviews and meta-analyses have consistently linked to an increased risk of mental health difficulties (Caslini et al., 2016; Mandelli et al., 2015; McKay et al., 2021; Read et al., 2005; Varese et al., 2012). Low SCC has also been implicated in a range of mental health conditions, such as depression and anxiety (Schwartz et al., 2012), psychosis (Cicero et al., 2016; de Sousa et al., 2016), eating disorders (Ali & Keel, 2023; Bardone-Cone et al., 2020), borderline personality disorder (Roepke et al., 2011; Vater et al., 2015), and severity of non-suicidal self-injury (Gu et al., 2024; Kruzan et al., 2022; Lear & Pepper, 2016). Experiencing childhood trauma has also been associated with low SCC in adolescents (Penner et al., 2019; Raemen et al., 2021) and adults (Vartanian et al., 2018).

Exposure to childhood trauma is common, and can have a profound, detrimental impact on future psychological wellbeing. Approximately one in four children in the United

Kingdom are exposed to potentially traumatising events (Lewis et al., 2019; Redican et al., 2022), and around three quarters of children in the USA have disclosed experiencing a potentially traumatic event by 16 years old (Copeland et al., 2007). In addition to mental health difficulties, childhood trauma also increases the likelihood of poorer psychosocial outcomes (Hailes et al., 2019), and child mortality, self-harm, suicidal behaviour, risky sexual behaviour, drug and alcohol misuse, obesity, hospital admissions due to interpersonal violence, and criminal behaviour across higher-income countries (Angelakis et al., 2019; Gilbert et al., 2009; Raemen et al., 2021; Webb et al., 2017). Therefore, it is imperative researchers seek to further understand the causal pathways between childhood trauma and mental health difficulties, as well as factors which can alleviate the impact of trauma and improve interventions. Despite a high prevalence of exposure to traumatising events during childhood, the majority of those exposed do not develop mental health difficulties, as there are many individual differences which influence the psychological response to trauma (Bonanno, 2004).

The severe distress evoked following a traumatic event could lead to renewed questioning and exploration of oneself and identity (Waterman, 2020), which could result in successful self-concept integration and future identity resilience. However, if one has difficulty applying autobiographical reasoning and integrating new information generated by the traumatic event, it could lead to new conflicts, causing a chronic state of disrupted SCC or a loss of identity. Findings from a qualitative study suggest that making meaning from traumatic events could influence the degree of identity-related distress one experiences (Marin & Shkreli, 2019). Traumatic events in childhood can hold semantic differences by nature of the event itself. For example, interpersonal abuse, particularly from a trusted caregiver, is potentially more detrimental to attachment relationships and one's trust in others (Waterman, 2020). Based on findings from cross-sectional studies, SCC development could

be disrupted by experiencing traumatic childhood events, potentially increasing the risk of future depression, psychosis and suicidal behaviour (Evans et al., 2015; Wong et al., 2019).

Self-defining memories (SDMs) are AMs of a specific event which feel vivid, evoke strong emotion, elicit recollection of other memories with similar themes, and are related to a person's core goals and conflicts (Blagov & Singer, 2004). SDMs can be scored according to specificity, which features details of a specific time and place of the event, and occurred within a 24 hour period. Another dimension is integration, which requires autobiographical reasoning, as it refers to the capacity to interpret events as meaningful, learn from them, and incorporate the memory into self-concept (Singer & Blagov, 2000). The process of applying autobiographical reasoning to SDMs may influence development of self-concept, through incorporating new meanings formed in relation to the self into a new personal narrative (Singer et al., 2013). The interpretations made from AM narratives such as SDMs, helps create a sense of identity and purpose (McAdams, 1996; McLean et al., 2007; Pasupathi & Hoyt, 2009). In adulthood, AM narratives demonstrating rich meaning-making have been linked to emotional wellbeing, psychological maturity and physical health (McAdams, 2006; McLean, 2008; Pals, 2006). Also, less coherent AM narratives have been linked with borderline personality disorder in participants with history of trauma (Bendstrup et al., 2021). Moreover, integrative SDMs have been linked to better social cognition and adjustment (Blagov & Singer, 2004), whereas non-integrative SDMs have been associated with schizophrenia (Berna et al., 2011).

Individuals who have experienced trauma may demonstrate lower AM specificity, as attempting to retrieve relatively benign AMs may activate the trauma memory, perhaps due to semantic associations (Williams, 2006). Individuals may also avoid retrieving memories of traumatic events to avoid evoking associated negative beliefs about the world and the self, and related emotional distress (Williams et al., 2007). There have been several systematic

reviews and meta-analyses exploring the relationship between childhood trauma and AM specificity (Barry et al., 2018; Fares-Otero, Alameda et al., 2023; Fares-Otero, De Prisco, et al., 2023; Ono et al., 2016; Williams et al., 2007). A robust relationship has been identified, with a large effect size, between exposure to trauma during childhood and deficits in AM specificity (Barry et al., 2018; Ono et al., 2016; Williams et al., 2007). This deficit has also been associated with psychotic disorders (Fares-Otero, Alameda, et al., 2023; Fares-Otero, De Prisco, et al., 2023) as well as PTSD and affective disorders (e.g. depressive disorders, bipolar disorder, postnatal depression), even when such individuals are euthymic (Ono et al., 2016; Williams et al., 2007). Longitudinal study findings have also suggested reduced AM specificity precedes mental health diagnosis and predicts symptom course over time (Kleim & Ehlers, 2008; Sumner et al., 2010).

However, there is discrepancy regarding whether trauma alone is sufficient to explain AM specificity deficits. In the reviews by Fares-Ottoro et al. (2023), it was reported that childhood trauma was only associated with AM specificity impairment if the event involved interpersonal abuse, which may be influenced by disruption to attachment (Fonagy et al., 2023; Lau-Zhu et al., 2023). Furthermore, there is discrepancy regarding timing of the traumatic event, with Barry et al. (2018) reporting adult participants whose trauma occurred in adulthood recalled significantly fewer specific memories than when trauma occurred in childhood, which opposes findings from previous reviews. The relationship between AM specificity deficit and childhood trauma is well supported by research evidence, though further investigation is needed to explore the mechanisms for which childhood trauma may influence such AM deficits and how this can impact psychological functioning.

A systematic review exploring SDMs and mental health difficulties reported that participants with a range of mental health difficulties, including PTSD, anorexia nervosa and substance dependence, provide fewer specific SDMs compared to controls (Wright et al., 2022). Although, this was not found for participants with psychosis, bipolar disorder, or

those with current or previous experience of depression. Participants with schizophrenia, anorexia nervosa, and bipolar disorder reported significantly less meaning making and integration of SDMs.

The outlined evidence indicates that the experience of childhood trauma likely increases the risk of future psychopathology, at least in part, by disrupting development of SCC. Furthermore, experiencing childhood trauma, is likely to produce deficits in recalling AMs with specific detail, and autobiographical reasoning. Given that these skills are suggested to be important for the development of SCC, it is reasonable to propose that reduced specificity and integration of AM narratives may be associated with low SCC. Despite this, only one study was found to have investigated the association between AM specificity and SCC (Fuentes & Desrocher, 2012). Furthermore, only one study was found to have investigated the association between integration of SDMs and SCC (Berna et al., 2011). Neither of these studies detected a significant relationship between AM processes and SCC, possibly because participants were in the stages of adolescence and emerging adulthood, and therefore, still in the process of SCC development. Moreover, there may not have been enough time elapsed since the occurrence of reported life events to enable successful AM recall and reasoning to be applied to such events. Fuentes and Desrocher (2012) also focused on broader AM rather than SDMs, and the method of assessing meaning making in the study by Berna et al. (2011) relied upon a self-report measure, rather than seeking a written narrative from participants.

Therefore, this study aimed to investigate the relationship between childhood trauma and SCC with adult participants. Furthermore, this study aimed to explore whether AM specificity or integration from SDMs mediated the relationship between childhood trauma and SCC. Potential confounding demographic variables were measured to identify if they needed controlling in analyses (e.g. age, mental health history).

Hypotheses

- Childhood trauma is negatively associated with SCC
- When controlling for confounding variables, participants who provide specific and integrative SDMs report higher SCC and lower levels of childhood trauma than those who provide non-specific and non-integrative SDMs.
- Specificity and integration of SDMs both mediate the relationship between childhood trauma and SCC.

Method

Participants

To be eligible for inclusion in the study, participants had to be residents of the United Kingdom, fluent in English, and at least 21 years of age. Participants also identified as having experienced at least one traumatic event prior to 18 years old (see Appendix A). Participants received no payment for their time.

Procedure

The study was a cross-sectional, correlational design. Data was collected from 1st January to 1st April 2024, using the online survey platform, Qualtrics, software licensed for use by Lancaster University students. This was a voluntary open survey which anyone could access, provided they had the weblink. Participants were recruited using a snowballing method. The advert for the study with a link to the survey webpage was shared on several social media platforms (X, Facebook, Instagram, and Reddit) from a research account created solely for this study, and within those platforms' community groups (see Appendix B for advert). Such groups were selected as they were dedicated to:

- Mental health-related interest, discussion, and support

- Trauma or childhood adversity-related interest, discussion, and support
- Research interest regarding mental health, trauma, or psychology
- Participation in psychological research

Within these posts, people were politely encouraged to share the information regarding the study in a cascading effect, to help reach as many potential participants as possible. Community guidelines for all these groups were adhered to and permission was sought from moderators as appropriate before sharing the study. Organisations working with people who have lived experience of trauma or mental health difficulties were also contacted and asked to share the study on their online pages. These were identified through searching on Google and X. Shaping Our Lives shared the study in their online newsletter. The Mental Health Forum consented to a post which advertised the research to forum users.

If participants clicked the link to be taken to the study, they were asked to read the information sheet (see Appendix C), followed by the consent form (see Appendix D). If participants wished to continue to take part in the study, they could click to proceed to the measures. When participants submitted their responses or ended the survey early, they were taken to the debrief sheet (see Appendix E).

Measures

These were administered in the order below.

Demographic questionnaire

Data was collected regarding age, gender, ethnicity, educational attainment, occupational status, and history of mental health difficulties (see Appendix F). Mental health variables included ascertaining if participants had ever received a diagnosis of a mental health

difficulty, accessed services for support with a mental health difficulty, or been prescribed medication for a mental health difficulty.

Self-Defining Memory Questionnaire (SDMQ)

Designed by (Singer & Moffitt, 1991), this questionnaire was initially completed with participants face-to-face and gaining verbal responses. The same authors, as well as other researchers, improved and adjusted the measure in subsequent studies. For example, (Singer & Moffitt, 1991) did not ask explicitly participants to describe a "specific" event when they developed the questionnaire, but the specificity instruction was later added by other authors (Thorne et al., 2004). This has been administered several times as traditional pen and paper method, without input from the researcher (Cuervo-Lombard et al., 2016; Singer et al., 2007; Thorne et al., 2004). Instead of providing participants with a written questionnaire to complete by hand, the single question was put on Qualtrics for participants to type their answer. This has been administered as an online survey by previous researchers (Blagov et al., 2023; Blagov et al., 2022; D'Argembeau & Garcia Jimenez, 2023). In each study where the SDMQ has been used, the question has been worded slightly differently (e.g. in one study, researchers may specify that the memory must have occurred before 18 years old, though another study may ask for a memory from adulthood). In the present study, researchers asked participants to provide a SDM from childhood, to maintain consistency between the life stage of the SDM and trauma, and to allow participants adequate time a since the SDM event occurred. The question was worded as follows:

You are asked to think about a specific event in your childhood that you feel is still important and helps you define who you are. The memory must have occurred ***before 18 years of age*** *and is very clear and familiar to you. This is a memory that helps you understand who*

you are as an individual and might be a memory you would tell someone if you wanted that person to understand you in a basic way. It may be a memory that is positive or negative, or both, in how it makes you feel. The only important aspect is that it leads to strong feelings. It is a memory that you have thought about many times. It should be familiar to you like a picture you have looked at a lot or song you have learned by heart.

Participants were provided with a textbox in which to type their SDM narrative. SDMs were scored by the main researcher and a second coder for specificity and integration, following the classification and scoring manual published by Singer and Blagov (2000). The memory text was copied into a secure file, and each allocated a participant number, separating it from all other data. Any identifiers that participants provided within the SDM were concealed by the main researcher, so the second coder did not see any identifying information. The second coder did not see or have access to the raw data. Both coders decided a rating independently for each memory, then if in disagreement, discussed this until a consensus was reached. There was a very high consensus, with 97.4 % initial agreement for specificity and 95.7 % for integration. I this study, Cohen's kappa showed there was high agreement between raters for specificity ($\kappa = .949$, $p < .001$) and integration ($\kappa = .884$, $p < .001$).

The Self-Concept Clarity Scale (SCCS)

The SCCS is a 12-item self-report questionnaire (see Appendix E), measuring the extent to which an individual's self-concept is clearly and defined, consistent and stable over time (Campbell et al., 1996). It has shown good internal consistency ($\alpha = 0.86$) and test-retest reliability ($r = 0.79$; Campbell et al., 2003). In the present study, SCCS demonstrated good reliability, (Cronbach's $\alpha = .903$), as indicated by Field (2017).

Brief Betrayal Trauma Survey (BBTS)

This is a 12-item, self-report measure of traumatic life events that occur before and after the age of 18 (Goldberg & Freyd, 2006). For the purposes of this study, only items referring to events before the age of 18 were used (see Appendix F). The measure produces an overall score of the level of children trauma and can be used to categorise each participant as having experienced either low betrayal or high betrayal trauma based on this score. In this study, the total score was used for analyses. Two items regarding the occurrence of sexual abuse were not included in the published survey due to technical error. Therefore, ten of the twelve items were measured, with a possible maximum score of 20. The measure also shows good convergent validity, and 3-year test–retest reliability of 83% for childhood items (Goldberg & Freyd, 2006). In the present study, BBTS demonstrated good reliability, (Cronbach's $\alpha = .726$), as indicated by Field (2017).

Ethical considerations

The study received full ethical approval from the Lancaster University Faculty of Health and Medicine Research Ethics Committee (see Section Four). Participants were asked for their informed consent prior to commencing the study (see Appendix A). Furthermore, participants were informed they would be asked to tick if they had experienced certain traumatic events during childhood but would not be asked to provide details of these events. Participants were advised that they could withdraw at any time, without penalty or giving a reason, by closing the window. Participants were also advised that data would be completely anonymous and were not asked for any identifying information or contact details. Additionally, participants were informed if they closed the window before the end of the study, their data would not be saved. On completion or withdrawal from the study, participants were redirected to the debrief information with contacts that may be helpful,

should they experience discomfort or distress and require support (see Appendix D). Participants were asked to type a SDM from childhood. It was anticipated that participants may choose to disclose a memory involving abuse or containing identifiers. Therefore, BBTS was administered last to minimise priming participants to recall trauma-related memories. Only researchers involved in the study were able to view the data.

Data analysis

Data was analysed using Statistical Package for Social Science (IBM SPSS) version 29. Data was initially assessed for missingness. Little MCAR's test was significant, suggesting that data was not completely missing at random. Jakobsen et al. (2017) recommended if there is any uncertainty that data is MCAR, data should be treated as though it is not MCAR, and multiple imputation is not advised to address missingness in this circumstance. Missing data for BBTS score, SCCS score, and demographic variables was below 5%. Therefore, participant data was eliminated from a specific analysis if there was any data missing for the included variables, as advised by Jakobsen et al. (2017). As data was not MCAR, analyses were conducted to explore whether any measured variables predicted SDM submission.

