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ORIGINAL ARTICLE

Posttraumatic stress disorder, emotional suppression and psychiatric co-morbidity in patients with chronic idiopathic urticaria: a moderated mediation analysis

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Abstract

Background: There is evidence suggesting that posttraumatic stress disorder (PTSD) symptom severity and CIU severity are linked and partially mediated by the high-anxious defense mechanism. What is unclear is whether emotional suppression, as a defense serving the opposite purpose for high-anxious defense, can also act as a mediator and whether this mediational effect is partly influenced by time since trauma and trauma type.

Aims: To investigate whether emotional suppression mediated the links between PTSD and CIU symptom severities, and PTSD and psychiatric co-morbid symptom severities. It then examined whether the mediating effect would be moderated by how long ago the trauma occurred and trauma type.

Methods: One hundred CIU patients were compared with 60 allergy patients. They completed questionnaires measuring PTSD, psychiatric co-morbidity and emotional suppression.

Results: Suppressing depression mediated the relationship between PTSD and psychiatric co-morbidity. How long ago the trauma occurred and trauma type moderated the mediational effect of suppressing depression.

Conclusions: Following a past trauma, CIU patients may develop PTSD symptoms which influence their psychological well-being through using different levels of emotional suppression, especially suppressing depression. The levels depend on the severity of PTSD symptoms, trauma history and whether they experienced interpersonal traumas.

Keywords

posttraumatic stress, emotional suppression, chronic idiopathic urticaria

History

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Introduction

Chronic idiopathic urticaria (CIU) is a distressing dermatological disorder defined as the occurrence of daily or frequent wheals and itching for at least six weeks with no identifiable cause. The diagnosis of CIU excludes other causes of urticaria such as allergies, autoimmune urticaria and physical urticaria. In the majority of patients, this is a self-limiting condition lasting several months to years. Theoretically, CIU patients can experience a “conversion” phenomenon whereby dermatological symptoms are an expression of underlying memories resulting from traumatic events (Briere, 2002; Brown, 2004; Gupta, 2006; Gupta et al., 2005). Conversion symptoms are relatively common with an estimated prevalence ranging between 20% and 25% among hospital patients (Feinstein, 2011). CIU patients are almost twice as likely to meet the diagnostic criteria for posttraumatic stress disorder (PTSD) resulting from past trauma than non-CIU patients (Chung et al., 2010). They are almost one and a half times

more likely than a healthy control to report psychiatric co-morbidity (Hunkin & Chung, 2012).

The link between PTSD symptom severity and CIU severity has been found to be partially mediated by the high-anxious defense mechanism (Hunkin & Chung, 2012). People who rely heavily on this defense have little self-image management and are highly anxious. They are aware of their anxious emotions and do not defend against them. This raises the question of what outcomes can be anticipated in CIU patients who do the opposite and suppress distressing emotions. In other words, can emotional suppression mediate the path between PTSD severity and CIU severity and psychiatric co-morbidity? This is one gap in PTSD literature which has not been investigated.

According to psychodynamic literature, suppression is a mature and conscious defense mechanism which involves intentional avoidance of thinking about distressing problems, feelings or experiences associated with traumatic events (Mayer, 2007; Myers et al., 2004). The distressing emotion associated with an unpleasant event is recognised, avoided and emotional expressive behaviour inhibited (Gross, 1998b). The link between emotional suppression and psychological symptom severity is controversial. Whilst suppression has

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been associated with increased PTSD symptom severity from past trauma (Amir et al., 1997; Clohessy & Ehlers, 1999; Falsetti et al., 2002), poor psychological well-being, adjustment (Temoshok et al., 2008) or physical symptoms (Schlatter & Cameron, 2010), the psychodynamic literature suggests that suppression can in fact protect psychological well-being (Vaillant & Vaillant, 1990) and reduce psychological distress (Cohen, 2013; Liverant et al., 2008).

