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# Self-stigma predicts post-traumatic and depressive symptoms in traumatized individuals seeking interventions for dissociative symptoms: a preliminary investigation

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## ABSTRACT

**Background:** Previous studies showed that self-stigma is associated with poor clinical outcomes in people with serious mental illness, and is associated with post-traumatic stress disorder (PTSD). However, less is known about self-stigma in people with dissociative symptoms, which are often related to psychological trauma. This study examined whether baseline self-stigma would be associated with dissociative, PTSD and depressive symptoms at post-intervention, after controlling for treatment usage and baseline symptom severity, in a sample of traumatized Chinese adults undertaking a psychoeducation intervention for dissociative symptoms.

**Methods:** We conducted a secondary analysis of data from a 60-day web-based psychoeducation programme. A total of 58 participants who provided data before and after the intervention were included for analysis. Hierarchical regression analyses were conducted.

**Results:** In this highly traumatized, dissociative, and symptomatic help-seeking sample, baseline self-stigma was associated with PTSD ( $\beta = .203, p = .032$ ) and depressive ( $\beta = .264, p = .025$ ) symptoms at post-intervention, even after controlling for baseline symptom severity, age, location, number of sessions attended in the web-based psychoeducation programme, and use of psychological treatments for PTSD/dissociative symptoms. However, self-stigma was not associated with dissociative symptoms ( $p = .108$ ).

**Conclusions:** This is the first study showing that self-stigma is a significant predictor of comorbid symptoms (i.e. PTSD and depressive symptoms) in people seeking interventions for dissociative symptoms. The findings that post-traumatic and dissociative symptoms have different relationships to self-stigma also highlight the possibility dissociation might be an independent psychological construct closely associated with trauma, but not merely a PTSD symptom, although further studies are necessary. The preliminary findings call for more efforts to understand, prevent, and address self-stigma in people with trauma-related mental health issues such as dissociative symptoms.

## El autoestigma predice síntomas postraumáticos y depresivos en individuos traumatizados que buscan intervenciones para síntomas disociativos: Una investigación preliminar

**Antecedentes:** Estudios previos mostraron que el autoestigma se asocia con malos resultados clínicos en personas con enfermedades mentales graves, y se asocia con el trastorno de estrés postraumático (TEPT). Sin embargo, poco se sabe sobre el autoestigma en personas con síntomas disociativos, que a menudo están relacionados con el trauma psicológico. Este estudio examinó si el autoestigma basal estaría asociado con los síntomas disociativos, de TEPT y depresivos en la post-intervención, después de controlar el uso del tratamiento y la gravedad de los síntomas basales, en una muestra de adultos chinos traumatizados que seguían una intervención de psicoeducación para los síntomas disociativos.

**Métodos:** Se realizó un análisis secundario de los datos de un programa de psicoeducación de 60 días basado en la web. Se incluyeron en el análisis 58 participantes que proporcionaron datos antes y después de la intervención. Se realizaron análisis de regresión jerárquica.

**Resultados:** En esta muestra altamente traumatizada, disociativa y sintomática de búsqueda de ayuda, el autoestigma basal se asoció con síntomas de TEPT ( $\beta = .203, p = .032$ ) y depresivos ( $\beta = .264, p = .025$ ) en la post-intervención, incluso después de controlar la gravedad de los síntomas basales, la edad, la ubicación, el número de sesiones asistidas en el programa de psicoeducación basado en la web y el uso de tratamientos psicológicos para el TEPT/síntomas disociativos. Sin embargo, el autoestigma no se asoció con los síntomas disociativos ( $p = .108$ ).

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## KEYWORDS

Self-stigma; trauma; dissociation; dissociative disorder; PTSD

## PALABRAS CLAVE

Autoestigma; Trauma; Disociación; Trastorno disociativo; TEPT


## 關鍵詞

自我污名; 創傷; 解離; 解離症; PTSD

## HIGHLIGHTS

- Little is known about the clinical impacts of self-stigma in people with trauma and dissociation.
- Self-stigma predicted post-traumatic and depressive symptoms in people seeking interventions for dissociative symptoms.
- More efforts to understand and prevent self-stigma in people with trauma-related symptoms are needed.