Descriptive statistics were obtained for each variable, and the continuous variables (age, BBTS score, and SCCS score) were assessed for normality, linearity and outliers. Analyses investigating gender only included males and females, as the number of participants reporting other gender identities were too small for analyses. Ethnic groups were combined to create a white and a non-white group to enable statistical analysis. Educational attainment subgroups were merged to form four groups: GCSE equivalent or below; A levels, vocational course or equivalent; undergraduate degree; and postgraduate degree.

Due to non-normal data, Spearman's Rho analyses, t-tests, and Analysis of Variance (ANOVA) were conducted with bootstrapping of 2000 samples to generate Bias Corrected Bootstrapped 95% confidence intervals (CI), as recommended by Field (2017). Spearman's Rho correlational analyses were conducted to explore relationships between continuous variables. Chi-square tests were conducted to investigate differences between demographic variables (gender, ethnicity, educational attainment, and mental health variables), SDM specificity and integration, and SDM submission. The assumption of expected frequencies being greater than five was met for these variables. A chi-square test could not be reported for occupational status as expected counts for three out of five groups were below five, violating test assumption (Field, 2017). Two-tailed independent t-tests were carried out to explore significant differences in age, BBTS score, and SCCS score, for gender, ethnicity, mental health history, and SDM submission, specificity and integration. History of mental health difficulty diagnosis, access of mental health service, and receipt of medication for mental health difficulty were combined to form a dichotomous variable of mental health history (history/no history). As recommended by Field (2017), equal variances were not assumed throughout, rather than referring to Levene's statistical test, as it is sensitive to larger sample sizes. Two x one-way ANOVAs with Games-Howell correction and post-hoc analyses were conducted to explore if there were significant differences in BBTS or SCCS scores in educational attainment. An ANOVA could not be conducted for occupational status as several groups were too small and could not be combined meaningfully.

A mediation analysis was planned to ascertain whether SDM specificity or integration mediated the relationship between BBTS and SCCS scores. Based on the work by Fritz and Mackinnon (2007), a minimum sample size of 75 participants was needed to detect a medium Cohen's *d* effect size of 0.39 (including a type 1 error of .05 and power of .8, were between X

and Y depending on ß path's values). However, mediation analyses were not conducted as findings did not indicate such a potential pathway.

Alternatively, to explore whether childhood trauma, specificity and integration predicted SCCS score when controlling for confounding demographic variables, bias corrected bootstrapping procedure based on 5000 bootstrapped replications of a hierarchical multiple linear regression model was used. Bias corrected 95% CIs, and bootstrapped standard errors and p-values were generated due to violation of regression assumptions. The unstandardised and standardised β values were not generated with use of bootstrapping. There were no issues with multicollinearity. Age, mental health history, and ethnicity were entered at step one, BBTS scores were entered at step two, and SDM specificity and integration were entered at step three.

Results

A total of 160 participants completed the study. Seven datasets were eliminated, as participants reported their age was below 21 years old, and one dataset was eliminated as they did not complete any measures. This resulted in a total of 152 participants (female = 110; male = 36; transgender male = 2; transgender female = 1; non-binary = 1; other = 1; prefer not to say = 1). Participant age ranged from 21 to 72 years old (M_{age} = 36.23, *SD* = 14.31). Ten cases were excluded from analyses involving BBTS scores (6.6%), due to incomplete data **(**BBTS score: *M* = 5.64; *SD* = 3.75; range = 14). SDMs were provided by 74.36% of participants (*N* =116), of which 50% were specific (*N* = 58), 50% were non-specific (*N* = 58); 24.35% were integrative (*N* = 28), and 75.65% were non-integrative (*N* = 88). Thirty-six participants did not provide an SDM. Further descriptive statistics can be found in Tables one and two.

TABE 1` ABOUT HERE

TABE 2` ABOUT HERE

All continuous variables (age, BBTS score and SCCS score) were assessed for normality and linearity. Kolmogorov-Smirnov tests of normality were significant for age, D (145) = .167, p <.001 (skewness = .796; kurtosis = -.572), BBTS score, D (142) = .102, p< .001 (skewness = -.419, kurtosis = -1.210), and SCCS score, D (147) = .116 , p< .001, (skewness = . 622; kurtosis = -.133), indicating that data was non-normal. Q-Q plots and histograms were observed to indicate a positively skewed, loglinear distribution for each variable. Although central limit theorem proposes that large sample sizes do not require normality or linearity, the sample size was not convincingly beyond the threshold required for applying central limit theorem (Field, 2017). Due to this, and the data being highly sewed,` it was treated as non-normal, violating parametric testing assumptions. Hence, bootstrapping procedures were conducted, as previously outlined.

Spearman's Rho

Two-tailed Spearman.s Rho correlational analyses (N = 137) identified that age was significantly correlated with SCCS score (r = .193, p = .024, CI [.014, -.357]) but not BBTS score (r = -.052, p = .542, CI [-.229, -.121], and BBTS score was significantly correlated with SCCS score (r = -.266, p = .002, CI [-.408, -.103]).

Chi-square tests

Chi-square tests showed there was no significant difference between males and females in scores for SDM specificity, $\chi^2(1, 111) = .766$, p = .381, SDM integration, $\chi^2(1, 111) = .003$, p = .958, SDM submission, $\chi^2(1, 146) = .380$, p = .538. With regards to history

of accessing mental health services, there was no significant difference in SDM specificity, $\chi^2(1, 115) = .246$, $p = .620$, SDM integration, $\chi^2(1, 115) = .029$, $p = .864$, or SDM submission, $\chi^2(1, 151) = 3.732$, $p = .053$. For mental health diagnosis, there was no significant difference in SDM specificity, $\chi^2(1, 115) = .100$, $p = .752$, SDM integration, $\chi^2(1, 115) = .1.009$, $p = .315$, or SDM submission, $\chi^2(1, 151) = 2.080$, $p = .149$. For mental health medication, there was no significant difference in SDM specificity, $\chi^2(1, 116) = .144$, $p = .704$, SDM integration, $\chi^2(1, 116) = .002$, p= .963, or SDM submission, $\chi^2(1, 111) = .003$, $p = .958$. For the overall mental health history, there was no significant difference in SDM specificity $\chi^2(1, 116) = .224$, p= .638, SDM integration $\chi^2(1, 116) = 3.357$, $p = .067$, or SDM submission, $\chi^2(1, 152) = 3.266$, $p = .071$. With regards to ethnicity, there was no significant difference in SDM submission, $\chi^2(1, 152) = .261$, $p = .609$. For educational attainment, there was no significant difference in SDM submission between the four groups, $\chi^2(3, 147) = .412$, $p = .938$ ($N = 147$), value = .053, $p = .938$, Cramer's V= .053.

Independent t-tests and ANOVAs

Independent t-test results can be found in tables three to eight. There was no significant difference in age, BBTS score, or SCCS score between participants who submitted an SDM and those who did not provide an SDM. Furthermore, there was no significant difference in BBTS or SCCS score between males and females. There was also no significant difference in BBTS score or SCCS score between participants who provided a specific SDM and those who provided a non-specific SDM. However, there was a significant difference in age, with younger participants providing significantly more specific SDMs, the effect size for which, was small.

There was no significant difference in BBTS or SCCS score between participants who provided integrative SDM and those who provided a non-integrative SDM. However, there

was a significant difference in age, with younger participants providing significantly more integrative SDMs, the effect size for which was close to medium.

White participants reported significantly lower BBTS scores than non-white participants, with a small effect size, though there was no significant difference in SCCS scores. Participants who reported history of mental health difficulty reported significantly lower SCCS scores than participants with no reported history of mental health difficulty, for which there was a large effect size. There was no significant difference in BBTS scores.

Two x one-way ANOVAs indicated there was no significant main effect of educational attainment on both BBTS, F (3, 133) = .173, p = .915, and SCCS scores F (3, 138) = 1.224, p = .303. Post-hoc analyses showed no significant differences in BBTS or SCCS scores in educational attainment (see tables 7 and 8).

TABLES 3 TO 8 ABOUT HERE

Hierarchical Linear Regression

The first model, including age, ethnicity and mental health history demonstrated a statistically significant effect, F (3, 103) = 9.288, p <.001, R^2= .218, accounting for 21.8% of the variance, with the change in variance being statistically significant, F change (3, 100) = 9.288, p <.001. The second model, with childhood trauma added, also demonstrated a statistically significant effect, F (4, 103) = 9.904, p <.001, R^2 = .286, accounting for 28.6% of the variance, with the change in variance being statistically significant, F (1, 99) = 9.409, p = .003. The third model, with specificity and integration added, also demonstrated a statistically significant effect, F (6, 103) = 6.733, p <.001, R^2= .294, accounting for approximately 29.4% of the variance. However, the change in variance was not statistically significant, F Change (2, 97) = .566, p = .570. In the first model, age, mental health history

and ethnicity all emerged as significant predictors, though in the second model, mental health history was no longer a significant predictor, and BBTS score emerged as a significant predictor of SCCS score. In the third model, age, ethnicity and BBTS score remained significant, mental health history remained nonsignificant, and specificity and integration were nonsignificant. This suggested that BBTS score may better explain the variance which was initially explained by mental health history. Furthermore, ethnicity was the strongest predictor, with a medium effect size, followed by BBTS score, and age, with small effect sizes.

TABLE 10 ABOUT HERE

Discussion

This study aimed to investigate the relationship between childhood trauma and SCC in adulthood. More specifically, this study aimed to explore whether specificity or integration of SDM narratives mediated the relationship between childhood trauma and SCC. No significant differences were observed for gender or educational attainment in relation to other demographic or experimental variables. However, age, ethnicity, and mental health history were identified as confounding variables which were controlled for in a regression analysis. A hierarchical regression analysis was conducted to explore whether childhood trauma predicted SCC after controlling for confounding demographic variables, and whether specificity and integration predicted SCC after controlling for childhood trauma and demographic variables.

Study findings

Ethnicity was the strongest predictor of SCC, above age, mental health history, and childhood trauma. This suggests that non-white participants report greater SCC than white participants. However, the sample size of non-white participants was small, thus this finding should be treated tentatively. In line with previous research, the results indicated that age was positively associated with SCC (Fuentes & Desrocher, 2012; Lodi-Smith & Crocetti, 2017). When childhood trauma was added to the regression model, older age still significantly predicted greater SCC, with a small effect size. Findings also indicated, in line with previous research, that history of mental health difficulty was associated with low SCC (Bardone-Cone et al., 2020; Cicero et al., 2016; de Sousa et al., 2016; Lear & Pepper, 2016; Roepke et al., 2011; Vater et al., 2015). However, the regression analysis suggested that greater childhood trauma exposure predicted low SCC, rather than mental health history. Furthermore, the findings supported the hypothesis that childhood trauma would be negatively associated with SCC, substantiating prior research findings (Ali & Keel, 2023; Evans et al., 2015; Penner et al., 2019; Raemen et al., 2021; Vartanian et al., 2018; Wong et al., 2019). Participants who experienced greater exposure to childhood trauma reported lower SCC, with a small effect size, and the addition of childhood trauma in regression models significantly increased the explained variance.

Younger participants were significantly more likely to provide specific and integrative SDM narratives. This supports previous research findings which found college students provided more specific and vivid SDMs than older participants (Singer et al., 2007). However, in the present study, younger adults were more likely to provide integrated SDMs, while contrastingly, Singer and colleagues (2017) reported that older participants provided more integrated SDMs than college students. No significant relationship was identified between specificity or integration of SDMs with childhood trauma or SCC. Furthermore,

specificity and integration did not significantly predict SCC, when controlling for age, ethnicity, mental health history, and childhood trauma in the regression model. Therefore, the results did not support the hypothesis that specificity and integration of SDM narratives would mediate the relationship between childhood trauma and SCC, despite past research findings indicating that AM specificity deficit is associated with childhood trauma exposure (Barry et al., 2018; Ono et al., 2016; Williams et al., 2007). Alternatively, this finding was consistent with previous research investigating the relationship between SCC and AM specificity (Fuentes & Desrocher, 2012), and integration from SDMs (Berna et al., 2011), which did not detect significant relationships.

Interpretation and implication of findings

The findings suggest that older age, non-white ethnicity and lower childhood trauma all significantly predict greater SCC, with ethnicity emerging as the most noteworthy predictor. More specifically, greater exposure to childhood trauma significantly increases the likelihood of low SCC, even when controlling for age, ethnicity and mental health history. This regression model accounted for 28.6% of the variance in explaining SCC. However, the findings also suggest the ability to produce a coherent narrative of a SDM, containing details of a time-specific event, along with interpretations, learnings or meanings made, does not influence SCC.

The study findings did not support the suggestion that organisation of AM is fundamental to SCC (Conway & Pleydell-Pierce, 2000), or consolidating new meanings within self-concept through autobiographical reasoning, supports SCC development (Singer at al., 2013). Furthermore, it was surprising to find that younger participants were more likely to produce specific, integrative SDM narratives, despite reporting lower SCC. Singer et al. (2007) suggested older adults could be inclined to produce less detailed,

overgeneralised SDM narratives, which cover a greater time period, and merge semantically similar events together, to help to create a sense of continuity across the lifespan. In contrast, self-understanding may be achieved in younger adults by retaining SDMs that are highly specific. Alternatively, Conway (2005) suggested that one is motivated to recall AMs based on current goals related to the self-concept. Therefore, older participants with greater SCC, may not have been motivated to recall specific AMs and engage in meaning making, if long distant memories were deemed unrelated to current life goals or motivation. There may also be a motivation to prevent destabilisation in those with higher SCC. Conversely, younger participants with low SCC, who recalled childhood SDMs and demonstrated integration, may have been motivated to do so, because it was deemed related to their current goals, and were motivated to resolve SCC difficulties. It is also possible that those who made great effort to provide a specific, integrative SDM, experienced a greater affective response, which could have influenced a momentary sense of confusion regarding self-concept (Çili & Stopa, 2015; Scala et al., 2018). However, this was not assessed in the study.

The study findings were interpreted with consideration of the sample characteristics and methodology. Occupational status in the sample was reflective of the UK population (Office for National Statistics, 2024). Although, history of mental health difficulty was highly prevalent (78%) and greatly elevated beyond the prevalence in the UK population (Spiers et al., 2016). However, this was expected, due to a target population of those exposed to childhood trauma and a large comorbidity with mental health difficulty (Caslini et al., 2016; Read et al., 2005; Varese et al., 2012). The sample was predominantly white (84%), with a low representation from other ethnic groups, though this is also reflective of the UK population (Office for National Statistics, 2022). Surprisingly, the findings suggest white participants report lower SCC, despite reporting lower exposure to childhood trauma than non-white participants. Research has indicated there can be differences in SCC between

ethnic groups, which could be influenced by cultural differences in development of self-concept and how one defines their identity according to their culture (Cicero, 2020). Additionally, there was an overrepresentation of participants who had completed an undergraduate or postgraduate degree (64%), in comparison to 39% across England and Wales (Office for National Statistics, 2023). Although, this did not appear to have an influence on SCC or SDM performance.

The method of measuring specificity in this study may have influenced the contrast with previous research findings regarding the association between childhood trauma and AM specificity (Barry et al., 2018; Ono et al., 2016 ; Williams et al., 2007), as past research typically employed the Autobiographical Memory Test (Wiliams & Broadbent, 1986) to assess specificity of AMs generated by cue words. It is important that research continues to use a reliable and valid range of methodological approaches to explore relationships with AM specificity and reasoning, rather than predominantly relying on one measure.