Emotional suppression has been shown to mediate the relationship between past traumas (e.g. childhood emotional trauma) and depression and anxiety (Krause et al., 2003). This mediating role of emotional suppression has been seen as a self-regulatory strategy which may be better understood by considering how long ago the trauma occurred and the trauma type. Traumatic experiences in early life, for example, may have a unique effect on the way people regulate themselves and manage subsequent stress (Herman & van der Kolk, 1987; Terr, 1991). Adverse life events in the previous year have been found to be associated with emotional regulation difficulties among adolescents (McEwen & Flouri, 2009). Also, early-onset interpersonal trauma appears to be more common among people with emotional regulation difficulties than late-onset single traumatic events (Ehring & Quack, 2010). In other words, the mediating role of emotional suppression as a self-regulatory strategy may be moderated by time since trauma and trauma type.

Based on the preceding literature, the current study was conducted to test the following hypotheses:

- (1) Emotional suppression will mediate the links between PTSD and psychiatric co-morbid symptom severity as well as PTSD and CIU symptom severity.
- (2) Time since trauma and trauma type (interpersonal vs non-interpersonal) will moderate the mediational effect of emotional suppression.

These hypotheses are depicted in Figure 1. The current investigation has potentially important implications for psychological treatment for CIU patients. It could provide guidance on the need to implement psychotherapeutic

interventions to address the impact of PTSD and trauma type on psychological well-being and whether emotional suppression as a coping strategy for CIU patients should be fostered or reduced through psycho-education.

Methods

Procedure

During the data collection period, 197 patients attended an immunology clinic in one hospital in the United Kingdom for medical consultation, of whom 116 and 81 were diagnosed with CIU and allergy, respectively. Following consultation, the hospital consultant and two nurse specialists invited patients meeting the research inclusion criteria to participate in the study. The criteria for CIU patients were (1) age 18 or above and (2) a clear diagnosis of CIU. For allergy patients, the criteria were the same with a clear diagnosis of CIU replacing urticaria $\pm$ angioedema due to a diagnosed allergy (type I hypersensitivity).

The purpose of the research was explained to patients with an information sheet and the ethical procedure was outlined. Consent was given by all patients. CIU severity was assessed by nurse specialists using the scoring system devised by the European Association of Allergy and Clinical Immunology (EAACI). Patients were asked to complete and return the questionnaires described in the measures section in a subsequent consultation. At that consultation, one CIU patient withdrew from the research without giving any reason; 15 other patients did not return the questionnaires. The remaining 100 patients were included in the study. Of the allergy patients, 21 did not return the questionnaires; the remaining 60 were included in the study. This recruitment procedure is depicted in Figure 2. The study was approved by the Research Ethics Committee of a local NHS Trust.

Measures

Demographic information was collected on gender, age, marital status, ethnicity, occupation, education level, time

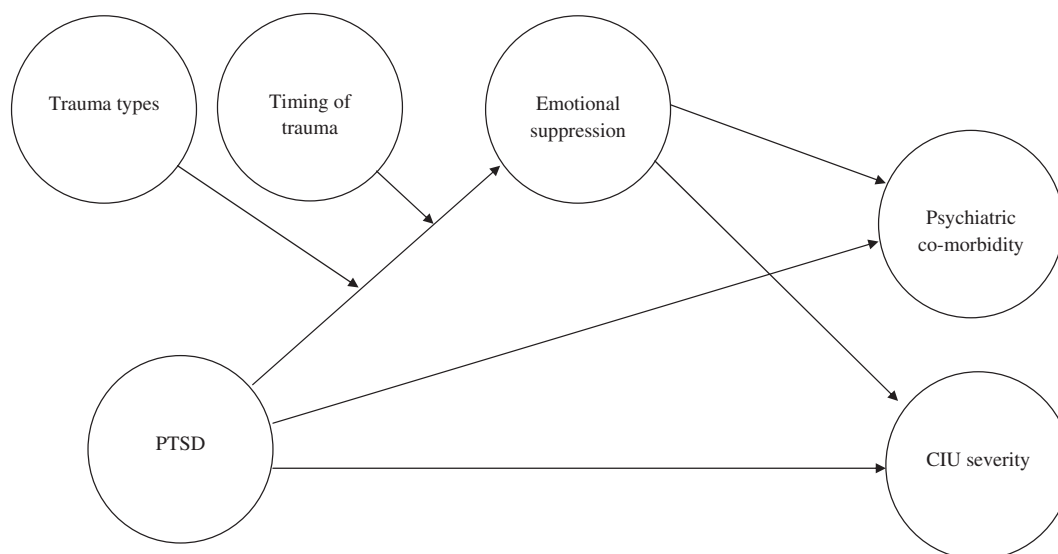


Figure 1. The hypothesized model with how long ago the trauma occurred and trauma types moderated the mediational effect of emotional suppression on the paths between PTSD symptom severity and CIU severity and psychiatric co-morbidity.

