



An examination of the relations between emotion dysregulation, dissociation, and self-injury among dissociative disorder patients

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ABSTRACT

Background: Dissociative disorder (DD) patients report high rates of self-injury. Previous studies have found dissociation and self-injury to be related to emotional distress. To the best of our knowledge, however, the link between emotion dysregulation and self-injury has not yet been examined within a DD population.

Objective: The present study investigated relations between emotion dysregulation, dissociation, and self-injury in DD patients, and explored patterns of emotion dysregulation difficulties among DD patients with and without recent histories of self-injury.

Method: We utilized linear and logistic regressions and *t*-test statistical methods to examine data from 235 patient-clinician dyads enrolled in the TOP DD Network Study.

Results: Analyses revealed emotion dysregulation was associated with heightened dissociative symptoms and greater endorsement of self-injury in the past six months. Further, patients with a history of self-injury in the past six months reported more severe emotion dysregulation and dissociation than those without recent self-injury. As a group, DD patients reported the greatest difficulty engaging in goal-directed activities when distressed, followed by lack of emotional awareness and nonacceptance of emotional experiences. DD patients demonstrated similar patterns of emotion dysregulation difficulties irrespective of recent self-injury status.

Conclusions: Results support recommendations to strengthen emotion regulation skills as a means to decrease symptoms of dissociation and self-injury in DD patients.

Un análisis de las relaciones entre la desregulación emocional, disociación y autolesiones en pacientes con trastorno disociativo

Antecedentes: Los pacientes con trastorno disociativo (DD en sus siglas en inglés) reportan altas tasas de autolesiones. Estudios anteriores han encontrado que la disociación y las autolesiones están relacionadas con el sufrimiento emocional. Sin embargo, hasta donde sabemos, la relación entre la desregulación emocional y las autolesiones aún no se ha examinado en una población con DD.

Objetivo: El presente estudio investigó las relaciones entre la desregulación emocional, la disociación y la autolesión en pacientes con DD, y exploró los patrones de las dificultades de desregulación emocional entre los pacientes con DD con y sin historias recientes de autolesión.

Método: Se utilizaron regresiones lineales y logísticas y métodos estadísticos de prueba *t* para examinar los datos de 235 díadas paciente-médico inscritas en el Estudio TOP DD Network.

Resultados: Los análisis revelaron que la desregulación emocional se asoció con un aumento de los síntomas disociativos y una mayor tendencia a la autolesión en los últimos seis meses. Además, los pacientes con un historial de autolesiones en los últimos seis meses informaron de una desregulación emocional y una disociación más graves que los que no se habían autolesionado recientemente. Como grupo, los pacientes con DD informaron de la mayor dificultad para participar en actividades dirigidas a objetivos cuando estaban angustiados, seguidos por la falta de conciencia emocional y la no aceptación de las experiencias emocionales. Los pacientes con DD demostraron patrones similares de dificultades de desregulación emocional, independientemente del estado de autolesión reciente.

Conclusiones: Los resultados apoyan las recomendaciones de fortalecer las habilidades de regulación de las emociones como medio para disminuir los síntomas de disociación y autolesión en pacientes con DD.

解离性障碍患者情绪失调, 解离和自伤之间关系的研究

背景: 解离性障碍 (DD) 患者报告了很高的自伤率。先前研究发现, 解离和自伤与情绪困扰有关。然而, 据我们所知, 情绪失调和自伤之间的联系尚未在 DD 人群中进行过研究。

目的: 本研究考查了 DD 患者情绪失调, 解离和自伤之间的关系, 并探讨了近期有和无自伤史的 DD 患者情绪失调困难的模式。

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关键词

自伤; 非自杀性自伤; 情绪调节; 情绪失调; 解离; 解离障碍

HIGHLIGHTS

- The current study found that emotional dysregulation in DD patients was associated with heightened dissociative symptoms and greater endorsement of self-injury in the past six months.

方法: 我们利用线性和逻辑回归以及 t 检验统计方法来考查来自 235 名参加 TOP DD 网络研究的医患配对数据。

结果: 分析显示, 在过去六个月中, 情绪失调与解离症状的加剧和对更多自伤有关。此外, 在过去 6 个月内有自伤史的患者报告的情绪失调和解离比没有近期自伤的患者更严重。作为一个群体, DD 患者报告在精神痛苦时进行目标导向活动最困难, 其次是缺乏情绪意识和不接受情绪体验。无论最近的自伤状态如何, DD 患者都表现出类似的情绪失调困难模式。

结论: 结果支持加强情绪调节技能作为减少 DD 患者解离和自伤症状的一种手段的建议。

The *Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition* (DSM-5) defines dissociation as ‘a disruption of and/or discontinuity in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control, and behavior’ (American Psychiatric Association [APA], 2013, p. 291). Dissociative psychopathology can manifest as amnesia, depersonalization, derealization, or identity alterations and can be accompanied by positive (e.g. psychotic-like symptoms; Schiavone, McKinnon, & Lanius, 2018) and negative (e.g. somatosensory deficits) symptoms (Şar, 2014). While dissociation is understood to be an adaptive, protective psychological process of detachment from highly traumatic events, the chronic reliance on dissociation as an escape from overwhelming experiences, emotions, and memories can put an individual at risk for developing a dissociative disorder (DD; Putnam, 2016). DDs are associated with a range of psychiatric symptoms (Brand et al., 2009; Schiavone et al., 2018), including emotion and behaviour dysregulation, as well as chronic self-injury. In fact, up to 86% of dissociative individuals self-injure (Ross & Norton, 1989; Saxe, Chawla, & Van der Kolk, 2002), which is more frequent than is found in other psychiatric populations (Calati, Bensassi, & Courtet, 2017; Saxe et al., 2002). Understanding the relation between emotion dysregulation, dissociation, and self-injury might have significant assessment and treatment implications for individuals with DDs.

