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The unique relationship between childhood sexual abuse, self-injury and suicide ideation: The mediating role of emotion dysregulation

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Abstract

Child sexual abuse (CSA) has serious short-term and long-term effects, including non-suicidal self-injury (NSSI) and suicidal ideation (SI). One possible thread linking CSA to NSSI and suicide risk is emotion dysregulation. The current study assessed whether facets of emotion dysregulation mediated relations of NSSI behaviours and functions, and SI. Participants ($N = 121$; *Mean* age = 18.69, age-range 18–22; 78 per cent female), college students with a history of childhood trauma, completed an online survey. Results indicated that facets of emotion dysregulation (i.e. clarity, non-acceptance) mediated the relationship between CSA and SI. CSA was associated with automatic negative reinforcement, social negative and social positive reinforcement NSSI functions, but was not associated with NSSI behaviours. Emotion dysregulation facets did not mediate the relationship between CSA and NSSI functions. Findings highlight the need to help CSA survivors have clarity and acceptance of emotional experiences to reduce SI risk.

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KEYWORDS
childhood sexual abuse, non-suicidal self-injury, suicide risk

Key Practitioner Messages
- Skill and knowledge development on emotion dysregulation related to non-acceptance and lack of clarity around emotional experiences may mitigate risk for suicidal ideation.
- Providers should screen for a history of childhood traumatic events, including childhood sexual abuse for young adults who present with NSSI behaviours and suicidal ideation.
- It may be helpful for practitioners to examine reasons for NSSI to help their patients with connecting their thoughts, feelings and NSSI behaviours.

INTRODUCTION

Child sexual abuse (CSA) can be defined as contact (e.g. penetrative sex, folding) and non-contact (e.g. exhibitionism, exposure to pornography) sexual acts involving coercion of a minor by an adult or minor (Townsend & Rheingold, 2013). While previous research has found child sexual abuse to be linked to non-suicidal self-injury (NSSI) and SI (Charak et al., 2016; Maniglio, 2011), it is unclear whether facets of emotion dysregulation mediate these relationships.

According to the United States Department of Health and Human Services, from 2009–2013 Child Protective Services agencies found strong evidence that 63,000 children a year were victims of sexual abuse. These rates of child sexual abuse in the United States are highly concerning. Research has indicated that child sexual abuse can have serious short-term and long-term effects, including emotion regulation difficulties (Briere & Elliott, 1994), non-suicidal self-injury (NSSI),

and suicide risk (Charak et al., 2016; Maniglio, 2011). A vulnerable developmental period is adolescence, when NSSI occurs in 5.5 per cent–17 per cent of the population (Swannell et al., 2014). Additionally, suicide is the second leading cause of death for 10–25-year-olds (Centers for Disease Control and Prevention [CDC], 2013).

CSA often brings mental, physical and emotional pain (Langevin et al., 2016) and NSSI behaviours, including cutting, burning, scratching and hitting oneself (Power et al., 2016), can serve as mechanisms to relieve pain. Such behaviours may also be used as maladaptive emotion regulation strategies in those with histories of CSA. Rabinovitch et al. (2015) examined baseline CSA and covariates (e.g. physical abuse, age) as predictors of NSSI and suicide attempts in 166 girls in the juvenile justice system and found that early CSA victimization was associated with NSSI (as well as history of suicide attempts). This can be explained through theory of self-harm suggesting early invalidating experiences may teach negative coping strategies (Linehan et al., 1993). For example, children observing maladaptive regulatory skills, such as an impulsive act of cutting, from their abusive parents may learn to utilize these strategies to regulate their own emotions. SI, which refers to any thought about killing oneself ranging from a fleeting consideration to a detailed plan (Joiner, 2005), has been associated with CSA. For example, Brabant et al. (2014) explored clinical profiles of 77 adolescent survivors of sexual abuse and found that 64 per cent experienced suicidal ideation.

Mechanisms between CSA, NSSI, and SI have not been systematically explored. One possible thread linking CSA to self-injury and suicide risk is emotion dysregulation (Miranda et al., 2013). Emotion regulation is the extrinsic and intrinsic processes responsible for monitoring, evaluating and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals (Thompson, 1994). Child survivors of sexual abuse are more likely to have emotion regulation difficulties compared to non-sexually abused children (Langevin et al., 2016). Further, emotion dysregulation has been linked to SI (Rajappa et al., 2012; Selby et al., 2007). In particular, inability to manage self-relevant emotions, endorsement of fewer adaptive responses to negative emotions (as well as maladaptive responses) and limited access to emotion-regulation strategies (Rajappa et al., 2012) have all been associated with suicidal ideation. Rajappa et al. (2012) examined the predictive utility of emotion dysregulation for suicidal ideation and found that compared to individuals with past suicide attempts, and those with no past ideations or attempts, individuals with current suicidal ideation had significantly lesser access to emotion regulation strategies (Rajappa et al., 2012). Furthermore, there is evidence that imagining one's death through daydreaming may be a form of emotion dysregulation (Selby et al., 2007) due to its ability to increase positive affect and decrease negative affect. Emotion dysregulation mediated the relationship between CSA, and self-harm, and SI and attempts in women with bulimia nervosa (Gordon et al., 2015).