since appearance of first CIU symptoms or most recent allergy, and any other illness.

The Posttraumatic Stress Diagnostic Scale (PDS) (Foa et al., 1997) is a widely used assessment for PTSD, based on DSM-IV criteria. This was completed by both the CIU and allergy groups. The cutoffs for the symptom severity were 0 = no rating, 1–10 = mild, 11–20 = moderate, 21–35 = moderate to severe and >36 = severe. This scale has shown good reliability, and in the current study, Cronbach's α for the PDS was 0.92.

The General Health Questionnaire-28 (GHQ-28) (Goldberg & Hillier, 1979) yields four subscales: somatic problems, anxiety, social dysfunction and depression. Internal reliability coefficients ranged from 0.78 to 0.95 (Goldberg & Bridges, 1987). Based on the current sample, the reliability of the four subscales was good (somatic problems, $\alpha = 0.82$; anxiety, $\alpha = 0.87$; social dysfunction, $\alpha = 0.88$; depression, $\alpha = 0.89$).

The Courtauld Emotional Control Scale (CECS) (Watson & Greer, 1983) is designed to measure the extent of suppression of anger, depression and anxiety. For the current study, Cronbach's α scores were 0.68, 0.70, 0.81 and 0.85 for suppressing anger, depression and anxiety subscales, and emotional suppression total, respectively.

Chronic idiopathic urticaria severity was assessed using the scoring system devised by the EAACI (Zuberbier et al., 2006). It focuses on key urticaria symptoms (wheal and pruritus) including frequency of episodes, duration of lesions, effect on respiration, facial involvement, severity of itching and effect on school/work and sleep and used a scale from 0 to 14.

Data analysis plan

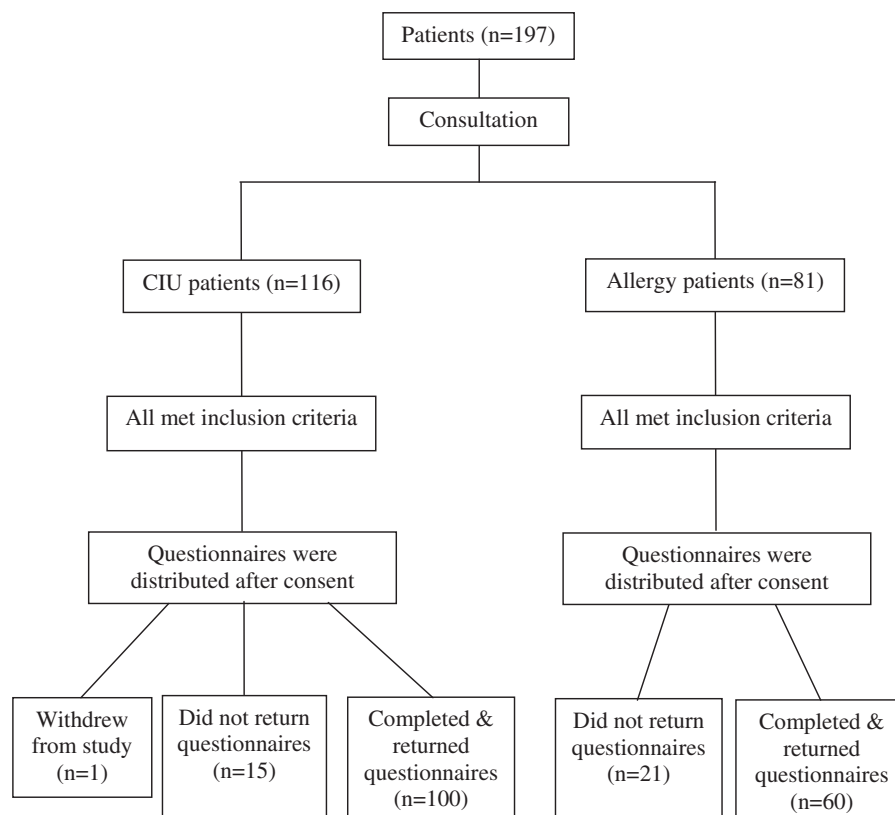
Three-way loglinear analyses were used to examine differences in the demographic variables of patients between groups. Multivariate analysis of variance was used to compare the mean scores of psychiatric co-morbidity and emotional suppression between groups and to identify interaction effects. PROCESS was used to examine mediation and moderated mediation (Hayes, 2013). For moderated mediation analysis, all continuous variables were z -standardized (Aiken & West, 1991) and indirect effects were reported at M and $\pm$ one SD of the moderator.