In this study, there was a high proportion of participants who did not submit an SDM. The submission or absence of an SDM narrative could not be explained by SCC, childhood trauma, or demographic variables measured in this study. However, although the result was nonsignificant, a chi-square test demonstrated that those with history of accessing services for support with a mental health difficulty were more likely submit an SDM (p = .053). t is` possible that those who have accessed mental health services had been spent more time, through support, to recall SDMs more so than those who have never accessed mental health services. Alternatively, SDM data may be missing at random, or could be explained by an extraneous variable unaccounted for in this study. Though unknown, it is possible that absence of an SDM could reflect confusion about task expectations, or an inability to complete the tas due` to other reasons (e.g. avoidance of eliciting difficult emotions). Furthermore, only 38.2% and 18.4% of the entire sample provided a specific or integrative

SDM narrative respectively, which is considerably lower than some previous studies (Blagov & Singer, 2004; Wright et al., 2019). It is possible that the online nature of conducting this study without a researcher present, influenced lower SDM quality in comparison to previous studies. However, previous online studies were successful at eliciting SDM responses, which may be due to rewarding participants financially or with course credits for their time (Blagov et al., 2023; Blagov et al., 2022). Furthermore, this difference may be reflected by a sample population which has experienced childhood trauma. It is possible that one traumatic event in childhood could be the threshold needed to increase risk of disruption to AM processes, and additional trauma exposure does not produce a cumulative effect on AM. These suggestions are speculation, and further research would be required to explore these possibilities.

Limitations

Due to the cross-sectional, correlational design, although associations between variables have been explored, causality cannot be inferred. Due to technical error, two items on the BBTS measure, asking if participants had experienced sexual abuse, were not included in the published survey. Although participants were still able to report if they had experienced this type of abuse within the 'not otherwise covered' item, the prevalence of sexually abusive experiences cannot be ascertained in this sample.

Several demographic variables were measured and controlled for in this study, though it may have been advantageous to assess and control for neurocognitive deficits (e.g. cognitive impairment), due to influence on AM skills, and negative affect (Scala et al., 2018), due to influence on SCC. However, the author sought to minimise the time it would take participants to complete the survey to increase participation. With regards to the sample characteristics, it comprised of mostly female (72%), white (84%), highly educated

participants, which limits generalisability to other population groups within the UK. The sample was also self-selecting, which implies participants were highly motivated to engage in and complete the study due to personal interest. These factors could limit generalisability to the wider UK population.

It is possible the online format of this study, rather than traditional pen and paper format implemented by Singer and colleagues (2007), disadvantaged older participants, who may have been less familiar with completing online research surveys, or had greater difficulty in comprehending the SDM task instructions. Therefore, it may have been beneficial to collect SDMs in person, using traditional pen and paper method, and ensuring participants understood task instructions. Additionally, it is unknown what factors contributed to an inability to provide an SDM, so conclusions around this cannot be drawn.

Future recommendations and clinical implications

This study was exploratory, seeking to investigate a possible mechanism in which exposure to childhood trauma could lead to SCC disturbance. This is the first known study to investigate the role of AM processes in the relationship between childhood trauma and SCC. Furthermore, this is the first known study to use the BBTS to measure childhood trauma in relation to SCC. Research investigating the relationship between AM specificity or autobiographical reasoning with SCC is sparse, and thus far, the author has not identified any studies which have found a significant relationship. This is despite much proposition in psychological theory, that AM recall and reasoning are crucial for developing and organising self-concept (Conway & Pleydell-Pierce, 2000), likely through a process of forming and consolidating coherent life-story (McAdams, 2001; Pasupathi & Mansour, 2006; Habernas & Bluck, 2000; Habernas & de Silveira, 2008). Further research is needed to explore the role of AM in SCC development, which implements a greater variety of reliable and valid methods

of measuring AM processes, rather than reliance on the AMT. Moreover, further research is needed to explore differences in AM processes and SCC between participants exposed to childhood trauma, and participants reporting no history of exposure.

The regression analysis, including age, ethnicity, mental health history and childhood trauma, accounted for 28.6% of the variance in explaining SCC. This reflects great individual difference in those exposed to childhood trauma, indicating many other variables which could be contributing to detriments in SCC, which need exploration (Bonanno, 2004). Examples of this include the nature of the event, parental attachment, communication in parental relationships and support received in response to the traumatic event (Crocetti et al., 2016; Davis, 2013; Evans et al., 2015; Gandhi et al., 2019; Perry et al., 2008; Van Dijk et al., 2014; Wu, 2009). Longitudinal research is recommended to establish causality between childhood trauma and SCC, but also, to identify other variables which may cause deficits or successful development of SCC. It is recommended that the relationship between childhood trauma, specificity and integration of SDMs, and SCC are studied with larger sample sizes and clinical samples. It would also be beneficial to examine difference between clinical populations and healthy matched controls. Also, as the sample was predominantly white and female, it is recommended that further research is conducted with males and different ethnic groups.

The findings imply that in psychotherapy, particular consideration should be given to supporting client exploration and understanding of how traumatic experiences may have influenced their SCC. Furthermore, psychotherapy models which may support development of SCC through the therapeutic alliance could be more effective for clients presenting with traumatic history, low SCC, insecure attachment, and relationship difficulties. Examples of such psychotherapies include dialectical behaviour therapy (DBT; Roepke et al., 2011) cognitive analytic therapy (Hallam et al., 2021), and mentalization based therapy (Vogt &

Norman, 2019). Ehlers and Wild (2015) advised that traumatised clients with attachment difficulties (e.g. following interpersonal abuse), are more likely to feel unsafe and have difficulty trusting others. Therefore, it is crucial to initially focus on developing a strong therapeutic relationship, that fosters safety and trust for the client.

Conclusion

This study was the first known study to investigate the role of AM specificity and autobiographical reasoning in the relationship between childhood trauma and SCC. The findings indicate that childhood trauma exposure significantly predicts lower SCC, along with white ethnicity and younger age. Although specificity and integration of SDM narratives were not associated with childhood trauma or SCC, it is important that future research endeavours to explore this pathway further, given that much psychological theory posits that exposure to trauma can influence AM disturbance. This research highlights the importance of investigating factors which may influence SCC, following childhood trauma, due to large individual differences in experience.

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Table 1

Sample distribution of participants according to demographic variables

			N	Percentage of total sample %
Total sample			152	
Gender		Male	36	23.68
		Female	110	72.37
		Transgender male	2	1.32
		Transgender female	1	0.66
		Non-binary	1	0.66
		Other	1	0.66
	PNTS		1	0.66
	Missing response		0	
Ethnicity	White		127	83.55
		White English, Welsh, Scottish, Northern Irish or British	105	69.08
		White Irish	11	7.24
		Any other White background	11	7.24
	Non-White		22	14.47
		Bangladeshi	1	0.66
		African	5	3.29
		Mixed race White and Black African	1	0.66
		Any other mixed or multiple ethnic groups	6	3.95
		Arab	1	0.66
		Any other ethnic group	3	1.97
	PNTS		2	1.32
	Missing response		1	0.66
Educational attainment		Did not complete school	7	4.61
		GCSEs/O levels or equivalent	16	10.53
		Vocational qualification or equivalent	12	7.89
		A levels or equivalent	14	9.21
		Undergraduate degree	52	34.21
		Postgraduate degree	46	30.26
	PNTS		3	1.97
	Missing response		1	0.66

Occupational status	Working full-time	62	40.79
	Working part-time	15	9.87
	Student	23	15.13
	Student and working	21	13.82
	Unemployed	8	5.26
	Homemaker	4	2.63
	Carer	2	1.32
	Retired	13	8.55
	Other	2	1.32
	PNTS	2	1.32
	Missing response		
Accessed mental health service for support with a mental health difficulty	Accessed	111	73.03
	Never accessed	40	26.32
Received medication for a mental health difficulty	Medication	90	59.21
	Never received medication	62	40.79
Received diagnosis of a mental health difficulty from medical professional	Diagnosis	91	59.87
	Never received diagnosis	60	39.47
Mental health history	History	118	77.63
	No history	34	22.37

Note. *N* = number of participants, PNTS = prefer not to say.

Table 2

Means and standard deviations of age, Brief Betrayal Trauma Survey score, and Self-Concept Clarity Score, for each demographic variables, including gender, ethnicity, educational attainment, occupational status and history of mental health difficulty.

		***N* age**	M_{age}	SD_{age}	***N* BBTS**	***M* BBTS**	***SD***	***N* SCCS**	***M* SCCS**	***SD* SCCS**
Total sample		152	36.63	14.31	142	5.64	3.75	147	31.65	10.56
Gender	Male	36	49.08	15.91	34	4.76	4.48	36	33.00	11.25
	Female	109	32.28	11.16	102	5.85	3.52	105	31.50	10.32
Ethnicity	White				118	5.39	3.77	122	30.91	10.81
	Non-White				21	7.00	2.95	22	35.00	8.81
Educational attainment	DNC school/GCSEs/O levels or equivalent				21	5.57	4.728	22	30.50	10.43
	A levels/vocational qualification or equivalent	12			25	5.68	4.00	24	32.35	12.93
	Undergraduate degree	52			47	5.83	3.50	50	29.94	9.36
	Postgraduate degree	46			44	5.27	3.38	46	33.89	10.71

		N age	M_{age}	SD_{age}	*N* BBTS	*M* BBTS	*SD*	*N* SCCS	*M* SCCS	*SD* SCCS
Occupational status	Full-time working	62			60	5.10	3.86	61	32.05	10.24
	Part-time working	15			14	6.14	3.53	14	31.64	12.51
	Student	23			22	6.27	4.49	23	30.83	9.47
	Student and working				18	6.11	2.81	19	31.79	10.15
	Unemployed	8			7	6.71	4.386			
	Homemaker	4			3	7.33	4.51			
	Carer	2			2	5.50	4.95			
	Retired	13			12	4.08	2.68	13	37.85	12.90
	Other	2								
Mental health service access	Accessed	111			105	6.13	3.58	107	29.13	9.34
	Never accessed	40			37	4.24	3.92	39	37.95	10.53
Mental health medication	Medication	90			84	6.29	3.59	88	28.84	9.69
	Never received medication	62			58	4.71	3.82	59	35.85	10.49
Mental health diagnosis	Diagnosis	91			85	6.48	3.48	88	28.41	9.36

		N age	M_{age}	SD_{age}	*N* BBTS	*M* BBTS	*SD*	*N* SCCS	*M* SCCS	*SD* SCCS
Mental health history	Never received diagnosis	60			56	4.30	3.79	58	36.28	10.42
	History				112	5.96	3.58	114	29.62	9.59
	No history				30	4.43	4.17	33	38.67	10.89

Note. BBTS = Brief Betrayal Trauma Survey, SCCS = Self-Concept Clarity Scale, SDM = self-defining memory, *N* = number of participants, *M* = mean, *SD* = standard deviation, M_{age} = mean age, SD_{age} = standard deviation for age, DNC = did not complete.

Table 3

Results of independent Samples t-tests examining differences between age, Brief Betrayal Trauma Survey score, and Self-Concept Clarity Scale score for self-defining memory submission

			Logistic Parameter	
		Age	BBTS score	SCCS score
SDM submitted	*N*	115	110	113
	M	35.94	4.72	30.77
	SE	1.31	.705	.967
No SDM	*N*	36	32	34
	M	37.17	5.91	34.59
	SE	2.56	.348	1.904
M_{diff}		1.23	-1.19	3.818
BCa 95% CI		-4.322, 6.553	-2.651, .240	-.396, 8.131
t		.427	1.514	1.774
df		54.43	47.21	51.22
p		.661	.121	.094
Cohen's *d*		.086	-.319	.365

Note. BBTS = Brief Betrayal Trauma Survey, SCCS = Self-Concept Clarity Scale, SDM = self-defining memory, *N* = number of participants, *M* = mean, SE = standard error mean, M_{diff} = Mean difference, BCa 95% CI = Bias Corrected 95% confidence interval, df = degrees of freedom

Table 4

Results of Independent Samples t-tests examining differences between age, Brief Betrayal Survey score and Self-Concept Clarity Scale score for males and females

		Logistic Parameter	
		BBTS score	SCCS score
Males	*N*	34	36
	M	4.76	33.00
	SE	.768	1.847
Females	*N*	102	105
	M	5.85	31.50
	SE	.348	1.007
M_{diff}		-1.088	-1.088
BCa 95% CI		-2.692, .561	-2.692, .561
t		-1.290	-1.290
df		47.30	47.30
p		.210	.210
Cohen's *d*		-.288	.142

Note. BBTS = Brief Betrayal Trauma Survey, SCCS = Self-Concept Clarity Scale, SDM = self-defining memory, *N* = number of participants, *M* = mean, SE = standard error mean, M_{diff} = Mean difference, BCa 95% CI = Bias Corrected 95% confidence interval, df = degrees of freedom.

Table 5

Results of Independent Samples t-tests examining differences between age, Brief Betrayal Survey score and Self-Concept Clarity Scale for self-defining memory specificity

			Logistic Parameter	
		Age	BBTS score	SCCS score
SDM specific	*N*	57	55	56
	M	33.25	5.96	28.89
	SE	1.575	.504	1.277
Non-specific	*N*	58	55	57
	M	38.59	5.85	32.61
	SE	2.032	.486	1.418
M_{diff}		5.341	-.109	3.721
BCa 95% CI		-.099, 10.753	-1.431, 1.167	-.034, 7.194
t		2.077	-.156	1.926
df		106.83	107.86	109.49
p		.045	.876	.055
Cohen's *d*		.387	-.030	.367

Note. BBTS = Brief Betrayal Trauma Survey, SCCS = Self-Concept Clarity Scale, SDM = self-defining memory, *N* = number of participants, *M* = mean, SE = standard error mean, M_{diff} = Mean difference, BCa 95% CI = Bias Corrected 95% confidence interval, df = degrees of freedom.

Table 6

Results of Independent Samples t-tests examining differences between age, Brief Betrayal Survey score and Self-Concept Clarity Scale score for self-defining memory integration

			Logistic Parameter	
		Age	BBTS score	SCCS score
SDM integrative	*N*	28	28	28
	M	30.86	7.04	29.04
	SE	1.791	.725	1.741
Non-integrative	*N*	87	82	85
	M	37.57	5.52	31.34
	SE	1.594	.390	1.149
M_{diff}		6.718	-1.511	2.345
BCa 95% CI		1.963, 11.337	-3.147, .035	-1.903, 6.179
t		2.802	-1.837	1.105
df		72.42	43.69	52.46
p		.007	.076	.272
Cohen's *d*		.488	-.419	.224

Note. BBTS = Brief Betrayal Trauma Survey, SCCS = Self-Concept Clarity Scale, SDM = self-defining memory, *N* = number of participants, *M* = mean, SE = standard error mean, M_{diff} = Mean difference, BCa 95% CI = Bias Corrected 95% confidence interval, df = degrees of freedom.

Table 7

Results of Independent Samples t-tests examining differences between age, Brief Betrayal Survey score and Self-Concept Clarity Scale score for ethnicity

		Logistic Parameter	
		BBTS score	SCCS score
White	*N*	118	122
	M	5.39	30.91
	SE	.347	.978
Non-White	*N*	21	22
	M	7.00	35.00
	SE	.644	1.877
M_{diff}		-1.610	-4.090
BCa 95% CI		-2.962, -.066	-8.421, .078
t		-2.201	-1.932
df		32.87	33.53
p		.046	.059
Cohen's *d*		-.439	-.388

Note. BBTS = Brief Betrayal Trauma Survey, SCCS = Self-Concept Clarity Scale, SDM = self-defining memory, *N* = number of participants, *M* = mean, SE = standard error mean, M_{diff} = Mean difference, BCa 95% CI = Bias Corrected 95% confidence interval, df = degrees of freedom.