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**Conclusiones:** Este es el primer estudio que muestra que el autoestigma es un predictor significativo de síntomas comórbidos (es decir, TEPT y síntomas depresivos) en personas que buscan intervenciones para los síntomas disociativos. Los hallazgos de que los síntomas post-traumáticos y disociativos tienen diferentes relaciones con el auto-estigma también destacan la posibilidad de que la disociación pueda ser un constructo psicológico independiente estrechamente asociado con el trauma, pero no simplemente un síntoma de TEPT, aunque son necesarios más estudios. Los resultados preliminares exigen más esfuerzos para comprender, prevenir y abordar el autoestigma en personas con problemas de salud mental relacionados con el trauma, como los síntomas disociativos.

### 自我污名化預測受創傷的解離症狀求助者之創傷後症狀和抑鬱症狀：初探

**背景:** 過去研究表明，自我污名與嚴重精神疾病患者的臨床結果不佳有關，亦跟創傷後壓力症（PTSD）相關。可是，儘管解離症狀往往跟心理創傷有關，我們對解離症狀人士的自我污名知之甚少。本研究以一個因解離症狀而接受心理教育之華人心理受創者樣本，探討介入前的自我污名是否跟介入後的解離症狀、PTSD症狀和抑鬱症狀相關，並控制治療服務使用和起始症狀嚴重程度之影響。

**方法:** 我們對一個為期60日的線上心理教育計劃的數據進行了二次分析。N = 58名在介入前、後提供數據的參與者被納入分析。我們進行了層次回歸分析。

**結果:** 在這班高度創傷、有著解離症狀和多樣症狀的求助者裡，介入前的自我污名跟介入後的PTSD症狀（ $\beta = .203, p = .032$ ）和抑鬱症狀（ $\beta = .264, p = .025$ ）相關，即使我們控制了起始症狀嚴重程度、年齡、地區、線上心理教育計劃出席次數以及PTSD/解離症狀心理治療的服務使用。然而，自我污名跟解離症狀並無顯著關係（ $p = .108$ ）。

**結論:** 這是第一個研究，顯示自我污名可預測解離症狀求助者的共病症狀（即PTSD和抑鬱症狀）。創傷後症狀和解離症狀與自我污名的關係不同，這顯示出，解離可能是一個跟創傷密切相關的獨立心理狀況，但不僅僅是其中一種創傷後症狀的例子，這方面尚需更多研究。此初步研究結果顯示，我們應致力理解、預防和處理受困於創傷後心理狀況——例如解離症狀——人士之自我污名。

## 1. Introduction

### 1.1. Stigma as an important issue in mental health

Stigma is an important topic in health and social research, especially in the mental health field. While public stigma could lead to challenges for providing services for people with mental health concerns in the community (e.g. mental health facilities are sometimes not welcome in the community) (Lee et al., 2022; Parcesepe & Cabassa, 2013), self-stigma can also be the source of distress for people with mental health problems, possibly leading to shame, loss of self-respect, or even suicidal ideation (Corrigan et al., 2016; Oexle et al., 2017). *Perceived stigma* refers to one's belief that other people have stigmatizing or discrediting attitudes about one's role or condition, while *self-stigma* means that one even agrees with the public stigma and perceives oneself in the same way (Corrigan et al., 2009; Hing et al., 2016). In other words, a person with mental illness who experience *perceived stigma* may believe that others view them as weak or incompetent, while someone with *self-stigma* would internalize the stigma and hold negative beliefs about themselves as a result. A recent systematic review indicated that baseline self-stigma was positively associated with mental health symptoms and hospitalization and negatively associated with self-esteem, life satisfaction, treatment adherence and social and vocational functioning at follow-up in

patients with serious mental illness (SMI) (Dubreucq et al., 2021). In the context of anxiety disorder, for example, self-stigma also lowers the effectiveness of treatments (Ociskova et al., 2018).