PROCESS uses bias-corrected bootstrapping and generates confidence intervals (Preacher & Hayes, 2008) which address the problem of bias resulting from the asymmetric and non-normal sampling distributions of an indirect effect (MacKinnon et al., 2004). The bootstrapping sampling ($n = 1000$) distributions of the indirect effects are produced by selecting a sample of cases from the complete data set and calculating the indirect effects in the resamples. Point estimates and confidence intervals (95%) are estimated for the indirect effects. The point estimate is considered to be significant when the confidence interval does not contain zero.

Results

The CIU and control groups comprised 100 ($F = 82$, $M = 18$) and 60 ($F = 39$, $M = 21$) patients, respectively. We investigated whether levels of psychiatric co-morbid symptom and emotional suppression varied depending on trauma severity by categorizing patients into different groups using the cutoffs

Figure 2. The recruitment procedure of the study.



for the symptom severity on the PDS. Among CIU patients, 19% did not report any trauma; 42%, 20%, 13% and 6% met the cutoffs for mild, moderate, moderate to severe and severe PTSD symptoms, respectively. For allergy patients, 22% did not report any trauma; 57%, 12% and 10% met the cutoffs for mild, moderate and moderate to severe PTSD symptoms, respectively. No allergy patients met the cutoff for severe PTSD symptoms. Due to the small sample size in some cells, we decided to combine the symptom categories of moderate, moderate to severe, and severe for subsequent analysis.

The three-way loglinear analyses were carried out to examine differences in the demographic variables of patients. The results showed that although the final models for all demographic variables indicated good model fits [Goodness of fit likelihood ratio for gender: $\chi^2 = 10.03$, $df = 6$, ns; educational levels (dummy variables: secondary education vs post-secondary education: $\chi^2 = 7.52$, $df = 7$, ns); income levels: $\chi^2 = 7.84$, $df = 5$, ns; the number of other illnesses: $\chi^2 = 16.17$, $df = 12$, ns)], the highest-order interaction (patient groups $\times$ PTSD severity symptom groups $\times$ demographic variables) was not significant (gender: $\chi^2 = 0.66$, $df = 2$, ns; education: $\chi^2 = 1.47$, $df = 2$, ns; income: $\chi^2 = 5.15$, $df = 2$, ns; the number of other illnesses: $\chi^2 = 8.59$, $df = 4$, ns). There was a poor model fit for marital status (Goodness of fit likelihood ratio $\chi^2 = 15.72$, $df = 7$, $p < 0.05$). Almost all of the CIU and allergy patients were Caucasian. There were no three-way interaction effects for age [$F(2,154) = 1.86$, ns] and how long ago patients noticed the onset of CIU/allergy symptoms [$F(2,154) = 0.12$, ns] either (see Table 1).

