

## The Battle ... within? Exploring the predictors and buffers of PTSD among wounded ex-combatants

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### ABSTRACT

The present study offers valuable insights into the psychological impact of war on wounded ex-combatants. By examining negative cognitions about the self and the world as predictors of PTSD symptoms and the moderating role of perceived control and social integration, this study reveals the complexities of PTSD in a population that has been largely overlooked in previous research. Our findings indicate that the predictors of PTSD symptoms are not uniform and are influenced by the sociohistorical and political context in which ex-combatants are situated. Furthermore, the moderating effects of perceived control and social integration highlight the importance of addressing not only individual psychological factors, but also the social and contextual factors that can influence recovery from PTSD. These insights suggest that a more comprehensive approach is necessary in order to fully understand and address PTSD in this population.

### 1. Introduction

El Salvador has gone through various periods that have shaped the current economic, political and social status of the country. A severe military dictatorship leading the country from 1931, a massively crushed peasant revolt in 1932, and decades of repression and social unrest resulted in a coup in 1980. This event triggered a 12-year civil war between right-wing death squads and the military-led government (i.e., Armed Forces of El Salvador, AFES) against the insurgent forces of the left-wing *Farabundo* Martí National Liberation Front (FMNL). By the time a peace agreement was signed in 1992, the war had claimed more than 75,000 lives and produced around half a million displaced people and refugees (Bounds, 2002), enforced disappearances and indiscriminate attacks against civilians (Betancur et al., 2001), and involved the militarization of society and the legitimization of violence (Martín-Baró, 1990; Samayoa, 1990).

Exposure to life-threatening events like warfare can lead to the development of posttraumatic stress disorder (PTSD) (Finley, 2011; French and Nikolić-Novaković, 2012; Hess and Dean, 2006; Jones, 2010; Meagher et al., 2014; Solomon, 1993), which is characterized by

re-experimentation, avoidance of trauma-related stimuli, increased reactivity, and negatively altered mood and cognitions (see American Psychiatric Association, 2013).

While PTSD has a lifetime prevalence rate around 10% worldwide (Williamson et al., 2021), it is worth highlighting that this rate is significantly higher among those who have experienced military conflict. For instance, a systematic review and meta-analysis by Steel et al. (2009) found a prevalence rate of 30.6% across 145 studies, and this rate rose to 44% among veterans of the Iraq and Afghanistan wars (Brown et al., 2010). In line with this, the prevalence of PTSD among Palestinian adolescents was around 56.8%, which increased to 76.5% among those injured during the Aqsa intifada (Khamis, 2008; Kolltveit et al., 2012).

Despite these staggering prevalence rates, not everyone who experiences a traumatic event will develop PTSD (Kienzler, 2008). Indeed, a meta-analysis by Hoppen and Morina (2019) estimated that among 1.45 billion individuals who had experienced war between 1898 and 2015, only 354 million (24.4%) went on to develop PTSD and/or major depression. Furthermore, a 20-year longitudinal study conducted by Solomon and Mikulincer (2006) suggests a complex course of the trauma symptoms as they may abate, crystallize into PTSD or include initially

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adaptive responses that eventually become psychopathological. In line with the latter, empirical reviews (e.g., Schottenbauer et al., 2008) and multidimensional metanalysis (e.g., Bradley et al., 2005) have found that most individuals continued to have residual post-treatment PTSD symptoms (Bradley et al., 2005), even reaching treatment non-response rates of up to 50% (Schottenbauer et al., 2008). This brings to the fore the relevance of focusing on the psychological processes involved in the maintenance of PTSD.