Table 8

Results of Independent Samples t-tests examining differences between age, Brief Betrayal Survey score and Self-Concept Clarity Scale score for mental health history

		Logistic Parameter	
		BBTS score	SCCS score
History	*N*	112	114
	M	5.96	29.62
	SE	.338	.898
No history	*N*	30	33
	M	4.43	38.67
	SE	.762	1.895
M_{diff}		-1.531	9.044
BCa 95% CI		-3.124, 1.43	4.800, 13.192
t		-1.836	4.312
df		41.13	47.31
p		.074	<.001
Cohen's *d*		-.413	.914

Note. BBTS = Brief Betrayal Trauma Survey, SCCS = Self-Concept Clarity Scale, SDM = self-defining memory, *N* = number of participants, *M* = mean, SE = standard error mean, M_{diff} = Mean difference, BCa 95% CI = Bias Corrected 95% confidence interval, df = degrees of freedom.

Table 9

Results of one-way Analysis of Variance post-hoc tests with Games-Howell correction, examining differences between Brief Betrayal Trauma Survey score for educational attainment

Education 1	Education 2	M_{diff}	SE	*p*	BCa 95% CI
1	2	-.11	1.30	1.00	-2.61, 2.53
1	3	-.26	1.14	.996	-2.42, 2.12
1	4	.30	1.17	.994	-2.03, 2.78
2	3	-.15	.94	.999	-1.95, 1.57
2	4	.41	.96	.973	-1.51, 2.23
3	4	.56	.71	.867	-.77, 1.86

Note. 1 = Did not complete school or completed GCSEs, O levels or equivalent; 2 = completed A levels, vocational course or equivalent; 3 = undergraduate degree; 4 = postgraduate degree. BBTS = Brief Betrayal Trauma Survey, SCCS= Self-Concept Clarity Scale, *M* = mean, SE = standard error mean, M_{diff} = Mean difference, BCa 95% CI = Bias Corrected 95% confidence interval.

Table 8

Results of one-way ANOVA post-hoc tests with Games-Howell correction, examining differences between Self-Concept Clarity Scale score for educational attainment

Education 1	Education 2	M_{diff}	SE	*p*	BCa 95% CI
1	2	-1.75	3.39	.957	-8.72, 5.18
1	3	.56	3.60	.996	-4.57, 5.85
1	4	-3.39	2.73	.603	-8.68, 1.92
2	3	2.31	2.87	.862	-3.05, 7.90
2	4	-1.64	3.04	.950	-7.53, 4.09
3	4	-3.95	2.07	.228	-7.85, .13

Note. 1 = Did not complete school or completed GCSEs, O levels or equivalent; 2 = Completed A levels, vocational course or equivalent; 3 = undergraduate degree; 4 = postgraduate degree. BBTS = Brief Betrayal Trauma Survey, *M* = mean, SE = standard error mean, M_{diff} = Mean difference, BCa 95% CI = Bias Corrected 95% confidence interval.

Table 10

Hierarchical multiple linear regression analysis with Self-Concept Clarity score as the outcome variable, and age, ethnicity, mental health history, Brief Betrayal Trauma Survey score, self-defining memory specificity, and self-defining memory integration as the predictor variables.

	Unstandardised B	**Standardised β**	**SE**	***p***	**BCa 95% CI**		R^2	**Adjusted R^2**	**Δ R^2**	***F* change**
Predictors					LL	UL				
Step one							.218	.194	.218	9.288
Constant	18.955		5.025	<.001	9.663	29.039				
Age	.221	.296	.077	.006	.069	.367				
Ethnicity	7.794	.289	2.360	.001	3.072	12.403				
MH history	-6.324	-2.39	2.612	.016	-11.393	-1.085				
Step Two							.286	.257	.068	9.409
Constant	20.983		4.619	<.001	12.834	30.395				
Age	.212	.285	.079	.010	.057	.376				
Ethnicity	8.821	.327	2.208	<.001	4.221	13.089				
MH history	-4.396	-.166	2.615	.089	-9.682	.873				
BBTS score	-.167	-.272	.253	.003	-1.243	-2.72				
Step Three							.294	.250	.008	.566
Constant	22.660		5.007	<.001	13.584	33.029				
Age	.203	.273	.080	.015	.048	.367				
Ethnicity	8.493	.315	2.322	<.001	3.791	12.869				
MH history	-4.713	-.178	2.627	.072	-9.923	.488				

	Unstandardised B	**Standardised β**	**SE**	***p***	**BCa 95% CI**		***R*²**	**Adjusted *R*²**	**Δ *R*²**	***F* change**
BBTS score	-.774	-.275	.258	.003	-1.254	-.265				
Specificity	-1.948	-.095	1.752	.273	-5.350	1.346				
Integration	1.071	.047	1.949	.582	-2.633	5.018				

Note. BBTS = Brief Betrayal Trauma Survey, MH = mental health, SE = standard error mean, BCa 95% CI = Bias Corrected 95% confidence interval, LL = lower limit, UL = upper limit.

Appendix A: Author Guidelines

1. Submission and Peer Review Process

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Review Article	Overview of developments in the field or current lines of thought; synthesizes multiple sources of information and has long list of references	7,500 words, including abstract, references, tables, and figures	Yes	Data Availability Statement IRB Statement
Commentary	Evidence-based opinion piece on a recently published *JTS*article	1,000 words, including references, tables, and figures	No	N/A

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Appendix A: Information Sheet

Doctorate in Clinical Psychology | Lancaster University

The relationship between childhood betrayal trauma and self-concept clarity: The role of self-defining memories

For further information about how Lancaster University processes personal data for research purposes and your data rights please visit our webpage: *www.lancaster.ac.uk/research/data-protection*

My name is Melanie Taylor and I am conducting this research as a student in the doctorate in clinical psychology programme at Lancaster University, Lancaster, United Kingdom.

What is the study about?

The purpose of this study is to investigate the relationship between experiencing childhood trauma and self-concept clarity. Furthermore, this study investigates the role of self-defining memories in this relationship.

Can I take part?

You can take part if you are at least 21 years old, English speaking and a UK resident. You must also identify as having experienced at least one traumatic event, before 18 years of age. An event which is traumatic includes any experience which you found very stressful, frightening or distressing. This may have involved:

- Experiencing or witnessing aggression, violence, emotional or sexual abuse
- Experiencing or witnessing accident or injury
- Experiencing illness or someone close to you experiencing illness
- Loss or bereavement
- Parental separation
- Experiencing bullying
- Natural disaster
- Living through and/or escaping conflict

This list is not full – you may have experienced something different which you found traumatic.

This study is seeking such participants, as we are investigating the relationship between childhood trauma and self-concept clarity. Participants must be at least 21 years old to provide a large enough time gap since childhood.

Do I have to take part?

No. It is completely up to you to decide whether or not you take part. You are able to withdraw from the study, without penalty and without giving a reason at any time, by closing the window. Please not that if you close the window before the study is compete your data will not be saved. However, once you reach the end of the study and click to submit your responses, your data will be saved. At this point, if you wish to withdraw your data, we will not be able to do so as all participants' data will be anonymised.

What will I be asked to do if I take part?
If you decide you would like to take part, you would be asked to complete a series of online questionnaires, which take approximately 15 to 20 minutes.

Will my data be identifiable?
Data will initially be securely stored on Qualtrics until all participants' data has been received. The data collected for this study will then be stored securely on Lancaster University One Drive; only the researchers conducting this study will have access to this data.

- The files on One Drive will be encrypted (that is no-one other than the researchers will be able to access them) and the computer itself password protected. At the end of the study, data will be kept securely for ten years. At the end of this period, they will be destroyed.
- Your responses will be made anonymous by removing any identifying information for yourself or others provided throughout the study. All reasonable steps will be taken to protect the anonymity of participants in this study. A psychology graduate may have access to some data to assist with coding. If so, they will only see the anonymised data.

What will happen to the results?
The results will be summarised and reported in a thesis and may be submitted for publication in an academic or professional journal. Once the report is ready, a link for this will be shared via the researcher's Twitter, Instagram and Facebook pages which anyone can access.

Are there any risks?
This study asks participants to indicate on a questionnaire whether they have experienced different traumatic events during childhood. You may experience some discomfort or distress from this. If you feel distressed, please choose to withdraw from the study. If you withdraw or end the study, you will be provided with contact information for organisations who could offer support if you are affected by the study.

Are there any benefits to taking part?
Although you may find participating interesting, there are no direct benefits to you for taking part. However, your contribution could improve our understanding of how childhood trauma can impact on self-concept in adulthood. Self-concept is related to increased likelihood of mental health difficulties.

Who has reviewed the project?
This study has been reviewed and approved by the Faculty of Health and Medicine Research Ethics Committee at Lancaster University.

Where can I obtain further information about the study if I need it?
If you have any questions about the study, please contact the main researcher:

Melanie Taylor
E-mail: m.taylor14@lancaster.ac.uk

Supervisor
Bill Sellwood
E-mail: b.sellwood@lancaster.ac.uk

Complaints
If you wish to make a complaint or raise concerns about any aspect of this study and do not want to speak to the researcher, you can contact:

Name of Research Director for your Division Tel: (01524) xxxxxx
Title; Email: xxxx@lancaster.ac.uk
Division
Lancaster University
Lancaster
LA1 XXX

If you wish to speak to someone outside of the Lancaster University Doctorate Programme, you may also contact:

Dr Laura Machin Tel: +44 (0)1524 594973
Chair of FHM REC Email: l.machin@lancaster.ac.uk
Faculty of Health and Medicine
(Lancaster Medical School)
Lancaster University
Lancaster
LA1 4YG

Thank you for taking the time to read this information sheet.

Resources in the event of distress
Should you feel distressed either as a result of taking part, or in the future, the following resources may be of assistance.

Samaritans- available 24 hours a day, everyday.
Tel: 116 123
You can also call the Samaritans Welsh Language Line on 0808 164 0123 (7pm–11pm every day
Email: jo@samaritans.org
Website: www.samaritans.org

SANEline- for mental health support, available 4.30-10.30pm, everyday
Tel: 0300 304 7000

Local NHS urgent mental health helpline- in England, you can find your local helpline for 24 hour advice and support here
Website: www.nhs.uk/service-search/mental-health/find-an-urgent-mental-health-helpline

Mind- the infoline can provide information and signposting for support, available Monday to Friday 9am-6pm, except for bank holidays
Tel: 0300 123 3393
Email: info@mind.org.uk

Appendix B: Advert

Doctorate in Clinical Psychology | Lancaster University

Would you be interested in taking part in a study to help psychologists better understand the impact of childhood trauma?

This study is a series of online questionnaires which take approximately 15 to 20 minutes to complete.

Your contribution could improve knowledge of how experiencing trauma during childhood can impact one's understanding of themselves in adulthood.

We are looking for participants who are:

- 21 years of age or over
- Fluent in English
- A UK resident

AND identify as having experienced at least one traumatic event before 18 years old. An event which is traumatic includes any experience which you found very stressful, frightening or distressing. This may have involved:

- Experiencing or witnessing aggression, violence, emotional or sexual abuse
- Experiencing or witnessing accident or injury
- Experiencing illness or someone close to you experiencing illness
- Loss or bereavement
- Parental separation
- Experiencing bullying
- Natural disaster
- Living through and/or escaping conflict

This list is not full – you may have experienced something different which you found traumatic.

If you are interested in taking part, please click on the link below to find out more information:

https://bit.ly/48eE9vJ

If you have any questions or would like to know more about the study, please e-mail Melanie Taylor at M.Taylor14@lancaster.ac.uk.

Appendix C: Consent Form

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Consent Form

We are asking if you would like to take part in a research project to investigate how experience of trauma in childhood may be related to self-concept clarity.
Before you consent to participating in the study we ask that you read the information below and click to give your consent to take part if you agree. If you have any questions or queries before signing the consent form please speak to the principal investigator, Melanie Taylor.

By proceeding to the survey you confirm that:

- You have read the information sheet and understand what is expected of you within this study
- You meet the specified criteria required to take part in the study
- You confirm that you understand that reasonable steps will be taken to ensure any responses/information you give will remain anonymous
- Your participation is voluntary
- You consent for the information you provide to be discussed with my supervisor at Lancaster University
- You understand your data cannot be withdrawn after you have submitted it at the end of the study
- You consent to Lancaster University keeping the anonymised data for a period of 10 years after the study has finished
- By clicking on this link, you consent to **taking part in the current study**

Appendix D: Debrief Information

Thank you for taking part in this research study. The aim was to investigate the relationship between betrayal trauma in childhood and self-concept clarity. Self-concept clarity is having a clear sense of who you are as a person.

Self-defining memories are of a specific, personal life event which feel vivid, evoke strong emotion, and bring about recollection of other memories with similar themes. We wanted to investigate whether the ability to recall specific details of a self-defining memory influenced this relationship. Furthermore, wanted to investigate whether making meaning from these experiences also influenced this relationship.

It is proposed that self-defining memories may influence self-concept through the process of making meaning from these experiences. Specificity is demonstrated if the memory recounted is detailed, and precise about the time and place. Meaning making is demonstrated if the recount of the memory shows reflection, learning, or explaining some influence of the experience on themselves or their life.

This study may help psychologists better understand how experiencing trauma in childhood can impact the development of self-concept. Previous research has shown that experiencing childhood trauma can increase the likelihood of mental health difficulties. Also, having reduced self-concept clarity may contribute to this likelihood.

Researchers have taken all reasonable steps to anonymise the data and which will only be viewed by researchers involved in the study. The findings will be used for the researcher to write their thesis for their doctorate in clinical psychology. The findings may also be used to write a research paper to be submitted to an academic or professional journal for publication.

If you would like to see a summary of the main findings and link to the published report once it is complete, please keep a look out for a posting on the researcher's social media accounts:

Facebook: www.facebook.com/Melanie.ClinPsy

Twitter: @Melanie_ClinPsy

Instagram: @Melanie_ClinPsy

If you have any questions or concerns about the research study, please contact Melanie Taylor via e-mail at M.Taylor14@lancaster.ac.uk.

Please find below the contact information for organisations that can support you if you have been affected by this study

Samaritans- available 24 hours a day, everyday.