Emotion dysregulation has been identified as a risk factor for NSSI (Maniglio, 2011) and suicide risk (Rajappa et al., 2012). NSSI is defined as deliberately injuring oneself without suicidal intent (Power et al., 2016). Nock and Prinstein's (2004) functional model of self-harm suggests that NSSI behaviours can serve to reduce psychophysiological tension or pain. There are four NSSI functions including automatic negative reinforcement (ANR), automatic positive reinforcement (APR), social positive reinforcement (SPR) and social negative reinforcement (SNR; Lloyd et al., 1997; Nock & Prinstein, 2004). ANR refers to engagement in NSSI in anticipation of removing a negative stimulus (e.g. distressed feelings; Nock & Prinstein, 2004). APR refers to the utilization of NSSI in anticipation of a reward (e.g. feeling *something* instead of numbness; Nock & Prinstein, 2004). SPR refers to the utilization of NSSI in anticipation of a rewarding social effect (e.g. feeling cared for by others; Nock & Prinstein, 2004). SNR refers to utilization of NSSI in anticipation of the removal of an aversive social effect (e.g. stopping bullying; Nock & Prinstein, 2004). Automatic reinforcements are common in NSSI samples (Klonsky, 2011), consistent with finding NSSI regulates affect.

One of the most well-validated and widely used instruments measuring emotion dysregulation is the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). Subscales of the DERS are defined as follows: non-acceptance of emotional response (NONACCEPT) refers to a tendency to have negative emotions, or non-accepting reactions to one's stress. For example, one may feel guilty, ashamed, embarrassed or angry with oneself for having suicidal thoughts (Van Orden et al., 2010). Difficulties engaging in goal-directed behaviour (GOALS) refers to difficulties concentrating and accomplishing tasks when experiencing negative emotion (i.e. difficulty concentrating, focusing on other things, getting work done). Impulse control difficulty (IMPULSE) refers to difficulty in remaining in control of one's behaviour when experiencing negative emotions (i.e. loss of control of one's behaviour). Lack of emotional awareness (AWARE) refers to the tendency to not attend to and acknowledge emotions (i.e. non-attentive to how one is feeling). Limited access to emotion regulation strategies (STRATEGIES) refers to the belief that there is little that can be done to regulate emotions effectively once one is upset (i.e. believing that that there is nothing that can be done to feel better when one is upset). Lack of emotional clarity (CLARITY) refers to the extent to which individuals know (and are clear about) the emotions they are experiencing (i.e. difficulty making sense out of one's feelings, being confused about how one feels, or having an unclear understanding of one's feelings; Gratz & Roemer, 2004).

Since the creation of the DERS, there has been examination of the relationship between different facets of emotion regulation and a range of psychopathologies (Khanipour et al., 2015). The DERS has been found to mediate the relationship between lifetime cumulative adversity and depressive symptomatology, suggesting that there is an intrapersonal mechanism related to emotion dysregulation that predicts depression (Abravanel & Sinha,

2015). This intrapersonal mechanism may also explain the link to NSSI and suicidal behaviours; research on the different facets of the DERS and NSSI have revealed that both impulse control (Khanipour et al., 2015) and limited access to emotion regulation strategies (STRATEGIES; Perez et al., 2012) significantly predicted increased NSSI behaviour. Many theories posit a direct role of impulsivity and suicidal behaviour (including NSSI), including Baumeister's model (Baumeister, 1990) and the interpersonal-psychological theory (Joiner, 2005). Furthermore, Weinberg and Klonsky (2009) found that each of the six dimensions, except awareness, were associated with suicidal ideation. These findings are important for clinicians in regard to treatment as findings can aid in narrowing the focus of certain treatments for NSSI or suicidal behaviours to the underlying causes of the behaviours (i.e. not having access to adaptive emotional regulation strategies or not being able to control impulsive behaviours).

To increase the specificity of the association between CSA and self-injury and suicide risk, it is essential to control for the co-occurrence of other types of trauma experiences as the presence of a single type of childhood maltreatment (e.g. CSA) is a rarity (Charak & Koot, 2015). Studies indicate that various types of childhood adversities, including abuse and neglect, co-occur and have a cumulative effect on suicidal behaviour among adolescents (Ford et al., 2013) and adults (Charak et al., 2016). With this in mind, the current study aims to assess the predictive relations of facets of emotion dysregulation and NSSI and SI and attempt after controlling for the effect of other types of childhood adversities. The following hypotheses were developed based on the current state of the literature.

Hypothesis 1. Facets of emotion dysregulation will mediate the relationship between CSA and NSSI, after controlling for other forms of childhood trauma exposure.

Hypothesis 2. Facets of emotion dysregulation will also mediate the relationship between CSA and NSSI functions, after controlling for other forms of childhood trauma exposure.

Hypothesis 3. Facets of emotion dysregulation will mediate the relationship between CSA and SI, after controlling for other forms of childhood trauma exposure.

METHOD

Sampling procedures

Introduction to psychology students from a mid-western U.S. University ($N = 800$) completed a variety of screening questions when signing up for an online research participant account and those who endorsed childhood trauma exposure were recruited to participate in the current study (citation removed). For an alpha<0.05, direct effect A path = 0.5, direct effect B path = 0.25, and an indirect effect = 0.5, minimum/maximum sample size = 100–400, a step size = 10, using 5000 replications and default random number seed = 1234 in the simulation, a sample size of 120 was sufficient. We re-ran it using 10,000 replications with an alpha<0.05, direct effect A path = 0.5, direct effect B path = 0.25, indirect effect = 0.5, power = 0.8, minimum/maximum sample size = 100–160 with a step = 10 and default seed = 1234, the sample size of 120 appeared stable across both. Potential participants were provided informed consent prior to participation in the study. Participantscompleted a 45-minute Psychdata survey. The study was approved by the University's IRB, and participants who completed the study received class credits. Participants could download a mental health educational handout that included contact information for resources. Data were collected from 09/2014–05/2015.