1.1. Self-injury

Self-injury involves intentionally causing physical harm to one’s own body and typically includes behaviours such as cutting, scratching, or burning the skin (Klonsky & Muehlenkamp, 2007). Self-injury serves a variety of functions for those who engage in it. Most commonly, self-injury is conceptualized as a means of distracting from and reducing emotional distress by producing alternative emotional states with enough success that the behaviour becomes reinforced (Hooley & Franklin, 2018). Trauma survivors with a history of self-injury report greater levels of emotion dysregulation than those without self-injury (Bedi, Muller, & Classen, 2014), and greater self-reported emotion dysregulation is associated with greater self-injury frequency (Titelius et al., 2018). A meta-analysis

of facets of emotion dysregulation associated with self-injury (Wolff et al., 2019) found that all subscales of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) were significantly related to self-injury; the subscales most strongly associated with self-injury (in descending order) were limited access to emotion regulation strategies, nonacceptance of emotional responses, impulse control difficulties, and difficulties engaging in goal-directed behaviours, with weaker associations found for difficulties with emotional clarity and emotional awareness.

Self-injury can also serve trauma-related functions. For example, self-injury can be used as a way of distracting from intrusive trauma thoughts or memories (Najmi, Wegner, & Nock, 2007), expressing deep emotional and psychophysiological pain (Dyer, Dorahy, Shannon, & Corry, 2013), self-soothing (Russell, Moss, & Miller, 2010), or re-enacting trauma (Connors, 1996). For some, self-injury may be a pathway to dissociate, such that the individual becomes detached from their mind and body while engaging in self-injury (Klonsky, 2007). For others, self-injury may serve as a form of self-punishment that their trauma history has led them to inaccurately believe they deserve (Bryan, Rudd, & Wertenberger, 2013). Although the function of self-injury has not been studied in a DD-identified population, Brand (2001) noted that DD patients’ self-injury may be best conceptualized as attempted solutions for dysregulated emotions and trauma-related stressors.

Dissociation is associated with self-injury and is an established mediator of the relationship between trauma and self-injury (e.g. Dorahy, Carrell, & Thompson, 2019; Rossi et al., 2019). Despite the documented relationship between dissociation and self-injury, and the high rates of self-injury among DD patients, few empirical studies on self-injury have focused solely on DD patients. Saxe et al. (2002) found that dissociative individuals engaged in self-injury more frequently, used more methods of self-injury, and began to self-injure at an earlier age when compared to individuals who did not dissociate. Engelberg and Brand (2012) examined patient-reported self-injury over the course of a 30-month naturalistic study of DD patients and found that heightened depression symptoms were correlated with higher levels of self-injury. Webermann, Myrick, Taylor, Chasson, and Brand (2016) found

that dissociation severity, in addition to depressive symptoms, distinguished DD patients who engaged in self-injury one or more times in the last six months from those that did not, such that those with higher dissociation severity were more likely to have engaged in self-injury. In order to develop more effective assessments and treatment interventions, further research is needed to understand what factors, such as emotion dysregulation, contribute to DD patients' unsafe behaviours.

1.2. Emotion dysregulation

According to Gross (1998), emotion regulation is 'the process by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions' (p. 275). Gratz and Roemer (2004) add that emotion regulation involves the awareness, understanding, and acceptance of emotional experiences, accompanied by the ability use adaptive coping strategies regardless of the intensity and nature of emotions. The absence of these skills is indicative of emotion dysregulation (Gratz & Roemer, 2004).

Emotion dysregulation has been linked to increased vulnerability for the development and maintenance of trauma-related psychopathology (Pencea et al., 2020). Powers, Cross, Fani, and Bradley (2015) found that emotion dysregulation mediates the relation between posttraumatic stress disorder (PTSD) symptoms and dissociative symptoms, suggesting that emotion dysregulation may be a mechanism underlying trauma-related symptomology. Cross-sectional and longitudinal studies have established a relation between trauma history and general emotion dysregulation, including difficulty controlling emotions when distressed, difficulty concentrating or accomplishing tasks when experiencing unwanted emotions, and difficulty using adaptive forms of coping when upset (Seligowski, Lee, Bardeen, & Orcutt, 2015). In examining relations between posttraumatic stress, affect dysregulation, and 'dysfunctional avoidance' activities (tension-reduction activities, including self-injury; dissociation; suicidality; and substance abuse), Briere, Hodges, and Godbout (2010) found that dysfunctional avoidance was associated with accumulated trauma exposure and mediated by posttraumatic stress and affect dysregulation. In one of the few studies to date with a DD sample undergoing treatment (Brand et al., 2019), patients reported high levels of emotion dysregulation at intake, but improved over the course of treatment. Clinical literature has noted that DD patients with childhood trauma histories may be terrified of their own emotions and those of others, and make a considerable

effort to avoid experiencing them (Steele, Boon, & van der Hart, 2017).