### 1.2. The limited literature on self-stigma in traumatized and dissociative populations

While there is extensive research on self-stigma in people with serious mental illness (SMI), which refers to 'mental, behavioral, or emotional disorder resulting in serious functional impairment' (National Institute of Mental Health, 2023, March), much less is known about stigma in people with trauma-related disorders (Bonfils et al., 2018). In a recent paper, Benfer et al. (2023) have already pointed out that, although research on self-stigma in people with trauma-related disorders is nascent and limited, self-stigma is associated with greater symptom burden in people with post-traumatic stress disorder (PTSD) and it may be a significant barrier to help seeking too. In addition, post-traumatic psychopathology and self-stigma share common cognitive and affective features, including negative appraisal or beliefs about oneself, and therefore more research on self-stigma in trauma survivors is needed so as to understand how it may potentially affect treatment adherence and clinical outcomes (Benfer et al., 2023).

In addition, it is reasonable to assume that traumatized individuals, especially those who have

encountered betrayal trauma (i.e. a traumatic event perpetrated by a close person, such as a parent or a caregiver) (Goldberg & Freyd, 2006), may be vulnerable to self-stigma because of trauma-related negative cognitions, self-blame and shame resulting from trauma (Herman, 1992; Platt et al., 2017). Self-stigma may impact how a trauma survivor thinks, feels and behaves during the recovery process (Kennedy & Prock, 2018). Some recent studies have been done to address this knowledge gap in recent years. Schneider et al. (2018) reported that perceived self-stigma was associated with increased risk for having PTSD and diminished likelihood of spontaneous recovery after trauma exposure in conflict survivors in Northern Uganda. Bonfils et al. (2018) found that people with PTSD and schizophrenia reported similar levels of self-stigma and that self-stigma is also associated with PTSD and comorbid symptoms in people with PTSD. Moreover, it was found that self-stigma was associated with PTSD symptoms in child sexual abuse survivors, implying that stigma is a potentially important factor in the development and maintenance of psychopathology in traumatized populations (Schröder et al., 2021). Similarly, in a cross-sectional study, Lewis et al. (2022) indicated that the prevalence of self-stigma was 41.2% in people with PTSD and that self-stigma was associated with lower income and more mental health symptoms. Recently, Reisinger and Gleaves (2022) reported that dissociative identity disorder (DID) (a severe form of post-traumatic psychopathology) was less stigmatized than schizophrenia but more stigmatized than depression. de Filippis et al. (2022) also found that self-stigma was positively associated with dissociative symptoms in patients with bipolar disorder. Furthermore, a previous cross-sectional analysis of people with dissociative symptoms indicated that 66.7% felt that they were worse than others, and 47.2% felt ashamed to have mental health problems (Fung et al., 2021).

The above-mentioned literature points to the importance of understanding and addressing self-stigma in traumatized populations and in people with trauma-related disorders. In particular, although dissociative symptoms are often conceptualized as a response to betrayal trauma (Freyd, 2008; Fung, Chien, et al., 2023; Gómez, 2020), which may be particularly related to self-blame and shame, our understanding of potential effects of self-stigma on clinical outcomes in individuals who exhibit dissociative symptoms is limited.

### 1.3. The present study

Given the above-mentioned knowledge gap, this study aimed to enhance our understanding of self-stigma in this regard. Although there is conceptual unclarity regarding the theoretical definitions of dissociation,