Tel: 116 123

You can also call the Samaritans Welsh Language Line on 0808 164 0123 (7pm–11pm every day

Email: jo@samaritans.org

Website: www.samaritans.org

SANEline- for mental health support, available 4.30-10.30pm, everyday

Tel: 0300 304 7000

Local NHS urgent mental health helpline- in England, you can find your local helpline for 24 hour advice and support here
Website: www.nhs.uk/service-search/mental-health/find-an-urgent-mental-health-helpline

Mind- the infoline can provide information and signposting for support, available Monday to Friday 9am-6pm, except for bank holidays
Tel: 0300 123 3393
Email: info@mind.org.uk

Appendix E: Demographics Questionnaire

1. How old are you? (Please note you must be at least 21 years old to take part).
   [Enter number] ☐

2. What is your gender?

   Male
   Female
   Transgender male
   Transgender female
   Non-binary
   Other
   Prefer not to say

3. What is your ethnicity?

   White
   English, Welsh, Scottish, Northern Irish or British
   Irish
   Gypsy or Irish Traveller
   Roma
   Any other white background
   Asian or Asian British
   Bangladeshi
   Chinese
   Indian
   Pakistani
   Any other Asian background
   Black or Black British
   African
   Caribbean
   Any other Black, Black British or Caribbean background
   Mixed or multiple ethnic groups
   White and Asian
   White and Black African
   White and Black Caribbean
   Any other Mixed or multiple ethnic background
   Other ethnic group
   Arab
   Any other ethnic group
   Prefer not to say

4. Have you ever accessed mental health services for support with a mental health difficulty?

   Yes

No
Prefer not to say

5. Have you ever received a diagnosis of a mental health difficulty from a medical professional?

   Yes
   No
   Prefer not to say

6. Have you ever received medication for a mental health difficulty?

   Yes
   No
   Prefer not to say

7. What is your highest educational attainment?

   Did not complete school
   GCSEs/O Levels or equivalent
   Vocational qualification e.g. BTEC, NVQ or equivalent
   A levels or equivalent
   Undergraduate degree
   Postgraduate degree
   Prefer not to say

8. How would you describe your occupational status?

   Working full-time
   Working part-time
   Unemployed
   Retired
   Student
   Student and working
   Homemaker
   Carer
   Other
   Prefer not to say

Appendix F: Self-Concept Clarity Scale

Please read the following statements and select the most appropriate answer.

Scale ranges from 1 *(strongly disagree)* to 5 *(strongly agree).*

1. My beliefs about myself often conflict with one another.*
2. On one day I might have one opinion of myself and on another day I might have a different opinion.*
3. I spend a lot of time wondering about what kind of person I really am.*
4. Sometimes I feel that I am not really the person that I appear to be.*
5. When I think about the kind of person I have been in the past, I'm not sure what I was really like.*
6. I seldom experience conflict between the different aspects of my personality.
7. Sometimes I think I know other people better than I know myself. *
8. My beliefs about myself seem to change very frequently.*
9. If I were asked to describe my personality, my description might end up being different from one day to another day.*
10. Even if I wanted to, I don't think I could tell someone what I'm really like.*
11. In general, I have a clear sense of who I am and what I am.
12. It is often hard for me to make up my mind about things because I don't really know what I want.*

* Indicates reverse-keyed item.

Appendix G: Brief Betrayal Trauma Survey

For each item below, please mark one response in the appropriate column.

Have each of the following events happened to you **before age 18**, and if so, how often?

	Frequency of occurrence		
	Never	1 or 2 times	More than that
Been in a major earthquake, fire, flood, hurricane, or tornado that resulted in significant loss of personal property, serious injury to yourself or a significant other, the death of a significant others, or the fear of your own death.			
Been in a major automobile, boat, motorcycle, plane, train, or industrial accident that resulted in similar consequences.			
Witnessed someone with <u>whom you were very close</u> (such as a parent, brother or sister, caretaker, or intimate partner)			

committing suicide, being killed, or being injured by another person so severely as to result in marks, bruises, burns, blood, or broken bones. This might include a close friend in combat.			
Witnessed someone with whom you were not so close undergoing a similar kind of traumatic event.			
Witnessed someone with whom you were very close deliberately attack another family member so severely as to result in marks, bruises, blood, broken bones, or broken teeth.			
You were deliberately attacked that severely by someone with whom you were very close.			
You were deliberately attacked that severely by someone with whom you were not close.			
You were made to have some form of sexual contact, such as touching or penetration, by			

someone with whom you were very close (such as a parent or lover).*			
You were made to have such sexual contact by someone with whom you were not close.*			
You were emotionally or psychologically mistreated over a significant period of time by someone with whom you were very close (such as a parent or lover).			
Experienced the death of one of your own children.			
Experienced a seriously traumatic event that was not already covered in any of these questions.			

*These items were not included in the published survey.

Section Three: Critical Appraisal

Doctorate in Clinical Psychology | Lancaster University

Melanie Taylor

This critical appraisal aims to discuss interpretations of the systematic literature review and empirical study findings. The clinical implications of the findings are also explored, followed by discussion of research project strengths and limitations. Recommendations for further research are proposed throughout this section.

Systematic literature review and empirical study findings

The review findings suggest that disturbance to self-concept clarity (SCC) significantly increases vulnerability to self-harm engagement and severity of self-harm. All included studies ($N = 18$) found a significant relationship between self-harm (or urge to self-harm) and SCC (or momentary SCC). This was predominantly evidenced with adolescent samples ($N = 9$) investigating non-suicidal self-injury (NSSI), in addition to clinical ($N = 4$) and university student samples ($N = 4$). All five longitudinal studies found low SCC has a causal role in increasing susceptibility to self-harm. However, conclusions drawn regarding direction of causality are tentative due to conflicting findings. Two out of five longitudinal studies found a bidirectional relationship, suggesting engagement in self-harm could also cause future detriments to SCC. Longitudinal research findings also suggest warm parenting style, secure maternal attachment, and greater maternal relationship quality may be important factors which protect adolescents with low SCC from future NSSI. Cross-sectional study findings suggest adolescents and patients (with borderline personality or eating disorder) typically engaged in NSSI to remove negative consequences for oneself (e.g. avoid or suppress negative feelings). Adolescents with low SCC also reported NSSI engagement to create positive consequences for oneself (e.g. identify myself as a person). These findings are consistent with meta-analysis findings (Taylor et

al., 2018), indicating intrapersonal functions (e.g. emotion regulation) are predominantly reported (66-81%).

The empirical study findings suggest greater trauma exposure, prior to 18 years of age, is associated with lower SCC in adulthood, in line with previous research findings (Raemen et al., 2021; Wong et al., 2019). Furthermore, greater childhood trauma exposure significantly predicted lower SCC, after controlling for age, ethnicity and history of mental health difficulties. Younger age, white ethnicity, and greater childhood trauma exposure significantly predicted lower SCC. It was hypothesised that greater childhood trauma exposure would increase the likelihood of providing non-specific and non-integrative self-defining memory (SDM) narratives. However, no association was found, despite previous findings that AM specificity deficits are associated with greater childhood trauma exposure (e.g. Barry et al., 2018). Furthermore, it was hypothesised that deficits in specificity and integration of SDMs would influence disruption to SCC. In line with study findings, previous studies also found no significant relationship between SCC, and AM specificity (Fuentes & Desrocher, 2012) or integration (Berna et al., 2011). However, younger participants were significantly more likely to provide specific, integrative SDMs. In this critical appraisal it is proposed that attachment style and parental relationship quality may hold crucial roles in SCC development, which were not measured in the empirical study.

Interpretation of findings: The role of attachment and parental relationships in self-concept clarity development

Adolescence and emerging adulthood are crucial times for SCC development (Erikson, 1963; Schwartz et al., 2013). Erikson (1968) proposed the importance of consistent, responsive,

warm caregiving in facilitating identity synthesis, and resolving identity conflicts and vice versa, inconsistent, cold, unresponsive, and harsh caregiving can facilitate mistrust, shame, and identity confusion in children. The review findings offered some support for this assertion, suggesting secure maternal attachment, maternal trust, and supportive parental and peer relationships, could protect adolescents from future NSSI engagement, by supporting SCC development. Consistently, other studies have also found NSSI is associated with problems in family support, attachment and peer relationships (Cheek et al., 2020; Lundh, et al., 2011; Tatnell et al., 2014; Victor et al., 2019). Insecure attachment and lack of support from caregivers to understand and interpret life experiences in relation to the self, can result in identity-related distress (Gandhi et al., 2015) and disturbed SCC (Crocetti et al., 2016; Emery et al., 2018; Kawamoto, 2020; Van Dijk et al., 2014).

The review findings suggested NSSI is often used by individuals with low SCC to regulate emotions, which may be evoked by identity-related distress. Taylor et al.'s (2018) meta-analysis found a substantial proportion of participants (32-56%) reported interpersonal functions for NSSI (e.g. to communicate distress), inferring it is commonly influenced by relational difficulties (e.g. difficulties expressing needs or receiving support from others). However, the review findings suggest low SCC is not associated with interpersonal NSSI functions. Although, it is possible that individuals with low SCC experience greater difficulty identifying interpersonal or attachment reasons for NSSI. Metacognitive deficits, influenced by a fragmented self-concept, may limit one's capacity to recognise the occurrence of more complex, interpersonal motivations for NSSI engagement (Lysaker et al., 2018). Participants with low SCC may be inclined to attribute NSSI engagement to the overwhelming emotional state or dissociation experienced at the time, even when relational circumstances have influenced

emotion dysregulation, or underpin motivations for engagement in NSSI. Additionally, interpersonal functions may be underreported as they could be perceived as socially unacceptable (Bentley et al., 2014). The prevalence of NSSI function endorsement may also vary greatly according to self-report measure used (Taylor et al., 2018). Therefore, an association between low SCC and interpersonal NSSI functions may not be captured by self-report measures. These are tentative suggestions, and greater investigation is required to explore reasons for NSSI in those with low SCC, which overcomes potential bias in retrospective self-report (e.g. ecological momentary assessment).

Previous evidence has also highlighted the importance of parental attachment (Chae et al., 2011; Newcombe & Reese, 2004; Reese & Farrant, 2003), parental relationships, and parental communication style in supporting AM and autobiographical reasoning ability during childhood (Cleveland & Reese, 2005; Nelson, 2003; Nelson & Fivush, 2004). Encouraging elaboration of AM narratives, and supporting children to discuss and make meaning from past events, may provide a framework for reconstructing one's own specific memories (Nelson, 2003). This could lead to the emergence of AM and preservation of AMs over time. A relationship between SDM specificity and integration, with childhood trauma or SCC, may not have been identified because the empirical study did not analyse the difference between interpersonal and non-interpersonal trauma.

A recent meta-analysis by Borelli et al. (2024), found a lack of relationship between memory specificity deficit and non-interpersonal childhood trauma. Interestingly, participants exposed to non-interpersonal childhood trauma revealed more vivid memories and accuracy of stressful childhood events, even with current psychological disorder (e.g. PTSD, depression). Moreover, there was a relationship between interpersonal childhood trauma and overgeneralised

AM, including specificity deficits, in both healthy and clinical populations. These findings suggest that interpersonal childhood trauma could cause greater disruption SCC, due to the detrimental impact on attachment and relationships. Unfortunately, this meta-analysis was not published until data collection was underway. If these findings were known prior to applying for ethical approval, participants who have experienced interpersonal trauma, specifically, may have been identified as the target population.

Detriments to SCC could be more severe for those exposed to interpersonal abuse, as the sense of betrayal could influence further detriments to attachment relationships and one's trust in others (Brezo et al., 2008; Kessler et al., 2017; Ketring & Feinauer, 1999; Waterman, 2020). The absence of support following interpersonal trauma could leave one unable to resolve the identity-related conflicts and confusion evoked by the event, resulting in a chronic state of disrupted SCC (Waterman, 2020). There is some evidence that interpersonal trauma could be more likely to cause PTSD (Kessler et al., 2017), and abuse perpetrated by parental figures could be more detrimental to psychological wellbeing than that perpetrated by individuals outside of the family (Brezo et al., 2008; Freyd et al., 2001; Ketring & Feinauer, 1999). Betrayal trauma theory proposes that children with abusive caregivers have an innate need to preserve the attachment relationship, as they are dependent on them for survival (Freyd et al., 2001). However, this is under researched and more investigation of the psychological impact of interpersonal abuse is needed to infer conclusions regarding in the influence on SCC.

Therefore, it is worthwhile investigating whether there is a relationship between interpersonal trauma, SDM specificity and integration, and SCC. Conversely, there may be no significant relationship when trauma is non-interpersonal. It is recommended that the study be replicated with a much larger sample size than that obtained in this empirical study, to provide

sufficient power for statistical analysis of differences between groups who experienced interpersonal or non-interpersonal trauma.

Recalling trauma memories and making meaning from traumatic events

Unexpectedly, the study findings did not suggest that AM specificity is disrupted following greater traumatic childhood experiences. Although, findings may tentatively suggest that AM recall is affected, as a significant proportion of participants did not provide an SDM, and a low proportion of SDM narratives were specific or integrative. Further research could be undertaken to explore differences in SDM specificity and integration between those exposed to childhood trauma and control group of non-exposed participants. This could help provide confirmation whether SDM submission is influenced by trauma or methodology. A self-report measure of emotional arousal elicited by the SDM could also provide insight regarding whether emotional arousal is influencing SDM submission, specificity or integration. Alternatively, a follow-up question could be posed to those who did not provide an SDM, to ascertain the reason for this (e.g. cannot recall a memory, unsure of task instructions, emotional avoidance).

There is extensive psychological literature proposing that traumatic experiences can cause difficulties with encoding and retrieval of the trauma memory, resulting in fragmentation of the trauma memory, intrusive memories of the event, and an involuntary re-experiencing of the event (Ehlers et al., 2004). Furthermore, post-traumatic stress disorder (PTSD) is influenced by the inability to coherently elaborate the trauma memory, and integrate the memory into context, time and place, with other information related to the event (Ehlers & Clark, 2000). This can cause great overwhelm for those with PTSD when recalling trauma memories, particularly when recalling the worst features of the event. Therefore, participants with PTSD may possibly

demonstrate deficits in specificity and integration of SDM narratives. However, this empirical study did not measure mental health symptoms, thus, it cannot be determined what proportion of the sample, if any, were currently experiencing PTSD.

Researching meaning making from traumatic events could improve understanding of this psychological process and its relation to SCC. However, I chose not to ask participants to recall and narrate a trauma memory via an online survey, for ethical reasons. Asking participants to recall trauma memories in specific detail, and encouraging interpretation of trauma memories, could potentially elicit overwhelm and great psychological distress. As the study was conducted online, participants could experience such distress in the context of having no access to psychological support. In this study, individuals who believed that participation may cause them distress were asked not to take part, or to withdraw from the study if this became an issue, to protect their psychological safety. Furthermore, participants were not asked to provide details of a traumatic event. Greater severity of PTSD symptoms, AM deficits and SCC disruption may have been experienced by individuals who abstained or withdrew. Unfortunately, the experiences of those individuals could not be captured in this sample. Therefore, it is recommended that in future research of this nature, participants with PTSD could be compared to a healthy control group. A face-to-face setting is recommended, so participants' needs can be assessed prior to the study and support can be provided as appropriate (e.g. make adaptations to the study format, recommend withdrawal from the study, offer space for compassionate psychological support). This would require great consideration with regards to safeguarding participants, and would benefit from collaboration with lived experience consultants, to ensure the method is ethical and participant psychological safety is supported.

Clinical implications

The review findings tentatively infer that psychotherapy models aiming to strengthen attachment and support development of interpersonal relationships (e.g. through the therapeutic alliance, peer support groups, systemic therapy), can facilitate self-reflection and identity exploration, which could improve SCC. This could be one mechanism for reducing self-harm. Meta-ethnography findings by Haw et al. (2023) highlighted many important therapeutic relationship qualities that support reduction in self-harm (e.g. trusting the therapist, sense of safety in therapy, non-judgemental space, equality of power). Furthermore, Haw et al. (2023) found that psychotherapy can help improve the ability to integrate past experiences and build an enduring identity, without the need for self-harm, by developing understanding and making meaning from one's difficulties. Although there was no relationship between integration and SCC in this empirical study, there is evidence that meaning making can influence rapid, substantial improvements in mental health during psychotherapy (Adler et al., 2013). Only one quantitative study has investigated how psychotherapy could facilitate improvements to SCC, and reduce self-harm severity, conducted by Roepke et al. (2011). Findings suggested DBT can facilitate significant improvements in SCC, along with reduction in depressive symptoms, for females with borderline personality disorder. Fundamentally, clinical psychologists must adopt a client-centred approach, seeking to understand the personal meanings that a client gives to their trauma experience, as well as their relationships with the features of the trauma memories (Ehlers & Wild, 2015).