2. The present study

Despite research documenting DD patients' difficulty regulating their emotions (e.g. Brand et al., 2019) and research linking affect dysregulation with dysfunctional avoidance (including self-injury and dissociation; Briere et al., 2010), there is a lack of research on if and how emotion dysregulation is associated with symptoms of dissociation and self-injury among explicitly DD-identified patients. In addition, although it is known that emotion dysregulation, broadly, is a source of difficulty for DD patients, less is known about patterns of dysregulation among DD patients. As such, the primary aims of the present study were to (a) examine relations between emotion dysregulation, experiences of dissociative symptoms, and self-injury; (b) investigate differences in emotion dysregulation and dissociation severity between DD patients with and without a recent history of self-injury; and (c) investigate patterns of emotion dysregulation among DD patients. Informed by Webermann et al. (2016) and Wolff et al. (2019), we hypothesized that emotion dysregulation would be associated with heightened symptoms of dissociation and greater endorsement of self-injury in the past six months (H1) and patients with a recent history of self-injury would demonstrate greater emotion dysregulation and dissociation severity than patients without a recent history of self-injury (H2). An additional exploratory aim of the study was to examine patterns of emotion dysregulation among individuals with and without recent self-injury, and among the overall sample.

3. Method

This study strove to extend the findings of Brand et al. (2019) by using cross-sectional data collected from the larger Treatment of Patients with Dissociative Disorders (TOP DD) Network study, a multi-modal, web-based psychoeducational intervention programme for DD patients and their clinicians that focused on improving DD patients' safety, increasing patients' emotional regulation capacities, and decreasing dissociative symptomology. After institutional review board approval from Towson University, clinicians were recruited at conference events and trainings, through professional organizations and mental health listservs, over social media communication platforms, and from prior (e.g. Brand et al., 2009) TOP DD Study participants who had expressed interest in participating in future studies. Clinicians were asked to invite a single DD patient who demonstrated potential to benefit from the study, was in early phases

of DD treatment (International Society for the Study of Trauma and Dissociation [ISSTD], 2011), and met the study eligibility requirements. The patient had to be diagnosed with dissociative identity disorder (DID), dissociative disorder not otherwise specified (DDNOS), or other specified dissociative disorder (OSDD). Given the TOP DD Network study was conducted shortly after the publication of the DSM-5 (APA, 2013), participants were eligible for the study with either a 'not otherwise specified-' or 'other specified-' DD diagnosis from either the DSM-IV-TR or DSM-5, respectively. Data was not collected regarding the specific presentation of DDNOS or OSDD (e.g. OSDD4; dissociative trance). Patients also had to be 18 years or older, able to read English at an eighth-grade level, working with their enrolled therapist for at least three months, and be able to tolerate non-detailed references to trauma, safety struggles, dissociation, and parts of self. After receiving informed consent, data on self-injury history, self-injury frequency, emotional dysregulation, and dissociation severity were collected.

3.1. Participants

During enrolment, 291 patient-clinician dyads began participating in the TOP DD Network study; however, only 235 patient-clinician completed all baseline measures and were therefore included in the present study. Patients primarily identified as women (90.21%) and white (82.55%), with an average age 40.89 years old ($SD = 10.60$, range 19–68). Patients had received a DD diagnosis an average of 4.40 years ($SD = 5.17$, range <1–25) prior to enrolling in the study, and had spent

an average of 8.47 years ($SD = 8.15$, range <1–40) receiving mental health treatment prior to that, totaling an average of 12.87 years in treatment prior to enrolling in the study. A total of 65.78% ($n = 148$) were diagnosed with DID, 30.22% ($n = 68$) were diagnosed with DDNOS, and 4.00% ($n = 9$) were diagnosed with OSDD. See Table 1 for additional patient demographic information. Clinicians had spent an average of 9.87 years treating DD patients prior to enrolling in the study ($SD = 7.65$, range = <1–34), and primarily identified as women (82.22%) and white (92.00%). See Table 2 for clinician participant demographic information.

3.2. Patient measures

3.2.1. Difficulties in emotion regulation scale

Emotion dysregulation was measured using the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS is a 36-item self-report measure assessing six components of emotion regulation difficulties, including nonacceptance of emotional responses (*nonacceptance*), lack of emotional clarity (*clarity*), lack of emotional awareness (*awareness*), limited access to emotion regulation strategies (*strategies*), difficulties engaging in goal-directed behaviours (*goals*), and impulse control difficulties (*impulse*). Response options are on a 5-point Likert scale ranging from 1 (*almost never*, 0–10%) to 5 (*almost always*, 91–100%); higher scores indicate higher levels of emotion dysregulation. The DERS demonstrates excellent internal consistency ($\alpha = .93$), good test-retest reliability (.88), and construct and

Table 1. Patient participant demographic information ($n = 235$).