Ehlers and Clarke's (2000) cognitive model of PTSD proposes three underlying psychological processes that can contribute to the development of a sense of serious and ongoing threat, a defining characteristic of chronic PTSD: a) extremely negative appraisals of the trauma and/or its sequelae, which can refer to cognitive interpretations of the world as an extremely dangerous place and/or the self as completely incompetent to achieve important life goals (see Foa et al., 1999); b) poor integration of the trauma memory with other autobiographical memories (i.e., disjointed trauma memories); and c) maladaptive coping responses (such as avoidance of PTSD symptoms or trauma reminders), which might ameliorate the sense of threat in the short term at the expense of preventing changes in both cognitive appraisals (thereby implicitly confirming them) and mental representations (i.e., trauma memories). Since these psychological processes are modifiable (Beierl et al., 2020), cognitive therapy targeting them constitutes an effective evidence-based treatment for PTSD (e.g., Ehlers et al., 2005, 2014; see also Ehlers et al., 2003), even when delivered in community settings (Gillespie et al., 2002).

According to the literature, cognitive change is arguably a key mechanism in PTSD treatment (LoSavio et al., 2017; Schumm et al., 2022; Zalta, 2015; see also Clark, 1995). However, addressing dysfunctional cognitions requires the person to be first exposed to trauma-related reminders (e.g., appraisals, memories, feelings and situations). For instance, prolonged exposure (see Foa et al., 2007) to cues/triggers of trauma helps individuals realize said stimuli are not (no longer) dangerous, which implies that avoidance is not required. An important nuance is worth noting, however: experimental evidence shows that among people with PTSD symptoms perceived uncontrollability over the environment can result in greater avoidance strategies (Hancock and Bryant, 2018). This brings to the fore the importance of increasing perceived control among people suffering from PTSD.

However, it is important to highlight that humans are not detached from their social context, as well as war-related PTSD does not originate in a vacuum but has a social causation (Benner et al., 2018). Furthermore, military studies have documented material and social conditions and group processes as protective factors (e.g., Weisæth, 1998; see also Johnson and Thompson, 2008). This has two implications for research. First, the sociohistorical conditions that turn people into victims depend on their group membership (see Blanco et al., 2006, 2016; Villagran et al., 2021), which suggests that it would be premature to assume a common set of PTSD predictors for different groups of traumatized people (Brewin et al., 2000), as evidenced by metanalysis of risk factors for PTSD (e.g., Brewin et al., 2000; Xue et al., 2015). Based on this, all ex-combatants in a post-war society should not be considered as homogeneous; rather, the group of ex-combatants to which they belonged should be the starting point for research on war-related PTSD. Another implication is the need to consider the relational dimension between individuals and their social world, which sets the ground to broaden the conceptualization of PTSD symptoms as "the crystallization –or materialization– in individuals of aberrant and dehumanizing social relationships such as those that prevail in situations of civil war" (Martín-Baró, 1990, p. 236). This suggests that a low quality of one's relationship to their society and community (i.e., social integration, see Keyes, 1998) might be another psychosocial process that maintains PTSD symptoms. Indeed, if extremely negative appraisals and maladaptive responses being challenged (e.g., in therapy) are mixed with occasional real-world inputs that reinforce them (i.e., intermittent reinforcement), the likelihood of maximizing said negative appraisals increases (see Bouton et al., 2001;

Bouton and Swartzentruber, 1991; Skinner, 1956), thus perpetuating PTSD symptomatology.

## 2. The current paper

The impact of trauma appears to follow a complex process (see Solomon and Mikulincer, 2006) and recovery can be particularly challenging among those who suffer war-related PTSD as they have typically been exposed to multiple and intense traumatic experiences. Furthermore, recovery from war-related PTSD can be influenced by other factors, such as international relationships, economics and politics (Kumar, 1997). Additionally, combat veterans may feel an additional sense of guilt and shame related to their combat experiences which can further complicate their recovery. This can be compounded if those veterans have been wounded, as said wounds will also constitute permanent reminders of the trauma.

Previous research has explored the impact of war in the general population (Ugalde et al., 2000), the impact of policy on the health of displaced people (Lundgren and Lang, 1989), community-based mental health and social care (Sisti, 1998), and the reintegration processes of young ex-combatants (Fundacion 16 de Enero, 1995). Notwithstanding, there is a scarcity of knowledge regarding the impact of war on wounded combatants. Thus, the first objective of this study is to investigate this population.