The review and empirical study findings highlight the need for further investigation to explore whether psychological interventions (e.g. individual psychotherapy, family therapy, peer support groups) can facilitate a reduction in self-harm, or facilitate psychological adjustment from childhood trauma, by supporting improvements in SCC. There is a paucity of

research investigating the role of improving SCC through psychological intervention, and the long-term benefits this could produce. Further investigation is needed with a diverse range of client samples and clinical presentations. Moreover, research must explore the mechanisms within interventions which elicit changes in SCC.

Strengths

A key strength of this review is it is the first known to have synthesised quantitative research investigating the relationship between SCC and self-harm. This review focused on a new area of research, for which publication of peer-reviewed studies began in 2014. Furthermore, the empirical study is the first known to investigate the relationship between childhood trauma and SCC using the Brief Betrayal Trauma Survey (BBTS). Also, this was the first known study to investigate whether specificity or integration of AMs mediate the relationship between childhood trauma and SCC.

This review only included peer-reviewed literature published in a scientific journal, increasing scientific rigour. Furthermore, the review encompassed all forms of self-harm including suicidal intent and the urge to self-harm, rather than just NSSI, due to the high comorbidity between NSSI and suicidal behaviour. This review also broadened the scope of included papers, by identifying and including alternative terms for SCC which referred to highly similar, if not the same constructs. Moreover, the individual items of each potential SCC measure were scrutinised to determine that only those which measured SCC, in line with the review definition, were included. A further strength of the review is that an assistant psychologist provided quality appraisal of a random sample of papers (25%) which showed good inter-rater reliability of quality assessment (82% agreement on items). The tool has also been demonstrated as reliable and suitable for assessing non-randomised studies (Deeks et al.,

2003). The review importantly highlighted that SCC could have a clinically meaningful role in self-harm engagement and severity, which warrants further exploration. In the empirical study, the self-report measures used had good validity and reliability. An assistant psychologist also provided independent scoring of specificity and integration of SDMs, to improve reliability of assessment. The study was designed and approved during the covid-19 pandemic. Therefore, the study was developed to take place online, to maximise opportunity for participation. Online advertisement, recruitment, and data collection may have broadened the reach of potential participants across the United Kingdom, improving accessibility.

Limitations

Conclusions drawn from the review findings are limited by the small number of research studies conducted with unique participant samples (N = 14) and clinical samples (N = 4). Findings from longitudinal studies have also inferred uncertain conclusions regarding causality. Greater investigation of the mechanisms through which low SCC may cause self-harm engagement is warranted, using longitudinal methods, with a diverse range of sample populations. This can help establish firmer conclusions with regards to causality and demonstrate if findings are generalisable to different groups across the global population. Research with participants experiencing psychological disorders which feature self-harm (e.g. borderline personality disorder) is limited. Therefore, further exploration is recommended with such populations.

Most studies included in the review measured NSSI (N = 17) but lacked validity with regards to this measurement, as no study measured and controlled for suicide-related variables. Examples include self-harm inflicted with suicidal intent, history of suicide attempt, and suicidal ideation. NSSI and suicidal behaviour are highly comorbid constructs (Nock et al., 2006; Voss

et al., 2020) and suicidal behaviours have been associated with SCC in other research findings (Raemen et al., 2021; Wong et al., 2019). In future research measuring NSSI, it is advantageous to control for suicidal behaviour.

A further potential limitation of this review is the slight amendments to the Effective Public Health Practice Project Quality Assessment Tool for Quantitative studies (Thomas et al., 2004) which could raise doubt regarding the validity of the tool. However, adaptations are commonly made to this tool in reviews (e.g. Butchart et al., 2017; Heshmati et al., 2023), and it was preferable to removing several dimensions from inclusion, which could have been detrimental to validity of ratings. The assistance of a second independent reviewer in assessing potential SCC measures would have been advantageous for evidencing reliability, though this resource was not available.

A limitation of the empirical study is that due to technical error, the two items regarding sexual abuse in the Brief Betrayal Trauma Survey were not included in the published survey. The Qualtrics platform may have removed these due to the language used in these items. Therefore, with regards to abuse, only physical and emotional abuse were captured. For any future online survey-based research, I will take screenshots of the completed survey and ensure to check every item and piece of information has been included in the published survey.

This empirical study may not have detected a relationship between specificity or integration of SDMs, with childhood trauma and SCC, due to choice of AM measure. However, the autobiographical memory test (AMT) which is predominantly used to measure aspects of overgeneralised AM, was not optimal for meeting the aims of the study (Griffith et al., 2012). Cue words are used to elicit AM recall, resulting in AMs which can be very significant and salient, or completely benign. To meet the aims of this study, the memory elicited needed to be

significant and important to one's life story, to provide participants with the foundation for making interpretations in relation to the self. Furthermore, as the AMT cannot measure aspects of autobiographical reasoning or meaning making, an additional measure would have been needed to capture this, taking longer participation time.

Measuring AM skills and processes, particularly meaning making, is challenging (Park, 2010). Definitions of meaning-making and the terminology used within literature to define this concept are inconsistent, which influences difficulty in measurement of the construct. When translated to quantitative measurement, much of the conceptual richness can be lost, providing an incomplete reflection of the overall construct. There can be great variation in whether participants report having searched for meaning following stressful life events, and that may be determined by the study's definition and scope of what it encompasses. For the purposes of the study aims, the optimal measure of SDMs was chosen, although current methods of measuring meaning making require development, which may begin by achieving consensus on a definition. Qualitative research methods can support exploration of meaning making from significant life events in greater depth. However, this approach cannot be used to establish relationships with trauma or SCC, indicate causality, or infer generalisability. The development of quantitative methods to assess specificity and meaning making is recommended, perhaps through interview, or through content analysis of journal narratives.

'The self' is a multi-faceted, abstract construct, comprising several components. It can be difficult to define and operationalise self-related variables, which may reflect differing views regarding their conceptualisation and developmental processes (Hards et al., 2024). A plethora of terms have been used within literature to refer to aspects of the self, such as, reference to the

content of self-beliefs and knowledge (e.g. self-concept), feelings about oneself (e.g. self-esteem), and the organisation of self-concept (e.g. SCC). Often, different terms are used to refer to highly similar constructs (e.g. self-esteem and self-worth). Although they are distinct constructs, SCC is strongly associated with other aspects of the self, such as self-esteem and self-concept (Weber et al., 2023). SCC was the only self-related construct measured in this thesis. The relationship between childhood trauma and other aspects of the self was not assessed. Therefore, it is possible that other self-related variables (e.g. self-concept or self-esteem) played an influential role in the relationship between childhood trauma and SCC. It would be advantageous to measure other self-related variables in future studies investigating the self and childhood trauma, to observe any interaction in the relationship with SCC.

A limitation of the study is the absence of collaboration with those who have lived experience of trauma. I endeavoured to seek collaboration with a consultant with lived experience of trauma, to gain feedback on the planned methodology and materials (e.g. information sheet, advert, prior to submitting the ethics application. Unfortunately, Lancaster University Public Involvement Network members felt they were unsuitable to provide consultation. Furthermore, several charitable organisations which offer consultation on trauma-related research projects did not respond attempts made to contact them. It may have been more difficult to gain a response, due to a global pandemic at the time. Many such organisations specify that consultants must be paid for their time, which I fully endorse. There is tremendous value in developing research studies with the expertise of those who have unique real-life experience of the issue being investigated, and those providing this valuable work ought to receive renumeration (Sartor, 2023. However, there was no funding available at the time. If I was able to receive this support, I could have potentially been advised if this research

aim is considered meaningful and worthwhile to those with lived experience of trauma, and received suggestions to improve accessibility of study information, measures used, or recruitment strategy, and anticipate barriers to participation.

Conclusion

The findings suggest that SCC can be disrupted by traumatic childhood experiences, and that low SCC increases vulnerability to future self-harm engagement. Furthermore, self-harm engagement may influence future detriments to SCC. Exploration of the role of SCC in relation to trauma and self-harm is a relatively new area of research. There is great opportunity for interesting research investigating the role of attachment, parenting and relationship quality in supporting SCC development following childhood trauma exposure. Further longitudinal studies are needed to draw firmer conclusions regarding causality, and investigation of the mechanisms for developing SCC in psychotherapy is imperative.

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Section Four: Ethics Application

Doctorate in Clinical Psychology | Lancaster University

Melanie Taylor

Ethics Application

D donotreply@infonetica.net

Reply Reply all Forward

To: Taylor, Melanie (Postgraduate Researcher)

Thu 18/08/2022 18:46

Cc: Sellwood, Bill

Letter.pdf
110 KB

This email originated outside the University. Check before clicking links or attachments.

Name: Melanie Taylor

Supervisor: Bill Sellwood

Department: Division of Health Research

FHM **REC Reference:** FHM-2022-0794-RECR-2

Title: The relationship between childhood betrayal trauma and self-concept clarity: The role of self-defining memories

Dear Miss Melanie Taylor,

Thank you for submitting your ethics application in REAMS, Lancaster University's online ethics review system for research. The application was recommended for approval by the FHM Research Ethics Committee, and on behalf of the Committee, I can confirm that approval has been granted for this application.

As Principal Investigator/Co-Investigator your responsibilities include:

- ensuring that (where applicable) all the necessary legal and regulatory requirements in order to conduct the research are met, and the necessary licences and approvals have been obtained.

- reporting any ethics-related issues that occur during the course of the research or arising from the research to the Research Ethics Officer at the email address below (e.g. unforeseen ethical issues, complaints about the conduct of the research, adverse reactions such as extreme distress).

- submitting any changes to your application, including in your participant facing materials (see attached amendment guidance).

Please keep a copy of this email for your records. Please contact me if you have any queries or require further information.

Yours sincerely,

Dr Laura Machin
Chair of the Faculty of Health and Medicine Research Ethics Committee
fhmresearchsupport@lancaster.ac.uk

Lancaster University

Research Ethics Application Form v1.3

Research Ethics Application Form v1.6.1 RECR

The relationship between childhood betrayal trauma and self-concept clarity: The role of self-defining memories - Approved

Information Regarding this Research Project

Are you conducting a research project?

(for more information on research projects please see our ethics pages)

- (•) Yes
- ( ) No

Does your research only involve animals?

- ( ) Yes
- (•) No

Are you undertaking this research as/are you filling this form out as:

- ( ) Academic/Research Staff
- ( ) Non Academic Staff
- ( ) Staff Undertaking a Programme of Study
- (•) PhD or DClinPsy student
- ( ) Undergraduate, Masters, Master by Research, MPhil or other taught postgraduate programme

Which Faculty are you in?

Faculty of Health and Medicine

Which department are you in?

Health Research

Will your project require NHS REC approval? (If you are not sure please read the guidance in the information button)

○ Yes ◉ No

Do you need Health Research Authority (HRA) approval? (Please read the guidance in the information button)

○ Yes ◉ No

Have you got external ethical approval from another organisation? For example another University, the NHS, or an institution abroad (e.g. IRB in USA)

○ Yes ◉ No

Is this an amendment to a project previously approved by Lancaster University?

○ Yes ◉ No

Will your research involve any of the following? (Multiple selections are possible, please see i icon for details)

- ☑ Human Participants
- ☐ Data relating to humans (Secondary/Pre-existing data only)
- ☐ Data collection from online sources such as social media platforms, discussion forums, online chat-rooms
- ☐ Human Tissue
- ☐ None of the above

Project Information

Please confirm/amend the title of this project.

The relationship between childhood betrayal trauma and self-concept clarity: The role of self-defining memories

Estimated Project Start Date 01/08/2022

Estimated End Date 01/12/2022

Is this a funded Project?

○ Yes ◉ No

Research Site(s) Information

Will you be using Research Site(s) outside of Lancaster University?

○ Yes ◉ No

Applicant Details

Are you the named Principal Investigator at Lancaster University?

◉ Yes ○ No

Please check your contact details are correct. You can update these fields via the personal details section located in the top right of the screen. Click on your name and email address in the top right to access "Personal details". For more details on how to do this, please read the guidance in the information button.

First Name

Melanie

Surname

Taylor

Department

Division of Health Research

Faculty

Health and Medicine

Email

m.taylor14@lancaster.ac.uk

Principal Investigator

You have stated that you are the Principal Investigator for this project.

First Name

Melanie

Surname

Taylor

Department

Division of Health Research

Email

m.taylor14@lancaster.ac.uk

Supervisor Details

Search for your supervisor's name. *If you cannot find your supervisor in the system please contact rso-systems@lancaster.ac.uk to have them added.*

First Name

Bill

Surname

Sellwood

Department

Health Research

Faculty

Faculty of Health and Medicine

Email

b.sellwood@lancaster.ac.uk

Do you need to add a second supervisor to sign off on this project?

- ○ Yes
- ◉ No

Additional Team Members

Other then those already added, please select which type of team members will be working on this project:

- ☐ I am not working with any other team members.
- ☐ Staff
- ☐ Student
- ☐ External

Please list all external contacts here:

First Name

[redacted]

Surname

[redacted]

Organisation

[redacted]

Details about the participants

As you are conducting research with Human Participants/Tissue you will need to answer the following questions before your application can be reviewed.

If you have any queries about this please contact your Ethics Officer before proceeding.

What's the minimum number of participants needed for this project?

75

What's the maximum number of expected participants?

300

Do you intend to recruit participants from online sources such as social media platforms, discussion forums, or online chat rooms?

- (•) Yes
- ( ) No

Will you get written consent and give a participant information sheet with a written description of your research to all potential participants?

- (•) Yes
- ( ) No
- ( ) I don't know

Will any participants be asked to take part in the study without their consent or knowledge at the time or will deception of any sort be involved?

- ( ) Yes
- (•) No
- ( ) I don't know

Is your research with any vulnerable groups?

(Vulnerable group as defined by Lancaster University Guidelines)

- (•) Yes
- ( ) No
- ( ) I don't know

Is your research with any adults (aged 18 or older)?

- (•) Yes
- ( ) No

Is your research data collected with completely anonymous adult (aged 18 or older) participants, with no contact details or other uniquely identifying information (e.g. date of birth) being recorded?

(•) Yes ( ) No

Is your research with adult participants (aged 18 years, or older) in private interactions (for example, one to one interviews, online questionnaires)?

(•) Yes ( ) No

Is your research with any young people (under 18 years old)?

( ) Yes (•) No ( ) I don't know

Does your research involve discussion of personally sensitive subjects which the participant might not be willing to otherwise talk about in public (e.g. medical conditions)?

(•) Yes ( ) No ( ) I don't know

Could the study induce psychological stress or anxiety, or produce humiliation or cause harm or negative consequences beyond the risks encountered in a participant's usual, everyday life?

(•) Yes ( ) No ( ) I don't know

Is there a risk that the nature of the research topic might lead to disclosures from the participant concerning either:

- Their own or others involvement in illegal activities
- Other activities that represent a threat to themselves or others (e.g. sexual activity, drug use, or professional misconduct)?

(•) Yes ( ) No ( ) I don't know

Does the study involve any of the following:

- Physically intrusive procedures including touching or attaching equipment to participants
- Administration of substances
- Ultrasound or sources of non-ionising radiation (e.g. lasers)
- Sources of ionising radiation, (e.g. X-rays)
- Collection or use of samples of Human Tissue (e.g. Saliva, skin cells, blood etc.)