Baseline characteristic	%	<i>n</i>	<i>M</i>	<i>SD</i>	Range
Age			40.89	10.60	19–68
Gender					
	Women	212			
	Man	23			
Race/ethnicity					
	Caucasian	194			
	Latino/a or Hispanic	4			
	Asian	6			
	Black	11			
	Native American	15			
	Other	5			
DD diagnosis ^a					
	DID (DSM-IV or DSM-5)	148			
	DDNOS (DSM-IV)	68			
	OSDD (DSM-5)	9			
Education completed					
	Grade school	8			
	High school	29			
	Trade or technical school	1			
	Professional or work training	7			
	Some college	43			
	College diploma	30			
	University degree (3 or 4-year)	58			
	Graduate degree	49			
	Other	10			
Years in mental health treatment before receiving DD diagnosis			8.47	8.15	<1–40
Years formally diagnosed with a DD			4.40	5.17	<1–25

DD = dissociative disorder; DID = dissociative identity disorder; DDNOS = dissociative disorder not otherwise specified; OSDD = other specified dissociative disorder; DSM = Diagnostic and Statistical Manual of Mental Disorders.

^a $n = 225$. A specific DD diagnosis was not reported for ten participants; however, being diagnosed with a DD was a requirement for participation in the present study.

Table 2. Clinician participant demographic information ($n = 225$).

Baseline characteristic		%	n	M	SD	Range
Gender	Female	82.2	185			
	Male	17.3	39			
	Transgender	0.4	1			
Race/ethnicity	White	92.0	207			
	Latino or Hispanic	0.9	2			
	Asian	1.3	3			
	Black	0.4	1			
	Other	5.3	12			
Country	United States	41.78	94			
	Norway	26.67	60			
	Canada	7.11	16			
	Australia	6.67	15			
	UK	5.33	12			
	Sweden	4.89	11			
	Netherlands	2.67	6			
	India	1.78	4			
	Spain	0.44	1			
	New Zealand	0.44	1			
	Israel	0.44	1			
Other	1.78	4				
Years treating dissociative patients			9.87	7.65	<1–34	

predictive validity for behaviours correlated with emotion regulation difficulties (e.g. self-injury; Gratz & Roemer, 2004). Cronbach's alpha for the DERS total sum score was .94 in this sample. Alpha coefficients of .91 (nonacceptance), .86 (clarity), .81 (awareness), .87 (strategies), .88 (goals), and .89 (impulse) were found for each subscale, respectively.

3.2.2. Dissociative experiences scale-II

Dissociation severity was measured using the Dissociative Experiences Scale-II (DES-II; Carlson & Putnam, 1993). DES-II is a 28 item, 11-point ordinal scale assessment where a participant indicates what percentage of time a particular dissociative experience has occurred. Scale response options range from 0% (*never*) to 100% (*always*); higher scores indicate higher average levels of dissociation. The DES-II has excellent internal consistency ($\alpha = .93$), convergent validity ($r = .67$), and good test-retest reliability ranging from .78 to .93 (van IJzendoorn & Schuengel, 1996). A Cronbach's alpha of .96 was found in this sample.

3.4. Clinician measures

3.4.1 Self-injury clinical data

History and frequency of patient self-injury was collected as part of a clinical data form adapted from a survey by Zittel Conklin and Westen (2005) and is the same form used in the first TOP DD naturalistic study (Brand et al., 2009). At baseline, clinicians were asked to report if the participating patient had ever self-injured (1 = *yes* or 0 = *no*), if the participating patient self-injured in the past six months (1 = *yes* or 0 = *no*), and how many times the patient self-injured in the six months prior to enrolling in the study.

3.5. Data analytic plan

First, descriptive statistics were examined to characterize the history and frequency of self-injury among patient participants. Second, we conducted a series of regressions to test our first hypothesis that emotion dysregulation would be associated with heightened symptoms of dissociation (linear regression) and greater endorsement of self-injury in the past six months (logistic regression). To facilitate interpretation of model parameters, emotion dysregulation was mean-centred for analyses to create meaningful zero values at which main effects could be interpreted. We used maximum likelihood estimation with robust standard errors (MLR) to address missing data and potential violations of normality assumptions. Third, a series of independent t -tests and their Cohen's d effect sizes were calculated to test our second hypothesis that patients with a recent history of self-injury would demonstrate greater emotion dysregulation and dissociation severity than patients without a recent history of self-injury. Finally, to investigate patterns of emotion dysregulation across self-injury groups in a manner that allowed for accurate cross-subscale comparisons despite the varying number of questions per subscale, we calculated mean DERS subscale responses (MDSRs) before completing a series of paired-sample t -tests comparing the MDSRs among the full sample as well as within each self-injury group (i.e. patients with and without a recent self-injury history). MDSRs were calculated by dividing each DERS mean subscale score by the number of questions in the respective subscale.

4. Results

4.1. Descriptive statistics

A total of 162 participants (68.94%) reported a lifetime history of self-injury; 105 participants (44.68%) reported engaging in self-injury in the six months prior to enrolling in the study. Patients with a recent history of self-injury self-injured an average of 8.49 times ($SD = 23.19$, range 1–150) in that timeframe.