According to the Ehlers and Clarke's (2000) cognitive model of PTSD, negative appraisals about oneself and the world are argued to be crucial in the maintenance of the disorder (see also Foa et al., 1999). In fact, a review conducted by Brown et al. (2019) found that the degree of improvement in negative post-traumatic cognitions is associated with improvement in PTSD symptoms.

Based on previous research (e.g., Brown et al., 2019), we can anticipate that in this study posttraumatic cognitions will be significant predictors of PTSD symptoms. However, since the FMLN was formed in response to the military-led government's oppression (see Wood, 2003), it is plausible that its members were more likely to have experienced violence in their communities than members of AFES. Therefore, we hypothesize that negative cognitions of the world will be a stronger predictor of PTSD symptoms among members of the FMLN.

On the other hand, members of the AFES may feel a heightened sense of responsibility for their actions since they typically operate under a strict code of conduct that emphasizes discipline, responsibility, and accountability for one's actions. Therefore, we hypothesize that negative cognitions of the self will be a stronger predictor of PTSD symptoms among members of the AFES.

Regarding the interaction effects, we would expect that individuals with a higher sense of control over their life outcomes be better equipped to navigate the unpredictability (and dangerousness) of the world. Therefore, we hypothesize that increased perceived control will buffer the impact of negative cognitions about the world on PTSD symptoms.

On the other hand, we would expect that the feeling that one has something in common with other members of the communities to which one belongs (i.e., social integration, see Keyes, 1998) can provide support and understanding. Therefore, we hypothesize that increased social integration will mitigate the impact of negative cognitions about the self on PTSD symptoms.

## 3. Method

### 3.1. Participants

In this research, 260 veterans of the Salvadoran Civil War participated. Of these participants, 205 (78.8%) were male and 55 (21.2%) were female. These individuals had been members of either the Armed Forces of El Salvador (AFES;  $N = 39$ , 15.0%) or the *Farabundo* Martí National Liberation Front (FMNL;  $N = 221$ , 85.0%) for an average of 7.95 years ( $SD = 3.45$ ). The age of participants at the time of the war ranged

from 3 to 64 years old (M = 22.85, SD = 9.69), and from 28 to 91 years old (M = 47.78, SD = 10.10) at the time this study was conducted. Participants belonged to one of the combat groups for an average of 7.95 years (SD = 3.45). All participants had been exposed to traumatic events, were war-wounded, and were disabled (see Table 1 for more details).

### 3.2. Procedure

#### 3.2.1. Contact with institutions and approval

To conduct this research, we made contact and held several meetings with the Association of the Wounded of the Salvadoran War, "Heroes of November 89" (AWSW; ALGES in Spanish). We received approval from the executive management, who acted as an ethics committee, to conduct this study with their service users.

### 3.3. Data collection

Data collection was conducted through house-to-house visits or at events organized by AWSW. A representative from AWSW was always present to introduce the researchers and minimize any potential harm to participants.

### 3.4. Measures

**Spanish version of the Davidson Trauma Scale (DTS; Davidson et al., 1997),** validated by Bobes et al. (2000): This 17-item ( $\alpha = 0.94$ ) instrument evaluates each of the symptoms of PTSD by rating their frequency and severity on a 5-point scale, which range between 0 (*never/no severity*), and 4 (*daily/extreme severity*). Frequency and severity scores were summed. A higher score indicates higher PTSD symptomatology.

**Brief Version of the Posttraumatic Cognitions Inventory (PTCI-9; Wells et al., 2019).** This 9-item instrument ( $\alpha = 0.66$ ) uses a Likert scale that ranges from 1 (*completely disagree*) to 7 (*completely agree*) to evaluate negative appraisals of the self ( $\alpha = 0.67$ ) and the world ( $\alpha = 0.71$ ) and self-blame ( $\alpha = 0.40$ ). We used the Spanish items validated by Blanco et al. (2010). Scores were averaged. A higher score indicates higher posttraumatic cognitions.