Inclusion/exclusion criteria

Criteria for inclusion in this study included being between the ages of 18–22, being exposed to trauma before age 12 and English as first language.

Measures

Trauma types

Part 1 (i.e. the Trauma History Profile) of the UCLA PTSD Reaction Index for *DSM-5* (UCLA-PTSD-5; Steinberg et al., 2013) was used to assess trauma types (i.e. physical neglect; emotional neglect; sexual abuse; physical abuse;

witnessing physical abuse of others; emotional abuse; witnessing domestic violence; community violence victim; witnessing community violence), age(s) of participant at time of exposure, role in the event (e.g. witness or victim) and worst trauma (if multiple traumas were endorsed). The Trauma History Profile was modified from its original design as a clinician-administered survey, to a self-report of prior traumas for the purposes of the current study. Totals were determined by a count of each traumatic event endorsed. Definitions of each trauma type were provided to participants to control for what individuals consider to be a traumatic event.

Emotion dysregulation

Difficulties in Emotion Regulation Scale (DERS) is a 36-item measure of clinically significant emotion dysregulation (e.g. 'I am attentive to my feelings') where responses range from 1 (almost never) to 5 (almost always; Gratz & Roemer, 2004). This self-report questionnaire, consisting of a total score and six subscale scores, has good psychometric properties as has been demonstrated with adult non-clinical samples (Gratz & Roemer, 2004). Specifically, the DERS has been found to have excellent internal consistency (subscale α range = 0.80 to 0.89) and concurrent validity (Gratz & Roemer, 2004) in a general sample. In the present study, the subscales of DERS were found to have adequate to excellent internal consistency reliability (subscale α range = 0.83 to 0.90).

Non-suicidal self-injury (NSSI)

The Functional Assessment of Self-Mutilation (FASM; Lloyd et al., 1997) is a 33-item questionnaire that assessed non-suicidal self-injurious behaviours and their functions over the last year. The FASM has adequate psychometric properties (e.g. $\alpha = 0.65$ to 0.66; Lloyd-Richardson et al., 2007). The FASM subscales showed adequate internal consistency ($\alpha = 0.83$ to 0.89; citation removed).

Suicide ideation

The Beck Scale for Suicide Ideation is a 19-item scale assessing SI, intent to die and attempt history. The scale has a three-point response scale (0–2, where higher numbers indicate greater suicide risk). The BSS was used to examine current SI. The BSS has shown excellent internal consistency (e.g. $\alpha = 0.81$–0.96) and concurrent validity ($r = 0.90$–0.94) and adequate divergent validity (r range = 0.58 to 0.69) when used with college student samples (Beck et al., 1988). This study's internal consistency was excellent ($\alpha = 0.88$) (citation removed).

Data analysis

Data were first analysed for missing values and normality, and missing values were estimated using maximum likelihood data estimation (Kline, 2011). Due to non-normality, we utilized square root and natural log transformation. We then ran chi-square analyses on demographics of our sample and correlations. We conducted mediation analyses using the PROCESS macro (Hayes & Rockwood, 2016) for IBM SPSS v.22 to explore the facets of emotion dysregulation, CSA, and engagement in NSSI behaviours after controlling for other trauma types. For all mediation analyses, we report bootstrapped confidence intervals, utilizing 5000 bootstrapped samples to estimate confidence intervals, for the direct effect of CSA on the mediator, the direct effect of the mediator on the outcome, the direct effect of CSA on the outcome and the indirect effect of CSA on the outcome.

RESULTS

Participant characteristics

Eighteen people completed the study despite being ineligible and were thus excluded from analyses (13 due to indicating that their trauma occurred after age 12 years old and five due to being older than 22 years). Participants ($N = 121$; Mean age = 18.69, range 18–22; 78 per cent female) were students at a Midwestern university with a history of childhood trauma (citation removed). Regarding trauma exposure, the range of childhood traumas endorsed was between one and 18 different traumas with a mode of three exposures. An assessment of trauma between the ages of 13 and

22 years old was also included to control for trauma after childhood. Only three participants did not have trauma after age 12 (citation removed). The number of traumas experienced during this time frame ranged between one and 19 with a mode of eight exposures. On average, it had been less than a year since any trauma exposure. NSSI was endorsed by 60 per cent of the sample, including 29 per cent using only one method, 30 per cent using two different methods, 14 per cent using three methods, 10 per cent using four methods and 18 per cent using five or more methods (citation removed). For a quick snapshot of NSSI, SI and trauma please see Table 1.