4.2. Regression analyses

Results of the linear regression analysis revealed emotion dysregulation was positively related to symptoms of dissociation, $B = 0.38$, $SE = 0.05$, $p < .001$, and explained 17.4% of variance in dissociative symptoms ($SE = 0.05$, $p < .001$). Results of the logistic regression analysis revealed for every one-unit increase in emotion dysregulation, the odds of engaging in self-injury behaviour in the past six months (versus not engaging in self-injurious behaviour in the past six months) increased by a factor of 1.02 ($SE = 0.01$, OR 95%

CI [1.01, 1.03], $p = .002$). Emotion dysregulation accounted for a marginal amount of variance in self-injury behaviour (5.9%; $SE = 0.04$, $p = .101$). This pattern of results supports our first hypothesis (H1).

4.3. T-tests

Independent t -tests and accompanying Cohen's d effect sizes (see Table 3) revealed that patients with recent self-injury had higher general emotion dysregulation ($d = 0.45$) and dissociation severity ($d = 0.49$) than patients without a recent history of self-injury. These results support our second hypothesis (H2). With regard to emotion dysregulation, patients with a recent history of self-injury reported more difficulties with nonacceptance of emotions ($d = 0.39$), impulse control ($d = 0.37$), emotional clarity ($d = 0.35$), and awareness ($d = 0.34$).

4.4. Mean DERS subscale response analyses

Mean DERS subscale response (MDSR) calculations (see Table 4) revealed that the full sample reported the greatest difficulty with being able to engage in goal-directed behaviour when distressed ($M = 3.68$, $SD = 0.90$), followed by difficulties with emotional awareness ($M = 3.54$, $SD = 0.77$), nonacceptance ($M = 3.50$, $SD = 1.02$), clarity ($M = 3.27$, $SD = 0.80$), regulation strategies ($M = 3.24$, $SD = 0.81$), and impulse control ($M = 2.65$, $SD = 0.93$). Among those with and without a recent history of self-injury, only one exception to this pattern emerged: for those with recent self-injury, the nonacceptance MDSR was slightly higher than that of the awareness MDSR. Notably, paired sample t -tests conducted with the full sample and each self-injury group revealed significant within-group differences between most MDSRs (p -values ranging from $p < .001$ to $p = .046$), with the exception of awareness and nonacceptance MDSRs

Table 3. Descriptive statistics, independent t -tests, and Cohen's d results.

Variable (Range)	All Participants ($n = 235$)		No self-injury in last 6 months ($n = 130$)		1+ self-injury in last 6 months ($n = 105$)		$t(233)$	p	Cohen's d
	M	SD	M	SD	M	SD			
DES-II (0–100)	38.70	20.31	34.41	19.61	44.01	20.00	3.70	<.001	0.49
DERS Total (36–180)	118.76	22.26	114.42	21.18	124.13	22.5	3.40	.001	0.45
DERS Goals (5–25)	18.42	4.49	18.10	4.39	18.82	4.60	1.22	.223	0.16
DERS Awareness (6–30)	21.22	4.63	20.52	4.60	22.09	4.53	2.62	.009	0.34
DERS Nonacceptance (6–30)	20.97	6.11	19.92	6.02	22.28	6.00	2.99	.003	0.39
DERS Clarity (5–25)	16.35	3.98	15.74	3.87	17.10	4.00	2.65	.009	0.35
DERS Strategies (8–40)	25.89	6.45	25.15	6.56	26.80	6.23	1.97	.051	0.26
DERS Impulse (6–30)	15.92	5.61	15.01	5.67	17.05	5.33	2.81	.005	0.37

Independent t -tests compared groups with and without recent self-injury.

Table 4. Means, standard deviations, and paired sample t -tests of Mean DERS Subscale Responses (MDSRs).

	All participants ($n = 235$)	No self-injury in last 6 months ($n = 130$)	1+ self-injury in last 6 months ($n = 105$)
	$M (SD)$		
Total MDSR	3.30 (0.62)	3.18 (0.59)	3.45 (0.62)
Goals MDSR _a	3.68 (0.90)	3.62 (0.88)	3.76 (0.92)
Awareness MDSR _b	3.54 (0.77)	3.42 (0.77)	3.68 (0.75)
Nonacceptance MDSR _c	3.50 (1.02)	3.32 (1.00)	3.71 (1.00)
Clarity MDSR _d	3.27 (0.80)	3.15 (0.77)	3.42 (0.80)
Strategies MDSR _e	3.24 (0.81)	3.14 (0.82)	3.35 (0.78)
Impulse MDSR _f	2.65 (0.93)	2.50 (0.95)	2.84 (0.89)
<i>Paired Sample t-tests (SE)</i>			
$t_{(a-b)}$	2.00 (.07)*	2.00 (.10)*	<i>ns</i>
$t_{(a-c)}$	2.76 (.07)**	3.07 (.10)**	<i>ns</i>
$t_{(a-d)}$	5.94 (.07)***	5.15 (.09)***	3.20 (.11)**
$t_{(a-e)}$	9.86 (.05)***	7.40 (.06)***	6.52 (.06)***
$t_{(a-f)}$	18.40 (.06)***	14.78 (.08)***	11.18 (.08)***
$t_{(b-c)}$	<i>ns</i>	<i>ns</i>	<i>ns</i>
$t_{(b-d)}$	5.70 (.05)***	4.35 (.06)***	3.68 (.07)***
$t_{(b-e)}$	4.64 (.06)***	3.01 (.09)**	3.65 (.09)***
$t_{(b-f)}$	12.59 (.07)***	9.23 (.10)***	8.59 (.10)***
$t_{(c-d)}$	3.28 (.07)**	<i>ns</i>	2.84 (.10)**
$t_{(c-e)}$	4.64 (.06)***	2.24 (.08)*	4.65 (.08)***
$t_{(c-f)}$	12.19 (.07)***	8.49 (.10)***	8.82 (.10)***
$t_{(d-e)}$	<i>ns</i>	<i>ns</i>	<i>ns</i>
$t_{(d-f)}$	9.64 (.06)***	7.24 (.09)***	6.35 (.09)***
$t_{(e-f)}$	11.32 (.05)***	8.44 (.08)***	7.70 (.07)***