( ) Yes (•) No ( ) I don't know

Details about Participant relationships

Do you have a current or prior relationship with potential participants? For example, teaching or assessing students or managing or influencing staff (this list is not exhaustive).

- ○ Yes
- ◉ No
- ○ I don't know

If you need written permission from a senior manager in an organisation where research will take place (e.g. school, business) will you gain this in advance of undertaking your research?

- ○ Yes
- ○ No
- ○ I don't know
- ◉ N/A

Will you be using a gatekeeper to access participants?

- ○ Yes
- ○ No
- ◉ I don't know if I will be using a gatekeeper

Will participants be subjected to any undue incentives to participate?

- ○ Yes
- ◉ No
- ○ I don't know

Will you ensure that there is no perceived pressure to participate?

- ◉ Yes
- ○ No
- ○ I don't know

Participant data

Will you be using video recording or photography as part of your research or publication of results?

- ○ Yes
- ◉ No

Will you be using audio recording as part of your research?

- ○ Yes
- ◉ No

Will you be using audio recordings in outputs (e.g. giving a presentation in a conference, using it for teaching)?

- ○ Yes
- ◉ No

Will you be using portable devices to record participants (e.g. audio, video recorders, mobile phone, etc)?

- (●) No
- ( ) Yes, and all portable devices will be encrypted as per the Lancaster University ISS standards, in particular where they are used for recording identifiable data
- ( ) Yes, but these cannot be encrypted because they do not have encryption functionality. Therefore I confirm that any identifiable data (including audio and video recordings of participants) will be deleted from the recording device(s) as quickly as possible (e.g. when it has been transferred to a secure medium, such as a password protected and encrypted laptop or stored in OneDrive) and that the device will be stored securely in the meantime

Will you be using other portable storage devices in particular for identifiable data (e.g. laptop, USB drive, etc)? (Please read the help text)

- (●) No
- ( ) Yes, and they will be encrypted as per the Lancaster University ISS standards in particular where they are used for recording identifiable data

Will anybody external to the research team be transcribing the research data?

( ) Yes (●) No

Online Sources

Does your research comply with the site(s) terms and conditions? Before completing the section below please read the 'Social Media Guidance for Researchers'

( ) Yes ( ) No ( ) It's unclear in the terms and conditions

Is there a reasonable expectation of privacy?

( ) Yes ( ) No

As there is a reasonable expectation of privacy you must obtain consent from site users.

- [ ] I confirm that I will obtain consent from relevant site users prior to undertaking this researh.

General Queries

Does the funder or any organisations involved in the research have a vested interest in specific research outcomes that would affect the independence of the research?

○ Yes ◉ No ○ I don't know

Does any member of the research team, or their families and friends, have any links to the funder or organisations involved in the research?

○ Yes ◉ No ○ I don't know

Can the research results be freely disseminated?

◉ Yes ○ No ○ I don't know

Will you use data from potentially illicit, illegal, or unethical sources (e.g. pornography, related to terrorism, dark web, leaked information)?

○ Yes ◉ No ○ I don't know

Will you be gathering/working with any special category personal data?

◉ Yes ○ No ○ I don't know

Are there any other ethical considerations which haven't been covered?

◉ Yes ○ No ○ I don't know

REC Review Details

Based on the answers you have given so far you will need to complete some additional questions to allow reviewers to assess your application. It is recommended that you do not proceed until you have completed all of the previous questions. Please confirm that you have finished answering the previous questions and are happy to proceed.

☑ I confirm that I have answered all of the previous questions, and am happy to proceed with the application.

Questions for REC Review

Summarise your research protocol in lay terms (indicative maximum length 150 words).

Research has shown experiencing childhood trauma can increase the risk of mental health difficulties, and having an unclear or uncertain understanding of oneself may further increase this risk. Experiencing trauma which involved a higher level of betrayal from another person (e.g. abuse from a trusted caregiver) may have a different psychological impact than experiencing traumas with a lower level of betrayal (e.g. an accident). This study investigates whether experiencing a higher level of betrayal trauma in childhood has a more detrimental impact on one's ability to understand themselves in adulthood.

Self-defining memories are memories of events which are significant, personal and evoke strong emotion. The ability to recall self-defining memories, tell them as a story with specific detail, and make some meaning from the experience (e.g. a lesson was learned), may help develop greater skill in understanding oneself. Therefore, this study also investigates whether being able to recall self-defining memories in specific detail, and make some meaning from the experience, is related to greater skill in understanding oneself.

This study may improve knowledge of factors which can increase risk of mental health difficulties after experiencing childhood trauma.

Participants will be at least 21 years old, fluent in English, UK residents, who identify as having experienced trauma prior to 18 years old. The study will be conducted online via Qualtrics. Study advertisement and recruitment will take place on social media.

State the Aims and Objectives of the project in Lay persons' language.

- To investigate the relationship between childhood trauma and the ability to understand oneself.
- To investigate whether the ability to recall specific details of a self-defining memory play a role in this relationship
- To investigate whether the ability to make meaning from self-defining memories (being able to reflect on, learn a lesson about yourself or life) play a role in this relationship.

Participant Information

Please explain the number of participants you intend to include in your study and explain your rationale in detail (eg who will be recruited, how, where from; and expected availability of participants). If your study contains multiple parts eg interviews, focus groups, online questionnaires) please clearly explain the numbers and recruitment details for each of these cohorts (see help text).

Participants recruited will identify as having experienced at least one traumatic event in childhood, UK residents, and English-speaking (due to lack of resources to translate study information into many languages). Participants must be 21 years of age or over to have given participants enough time to have experienced and be able to recall a self-defining memory from childhood, which must have occurred before 18 years old and be at least one year old, and have given self-concept enough time to develop and stabilise. At least 75 participants are required, to achieve .8 power and detect a medium Cohen's d effect size of .39 (Fritz & MacKinnon, 2007). This effect size relates to three possible relationships between the variables betrayal trauma, specificity, and and self-concept clarity, as well as betrayal trauma, meaning making and self-concept clarity. Additional participants will help improve statistical power and allow further post-hoc analyses.

As you have indicated that you are working with a vulnerable group please describe the intended participants, and why they are needed for this research.

Participants identify as having experienced at least one traumatic event during childhood. Participants will be given the Brief Betrayal Trauma Survey, asking if they have experienced different types of trauma before 18 years old. They are needed to investigate how betrayal trauma in childhood influences self-concept clarity, which may increase risk of mental health difficulties.

You have selected that the research may involve personal sensitive topics that participants may not be willing to otherwise talk about. Please indicate what discomfort, inconvenience or harm could be caused to the participant and what steps you will take to mitigate or manage these situations.

Participants will be asked to type out a self-defining memory from childhood, one which evokes strong emotion. Participants are not being asked to recall and detail a memory of a traumatic experience, though they may still recall and choose to report a memory which evokes difficult emotions. Participants will also be given the Brief Betrayal Trauma Survey (BBTS), asking them to tick whether they experienced different types of trauma before 18 years old. This could cause discomfort or distress to participants. Participants will be informed of this prior to taking part in the study and informed they can withdraw at any time without penalty. Participants will also be informed prior to consenting that we will only receive their data once they have clicked to submit at the end. Once data has been submitted, it will not be possible to remove their data as it will all be anonymous. On completion or withdrawal from the study, participants will be redirected to the debrief information containing contact information for organisations where participants can access appropriate support if they have been affected by the study. The BBTS (trauma measure) will be administered last, after the self-defining memory questionnaire, to avoid priming of traumatic memories.

You stated that the study could induce psychological stress or anxiety, or produce humiliation or cause harm or negative consequences beyond the risks encountered in a participant's usual, everyday life. Please describe the question(s) and situation(s) that could lead to these outcomes and explain how you will mitigate this.

Participants will be given the Brief Betrayal Trauma Survey (BBTS), asking them to tick whether they experienced different types of trauma before 18 years old. This could cause discomfort or distress to participants. Participants will be informed of this prior to taking part in the study and informed they can withdraw at any time without penalty or giving a reason. Participants will be asked for their informed consent prior to commencing the study. On completion or withdrawal from the study, participants will be redirected to the debrief information with contacts that may be helpful, should they experience discomfort or distress and require support.

You have selected that there is a risk that the nature of the research might lead to disclosures from the participant. What kind of information might participants disclose? How will you manage that situation?

Participants will be asked to tick whether they experienced different types of trauma during childhood. Participants will also be asked type a self-defining memory from childhood. Participants are not being asked to disclose a memory of trauma or abuse, though they may choose to disclose a memory involving abuse and/or containing identifiers. Participants will not be asked to leave identifying information or contact details. If participants choose to include identifiers these will be anonymised when stored on Lancaster University One Drive. However, the original data will be stored within Qualtrics and this cannot be changed within that format. Only researchers involved in the study will view the data. On completion or withdrawal from the study, participants will be redirected to the debrief information containing contact information for organisations where participants can access appropriate support if they have been affected by the study.

Participant Relationships

You have selected that you do not know if you will be using a gatekeeper to access your participants. Please provide details below on how you will be accessing your participants and what measures are in places to prevent any undue pressure on the participants.

Participants will be recruited via social media, including Twitter, Facebook and Instagram (this is not exhaustive). Organisations or who have pages on Twitter, Facebook and Instagram, for example, will be asked to share the study advertisement and link to complete the study, for those who choose to do so. It is possible a gatekeeper may offer to share the study at some point within their group and may know the identity of some participants who access those groups or pages, if the participant chooses to disclose to them that they completed the study.

Information about the Research

What are your dissemination plans? E.g publishing in PhD thesis, publishing in academic journal, presenting in a conference (talk or poster).

The findings of this research will be used to write a doctoral thesis. Results of the research will be submitted for publication in an academic/professional journal. A link to this research paper will be shared via the researcher's social media pages, which have been used to advertise the study and recruit participants. A lay summary of the main findings will be shared for participants via this means.

Online Sources

You have indicated site users have a reasonable expectation of privacy and therefore you will need to obtain consent to use their data for this project. Please explain how you propose to obtain consent.

If a potential participant sees the advert for the study and clicks the link, they will proceed to the participant information on Qualtrics and the consent form. They will only proceed to the study if they give their informed consent.

General Queries

You have indicated that you will be gathering/working with special category data. Please confirm here how you will comply with data protection law (GDPR) for use of special category personal data.

Participants will be asked information regarding their gender, ethnicity, educational attainment and mental health (please see demographic questionnaire). This is to provide researchers with a greater understanding of the sample, how representative it is, and how generalisable the findings are to the wider population. Researchers also need to understand whether there is a significant difference between groups in terms of gender, educational attainment, prevalence of mental health difficulties, ethnicity, and whether this could impact findings. Data will be stored securely on Lancaster University One Drive which can only be accessed and viewed by researchers involved in this study.

You have stated that there are other ethical considerations that have not been covered. Please explain what these other ethical considerations are, and how you would mitigate concerns regarding this research project.

It is possible the researcher may read distressing accounts of childhood memories, if participants choose to recount those. The researcher can discuss the impact of this with supervisor, Bill Sellwood, if it is felt needed. Members of the public and participants will be provided with the researcher's Twitter account, university e-mail address, name and university. People may choose to contact the researcher or leave comments that are difficult to manage. The researcher will consult with Bill Sellwood for support and guidance if any of these issues arise.

Data Storage

How long will you retain the research data?

10 years

How long and where will you store any personal and/or sensitive data?

Data will be anonymised and identifiers will be removed when it is stored on Lancaster University One Drive. Data will be deleted from Qualtrics once it has been transferred to One Drive. Data will be stored for 10 years.

Please explain when and how you will anonymise data and delete any identifiable record?

Participants will be given a unique participant number. If participant have reported any identifiers these will be removed and replaced with the appropriate label (e.g. "friend's name," "street name".)

Project Documentation*

Important Notice about uploaded documents:

When your application has been reviewed if you are asked to make any changes to your uploaded documents please highlight the changes on the updated document(s) using the highlighter so that they are easy to see.

Please confirm that you have read and applied, where appropriate, the guidance on completing the Participant Information Sheet, Consent Form, and other related documents and that you followed the guidance in the help button for a quality check of these documents. For information and guidance, please use the relevant link below:

FST Ethics Webpage

FHM Ethics Webpage

FASS-LUMS Ethics Webpage

REAMS Webpage

☑ I confirm that I have followed the guidance.

As you are in FHM please upload your Research Proposal for this project.

Documents

Type	Document Name	File Name	Version Date	Version	Size
Research Proposal	Research protocol 04.05.22	Research protocol 04.05.22.docx	04/05/2022	1	82.5 KB

In addition to completing this form you must submit all supporting materials. Upload documents that you will use and that participants will see. Please indicate which of the following documents are appropriate for your project:

- [x] Advertising materials (posters, emails)
- [ ] Letters/emails of invitation to participate
- [x] Consent forms
- [x] Participant information sheet(s)
- [ ] Interview question guides
- [ ] Focus group scripts
- [x] Questionnaires, surveys, demographic sheets
- [ ] Workshop guide(s)
- [x] Debrief sheet(s)
- [ ] Transcription (confidentiality) agreement
- [ ] Other
- [ ] None of the above.

Please upload the documents in the correct sections below:

Please ensure these are the latest version of the documents to prevent the application being returned for corrections you have already made.

Please upload all consent forms to be used in this project.

Documents

Type	Document Name	File Name	Version Date	Version	Size
Consent Form	Consent form	Consent form.doc	13/07/2022	2	37.5 KB

Please upload all Participant Information Sheets:

Documents

Type	Document Name	File Name	Version Date	Version	Size
Participant Information Sheet	Participant Information sheet	Information sheet .docx	13/07/2022	2	30.3 KB

Please upload all advertising materials (posters, emails)

Documents

Type	Document Name	File Name	Version Date	Version	Size
Advertising materials	Advert	Advert.docx	04/05/2022	1	30.9 KB

Please upload all Questionnaires, surveys, demographic sheets

Documents

Type	Document Name	File Name	Version Date	Version	Size
Questionnaires, surveys, demographic sheets	Brief Betrayal Trauma Survey	Brief Betrayal Trauma Survey.gif	02/03/2022	1	342.3 KB
Questionnaires, surveys, demographic sheets	Self Concept Clarity Scale	Self Concept Clarity Scale.doc	02/03/2022	1	23.0 KB
Questionnaires, surveys, demographic sheets	Demographics questionnaire	Demographics questionnaire.docx	14/04/2022	1	18.6 KB
Questionnaires, surveys, demographic sheets	Self-defining memories questionnaire	Self-defining memories questionnaire.docx	13/07/2022	2	12.7 KB

Please upload a copy of your Debrief sheet.

Documents

Type	Document Name	File Name	Version Date	Version	Size
Debrief sheet	Debrief	Debrief.docx	04/05/2022	1	16.5 KB

Declaration

Please Note

Research Services monitors projects entered into the online system, and may select projects for quality control.

All research at Lancaster university must comply with the LU data storage and governance guidance as well as the General Data Protection Regulation (GDPR) and the UK Data Protection Act 2018. (Data Protection Guidance webpage)

☑ I confirm that I have read and will comply with the LU Data Storage and Governance guidance and that my data use and storage plans comply with the General data Protection Regulation (GDPR) and the UK Data Protection Act 2018.

Have you that you have undertaken a health and safety risk assessment for your project through your departmental process? (Health and Safety Guidance)

☑ I have undertaken a health and safety assesment for your project through my departmental process, and where required will follow the appropriate guidance for the control and management of any foreseeable risks.

When you are satisfied that this application has been completed please click "Request" below to send this application to your supervisor for approval.