Summary of outcome data

Five per cent of values were missing and were found to be missing at random; therefore, missing data were substituted using maximum likelihood data estimation (Kline, 2011). With the exception of the DERS subscales, which were normally distributed, all variables were skewed and kurtotic (Table 2). The following transformed variables were used in the analyses: SI variable ($M = 1.03$, $SD = 1.26$), automatic negative reinforcement subscale ($M = 0.834$, $SD = 0.995$), automatic positive reinforcement subscale ($M = 0.901$, $SD = 1.10$), social positive reinforcement ($M = 0.844$, $SD = 1.24$) and social negative reinforcement subscale ($M = 1.22$, $SD = 0.703$). Data did not violate assumptions of multicollinearity (Table 2; all variables had VIF values of less than 10 and Tolerance values of greater than 0.2; citation removed). Results from bivariate correlations of the main variables can be found in Table 2. Regarding trauma types and their correlations with dependent measures, sexual abuse was correlated with automatic negative reinforcement, social negative reinforcement and social positive reinforcement, while witnessing domestic violence and experiencing emotional abuse were correlated with automatic positive reinforcement. Only sexual abuse, physical abuse and witnessing community violence were correlated with SI.

NSSI behaviours mediation analyses

CSA was associated with the Strategies facet of DERS, and Strategies facet was associated with NSSI behaviours (Table 3). Further, CSA was associated with the Aware facet of DERS. Finally, the Non-acceptance facet was associated with NSSI behaviours. CSA was not associated with NSSI behaviours after controlling for other types of trauma; therefore, mediation of DERS facets did not occur (Table 3).

Mediation analyses were also used to assess whether subscales of emotion dysregulation mediated the relationship between CSA and NSSI functions after controlling for other types (i.e. physical neglect, emotional neglect, sexual abuse, physical abuse, witnessing physical abuse of others, emotional abuse, witnessing domestic violence, community violence victim, witnessing community violence) of trauma and NSSI behaviours. Following are the subscale results.

Impulse control subscale

Sexual abuse was not associated with impulse control; however, there were direct relationships between sexual abuse and ANR, SNR and SPR (see Table 3). Further, impulse control was directly related to ANR, APR and SNR (see Table 3).

T A B L E 1   Sample descriptive characteristics

Sample characteristic	Specific item endorsed	Per cent endorsed
Traumatic Events	Bereavement	30%
	Sexual Abuse	14%
	Emotional Abuse	14%
NSSI Method	Self-hitting	42%
	Skin cutting/carving	34%
	Self-biting	29%
Suicide Ideation	5 or more times per month	9%
	3–4 times per month	4%
	2 times per month	14%
	1 time per month	30%

TABLE 2 Correlation and means and standard deviations of childhood sexual abuse and facets of emotion regulation

	1.	2.	3.	4.	5.	6.
1. CSA	1					
2. SI	0.22, (0.04, 0.38), 0.015	1				
3. ANR	0.24, (0.06, 0.40), 0.009	0.41, (0.25, 0.55), <0.001	1			
4. APR	0.13, (−0.05, 0.30), 0.148	0.40, (0.24, 0.54), <0.001	0.86, (0.80, 0.90), <0.001	1		
5. SNR	0.33, (0.16, 0.48), <0.001	0.35, (0.18, 0.50), <0.001	0.62, (0.49, 0.72), <0.001	0.46, (0.31, 0.59), <0.001	1	
6. SPR	0.27, (0.10, 0.43), 0.003	0.23, (0.05, 0.39), 0.012	0.69, (0.58, 0.77), <0.001	0.61, (0.48, 0.71), <0.001	0.72, (0.62, 0.79), <0.001	1
7. NAD						
8. GD						
9. ICD						
10. AD						
11. SD						
12. CD						
Mean	0.18	2.62	1.68	2.01	1.18	2.23
SD	0.63	4.33	2.27	2.79	2.43	3.96
Skew		0.970	0.556	0.608	1.14	−0.383
Kurtosis		−0.230	−1.37	−1.29	−0.144	−0.212
Tol	0.89	0.59	0.20	0.21	0.35	0.25
VIF	1.13	1.69	7.21	5.96	2.89	3.95

Note: XX = value., XXX = p-value.

Abbreviations: CSA, childhood sexual abuse; SI, suicide ideation; ANR, automatic negative reinforcement; APR, automatic positive reinforcement; SNR, social negative reinforcement; SPR, social positive reinforcement; NAD, nonacceptance DERS; GD, goals DERS; ICD, impulse control DERS; AD, awareness DERS; SD, strategies DERS; CD, clarity DERS; Tol, Tolerance; VIF, Variance Inflation Factor. Skew and kurtosis values are reported for all transformed variables used in this study.

TABLE 2 (Continued)