* $p < .05$; ** $p < .01$; *** $p < .001$; *ns* = not significant.

Paired-sample t -tests compare the MDSRs among the full sample as well as within each self-injury group (i.e. patients with and without a recent self-injury history).

and clarity and strategies MDSRs ($ps > .05$). Several other differences between MDSRs emerged among participants with a recent history of self-injury, which were different from participants without a recent history of self-injury. See Table 4 for paired sample t -test results within each group.

5. Discussion

The present study examined relations between emotion dysregulation, dissociation, and self-injury among DD patients. Results revealed a concerning level of self-injurious behaviours: nearly 69% of the sample reported a lifetime history of self-injury and close to half (44.68%) self-injured one or more times in the previous six months. As hypothesized, emotion dysregulation was associated with heightened dissociative symptoms and greater endorsement of self-injury in the past six months. In addition, patients with recent self-injury reported higher emotion dysregulation and dissociation severity than patients without a recent history of self-injury. In particular, individuals with recent self-injury reported greater difficulties with emotion dysregulation related to non-acceptance, impulse, clarity, and awareness. Despite these differences in emotion dysregulation severity, patterns of emotion dysregulation among DD patients were similar across self-injury groups, with both groups reporting the greatest difficulty with engaging in goal-directed behaviours when distressed. We discuss each of these findings below.

Results from this study add to the literature demonstrating that self-destructive behaviours are alarmingly frequent among DD patients. Patient participants spent an average of 13 years receiving mental health treatment prior to enrolling in the study. Despite years of treatment, however, many continued to struggle with self-injury. There is clearly a need for better understanding of how to help DD patients stabilize self-injury. When interpreting prevalence rates, it is important to consider that not all occurrences of self-injury may be reported to the clinician. Self-injury often occurs in isolation and secrecy long before it is brought to the attention of others, including clinicians (Chu, 2011). Unique to DD patients, self-injury can occur in a state of dissociation, resulting in later amnesia, such that the patient does not recall injuring themselves; up to 60% of DD patients report amnesia before, during, or after self-injuring (Coons & Milstein, 1990). DD patients may also have specific self-states (sometimes referred to as ‘parts,’ ‘identities,’ or ‘alters’) whose role, or function, is to self-injure (Brand, 2001). DD patients can find evidence of hurting themselves without any memory of engaging in such behaviours. The secrecy about and inconsistent awareness of potentially self-destructive and lethal behaviours may amplify the risk and danger of these

behaviours among individuals with dissociative symptoms.

Previous research has established relations between self-destructive behaviours, dissociation severity, depression symptoms, and somatization among DD patients (Engelberg & Brand, 2012; Ozturk & Sar, 2008; Webermann et al., 2016). The present study extends this work by underscoring that DD patients experiencing emotion dysregulation are likely among those at risk for experiencing more severe dissociation and occurrence of self-injury. To our knowledge, no previous studies have examined emotion dysregulation and its subtypes as related to dissociative symptom severity and self-injury among DD patients, despite arguments for emotion dysregulation as a potential risk factor for dissociation (e.g. Powers et al., 2015) and self-injury (e.g. Wolff et al., 2019) in the broader literature. Notably, DD patients in this sample reported more general emotion dysregulation ($M = 118.76$) than the samples the DERS’ psychometric properties were tested on ($M = 77.99$ for women sample; Gratz & Roemer, 2004) and more than individuals with a range of psychiatric conditions, including individuals with PTSD symptoms (e.g. $M = 94.02$ in PTSD sample; Radomski & Read, 2016). These DD patients also reported greater emotional dysregulation than found in a sample of patients with severe self-injury (e.g. $M = 110.97$; Chen & Chun, 2019). This finding emphasizes the degree of emotional dysregulation faced by DD patients, and the importance of addressing dysregulation in treatment of DDs.