Signed: This form was signed by Professor Bill Sellwood (b.sellwood@lancaster.ac.uk) on 20/07/2022 12:15

Please read the terms and conditions below:

- You have read and will abide by Lancaster University's Code of Practice and will ensure that all staff and students involved in the project will also abide by it.
- If appropriate a confidentiality agreement will be used
- You will complete a data management plan with the Library if appropriate. Guidance from Library.
- You will provide your contact details, as well as those of either your supervisor (for students) or an appropriate person for complaints (such as HoD) to any participants with whom you interact, so they know whom to contact in case of questions or complaints?
- That University policy will be followed for secure storage of identifiable data on all portable devices and if necessary you will seek guidance from ISS
- That you have completed the ISS Information Security training and passed the assessment
- That you will abide by Lancaster University's lone working policy for field work if appropriate
- On behalf of the institution you accept responsibility for the project in relation to promoting good research practice and the prevention of misconduct (including plagiarism and fabrication or misrepresentation of results).
- To the best of your knowledge the information you have provided is correct at the time of submission
- If anything changes in your research project you will submit an amendment

To complete and submit this application please click "Sign" below:

Signed: This form was signed by Miss Melanie Taylor (m.taylor14@lancaster.ac.uk) on 13/07/2022 19:53

Appendix: Research protocol

Title: The relationship between childhood betrayal trauma and self-concept clarity: The role of specificity and making meaning from self-defining memories

Applicant: Melanie Taylor, Trainee Clinical Psychologist, Lancaster University

Supervisors: Dr Bill Sellwood, Professor Programme Director, Lancaster University

Version number: 1

Introduction

Childhood trauma is associated with mental health difficulties in adulthood (Varese et al., 2012), increased risk of suicide (Angelakis et al., 2019) and poorer psychosocial outcomes (Hailes et al., 2019). Therefore, researchers must investigate the psychological processes which influence how childhood trauma may lead to these adverse outcomes. Attachment styles mediate the relationships between specific childhood traumas and specific negative mental health outcomes (Sitko et al., 2014). Furthermore, the psychological effects of child abuse from a caregiver or someone emotionally close is likely more severe than abuse perpetrated by a stranger (Kiser at al., 2014; Pearce et al., 2017). Betrayal trauma theory proposes that children with abusive caregivers have an innate need to preserve the attachment relationship, as they are dependent on them for survival (Freyd et al., 2001). Therefore, it is advantageous to consider the relationship with the perpetrator of child abuse.

Self-concept clarity (SCC) is the degree to which an individual's beliefs about themselves are defined, consistent with each other, and stable over time (Campbell et al., 1996). Reduced SCC increases the risk of psychosis, suicidal behaviour and depression following adverse and traumatic experiences in childhood (Evans et al., 2015; Wong et al., 2018).

Self-defining memories (SDMs) are autobiographical memories of a specific event which feel vivid, evoke strong emotion, elicit recollection of other memories with similar

themes, and are pertinent to a person's core goals and conflicts (Blagov & Singer, 2004). SDMs help an individual to define their perception of themselves and explain who they are as a person (Singer, 2005). SDMs may influence self-concept through the process of making meaning from these experiences and incorporating them into a personal narrative (Singer et al., 2013), which has been associated with better social cognition and adjustment (Blagov & Singer, 2004). This has implications for clinical psychologists, as many therapeutic approaches advocate supporting clients to reflect on and make meaning from personal experiences, identify personal values and goals, and make changes based on these factors.

Recall of SDMs is less specific in people who experience childhood trauma (Barry et al., 2018), perhaps because experience of trauma creates difficulties in accessing memories without eliciting recall of the trauma memory. Additionally, people with a diagnosis of schizophrenia show overgeneralised autobiographical memory recall than controls (Nieto et al., 2019). Furthermore, poorer specificity and deficits in making meaning from SDMs are linked to depression and schizophrenia diagnoses (Berna et al., 2011; Neumann et al., 2007; Sumner et al., 2010; Thorne et al., 2004).

Reduced SCC may be influenced by difficulties with recalling specific details of significant personal events and making meaning from these experiences. Only one study has investigated the association between SCC and autobiographical memory specificity (Fuentes & Desrocher, 2012) and one study has investigated the association between SCC and meaning making from SDMs (Berna et al., 2016). Both studies failed to find a significant relationship, though this is likely due to methodological issues, such as restricted age range of participants, focus on broader autographical memory rather than SDMs, and the method of assessing meaning making.

In summary, there is a lack of research investigating the psychological pathways between childhood betrayal trauma and psychopathology. High childhood betrayal trauma

increases likelihood of experiencing psychotic symptoms (Pearce et al., 2017). Childhood trauma is also associated with poorer memory specificity (Barry et al., 2018). Additionally, poorer memory specificity and meaning making from SDMs are associated with psychopathology (Neumann et al., 2007; Nieto et al., 2019; Thorne et al., 2014). As the relationship between SCC and psychopathology in people who experienced childhood trauma is well established (Evans et al., 2015; Wong et al., 2018), it is important to focus investigation on psychological mechanisms that may lead to reduced SCC. Experiencing high childhood betrayal trauma may result in an impaired ability to recall specific details and make meaning from personal experiences, which in turn, may be detrimental to SCC. Greater understanding of these psychological processes will enable more appropriate, person-centred therapeutic interventions to be developed.

This study is investigating whether high betrayal trauma is significantly associated with reduced SCC, and whether specificity and making meaning from SDMs mediates this relationship.

Method

Participants

Participants will be people who self-identify as having experienced at least one traumatic event in childhood, residing in the United Kingdom. Participants must be fluent in English as researchers do not have the resources available to translate materials into other languages or translate participant responses into English. Participants must be 21 years of age or over; this is to provide participants sufficient time to have experienced and be able to recall a SDM, which must have occurred before 18 years old and be at least one year old. I will aim

for a minimum sample size of 75, to achieve 0.8 power and detect a medium Cohen's d effect size of 0.39 for mediation analyses.

Recruitment will be on a national scale to enable researchers to reach the number of participants required. Participants will be recruited online by sharing an advert on social media pages, such as Twitter, Instagram, Facebook and Reddit. This will be shared from an account created solely for the purpose of this study. Within this post, the public will be asked if they can share the post wider, so the information and survey can be cascaded by members of the public. The Lancaster University Doctorate course will be asked to share this post on their social media accounts. Furthermore, charitable organisations based in the UK, who support people who have experienced trauma or mental health difficulties will be contacted and asked if they can share the advert for the study on their social media (e.g. National Survivor User Network, The Trauma Recovery Centre). This can help further increase reach to potential participants.

Design

The study will be quantitative with a cross-sectional design, as it is not possible to use a prospective or longitudinal approach to achieve the aims of this study given time constraints. Data will be collected online using a Qualtrics survey. Self-report measures will be used to measure all variables due to time constraints and lack of resources to conduct interviews, and to enable gathering of data from a greater number of participants.

Materials

Brief Betrayal Trauma Survey (BBTS; Goldberg & Freyd, 2006)

This is a 12-item, self-report measure of traumatic life events that occur before and after the age of 18. For the purposes of this study, I will only use items referring to events before the age of 18, as done by Pearce and colleagues (2017). The measure produces an overall score of the level of betrayal and can be used to categorise each individual as having experienced either low betrayal or high betrayal trauma based on this score. In this study, the score will be used as continuous data rather than dividing participants into high or low betrayal categories based on their scores. The measure also shows good construct validity (DePrince & Freyd, 2001), convergent validity, and 3-year test–retest reliability of 83% for childhood items (Goldberg & Freyd, 2006).

Self-Defining Memory Questionnaire (SDMQ)

Designed by Singer and Moffitt (1991), this was initially completed with participants face-to-face and participants responded with verbal answers. The same authors, as well as other researchers, improved and adjusted the measure in subsequent studies. For example, Singer and Moffitt (1991) did not ask explicitly for participants to describe a "specific" event when they developed the questionnaire, but the specificity instruction was later added by other authors (Thorne, McClean & Lawrence, 2004). This has been used many times as a written questionnaire, where participants are given a booklet and write down their answers by hand without input from the researcher (e.g. Cuervo-Lombard et al., 2016; McLean & Thorne, 2003; Thorne, McClean & Lawrence, 2004; Wright, Davies, Fowler, & Greenwood, 2019). Instead of giving participants a written questionnaire to complete by hand, the single question will be put on Qualtrics for participants to type their answer. Researchers also do not have the time and resources to travel to participants to ask this question face-to-face.

In each study where the SDMQ has been used, the question has been worded slightly differently (e.g. in one study, researchers may specify that the memory must have occurred before 18 years old, though another study may ask for a memory from adulthood). In this study, researchers will ask participants to provide a SDM from childhood, to keep the time period for which participants are being asked about trauma and a SDM consistent with each other. The question will be worded as follows:

You are asked to think about a specific event in your childhood that you feel is still important and helps you define who you are. The memory must have occurred ***before 18 years of age*** *and is very clear and familiar to you. This is a memory that helps you understand who you are as an individual and might be a memory you would tell someone if you wanted that person to understand you in a basic way. It may be a memory that is positive or negative, or both, in how it makes you feel. The only important aspect is that it leads to strong feelings. It is a memory that you have thought about many times. It should be familiar to you like a picture you have looked at a lot or song you have learned by heart.*

Participants will be given a text box in which to type their answer. SDMs will be scored for specificity and meaning making following criteria proposed by Singer and Blagrov (2000-2001). Cohen's k was .828 for specificity and .718 for meaning making, suggesting good inter-rater reliability (Singer & Blagrov, 2000-2001).

The Self-Concept Clarity Scale (SCCS)

This is a 12-item self-report questionnaire, designed by Campbell et al. (1996), which measures the extent to which an individual's self-concept is clearly and defined, consistent

and stable. It has shown good internal consistency (α=0.86) and test-retest reliability (r=0.79; Campbell et al., 2003).

Procedure

Potential participants can view the study information online which will have been advertised via social media. Participants will be able to decide if they would like to take part in the study by clicking on a link which will bring them to further information about the study. Once participants read that information, they can choose whether they want to give their informed consent to continue to the study.

If participants consent, they will be taken to the demographics questionnaire, followed by the SCCS, SDM question, and finally, the BBTS. When they are completed, participants can choose whether to submit their answers and will continue to the debrief. The whole study is expected to take 15-20 minutes to complete.

Proposed analysis

If participants provide some incomplete data, where possible this will be included in the analysis. Data will be tested for normality of distribution, linearity, outliers, and homoscedasticity. Data will be examined using correlation and regression analyses to explore relationships between the predictor variable (betrayal trauma), the dependent variable (self-concept clarity) and demographic variables (e.g. age, gender). T-test and chi-square analyses will be used to identify if there are significant differences between groups (meaning making vs no meaning making; specificity vs no specificity) according to demographic variables (e.g. age, gender). Logistic regression analyses will be used to examine whether betrayal trauma score predicts meaning making and specificity. T-test analyses will also be used to examine whether there is a significant difference between groups (meaning-making vs no meaning making;

specificity vs no specificity) in SCC scores. If sufficient data are obtained, mediational analyses will be performed to explore whether meaning making and specificity mediate the relationship between betrayal trauma and SCC.

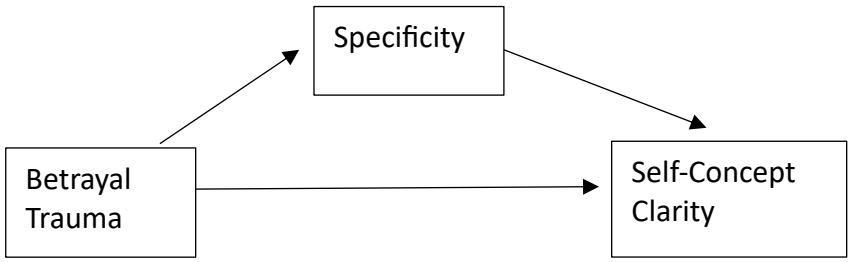

Figure 1. It is hypothesised that specificity mediates the relationship between betrayal trauma and self-concept clarity.

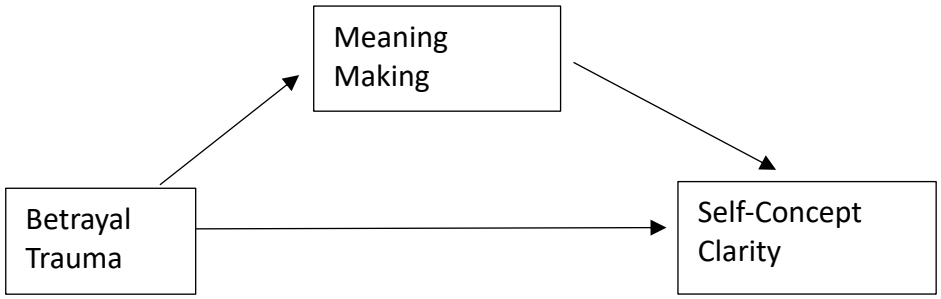

Figure 2. It is hypothesised that meaning making mediates the relationship between betrayal trauma and self-concept clarity.

Practical issues

Data storage

Data will be initially collected online through the Qualtrics website (www.qualtrics.com) and will be stored securely on a password protected folder on the

Lancaster University One Drive. Only the researchers conducting this study will have access to it. Professor Bill Sellwood will be the data custodian one the study is completed. Data will be destroyed after 10 years. Lancaster University will be the data controller for any personal information collected as part of this study.

Dissemination of findings

Findings from this study will be disseminated as a Lancaster University doctoral thesis. The study will be submitted for publication to a relevant academic journal. A lay summary of research findings will be shared via my research social media accounts which were used to recruit participants, along with a link to the journal in which the article is published. Participant data will be pooled for results and no individual data will be presented when publishing findings.

Monitoring of study

All aspects of the research will be supervised and monitored by the academic supervisor, Professor Bill Sellwood. Melanie Taylor will regularly check social media accounts to respond to any comments and queries, and will seek advice from Bill Sellwood regarding this if needed.

Ethical concerns

Participants will be given the BBTS, asking them to tick whether they experienced different types of trauma before 18 years old. This could cause discomfort or distress to participants. Specific details of traumatic events will not be asked about. Participants will be informed of this prior to taking part in the study and informed they can withdraw at any time

without penalty or giving a reason. Participants will be asked for their informed consent prior to commencing the study. On completion or withdrawal from the study, participants will be redirected to the debrief information with contacts that may be helpful, should they experience discomfort or distress and require support.

Participants will also be asked type a SDM from childhood. Participants may choose to disclose a memory involving abuse and/or containing identifiers. The BBTS will be administered at the end to avoid priming participants to recall trauma-related SDMs from childhood. Participants will not be asked to leave identifying information or contact details. If participants choose to include identifiers these will be anonymised when stored on Lancaster University One Drive. However, the original data will be stored within Qualtrics and this cannot be changed within that format. Only researchers involved in the study will be able to view the data.

It is possible the researcher may read distressing accounts of childhood memories, if participants choose to recount those. The researcher can discuss the impact of this with supervisor, Bill Sellwood, if it is felt needed. Members of the public and participants will be provided with the researcher's Twitter account, university e-mail address, name and university. People may choose to contact the researcher or leave comments that are difficult to manage. The researcher will consult with Bill Sellwood for support and guidance if any of these issues arise.

Timescale

The study is expected to start recruiting participants in May 2022 and is expected to complete recruitment in August 2022. The data collection period would only be extended should the minimum number of participants not be reached by the proposed end time, or the data collected be insufficient for required analyses. Should participants and stakeholders

request a summary of the main findings of the study, this would be epected` to be provided by October 2022.

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