**Lack of control subscale of the Fatalism Scale (Blanco and Díaz, 2007):** This 4-item ( $\alpha = 0.67$ ) subscale measures the perceived inability to obtain positive outcomes and avoid negative outcomes and uses Likert-type items ranging from 1 (*completely disagree*) to 6 (*completely agree*). Scores were reversed and averaged. A higher score indicates higher perceived control.

**Table 1**  
Traumatic events and disabilities suffered.

Traumatic event experienced	Counts	% of Total
Injury in armed conflict	87	33.5%
Suffering from some type of violence	10	3.8%
Witnessed the suffering and/or death of relatives	66	25.4%
Witnessed the suffering and/or death of colleagues or others	30	11.5%
Deprivations	9	3.5%
Proximity to death	25	9.6%
Abandonment of the home	14	5.4%
Loss of material goods	5	1.9%
Other	14	5.4%
<b>Total</b>	<b>260</b>	<b>100%</b>
<b>Disability due to ...</b>	<b>Counts</b>	<b>% of Total</b>
lower limb injury	68	26.2%
injury in various parts of the body	43	16.5%
head and face injuries	36	13.8%
sensory disabilities	20	7.7%
lower limb amputation	22	8.5%
amputation of upper limbs	20	7.7%
injury to the chest and abdomen	19	7.3%
upper limb injury	21	8.1%
injury of upper and lower limbs	11	4.2%
<b>Total</b>	<b>260</b>	<b>100%</b>

**Social integration of the Social Well-Being Scale (SWB Scale; Keyes, 1998),** validated by Blanco and Díaz (2005): This 5-item ( $\alpha = 0.63$ ) subscale measures the quality of one's relationship to society and community and uses Likert-type items ranging from 1 (*completely disagree*) to 7 (*completely agree*). Scores were averaged. A higher score indicates higher social integration.

### 3.5. Analysis

#### 3.5.1. Preliminary analyses

We analysed data using the software SPSS Statistics 25. We accepted Cronbach's alpha values of at least 0.70, as suggested by Nunnally (1978), as well as  $0.60 \leq \alpha < 0.70$ , when the mean inter-item correlation ranged between 0.2 and 0.4 (see Briggs and Cheek, 1986).

#### 3.5.2. Analytic procedure

To analyse the data, we first split the sample into two groups (i.e., AFES and FMNL) and used Pearson's product-moment correlations to assess the relationships among all variables of interest. Next, we used ordinary least squares (OLS) regression models, implemented using the GAMLj module for Jamovi 1.8.1 (The jamovi project, 2021), to predict PTSD symptoms from negative appraisals of the self and the world. Thirdly, we tested the moderating role of perceived control and social integration (at one standard deviation above/below the mean) on the relationship between PTSD symptoms and statistically significant predictors. In all regression models, we entered the independent variable first, followed by the moderator and the interaction term. We conducted robustness checks by testing whether the moderating effects remained statistically significant when controlling for length of membership in their combat group, traumatic event experienced, and type of wound suffered (i.e., disability). All continuous covariates were mean centred whereas nominal ones were effect-coded (deviation contrast). We applied the Holm-Bonferroni correction for multiple hypothesis tests where appropriate.

## 4. Results

### 4.1. Preliminary results

We found no missing values in any of the variables of interest. Tables 2 and 3-4 display the descriptive statistics and association coefficients for the study variables.

Among members of the AFES, there was a significant correlation between negative appraisals of the world and one of the proposed moderators, i.e., social integration ( $r = -0.356, p < .05$ ), which in turn was not correlated with PTSD symptoms. Negative appraisals of the world as an independent variable was significantly associated with PTSD symptoms ( $r = 0.481^{**}, p < .01$ ).