When compared to published data of overall emotion dysregulation among individuals with borderline personality disorder (BPD; e.g. $M = 114.79$ – 139.76), these DD patients had similarly high scores on overall emotion dysregulation ($M = 118.76$); however, DD patients consistently struggled more than BPD patients with emotional Awareness, Clarity, and Nonacceptance of emotional responses, and struggled less than BPD patients with Goals, Strategies, and Impulsivity (e.g. Ibraheim, Kalpakci, & Sharp, 2017; Rufino, Ellis, Clapp, Pearte, & Fowler, 2017; Salgó, Szeghalmi, Bajzát, Berán, & Unoka, 2021). In other words, DD patients had more difficulty than BPD patients on the subscales related to their ability to be aware of, accept, and cognitively process emotions, all of which are *internal* processes not observable to others. In contrast, BPD patients appear to ruminate more and impulsively act out when distressed. Thus, BPD patients’ emotional dysregulation appears more likely to be *externally* expressed in behaviours which are observable to others. As such, the clinical implications of this study may not fully apply to BPD treatment. While DD patients may need support in gaining awareness and clarity of their emotions, the focus for BPD patients may centre around distress tolerance

and behavioural inhibition. This key distinction may be an area that discriminates between the disorders, although patients in these groups need to be directly compared in future studies.

General emotion dysregulation and particular deficits related to nonacceptance of emotional responses, impulsivity, emotional awareness, and clarity were apparent struggles for all DD patients, but were greater struggles for individuals with recent self-injury. This calls attention to potentially unique emotional processes of DD patients, such that they often cope and survive through disconnecting and escaping from their emotions. For example, dissociation allows individuals to operate with a lack of integration of thoughts, memories, emotions, and awareness. When DD individuals perceive their emotions as unwanted, overwhelming, or threatening, they can employ cognitive strategies that isolate these emotions from the forefront of their awareness (DePrince & Freyd, 1999). By doing so, patients can prevent themselves from confronting their intense emotions and accompanying urges. Self-injury and dissociation provide relief from some emotions while producing alternative, perhaps more bearable, emotional states (e.g. feeling numbness instead of sadness). While this may provide a quick sense of relief for the patient (Chu, 2011), it can further impair the individual's ability to distinguish which emotions they are experiencing (i.e. clarity). DD patients already have unique challenges associated with their ability to be cognizant of their emotions, so the addition of engaging in self-injury rather than feeling emotions may further inhibit patients' ability to regulate their emotions.

Individuals with and without a recent history of self-injury indicated that when distressed they struggled most with engaging in goal-directed behaviours. The vast majority of participants reported they struggled with difficulty concentrating or working towards accomplishing other tasks when experiencing challenging emotions; specifically, patients' mean scores on this subscale indicated they struggled engaging in goal-directed behaviours 65% to 90% of the time they were distressed. This is consistent with findings from McKinnon et al. (2016) and Boyd et al. (2020), who found that individuals who experience dissociation have difficulty maintaining their attention and that emotion dysregulation accounted for some variance in trauma survivors' cognitive abilities (e.g. concentrating).

DD patients' struggle with goal-directed behaviours also suggests that DD patients may be vulnerable to becoming highly ruminative and fixated when experiencing distressing emotional states, resulting in an inability to engage in other tasks. For trauma survivors, rumination is conceptualized as a chronic and repetitive fixation on 'trauma and its consequences,' which may include PTSD symptoms featuring

assimilated and overaccommodated beliefs about themselves, the world, and the causes and consequences of their traumatic experiences (Brown, Hetzel-Riggin, Mitchell, & Bruce, 2018; Michael, Halligan, Clark, & Ehlers, 2007). In many cases, rumination can serve as a mechanism of cognitive avoidance, such that it allows the individual to avoid processing the details of their trauma by magnifying less relevant details or distractions (Elwood, Hahn, Olatunji, & Williams, 2009; LoSavio, Dillon, & Resick, 2017). Such ruminative-type behaviours can be a risk and maintenance factor for trauma-related symptoms, distress, and impairment (Brown et al., 2018; Elwood et al., 2009). As a part of the treatment for trauma and dissociation, providers may find it useful to teach specific containment strategies in order to assist patients in accepting their emotions and experiences while also not becoming 'stuck' in them (Chu, 2011). Developing more flexible and balanced skills in attending to, containing, and moving on from moments of difficult emotions could buffer DD patients from becoming debilitated by their emotions in other domains of their life (e.g. ability to work or engage in daily tasks).

Individuals with recent self-injury also demonstrated more severe dissociative symptoms. As discussed, self-injury and dissociation are both ways in which individuals can manage their emotions. It might be that individuals with higher levels of emotion dysregulation also experience more dissociation and endorse greater self-injury because they are reliant on these ways of coping and seek quick relief. Although results revealed a significant relation between emotion dysregulation and dissociation, as well as emotion dysregulation and self-injury, the amount of variance accounted for in these models implies there are other variables that contribute to these links. This may include individual characteristics that were not accounted for, such as age that trauma began, type or chronicity of trauma, gender identity, and current level of stress. Other functions of self-injury must also be considered. For example, trauma- and dissociation-specific functions and triggers of self-injury, such as re-enacting trauma, self-punishment, revenge, self-fragmentation, or marking of autonomy, may factor into these self-destructive behaviours. Further research is needed to test these suppositions.