In terms of CIU severity, no significant difference was found between the three PTSD severity symptom groups [$F(2,97) = 1.52$, ns] (see Table 1). Focusing on psychiatric co-morbidity, MANOVA results showed that there were significant differences between the CIU and allergy patient groups in somatic problems [$F(1,154) = 20.66$, $p < 0.001$, $\eta^2 = 0.11$], anxiety [$F(1,154) = 23.40$, $p < 0.001$, $\eta^2 = 0.13$] and social dysfunction [$F(1,154) = 14.19$, $p < 0.001$, $\eta^2 = 0.08$] but not depression [$F(1,154) = 3.81$, ns]. Pairwise comparisons (LSD) showed that CIU patients reported significantly more psychiatric co-morbid symptoms than the allergy group at the α -level of 0.001. There were also significant differences between PTSD symptom severity groups in psychiatric co-morbidity [somatic problems: $F(2,154) = 11.83$, $p < 0.001$, $\eta^2 = 0.13$, anxiety: $F(2,154) = 16.11$, $p < 0.001$, $\eta^2 = 0.17$, social dysfunction: $F(2,154) = 9.87$, $p < 0.001$, $\eta^2 = 0.11$, depression: $F(2,154) = 10.83$, $p < 0.001$, $\eta^2 = 0.12$]. Patients with a severe level of PTSD reported significantly more psychiatric co-morbid symptoms than the no-trauma and mild PTSD symptom groups ($p < 0.01$).

Turning to emotional suppression, the patient groups differed significantly in suppressing depression [$F(1,148) = 8.18$, $p < 0.01$, $\eta^2 = 0.05$] with CIU patients suppressing more than the allergy patients. No significant differences were found for suppressing anger [$F(1,148) = 2.77$, ns] and anxiety [$F(1,148) = 3.44$, ns]. Comparing the PTSD severity symptom groups, significant difference was also found in suppressing depression [$F(2,148) = 5.74$, $p < 0.01$, $\eta^2 = 0.07$]. The moderate/severe

group suppressed depression significantly more than the mild ($p < 0.05$) and no trauma groups ($p < 0.01$).

On average, the events occurred approximately 13 years ago for CIU patients with mild PTSD severity and just over 8.5 years ago for CIU patients with moderate/severe PTSD symptoms. For allergy patients with mild PTSD symptoms, the events occurred approximately 9.5 years ago. For those with moderate/severe symptoms, events occurred 6.5 years ago. The ANOVA results indicated no significant differences between the patient groups [$F(1,111) = 1.35$, ns], the PTSD severity symptom groups [$F(1,111) = 2.54$, ns] and no interaction effects [(patient groups $\times$ PTSD severity symptom groups $\times$ time since event occurred) $F(1,111) = 0.05$, ns].

In terms of trauma type and in line with recent literature (Ehring & Quack, 2010), we classified the traumatic events in terms of interpersonal traumas or non-interpersonal trauma. Adopting the definitions from recent studies (Lilly & Lim, 2013; Westphal et al., 2013), interpersonal trauma was defined as an assault experienced directly from another person, such as robbery, physical or sexual abuse/assault, assault with weapon, or domestic violence. The results showed that although the three-way loglinear analysis showed a good model fit for trauma type (GoF likelihood ratio: $\chi^2 = 8.40$, $df = 8$, ns), the highest-order interaction was not significant ($\chi^2 = 1.77$, $df = 4$, ns) (see Table 2).

In terms of the moderated mediation results, the total and direct effects of PTSD symptom severity on CIU severity were 0.01. The difference between the total and direct effects was the total non-significant indirect effects through emotional suppression. However, the total and direct effects of PTSD on psychiatric co-morbidity were 0.95 and 0.91, respectively. The difference between the total and direct effects was the total significant indirect effect through suppressing depression with the effect of 0.09. Thus, in estimating the moderating effects, we only focused on the conditional indirect effects of PTSD symptom severity on psychiatric co-morbidity through suppressing depression at values of the two moderators (time since trauma and trauma type).

The cross-product terms between PTSD symptom severity and the two moderators were significant. The positive coefficient (0.05) of the interaction term (PTSD $\times$ time since trauma) for predicting the suppression of depression implied that high PTSD symptom severity combined with traumas which happened longer ago acted to increase emotional suppression of depression. The negative coefficient (−0.13) of the interaction terms (PTSD $\times$ trauma type) when the outcome was suppressing depression implied that high PTSD symptom severity combined with interpersonal traumas was associated with lower suppression of depression (see Tables 3 and 4). Further analysis revealed that the interaction between the two moderators (time since trauma $\times$ trauma type) predicted the suppression of depression (coefficient = 0.02, SE = 0.00, $t = 2.75$, $p < 0.01$, LLCI: 0.06, ULCI: 0.03).