	7.	8.	9.	10.	11.	12.
1. CSA 1	0.19, (0.01, 0.36), 0.039	0.13, (−0.05, 0.30), 0.149	0.12, (−0.06, 0.29), 0.194	0.17, (−0.01, 0.34), 0.066	0.21, (0.03, 0.37), 0.019	0.20, (0.02, 0.36), 0.031
2. SI	0.37, (0.20, 0.51), <0.001	0.27, (0.10, 0.43), 0.003	0.35, (0.18, 0.50), <0.001	0.12, (−0.06, 0.29), 0.201	0.51, (0.36, 0.63), <0.001	0.41, (0.25, 0.55), <0.001
3. ANR	0.27, (0.10, 0.43), 0.002	0.24, (0.06, 0.40), 0.007	0.37, (0.20, 0.51), <0.001	−0.07, (−0.24, 0.11), 0.444	0.49, (0.34, 0.61), <0.001	0.29, (0.12, 0.44), 0.001
4. APR	0.32, (0.15, 0.47), <0.001	0.27, (0.10, 0.43), 0.003	0.34, (0.17, 0.49), <0.001	−0.12, (−0.29, 0.06), 0.207	0.43, (0.27, 0.56), <0.001	0.25, (0.07, 0.41), <0.001
5. SNR	0.05, (−0.13, 0.23), 0.594	0.19, (0.01, 0.36), 0.036	0.31, (0.14, 0.46), 0.001	−0.05, (−0.23, 0.13), 0.585	0.25, (0.07, 0.41), 0.005	0.11, (−0.07, 0.28), 0.212
6. SPR	0.12, (−0.06, 0.29), 0.208	0.12, (−0.06, 0.29), 0.189	0.22, (0.04, 0.38), 0.017	−0.03, (−0.21, 0.15), 0.746	0.22, (0.04, 0.38), 0.017	0.10, (−0.21, 0.15), 0.254
7. NAD	1	0.48, (0.33, 0.60), <0.001	0.49, (0.34, 0.61), <0.001	0.15, (−0.03, 0.32), 0.102	0.67, (0.56, 0.76), <0.001	0.43, (0.27, 0.56), <0.001
8. GD		1	0.55, (0.41, 0.66), <0.001	−0.11, (−0.28, 0.07), 0.236	0.67, (0.56, 0.76), <0.001	0.39, (0.23, 0.53), <0.001
9. ICD			1	0.13, (−0.05, 0.30), 0.127	0.70, (0.59, 0.78), <0.001	0.47, (0.32, 0.60), <0.001
10. AD				1	0.10, (−0.08, 0.27), 0.286	0.40, (0.24, 0.54), <0.001
11. SD					1	0.53, (0.39, 0.65), <0.001
12. CD						1
Mean	15.28	15.71	13.56	18.54	20.77	13.99
SD	6.31	5.40	5.73	5.05	8.16	4.77
Skew						
Kurtosis						
Tol 0.89	0.45	0.42	0.48	0.70	0.23	0.52
VIF 1.13	2.23	2.37	2.07	1.43	4.29	1.92

Note: XX = value.. XXX = p-value.

Abbreviations: CSA, childhood sexual abuse; SI, suicide ideation; ANR, automatic negative reinforcement; APR, automatic positive reinforcement; SNR, social negative reinforcement; SPR, social positive reinforcement; NAD, nonacceptance DERS; GD, goals DERS; ICD, impulse control DERS; AD, awareness DERS; SD, strategies DERS; CD, clarity DERS; Tol, Tolerance; VIF, Variance Inflation Factor. Skew and kurtosis values are reported for all transformed variables used in this study.

TABLE 3 DERS facets mediation of childhood sexual abuse and NSSI behaviours and functions, and SI

Outcome	Mediator	Estimates, (95% confidence interval), p-value			
		A	B	C	D
NSSI	Impulse control	1.19, (0.556, 2.71), 0.194	−0.046, (−0.114, 0.022), 0.182	0.183, (0.385, 0.850), 0.046	−0.54, (0.186, 0.897), 0.041
	Clarity	1.70, (0.141, 2.83), 0.031	0.051, (−0.032, 0.134), 0.229	0.152, (−0.983, 0.269), 0.261	0.086, (−0.048, 0.266), 0.983
	Strategies	2.91, (0.450, 5.03), 0.019	−0.035, (−0.083, 0.014), 0.160	−0.187, (−0.814, 0.440), 0.555	−0.010, (0.050, 0.281), <0.001
	Aware	1.76, (0.099, 3.02), 0.034	−0.012, (−0.060, 0.084), 0.742	0.296, (−0.926, 0.327), 0.366	−0.021, (−0.110, 0.159), 0.774
	Goals	1.23, (−0.409, 2.66), 0.149	0.007, (−0.066, 0.080), 0.847	0.225, (−0.913, 0.333), 0.358	0.009, (−0.110, 0.131), 0.874
	Non-acceptance	1.12, (0.933, 0.324), 0.039	0.012, (−0.051, 0.075), 0.707	0.040, (−0.093, 3.65), 0.339	0.019, (0.085, 0.228), 0.738
ANR	Impulse control	1.02, (−0.556, 2.71), 1.94	0.127, (0.071, 0.203), <0.001	0.640, (0.109, 1.31), 0.021	0.130, (0.101, 1.31), 0.009
	Clarity	1.59, (0.141, 2.83), 0.031	0.119, (0.034, 0.202), 0.005	0.618, (0.051, 1.31), 0.034	0.189, (−0.005, 1.19), 0.095
	Strategies	2.64, (0.450, 5.03), 0.019	0.127, (0.083, 0.172), <0.001	0.480, (−0.071, 1.09), 0.085	0.335, (0.086, 0.649), <0.001
	Aware	1.78, (0.099, 3.02), 0.035	−0.047, (−0.121, 0.027), 0.211	0.829, (0.283, 1.57), 0.005	−0.084, (−0.263, 0.046), 0.342
	Goals	1.14, (−0.409, 2.66), 0.149	0.091, (0.017, 0.164), 0.016	0.670, (0.128, 1.38), 0.019	0.104, (0.042, 0.380), 0.019
	Non-acceptance	1.90, (0.093, 3.65), 0.039	0.085, (0.022, 0.148), 0.008	0.647, (0.068, 1.33), 0.030	0.162, (−0.015, 0.546), 0.115
APR	Impulse control	1.02, (−0.556, 2.71), 0.194	0.160, (0.076, 0.243), <0.001	0.303, (−0.347, 1.17), 0.285	0.163, (0.101, 0.526), <0.001
	Clarity	1.59, (0.141, 2.83), 0.031	0.137, (0.032, 0.242), 0.011	0.293, (−0.411, 1.17), 0.343	0.217, (−0.411, 1.17), 0.109
	Strategies	2.64, (0.450, 5.03), 0.019	0.145, (0.088, 0.202), <0.001	0.142, (−0.555, 0.928), 0.619	0.383, (0.101, 0.798), <0.001
	Aware	1.78, (0.099, 3.02), 0.035	−0.072, (−0.164, 0.020), 0.125	0.063, (−0.113, 1.49), 0.091	−0.128, (−0.112, 1.49), 0.273
	Goals	1.14, (−0.409, 2.66), 0.149	0.132, (0.041, 0.223), 0.005	0.305, (−0.343, 1.21), 0.270	0.150, (0.062, 0.577), 0.022
	Non-acceptance	1.90, (0.093, 3.65), 0.039	0.134, (0.056, 0.212), <0.001	0.251, (−0.442, 1.01), 0.397	0.255, (0.014, 0.744), 0.048
SNR	Impulse control	1.02, (−0.556, 2.71), 0.194	0.115, (0.044, 0.185), 0.002	1.15, (0.492, 1.77), 0.001	0.117, (0.059, 0.357), <0.001
	Clarity	1.59, (0.141, 2.83), 0.031	0.027, (−0.063, 0.116), 0.557	1.25, (0.512, 1.89), <0.001	0.043, (−0.106, 0.199), 0.602
	Strategies	2.64, (0.450, 5.03), 0.019	0.057, (0.005, 0.108), 0.031	1.16, (0.436, 1.76), 0.001	0.150, (−0.060, 0.372), 0.125
	Aware	1.78, (0.099, 3.02), 0.046	−0.048, (−0.124, 0.029), 0.221	1.33, (0.657, 1.99), <0.001	−0.085, (−0.248, 0.058), 0.350
	Goals	1.14, (−0.409, 2.66), 0.149	0.068, (−0.010, 0.145), 0.085	1.18, (0.520, 1.84), <0.001	0.077, (−0.043, 0.307), 0.308
	Non-acceptance	1.90, (0.093, 3.65), 0.039	−0.005, (−0.073, 0.063), 0.185	1.35, (0.591, 1.94), <0.001	−0.009, (−0.201, 0.241), 0.896