5.1. Limitations and future directions

Although the current study fills a notable gap in the literature, the findings of this study must be interpreted in light of its limitations. First, self-injury was measured using single items from a clinician-reported clinical data form questionnaire rather than from validated, patient-reported measures of self-injurious behaviours. We aimed to ensure retention over the

larger longitudinal study by keeping questionnaires brief; consequentially, this does not account for potential clinician- and patient-report discrepancies (e.g. a patient not reporting self-injury or suicide attempts to their clinician) and does not gather other related information (e.g. method of self-injury, function of self-injury, placement on the body), which could have offered more detailed information regarding the patterns of and motivations for self-injury among DD patients. Second, the patient participants in this study represent a largely cisgender (100%), female (90%), white (83%), treatment-seeking sample who had access to resources such as internet and therapeutic support from a clinician who was willing to treat dissociative patients. This may limit the present study's generalizability to a diverse sample of individuals with DDs that do not have access to specialized psychiatric care or opportunities to participate in research studies. Third, all analyses were cross-sectional: emotion dysregulation was not examined as a longitudinal predictor of dissociation and self-injury. Future researchers should examine these variables longitudinally to clarify how these processes unfold over time.

Future researchers may also be interested in completing a qualitative study to explore specific motivations for DD patients' unsafe behaviours. Using a validated measure of self-injury, such as the Inventory of Statements about Self-Injury (ISAS; Klonsky & Glenn, 2009), may also reveal patterns in the method, function, nature of urges, age of onset, and frequency of self-injury among DD patients. Researchers might be interested in utilizing ecological momentary assessment to assess daily emotions, trauma symptoms, and self-injury behaviours as well. This approach has allowed for an examination of both the acute and chronic characteristics of self-injury (Kiekens et al., 2020), and would allow researchers the opportunity to gain insight into these behaviours among DD patients. Predictors of self-injury and suicide attempts should continue to be explored to identify factors that are prognostic of later safety-compromising behaviours, which, in turn, may allow for improvements in treatment interventions for DD patients.

5.2. Clinical implications

The findings from this study have important clinical implications for DD patients and their clinicians. The high rates of lifetime and recent self-injury highlight the need for clinicians to conduct ongoing assessments of DD patients' self-destructive behaviours throughout treatment. Although there are many challenges associated with screening, preventing, and predicting safety-compromising behaviours (e.g. identity changes, behaviours that occur in a dissociative

state), it is recommended that clinicians examine emotion dysregulation when assessing for dissociation and self-injury risk, as heightened emotion dysregulation may indicate an increased risk for dissociative symptoms and/or self-destructive behaviours.

DD patients demonstrated remarkable difficulty regulating their emotions. In fact, DD patients struggled with regulating their emotions more than other samples of individuals with PTSD symptoms (e.g. Radomski & Read, 2016) and severe self-injury (e.g. Chen & Chun, 2019), emphasizing the severity of emotion dysregulation DD patients experience. The findings of this study support treatment models that emphasize developing emotion regulation and grounding skills with DD patients, which is consistent with expert recommended treatment strategies (Brand et al., 2012) and ISSTD (2011) guidelines for treating DD patients. Interventions that seek to enhance emotion regulation can be effective at improving individuals' ability to regulate their emotions (Lee et al., 2020), which is reflective of the outcomes of DD patients in the TOP DD Network Study (Brand et al., 2019). In longitudinal analyses, TOP DD Network patient participants experienced improved emotion regulation, less dissociative and PTSD symptoms, and trends towards fewer self-injury and suicide attempt episodes (Brand et al., 2019).

Patients' difficulty with emotional awareness, clarity, and nonacceptance point to the need to help patients enhance their ability to identify, label, and accept their emotional responses, beginning with noticing signs of feeling 'too much' or 'too little' as well as managing and reducing trauma-related emotions and reactions (e.g. Schielke, Brand, & Lanius, *in press*). Containment strategies may also prove useful when practicing emotional awareness, as this may allow patients to notice what is manageable if they have practice containing intrusive memories or thoughts that feel overwhelming in order to prevent becoming debilitated and/or unable to function due to emotional flooding (Chu, 2011; Steele et al., 2017).

DD patients' desire to avoid and/or escape unwanted emotions may be a barrier to the utilization of emotion regulation strategies in times of distress. To address this, clinicians can explore barriers to implementation of strategies that would counter dissociative or self-destructive behaviours. Some of these barriers may include fear of emotions (e.g. 'I'll never stop crying if I allow myself to feel my feelings'), underlying trauma-related shame (e.g. 'I don't deserve to feel better because I am an awful person'), negative beliefs about one's self and the world (e.g. 'This is the only way I can feel in control'; 'I won't ever be able to feel better'), exposure to other daily stressors, or experiencing revictimization. Ultimately, exploration of barriers to regulating emotions, accompanied with engagement in strengthening emotion regulation may

be valuable additions to existing interventions targeting the treatment of DDs. With enhanced access to, awareness of, and comfort with emotions, dissociative individuals may begin to gradually improve their safety, symptoms, and quality of life.

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Data availability statement

The data are not publicly available to ensure the anonymity and confidentiality of participant responses.

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