Discussion

This study examined whether emotional suppression mediated the link between PTSD severity and CIU severity or

Table 1. Demographic information according to patient and PTSD symptom severity groups.

	CIU						Allergy					
	No trauma (n = 19)		Mild PTSD (n = 42)		Moderate/severe PTSD (n = 39)		No trauma (n = 13)		Mild PTSD (n = 34)		Moderate/severe PTSD (n = 13)	
	N	%	N	%	N	%	N	%	N	%	N	%
Female	15	79	33	79	34	87	7	54	21	62	11	85
Male	4	21	9	21	5	13	6	46	13	38	2	15
Single	6	32	3	7	10	26	7	54	9	26	4	31
Married	9	47	33	79	20	51	6	46	19	56	8	61
Cohabitate	1	5	1	2	5	13	–	–	3	9	–	–
Sep/divorced	2	11	4	10	4	10	–	–	3	9	–	–
Widowed	1	5	1	2	–	–	–	–	–	–	1	8
Caucasian	19	100	41	98	38	97	13	100	34	100	13	100
Higher education	2	11	6	14	6	15	1	8	9	26	2	15
Undergraduate	4	21	7	17	6	15	3	23	4	12	2	15
Postgraduate	2	10	2	5	2	6	–	–	3	9	–	–
Secondary education	11	58	27	64	25	64	9	69	18	53	9	70
Low income	13	68	32	76	20	51	9	69	23	68	11	84
Medium income	3	16	8	19	17	44	4	31	10	29	2	16
High income	3	16	2	5	2	5	–	–	1	3	–	–
No other illness	12	63	24	57	20	51	8	61	17	50	6	46
1 other illness	2	11	13	31	8	21	4	31	7	21	5	38
>1 other illness	5	26	5	12	11	28	1	8	10	29	2	16
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	43.26	10.45	50.66	14.21	43.64	14.68	33.07	17.05	35.97	15.90	40.07	15.06
How long ago started symptoms	47.47	60.90	44.47	98.62	57.84	61.23	93.15	102.00	111.85	140.56	122.76	162.67
CIU severity	8.84	1.95	8.40	2.24	9.28	2.41	–	–	–	–	–	–

Table 2. Previous trauma type and onset; means and standard deviations for psychiatric co-morbidity, emotional suppression.

	CIU						Allergy					
	No trauma (n = 19)		Mild PTSD (n = 42)		Moderate/severe PTSD (n = 39)		No trauma (n = 13)		Mild PTSD (n = 34)		Moderate/severe PTSD (n = 13)	
	N	%	N	%	N	%	N	%	N	%	N	%
Interpersonal trauma	–	–	7	17	14	36	–	–	10	29	4	31
Non-interpersonal trauma	–	–	35	83	25	64	–	–	24	71	9	69
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Trauma onset (in months)	–	–	155.94	147.55	103.78	130.75	–	–	116.10	145.07	77.08	106.08
Somatic	12.89	3.33	13.61	3.68	18.07	4.85	10.61	2.14	11.50	3.11	13.30	3.72
Anxiety	14.31	4.88	13.88	4.40	19.64	5.05	12.07	3.22	10.52	2.86	14.23	4.08
Social dysfunction	15.47	2.34	15.30	2.08	18.17	4.55	14.00	1.08	13.73	1.30	15.61	2.25
Depression	10.05	3.67	8.23	2.06	13.53	6.44	8.69	4.36	8.32	2.27	10.53	3.92
Suppress anger	13.73	5.06	15.17	4.31	16.10	4.36	13.83	4.23	13.06	4.52	14.07	4.19
Suppress depression	14.36	4.53	15.42	3.62	17.41	3.83	11.91	3.20	13.96	3.87	15.23	4.14
Suppress anxiety	16.21	4.83	18.33	3.57	18.92	4.39	15.75	5.02	17.31	5.84	15.69	4.58

psychiatric co-morbidity. It also examined whether the mediating role would be moderated by the time since trauma occurred and the type of trauma (interpersonal or not). Hypothesis one was partially supported in that emotional suppression did not mediate the link between PTSD and CIU symptom severities, although it did mediate the link between PTSD and psychiatric co-morbid symptom severities. Hypothesis two was supported in that time since trauma and trauma type moderated the mediational effect of suppressing depression.