dissociation is an important feature of post-traumatic psychopathology and it has been well operationalized in the field (Černis et al., 2021; Fung, Ross, et al., 2022; Ross, 2007; Van der Hart et al., 2006). Operationally defined dissociative symptoms (i.e. measured using validated standardized measures) are empirically associated with betrayal trauma across cultures (Fung, Chien, et al., 2023; Fung, Geng, et al., 2023). People seeking services for complex trauma and dissociation are a vulnerable client group as many of them not only have extensive comorbid symptoms but also a variety of interpersonal and intrapersonal difficulties (e.g. affect dysregulation, trust issues, negative self-concept) (Cloitre et al., 2012; Fisher, 1999; Fung & Ross, 2019). Understanding the impacts of self-stigma in treatment-seekers on their clinical conditions could inform the development of new interventions and modifications of existing services for traumatized clients. For instance, it is currently unclear to what extent it is important to target self-stigma in the early stages of treatment for people who report trauma histories and present with dissociative symptoms. Since there is a lack of longitudinal studies on the impacts of self-stigma on mental health symptoms in people seeking interventions for dissociative symptoms, we conducted a secondary analysis of a previously reported web-based psychoeducation programme (Fung, Chan, et al., 2022).

Our main hypothesis was that baseline self-stigma would be associated with dissociative, PTSD and depressive symptoms at post-intervention, after controlling for treatment usage and baseline symptom severity, in a sample of Chinese adults seeking interventions for dissociative symptoms.

## 2. Methods

### 2.1. Participants

This study analyzed data from a web-based psychoeducation programme for people with dissociative symptoms. The project received ethical approval at the Hong Kong Polytechnic University. The methodology, intake screening results (Time 1) and programme evaluation data have been reported elsewhere (Fung et al., 2021; Fung, Chan, et al., 2022; Fung, Hung, et al., 2023). This project recruited Chinese adults who self-reported to have dissociative symptoms to participate in a 12-session (60-day) web-based psychoeducation programme. The inclusion criteria included the following: participants who provided informed consent, had attended the mobile phone-based screening interview to confirm their identity, and completed the baseline (pre-intervention) and post-intervention (60 days) assessments. There were no exclusion criteria.

Originally, 91 participants completed the online registration; 83 of them attended the mobile phone-based screening interview and completed the baseline (pre-intervention) assessments; and 58 completed the post-intervention (60 days) assessments. Independent sample *t* test and chi-square analyses showed that participants who were included in the present study ( $n = 58$ ) and those who did not ( $n = 33$ ) did not differ in all baseline variables, including age, gender, employment status, marital status, dissociative symptoms, PTSD symptoms, depressive symptoms, borderline personality disorder symptoms, and the levels of self-stigma. The sample characteristics, including the frequency of self-stigma as well as the changes in the four major variables after the psychoeducation intervention in this sample, are reported in Supplementary Table S1, S2, and S3. This is a traumatized, dissociative, and symptomatic intervention-seeking sample: most participants reported multiple childhood and adulthood traumatic events (94.8% reported at least one lifetime traumatic event) and screened positive for clinically significant dissociative symptoms (i.e. the Dissociative Experiences Scale-Taxon score  $\geq 25$ ) (82.8%) and PTSD (i.e. the PTSD Checklist for DSM-5 score  $\geq 49$ ) (65.5%).

## 2.2. Measures

This study analyzed self-report data collected using the following measures at baseline and post-intervention.

### 2.2.1. The Self-deprecation subscale of the Perceived Psychiatric Stigma Scale (PPSS-SD)

This subscale is derived from the original PPSS, which is a reliable and valid Chinese self-report measure of mental health stigma (Han & Chen, 2008). The PPSS-SD has 6 items measuring the self-stigma. Example items include: 'If I have a mental illness, I feel that I am worse than others,' 'It is shameful for me to have mental problems,' and 'Using psychiatric services means that I am a person who is not strong enough.' Although this scale is named 'Perceived Psychiatric Stigma Scale,' the items included in the PPSS-SD are obviously measuring self-stigma rather than perceived stigma, according to the above-mentioned definitions. The PPSS-SD had good internal consistency in the present sample ( $\alpha = .833$ ).