(Continues)

TABLE 3 (Continued)

Outcome	Mediator	Estimates, (95% confidence interval), p-value			
		A	B	C	D
SPR	Impulse control	1.02, (−0.556, 2.71), 0.194	0.130, (0.010, 0.250), 0.034	1.51, (0.439, 2.61), 0.006	0.133, (−0.011, 0.453), 0.300
	Clarity	1.59, (0.141, 2.83), 0.006	0.045, (−0.104, 0.193), 0.550	1.63, (0.479, 2.72), 0.003	0.072, (−0.143, 0.336), 0.597
	Strategies	2.64, (0.450, 5.03), 0.019	0.082, (−0.005, 0.168), 0.063	1.47, (0.334, 2.55), 0.011	0.216, (−0.160, 1.40), 0.163
	Aware	1.78, (0.099, 3.02), 0.002	−0.055, (−0.183, 0.073), 0.396	1.72, (0.634, 2.86), 0.002	−0.098, (−0.320, 0.124), 0.487
	Goals	1.14, (−0.409, 2.66), 0.149	0.064, (−0.066, 0.193), 0.333	1.56, (0.489, 2.70), 0.005	0.073, (−0.067, 0.353), 0.483
	Non-acceptance	1.90, (0.093, 3.65), 0.039	0.043, (−0.070, 0.155), 0.454	1.59, (0.469, 2.70), 0.006	0.081, (−0.140, 0.456), 0.519
SI	Impulse control	1.23, (−0.556, 2.71), 0.194	0.245, (0.117, 0.372), <0.001	1.44, (0.293, 2.72), 0.015	0.264, (0.214, 0.759), 0.036
	Clarity	1.79, (0.141, 2.83), 0.030	0.343, (0.191, 0.495), <0.001	1.17, (0.152, 2.14), 0.048	0.614, (0.010, 2.33), 0.042
	Strategies	2.96, (0.450, 5.03), 0.019	0.255, (0.170, 0.340), <0.001	1.02, (−0.285, 1.90), 0.146	0.075, (0.187, 1.32), 0.029
	Aware	1.69, (0.099, 3.02), 0.066	0.065, (−0.077, 0.206), 0.366	1.62, (0.180, 2.64), 0.025	0.111, (−0.111, 0.452), 0.734
	Goals	1.28, (−0.409, 2.66), 0.149	0.195, (0.055, 0.334), 0.006	1.49, (0.096, 2.48), 0.015	0.250, (0.101, 0.902), 0.034
	Non-acceptance	2.13, (0.093, 3.65), 0.039	0.236, (0.119, 0.352), <0.001	1.30, (0.099, 2.23), 0.015	0.503, (0.076, 1.54), <0.001

Note: NSSI = Non-suicidal self-injury. ANR = Automatic Negative Reinforcement. APR = Automatic Positive Reinforcement. SNR = Social Negative Reinforcement. SPR = Social Positive Reinforcement. SI = Suicidal Ideation. A = Direct effect of Child Sexual Abuse (CSA) on the mediator. B = Direct effect of the mediator on the outcome. C = Direct effect of CSA on the outcome. D = Indirect effect of CSA on the outcome.