Focusing on the findings related to hypothesis one, suppression of depression was a maladaptive emotional regulation strategy. The more suppression of depression, the higher the psychiatric co-morbid severity. This contradicts existing literature suggesting that emotional suppression is a

protective strategy (Cohen, 2013; Liverant et al., 2008; Vaillant & Vaillant, 1990). However, this finding is by no means conclusive and different findings have been reported for different populations. With the problem of cancer, for example, emotional suppression was found to be both protective in one study (Cohen, 2013) and maladaptive in another (Ho et al., 2004; Iwamitsu et al., 2005). Focusing on flood victims, a recent study even showed that emotional suppression did not relate to PTSD or psychiatric co-morbidity (Chung et al., 2014). Thus, the protective effects of emotional suppression remain unclear.

In line with previous research (Krause et al., 2003), whilst emotional suppression (especially of depression) was found to mediate the effects of PTSD, it influenced specific outcomes, namely, psychiatric symptoms rather than CIU severity.

Table 3. The mediational effects of PTSD symptom severity on CIU severity and psychiatric co-morbidity with emotional suppression as the mediator.

	Effect	SE	T	P	LLCI	ULCI	Boot SE	Boot LLCI	Boot ULCI
Total effect of PTSD on CIU severity	0.01	0.02	0.85	0.39	−0.02	0.06	–	–	–
Direct effect of PTSD on CIU severity	0.01	0.02	0.47	0.63	−0.03	0.06	–	–	–
Indirect effect of PTSD on CIU severity	0.00	–	–	–	–	–	0.00	−0.00	0.02
Total	−0.00	–	–	–	–	–	0.00	−0.01	0.00
Suppress anger	0.01	–	–	–	–	–	0.00	−0.00	0.03
Suppress depression	−0.00	–	–	–	–	–	0.00	−0.01	0.00
Suppress anxiety	0.95	0.12	7.42	0.00	0.70	1.21	–	–	–
Total effect of PTSD on psychiatric co-morbidity	0.91	0.12	7.26	0.00	0.66	1.16	–	–	–
Direct effect of PTSD on psychiatric co-morbidity	0.04	–	–	–	–	–	0.05	−0.03	0.17
Indirect effect of PTSD on psychiatric co-morbidity	−0.03	–	–	–	–	–	0.03	−0.14	0.01
Total	0.09	–	–	–	–	–	0.05	0.00	0.23
Suppress anger	−0.01	–	–	–	–	–	0.03	−0.17	0.02
Suppress depression									
Suppress anxiety									

Table 4. The moderated mediational effects on the relationship between PTSD symptom severity and psychiatric co-morbidity at values of moderators (how long ago the trauma occurred and trauma types).

Mediators	Time trauma	Trauma type	Effect	Boot SE	Boot LLCI	Boot ULCI
Suppressed anger	−1.00	−0.26	−0.02	0.05	−0.18	0.04
Suppressed anger	0.00	−0.26	−0.01	0.05	−0.14	0.06
Suppressed anger	1.00	−0.26	−0.01	0.08	−0.23	0.10
Suppressed depression	−1.00	−0.26	0.12	0.08	0.01	0.41
Suppressed depression	0.00	−0.26	0.18	0.09	0.03	0.42
Suppressed depression	1.00	−0.26	0.24	0.14	0.03	0.62
Suppressed anxiety	−1.00	−0.26	−0.03	0.05	−0.19	0.02
Suppressed anxiety	0.00	−0.26	−0.05	0.07	−0.26	0.04
Suppressed anxiety	1.00	−0.26	−0.06	0.10	−0.40	0.06

How long ago the trauma occurred is on a standardized scale in that 0 represents the mean, +1 and −1 represent 1 standard deviation above and below the mean, respectively.