### 2.2.2. The Dissociative Experiences Scale-Taxon (DES-T)

The DES-T is an 8-item subscale of the original 28-item DES (Bernstein & Putnam, 1986; Waller et al., 1996) and can be used to assess pathological dissociation (Waller et al., 1996; Waller & Ross, 1997). Ross et al. (2002) found that the DES-T had good to excellent agreement with structured diagnostic

interviews in detecting complex dissociative disorders (Cohen's kappa = 0.76 to 0.81). The Chinese version of the DES-T also had good internal consistency and test-retest reliability, was strongly associated with other dissociation measures ( $r = .626$  to  $.653$ ), and could identify dissociative disorders with a sensitivity of 93.8% and a specificity of 77.8% when a cutoff score of 25 was used (Chan et al., 2017; Fung et al., 2018). The DES-T had good internal consistency in the present sample ( $\alpha = .894$ ).

### 2.2.3. The Post-traumatic Stress Disorder Checklist for DSM-5 (PCL-5)

The PCL-5 is a self-report measure of post-traumatic stress disorder symptoms (Blevins et al., 2015; Geier et al., 2019). The Chinese version of the PCL-5 also had excellent internal consistency and could detect PTSD with a sensitivity of 70.6% and a specificity of 72.7% when a cutoff score of 49 was used in an outpatient sample (Fung et al., 2019). The PCL-5 had excellent internal consistency in our sample ( $\alpha = .930$ ).

### 2.2.4. The Patient Health Questionnaire-9 (PHQ-9)

The PHQ-9 is a commonly-used self-report measure of depression (Kroenke & Spitzer, 2002). The Chinese Version of the PHQ-9 has also been validated and used in previous studies (Fung, Chien, et al., 2022; Yeung et al., 2008). The PHQ-9 had good internal consistency in our sample ( $\alpha = .875$ ).

## 2.3. Data analysis

SPSS 22.0 was used to analyze the data. To test our hypothesis, we followed previous studies (e.g. Lin et al., 2022; Oexle et al., 2017; Zhou et al., 2020) and used hierarchical regression analyses to examine if baseline self-stigma would be associated with clinical symptoms at post-intervention, after controlling for baseline severity of dissociative, post-traumatic, and depressive symptoms, and other potential confounders, including age, location, number of sessions attended in the web-based psychoeducation programme, and use of psychological treatment for PTSD/dissociative symptoms during the follow-up period. For each regression analysis, all assumptions were checked, including independence of residuals, linearity, homoscedasticity, and normality.

## 3. Results

At baseline, self-stigma was cross-sectionally correlated with PTSD symptoms ( $r = .378$ ,  $p = .003$ ) and depressive symptoms ( $r = .309$ ,  $p = .018$ ), but not with dissociative symptoms ( $r = .135$ ,  $p = .312$ ).

A series of hierarchical multiple regression analyses were conducted to examine the longitudinal relationship between baseline self-stigma and mental health

symptoms at post-intervention. As shown in Table 1, baseline self-stigma was associated with PTSD symptoms ( $\beta = .209$ ,  $p = .032$ ) and depressive symptoms ( $\beta = .264$ ,  $p = .025$ ) at post-intervention, even after controlling for baseline symptom severity, age, location, number of sessions attended in the web-based psychoeducation programme, and use of psychological treatments for PTSD/dissociative symptoms. In the regression analyses predicting post-intervention PTSD and depressive symptoms, the addition of baseline self-stigma (the baseline PPSS-SD scores) to the prediction model led to a statistically significant increase in  $R^2$  of .033, to .056,  $p < .05$  (see Table 1). However, baseline self-stigma was not significantly associated with dissociative symptoms ( $\beta = .108$ ,  $p = .217$ ) at post-intervention.

#### 4. Discussion

This is one of the few studies that has examined the longitudinal relationship between self-stigma and mental health symptoms in people with trauma-related mental health problems. This study is also the first to examine the predictive role of self-stigma in people seeking interventions for dissociative symptoms. We found that self-stigma was cross-sectionally and longitudinally associated with PTSD and depressive symptoms in our sample, but not with dissociative symptoms.

