

**Appendix 1** to Terpou BA, Lloyd CS, Densmore M, et al. Moral wounds run deep: exaggerated midbrain functional network connectivity across the default mode network in post traumatic stress disorder. *J Psychiatry Neurosci* 2022. doi: 10.1503/jpn.210117

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## **Supplemental Materials**

### **Moral Wounds Run Deep:**

#### **Exaggerated Midbrain Functional Network Connectivity**

#### **Across the Default Mode Network in Post-Traumatic Stress Disorder**

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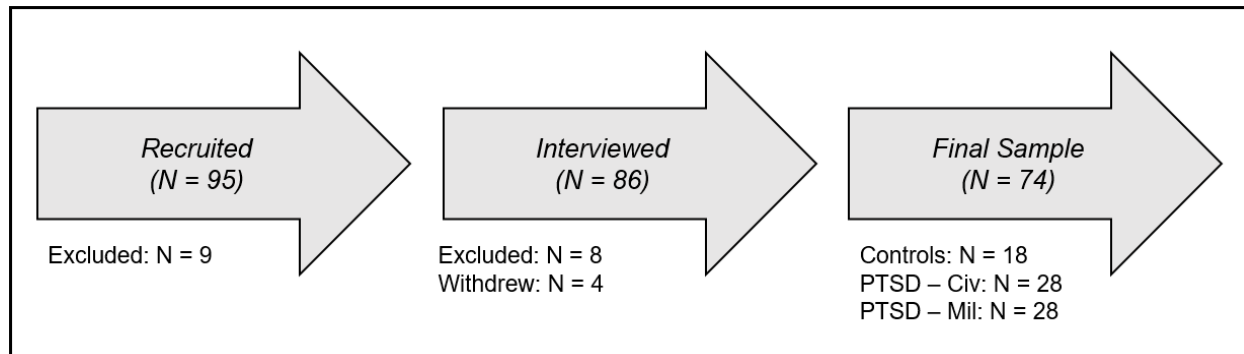
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**Recruitment and Enrollment**



*Figure S1: Flow chart describing recruitment and enrollment stages. Pre-screening criteria led to ninety-five participants being recruited. Prior to in-person participant interviews, nine participants were excluded based on evolving inclusion criteria and due to some participants not following up. After administering questionnaires and gathering information on participant's MIs, eight participants were excluded and four withdrew. In total, seventy-four participants completed all study requirements and were included in the final sample.*

**Clinical Questionnaires and State- and Trait-Related Scales**

**Moral Injury Event-Related State Shame Ratings:**

Immediately after neutral and MI-event related memory scripts were read, participants were asked to rate how much shame they felt in regard to the presented script (1 = not at all; 4 = very much).

**Structured Clinical Interview for DSM-IV (SCID-I):**

The Structured Clinical Interview for DSM-IV Axis-I Disorders – Research Version<sup>1</sup> was administered to ascertain psychiatric history, which was used primarily to determine inclusion criteria and current comorbidity status.

**Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) and Life Events Checklist:**

The Clinician-Administered PTSD Scale for DSM-5 (CAPS-5)<sup>2,3</sup> was administered to assess symptom severity and Criterion D symptom severity in particular, pertaining to alterations in cognitions and mood, i.e., the inability to recall event details, exaggerated negative beliefs and expectations, distorted cognitions leading to blame, persistent negative state, apathy, interpersonal detachment, and diminished positive emotion.

**Other Self-Report Measures:**

The Moral Injury Events Scale (MIES)<sup>4</sup> was used to confirm exposure and distress related to a moral injury event (with items 8 and 9 omitted when assessing non-military participants). Finally, the Multiscale Dissociation Inventory (MDI)<sup>5</sup> and the Childhood Trauma Questionnaire (CTQ)<sup>6</sup> were used to assess group differences in dissociative symptoms and childhood maltreatment and neglect, respectively.

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**TABLE S1: PSYCHOTROPIC MEDICATION PRESCRIPTIONS BY GROUP**

CLASS	MEDICATION	GROUP					
		HC		CIV		MIL	
		Past	Present	Past	Present	Past	Present
SSRIs	CITALOPRAM	-	-	-	-	-	2
	FLUOXETINE	-	-	-	1	2	-
	PAROXETINE	-	-	-	-	1	2
	SERTRALINE	-	-	-	1	1	2
SSRI/SNRIs	VENLAFAXINE	-	-	1	1	2	2
	DULOXETINE	-	-	-	-	1	1
SARIs	TRAZODONE	-	-	-	5	2	2
BENZODIAZEPINES	LORAZEPAM	-	-	-	1	3	1
	OXAZEPAM	-	-	-	-	1	1
	CLONAZEPAM	-	-	1	2	1	3
NON-BENZODIAZEPINES	BUSPIRONE	-	-	-	-	1	-
TRICYCLICS	AMITRIPTYLINE	-	-	-	1	1	-
	DOXEPIN	-	-	-	-	1	-
ATYPICAL	QUETIAPINE	-	-	-	3	2	2
ANTI-PSYCHOTICS	RISPERIDONE	-	-	1	-	-	-
OTHER	MIRTAZAPINE	-	-	-	-	-	1
ANTI-DEPRESSANTS	BUPROPION	-	-	-	1	3	2
ANTI-CONVULSANT	DIVALPROEX	-	-	-	1	-	-
ANTI-MANIC AGENT	LITHIUM	-	-	-	-	-	1
HYPNOSEDATIVE	ZOPICLONE	-	-	-	4	3	2
PHENOTHIAZINE	METHOTRIMEPRAZINE	-	-	-	-	1	1

**Abbreviations:** HC: MI Event-Exposed, Healthy Controls; CIV: Civilian Occupational-Related PTSD; MIL: Military or Law Enforcement-Related PTSD; SSRIs: Selective Serotonin Reuptake Inhibitors; SNRIs: Selective Norepinephrine Reuptake Inhibitors; SARIs: Serotonin Receptor Antagonists and Reuptake Inhibitors

*Note: Only ten and twenty-three participants with civilian-related PTSD and military- and law enforcement-related PTSD, respectively, had a presently prescribed medication, with some participants prescribed multiple medications.*

## **Moral Injury and Neutral Event-Related Script Information**

### **Instructions:**

Before your upcoming visit, we ask that you think about two personal experiences: 1) a moral injury event (see below) and 2) a neutral event that took place around the same time (e.g., brushing teeth, eating breakfast). Neutral events should not have elicited strong positive or negative emotions during the event.

### **Definition:**

Moral injury refers to the emotional or spiritual impact of participating in, witnessing, and/or being victimized by actions and behaviours which violate one's own core moral values and behavioural expectancies of the self and of others.

Moral injury events should elicit strong moral emotions (e.g., shame, guilt, betrayal), somewhere between a 5-8 on a 1-10 scale (with 10 being most severe). We would avoid selecting a moral injury event scoring above 8, since we do not want the memory to be too upsetting when you recall it.

### **Other Moral Injury Definitions:**

- A disruption in an individual's confidence and expectations about one's own or others' motivation or capacity to behave in a just and ethical manner.<sup>7</sup>
- An inability to justify personal actions or witnessed events, leading to these events having an unsuccessful integration into pre-existing moral schemas.<sup>8</sup>
- A deep soul wound that pierces a person's identity, sense of morality, and relationship to society.<sup>9</sup>

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