Clarity subscale

Although CSA was associated with clarity, and clarity and sexual abuse were associated with ANR (see Table 3); the 95 per cent confidence interval of the conditional indirect effect of the clarity subscale did include zero, and therefore was not significant, indicating no mediation occurred. Mediation did not occur for any of the other NSSI functions because direct pathways were not related to each other (see Table 3).

Strategy subscale

Sexual abuse was associated with the strategy subscale, SNR and SPR, but not automatic NSSI functions (see Table 3). The strategy subscale was only associated with automatic NSSI functions (see Table 3). Therefore, mediation did not occur.

Aware subscale

Sexual abuse was associated with the awareness subscale, as well as ANR and SPR (see Table 3). Awareness subscale was not associated with any NSSI functions (see Table 3). Therefore, mediation did not occur.

Goals subscale

Sexual abuse was not associated with goals subscale or APR but was associated with ANR and NSSI social functions, while goals were only associated with NSSI automatic functions (see Table 3). Therefore, mediation did not occur.

Non-acceptance subscale

Sexual abuse was associated with the non-acceptance subscale, ANR and NSSI social functions (see Table 3). However, non-acceptance subscale was only associated with APR. Therefore, mediation did not occur.

Suicide ideation mediation analyses

Mediation analyses utilizing the PROCESS module (Hayes & Rockwood, 2016) in IBM SPSS v.22 were used to assess whether subscales of emotion dysregulation mediated the association between CSA and SI after controlling for other trauma. The following are the subscale results.

Clarity subscale

CSA was associated with clarity, and clarity and CSA were associated with SI (Table 2). Further, the 95 per cent confidence interval of the conditional indirect effect of the clarity subscale did not include zero, and therefore was significant, indicating mediation occurred. The overall model was statistically significant ($F[9111] = 4.17$, $p < 0.001$, $R^2 = 0.25$).

Non-acceptance subscale

Additionally, CSA was associated with non-acceptance, and non-acceptance and CSA were associated with SI (Table 2). Further, the 95 per cent confidence interval of the conditional indirect effect of the non-acceptance subscale did not include zero, and therefore was significant, indicating a partial mediation occurred. The overall model was statistically significant ($F[9111] = 3.25$, $p < 0.01$, $R^2 = 0.21$).

Impulse control subscale

CSA was not associated with impulse control; however, impulse control and CSA were associated with SI (Table 2). Therefore, mediation did not occur.

Goals subscale

Similarly, CSA was not associated with the goals subscale; however, goals and CSA were associated with SI (Table 2). Therefore, mediation did not occur.

Strategy subscale

CSA was associated with strategies subscale and strategies subscale was associated with SI; however, CSA was not associated with SI (Table 2). Therefore, mediation did not occur.

Aware subscale

Finally, CSA was associated with the aware subscale and SI; however, the aware subscale was not associated with SI (Table 2). Therefore, mediation did not occur.

DISCUSSION

The present study examined the role of facets of emotion dysregulation as mediators between CSA and NSSI behaviours and functions, as well as SI. Contrary to Hypothesis 1, CSA was not associated with NSSI behaviours, and therefore, no mediation of emotion dysregulation was observed. CSA was associated with the DERS clarity, awareness and non-acceptance subscales, and automatic negative reinforcement, social negative reinforcement and social positive reinforcement NSSI functions. However, none of the DERS subscales mediated the relationship between CSA and NSSI functions (i.e. Hypothesis 2 was not supported). In partial support of Hypothesis 3, the emotion dysregulation facets that mediated the relationship between CSA and SI were lack of clarity about emotions experienced and non-accepting reactions to one's stress.

CSA does appear to increase facets of emotion dysregulation, which in turn, does increase the risk for NSSI functions and SI. These findings underscore the importance of not just the presence of emotion dysregulation but the specific type of emotion dysregulation that individuals are experiencing. Replications of these findings would lend stronger support for assessing facets of emotion dysregulation among survivors of CSA as an 'upstream' predictor of NSSI and SI.

Our findings preliminarily support the interpersonal theory of suicide (IPT; Joiner, 2005), which theorizes that painful and provocative experiences like NSSI behaviours, influence risk for suicide independently from emotional risk factors (e.g. feelings of hopelessness, feeling like a burden on others, not belonging) for SI. Specifically, in line with the IPT, NSSI behaviours may increase risk for suicide by increasing pain tolerance (Van Orden et al., 2010), while functions for NSSI may indirectly increase risk for suicide by increasing SI.

We did not find support for mediation of emotion dysregulation facets between CSA and NSSI functions. It could be that NSSI functions are themselves stronger mechanisms linking CSA to NSSI behaviours. We did find unique pathways between CSA and NSSI functions, as well as unique pathways between facets of emotion dysregulation and NSSI functions. Specifically, CSA was associated with automatic negative reinforcement after controlling for all (i.e. non-acceptance, goals, impulse control, emotional awareness and clarity) but the strategy facet of emotion dysregulation. This would suggest that individuals engage in NSSI in order to reduce negative emotions stemming from CSA. CSA was not associated with automatic positive reinforcement. This would suggest that individuals engaging in NSSI to feel *something* are not inhibiting their feelings due to CSA. CSA was also associated with engagement in NSSI for social negative and social positive reinforcements. This would suggest that individuals with histories of CSA may engage in NSSI to both gain affection within their social relationships as well as to stop negative social interactions (e.g. being teased).