First of all, the significant relationship between self-stigma and PTSD and depressive symptoms points to the importance of preventing and addressing self-stigma in the context of trauma care services (Bonfils et al., 2018). As revealed in our longitudinal analyses, self-stigma was a significant predictor of comorbid symptoms (i.e. PTSD and depressive symptoms) at post-intervention, even after controlling for service usage. Although more research will be required, our findings point to the potential possibility that self-stigma might lead to poor clinical outcomes in trauma survivors (e.g. in our sample, 94.8% reported at least one lifetime traumatic event). This hypothesized causal relationship, however, requires more research in the future. Self-stigma may be a clinically significant factor in trauma survivors because survivors with higher levels of self-stigma might tend not to seek help, do positive things to make a change (e.g. find a job, do exercises, learn new things), engage in social activities, and adhere to treatment (Corrigan & Rao, 2012). In trauma survivors, self-stigma might also interact with post-traumatic cognitions (e.g. 'it was my fault') – having said that, this potential relationship requires further investigation in the future. Moreover, although the associations were statistically significant in the present study, they were not very strong ( $\beta = .203$  to  $.264$ ). Thus, the potential mediating and moderating mechanisms behind these

associations in people seeking trauma care services also require further investigation to understand how to better address the potential impacts of self-stigma. For example, a previous study found that self-compassion may buffer the effects of self-stigma on cognitive fusion (Pyszkowska et al., 2021). The psychoeducation programme in the present project (the evaluation results have been reported elsewhere (Fung, 2021; Fung, Chan, et al., 2022) as well as in the Supplementary Table S3) might also be a promising way to address self-stigma in trauma survivors, as the levels of self-stigma reduced after the intervention. Nevertheless, randomized controlled trials in the future are required to evaluate its effectiveness.

Our findings revealing the predictive role of self-stigma on mental health symptoms in traumatized participants seeking interventions suggest that timely anti-stigma interventions might be an important component in trauma care. Nevertheless, despite growing efforts to address stigma, the effectiveness of current interventions for reducing self-stigma in people with mental health problems is unclear and limited (Büchter & Messer, 2017). To facilitate the recovery of trauma survivors, we may need to develop evidence-based anti-stigma programmes that can be used as a standalone intervention or as part of a more complex intervention for trauma care service users. It has long been emphasized that normalizing the trauma-related experience is vital in the early stage of recovery (Herman, 1992) – the post-traumatic 'symptoms' are understandable human reactions instead of signs of weakness (Fung & Ross, 2019). In fact, previous studies have shown that educational interventions that explain mental health problems from multiple perspectives (i.e. not only biogenetic but also psychosocial and trauma-informed aspects) may help reduce stigma (Carter et al., 2019). Compassion-based interventions are also found to be effective in reducing trauma-related shame (Joseph & Bance, 2020) and self-stigma (Stynes et al., 2022), and therefore should be further considered in future intervention studies for people with trauma-related mental health problems such as dissociative symptoms.

Another worth noting finding is that, although self-stigma predicted PTSD and depressive symptoms, it did not predict dissociative symptoms, suggesting that self-stigma has a different relationship to PTSD than it does to dissociation. This is one of the major findings in the present study and it implies that whilst dissociation is a common post-traumatic reaction, it might be a distinct psychological construct in its own right, as it might have differing relationships to important variables related to trauma survival. However, this conclusion is limited by the use of the DES-T, which is intended as a screening measure and thus cannot comprehensively assess different types of dissociation (Fung, Ross, et al., 2022). Future