Regarding members of the FMNL, there were significant correlations between negative appraisals of the world and lack of control ( $r = 0.273, p < .001$ ) and social integration ( $r = -0.168, p < .05$ ), as well as between

**Table 2**  
Descriptive statistics.

	Group	Mean	Median	SD	SE
1. Neg. Cognitions Self*	AFES	2.744	2.333	1.748	0.280
	FMNL	2.179	1.667	1.399	0.094
2. Neg. Cognitions World***	AFES	5.162	5.333	1.263	0.202
	FMNL	4.345	4.667	1.571	0.106
3. PTSD*	AFES	48.462	44.000	27.720	4.439
	FMNL	39.186	40.000	23.993	1.614
4. Perceived Control***	AFES	4.051	3.750	1.290	0.207
	FMNL	4.962	5.250	1.053	0.071
5. Social Integration***	AFES	4.944	5.200	1.188	0.190
	FMNL	5.614	5.800	0.957	0.064

Note: †p < .10 \*p < .05. \*\*p < .01. \*\*\*p < .001 for independent samples T-test.

**Table 3**  
Correlation coefficients (AFES).

	1	2	3	4	5
1. Neg. Cognitions Self	–				
2. Neg. Cognitions World	0.214	–			
3. PTSD	0.203	0.481**	–		
4. Perceived Control	- 0.292	- 0.074	- 0.297	–	
5. Social Integration	- 0.302	- 0.356*	- 0.313	0.516***	–

Note: †p < .10 \*p < .05. \*\*p < .01. \*\*\*p < .001.

**Table 4**  
Correlation coefficients (FMNL).

	1	2	3	4	5
1. Neg. Cognitions Self	–				
2. Neg. Cognitions World	0.263***	–			
3. PTSD	0.437***	0.159*	–		
4. Perceived Control	- 0.453***	- 0.273***	- 0.169*	–	
5. Social Integration	- 0.299***	- 0.168*	- 0.134*	0.353***	–

Note: †p < .10 \*p < .05. \*\*p < .01. \*\*\*p < .001.

negative appraisals of the self and lack of control ( $r = 0.453, p < .001$ ) and social integration ( $r = - 0.299, p < .001$ ). Negative appraisals of the self and the world as independent variables were significantly associated with PTSD symptoms; respectively,  $r = 0.437, p < .001$ , and  $r = 0.159, p < .05$ .

**4.2. Regression models**

**4.2.1. Armed Forces of El Salvador**

Regression models indicated that posttraumatic cognitions predicted PTSD symptoms among members of the AFES,  $F(2, 36) = 5.735, p = .007, \eta^2p = .242$ . The parameter estimates are shown in Table 5.

On the one hand, adding the interaction term between negative appraisals of the world and perceived control significantly increased the prediction of PTSD symptoms,  $\Delta R^2 = 0.264, F(2, 34) = 9.069, p < .001$ . Results revealed a significant two-way interaction ( $b = - 7.648, SE = 2.040, p < .001, \eta^2p = .293$ ), which remained statistically significant after controlling for length of membership in the AFES, type of injury, and traumatic event ( $b = - 9.123, SE = 1.927, p < .001, p_{Holm-Bonferroni} = .004, \eta^2p = .599$ ). The simple slope between negative appraisals of the world and PTSD symptoms was statistically significant at one standard deviation below the mean of perceived control, ( $b = 26.054, SE = 4.123, p < .001, \eta^2p = .727$ ), but not at one standard deviation above ( $b = 2.584, SE = 4.570, p = .580, \eta^2p = .021$ ). This suggests that increasing perceived control can buffer the impact of negative appraisals of the world on PTSD symptoms, as shown in Fig. 1.