The symptom-specific effect of emotional suppression has been found elsewhere (Chung & Hunt, 2014). In fact, one study recently concluded that emotional suppression strategies have the inadvertent effect of maintaining psychological symptom severities (D'Avanzato et al., 2013). Seemingly, antecedent experiences, PTSD from past trauma, and resulting predispositions (suppression of depression) could have led some individuals to become vulnerable to specific psychological symptoms rather than physical ones, i.e. CIU severity (Blatt & Zuroff, 1992).

The mediating effects of suppressing depression were moderated by time since trauma occurred and trauma type, supporting hypothesis two. CIU patients tended to suppress depressive emotions when they had a high level of PTSD symptom severity and a long history of trauma. Trauma happened long ago could have led to the emergence of an inadequate neurodevelopment of emotional and arousal regulatory systems and associated emotion dysregulation (Lanius et al., 2010) and, ultimately, a breakdown in emotional processing. Instead, an attempt is made to prevent emotional exhaustion and inhibit the flow of traumatic information to a tolerable level (Ihilevich & Gleser, 1993; Thome, 1990) by suppressing depressive emotions (Gross, 1998b). As a result, these distressing emotions are unchanged

which increases physiological activation. In turn, this might exacerbate psychological symptoms, hence, the emergence of poor psychological well-being or other psychological difficulties (Amstadter & Vernon, 2008; Gross & John, 2003; Temoshok et al., 2008).

CIU patients tended not to suppress depression when they had a high severity of PTSD symptoms and had experienced interpersonal trauma. This type of trauma is an assault to the self that affects one's system of meaning and the core assumptions held such as safety, justice, the benevolence of the world and oneself (Janoff-Bulman, 1992). It undermines the person's sense of security, and can affect their personal identity. Identity can become fragmented and unintegrated (Wilson, 2006) interfering with the ability to regulate, control, inhibit or suppress emotion leading to externalizing behaviour such as impulsivity and other psychological difficulties (Miller et al., 2004).

Focusing on the interaction effects that interpersonal trauma happened long ago influenced the suppression of depression, our body can memorize the trauma and manifest traumatic memories as urticaria. To buffer against distress, dissociation is often used as a form of “unconscious” defense among patients with dermatological problems (Gupta, 2006; Gupta et al., 2005). Our findings could suggest that the

development or vividness of these memories is sensitive to the specific nature of the traumatic event (especially of interpersonal trauma) which happened long ago for CIU patients. This is in line with the claim that urticaria is a manifestation of increased physiological reactivity and sympathetic nervous system arousal of PTSD resulting from a specific trauma experience. Such experience has an idiosyncratic and unique significance for patients (Gupta & Gupta, 2012). Our findings suggest that to defend against the distress resulting from these memories, patients engaged in a “conscious” process of recognizing and yet inhibiting their emotional expressive behaviour. In other words, both conscious and unconscious defenses such as dissociation suggested in literature are relevant for these patients. Whilst suppression of depression could modify the behavioural aspect of the emotion, it does not decrease the emotion itself. In turn, this could link to psychiatric co-morbid symptoms (Gross, 1998a).

Several limitations of this study are worth mentioning. First, it was cross-sectional in nature which means that we could not comment on causality between independent and dependent variables. Second, all the measures used in this study were self-reported. This could have led to over reporting on, for example, PTSD symptoms (Stevens et al., 2013). Third, the measure we used to assess CIU severity could have been strengthened by a supplementary measure of, for example, Skindex-17 (Nijsten et al., 2006). This would have given us additional information pertaining to dermatology-specific quality of life. Lastly, it would have been useful to measure the role of cognitive reappraisal along with emotional suppression (Gross, 2001). The differences in the use of emotional suppression vs reappraisal could lead to a better understanding of the processes involved in the regulation of emotions following traumatic events.

To conclude, PTSD symptom severity from past trauma can influence CIU patients’ psychological difficulties through the mediating effects of the suppression of depression. However, different trauma characteristics may moderate these effects with the effects of suppression of depression greater for traumatic events that occurred long ago and events that were non-interpersonal in nature.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

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