**Table 1.** Hierarchical multiple regression predicting mental health symptoms at post-intervention ( $N = 58$ ).

Variables	Post-intervention dissociative symptoms				Post-intervention PTSD symptoms				Post-intervention depressive symptoms			
	$\beta$	$p$	$\beta$	$p$	$\beta$	$p$	$\beta$	$p$	$\beta$	$p$	$\beta$	$p$
Constant		.974		.897		.081		.102		.112		.140
Age	.003	.976	-.016	.852	.029	.766	-.007	.939	-.073	.543	-.119	.308
Location (Hong Kong)	.011	.904	-.006	.950	-.022	.821	-.052	.580	-.017	.888	-.056	.630
Psychoeducation session	.037	.656	.039	.637	-.264	.006	-.260	.005	-.157	.171	-.152	.167
Psychological treatment	-.002	.979	-.017	.847	.118	.228	.090	.341	.042	.726	.007	.955
Baseline DES-T	.816	.000	.833	.000	.104	.363	.137	.217	.062	.661	.106	.441
Baseline PCL-5	.060	.588	.021	.852	.538	.000	.465	.000	.199	.199	.103	.502
Baseline PHQ-9	-.048	.659	-.074	.505	.209	.086	.161	.176	.435	.005	.372	.014
Baseline PPSS-SD			.108	.217			.203	.032			.264	.025
$R^2$	.701		.711		.635		.668		.433		.488	
Adjusted $R^2$	.660		.663		.584		.614		.353		.405	
$F$	16.776***		15.040***		12.420***		12.313***		5.450***		5.848***	
$\Delta R^2$	.701		.09		.635		.033		.433		.056	
$\Delta F$	16.776***		1.563		12.420***		4.857*		5.450***		5.328*	

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

Note. Treatment = Reported receiving any psychological treatment for PTSD/dissociation during the period between baseline and post-intervention; DES-T = the Dissociative Experiences Scale-Taxon; PCL-5 = the PTSD Checklist for DSM-5; PHQ-9 = the Patient Health Questionnaire-9; PPSS-SD = the Self-deprecation subscale of the Perceived Psychiatric Stigma Scale.

studies may therefore need to further explore the role of self-stigma in trauma survivors using more robust measures of dissociation, and across different types of dissociative experiences. The reasons behind why self-stigma could predict PTSD and depressive symptoms but not dissociative symptoms are unclear and require further quantitative and qualitative inquiries. One of the possible reasons is that self-stigma involves cognitive processes and negative thoughts, which may be particularly relevant to PTSD and depressive symptoms (e.g. negative cognitions). Meanwhile, dissociative symptoms might be better predicted by factors other than cognitive factors, such as stressors and the sense of safety. Nevertheless, further studies in this regard are needed.

This study has some strengths. We conducted screening interviews to confirm the identity of the participants, which is important in online research (Chan et al., 2017). We used validated measures. We also conducted longitudinal analyses in addition to cross-sectional analyses. However, the limitations should be acknowledged too. We used a convenience sample of participants who completed the web-based intervention, and this could limit the generalizability of the findings. We relied on self-report data, we could not confirm the clinical diagnosis, and this may be a diagnostically diverse sample; nevertheless, our data collected using validated measures showed that this is a highly traumatized, dissociative, and symptomatic intervention-seeking sample which might be found in naturalistic settings. Additionally, although power analysis indicated that 55 participants would be enough for hierarchical regression with up to 8 predictors and one tested predictor, our sample ( $N = 58$ ) is still relatively small. Finally, it is important to note that quantitative, group-based analyses could only provide limited insights into the potential impacts of self-stigma. Future studies using qualitative research

approaches are required to further explore how trauma survivors subjectively perceive their mental health problems and how the social environments and personal life histories may affect their mental health symptoms as well as self-stigma. Phenomenological examination of the subjective experiences of individual cases would provide additional insights into how self-stigma could be prevented and addressed in trauma survivors.

Taken together, this is the first study showing that self-stigma is a predictor of clinical symptoms in severely traumatized people seeking interventions for dissociative symptoms. The preliminary findings call for more efforts to understand, prevent, and address self-stigma in people with trauma and dissociation. Moreover, this study also reveals that dissociation might be an independent psychological construct closely associated with trauma, but not merely a PTSD symptom, although further studies are necessary.

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## Authors agreement

All authors have contributed to the preparation of the article and have approved the final article.

## Data availability statement

The data that support the findings of this study are available from the corresponding author, HWF, upon reasonable request.

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