Regarding the unique pathways identified between facets of emotion dysregulation and NSSI functions, we found that impulse control was associated with both automatic NSSI functions. This supports prior research that has

identified impulsivity as a factor for NSSI (Rimkeviciene et al., 2015). Thus, individuals who have difficulty with controlling their behaviour in the presence of negative emotions are more likely to engage in NSSI to reduce negative emotions or feel *something* if feeling numb. Individuals who are experiencing negative emotions in the face of negative social interactions also are more likely to engage in NSSI to reduce those negative social interactions. Intriguingly, individuals experiencing negative emotions in the absence of positive social interactions (i.e. when feeling isolated/alone) are not more likely to engage in NSSI in order to increase social connectedness. Individuals who are having difficulty clarifying how they are feeling (Clarity subscale) are only more likely to engage in NSSI when wanting to reduce negative emotions. Among individuals who believe they have limited abilities to effectively regulate their emotions (i.e. Strategies subscale) may engage in NSSI to reduce negative emotions and to feel *something*. The emotion dysregulation facet of lacking emotional awareness (i.e. not attending to emotions) was not associated with NSSI functions. This could be because if an individual is not attending to their emotions, they would not have a desire to engage in NSSI. These individuals likely are not connecting negative emotional states with social interactions (neither negative interactions nor lack of positive interactions). For individuals who have difficulty engaging in goal-directed behaviours when experiencing negative emotions, engagement in NSSI to reduce those negative emotions or to feel *something* may take precedence over other goals. Thus, negative emotional states are so aversive to these individuals that no other goals can be focused on. Finally, individuals who have non-accepting reactions to negative emotions are only more likely to engage in NSSI in order to feel *something*. It could be that feeling *nothing, empty or numb* creates dissonance (e.g. 'I should be reacting in this situation!') in the individual and, thus, they engage in NSSI.

Regarding Hypothesis 3, we found lack of emotional clarity partially mediated the relationship between CSA and SI. That is, individuals who are unable to clarify how they are feeling were more likely to have SI. This is troubling since it is developmentally appropriate for children to have difficulty identifying emotions (Malik & Marwaha, 2021). We also found individuals who tend to not accept, and therefore have negative reactions to their stress stemming from CSA, are at increased risk for SI. This suggests individuals who are angry at or blame themselves for being sexually abused or who feel ashamed/embarrassed about being sexually abused are at increased SI risk.

While other emotion dysregulation facets did not mediate the relationship between CSA and SI, there were unique pathways found between CSA and emotion dysregulation facets. Specifically, experiencing CSA was associated with having limited strategies for emotion regulation and not attending to emotions. There were also links between all emotion dysregulation facets and SI except for lack of emotional awareness. This would suggest that individuals who do not attend to their emotions are likely not bothered by their emotions and thus have no thoughts of death.

Implications for providers are as follows. First, providers should assess frequency and means of NSSI, NSSI behaviour reasons particularly when their clients have a CSA history. Second, providing interventions focused on emotion regulation via integration of emotional experiences with thoughts and behaviours may help clients better integrate their experiences and have better insight into the connections between NSSI behaviours, CSA history and emotions. For difficulties with identifying emotions, using a cognitive behavioural framework would be useful. Providing an acceptance and commitment therapeutic lens may be especially useful if patients are struggling to accept their emotional experiences (Turrell & Bell, 2016). For difficulties with impulsivity stemming from CSA, utilizing a trauma-informed therapy modality that helps to strengthen attachment relationships, thereby improving a sense of safety, which would facilitate a more optimal environment for learning emotion regulation skills and executive functioning capacities (i.e. reducing impulsivity) would be useful for patients identified as engaging in NSSI for emotion management reasons (i.e. either to reduce strong negative feelings or to feel something when feeling numb) (Blaustein & Kinniburgh, 2019).

Limitations/Future directions

The present findings should be considered in light of the following limitations. First, the present study design was cross-sectional in nature and hence causality is an assumption. Nonetheless, previous studies support that emotion dysregulation is an underlying mechanism between experiences of CSA and adult suicidal behaviour. Second, the present study asked respondents to report retrospective experiences of CSA during childhood. This can lead to recall bias; however, using items inquiring about specific behavioural aspects of CSA, as done in the present study, reduces chance of recall bias (Widom & Morris, 1997). Nonetheless, we provide preliminary guidance on the roles of emotion dysregulation facets as important mechanisms between CSA, NSSI and SI. Further, we had only participants who identified as a binary gender, although they had the option of identifying as non-binary. Results, therefore, cannot be generalized to non-binary individuals. Our findings may not generalize to survivors who have limited socioeconomic and/or intellectual capacities. Future directions include assessing these relations in prospective longitudinal studies of clinical

populations with survivors who identify across the spectrum of gender, socioeconomic status and cognitive capacities. Additionally, it will be important to assess whether NSSI functions indirectly increase risk for suicide by increasing SI.

ETHICAL STATEMENT

The study was approved by the University's IRB prior to data collection.

CONFLICT OF INTEREST

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