On the other hand, adding the interaction term between negative appraisals of the world and social integration significantly increased the prediction of PTSD symptoms,  $\Delta R^2 = 0.236, F(2, 34) = 7.680, p = .002$ . Results revealed a significant two-way interaction ( $b = - 10.230, SE = 2.710, p < .001, \eta^2p = .295$ ), which remained statistically significant after controlling for length of membership in the AFES, type of injury, and traumatic event ( $b = - 9.657, SE = 3.560, p = .016, p_{Holm-Bonferroni} = .032, \eta^2p = .329$ ). The simple slope between negative appraisals of the world and PTSD symptoms was statistically significant at one standard deviation below the mean of social integration, ( $b = 26.675, SE = 5.852,$

**Table 5**  
Parameter estimates for the AFES.

Names	Estimate	SE	95% Confidence Interval		$\beta$	t	p	$\eta^2p$
			Lower	Upper				
(Intercept)	48.462	3.971	40.407	56.516	0.000	12.203	<.001	
Negative appraisals of the Self	1.662	2.356	-3.117	6.441	0.105	0.705	0.485	0.014
Negative appraisals of the World	10.058	3.261	3.445	16.671	0.458	3.085	0.004	0.209

$p < .001, \eta^2p = .581$ ), but not at one standard deviation above ( $b = 7.583, SE = 6.352, p = .251, \eta^2p = .087$ ). This suggests that increasing social integration can buffer the impact of negative appraisals of the world on PTSD symptoms, as shown in Fig. 2.

**4.2.2. Farabundo Martí National Liberation**

Regression models indicated that posttraumatic cognitions predicted PTSD symptoms among members of the FMNL,  $F(2, 218) = 26.033, p < .001, \eta^2p = .193$ . The parameter estimates are shown in Table 6.

Results revealed that adding the interaction term between negative appraisals of the self and perceived control did not significantly increase the prediction of PTSD symptoms,  $\Delta R^2 = 0.002, F(2, 216) = 0.260, p = .771, p_{Holm-Bonferroni} = 0.771$ .

In contrast, adding the interaction term between negative appraisals of the self and social integration significantly increased the prediction of PTSD symptoms,  $\Delta R^2 = 0.023, F(2, 216) = 3.175, p = .044$ . Results revealed a significant two-way interaction ( $b = - 1.953, SE = 0.775, p = .012, \eta^2p = .029$ ), which remained statistically significant after controlling for length of membership in the FMNL, type of injury, and traumatic event ( $b = - 2,133, SE = 0.819, p = .010, p_{Holm-Bonferroni} = .030, \eta^2p = .034$ ). The simple slope between negative appraisals of the self and PTSD symptoms was statistically significant at one standard deviation below the mean of social integration, ( $b = 8.416, SE = 1.285, p < .001, \eta^2p = .183$ ) and at one standard deviation above ( $b = 4.298, SE = 1.608, p = .008, \eta^2p = .036$ ). This suggests that increasing social integration can weaken the impact of negative appraisals of the self on PTSD symptoms, as shown in Fig. 3.

**5. Discussion**

As predicted by Ehlers and Clark’s (2000) cognitive model, our study found that negative appraisals of the trauma and/or its sequelae significantly predicted higher levels of PTSD symptoms. The results of this study indicate that the specific predictors of PTSD symptomatology differed between the AFES and FMNL. This suggests that the impact of trauma and the development of PTSD symptoms is not uniform across all ex-combatants.

However, contrary to our hypothesis, only negative cognitions of the world were a significant predictor among members of the AFES. One possible explanation for this unexpected finding could be that despite the likely heightened sense of personal responsibility among members of the AFES, due to their military service, they might have also been socialized to prioritize their sense of duty to the state and their identity as a soldier over their individual self. Furthermore, they may have been exposed to or involved in atrocities against civilians, which could have led to a sense of moral injury that contributed to developing negative beliefs about the world.

Also contrary to our hypothesis, only negative cognitions of the self were a significant predictor among members of the FMNL. One possible explanation for this unexpected finding is that members of the FMNL, an insurgent group, may have internalized stigmatizing messages as terrorists or traitors. Furthermore, making significant sacrifices to join the armed struggle may have resulted in a sense of disconnection from their previous lives and a perceived failure to meet their own or others’ expectations.

Despite these unexpected findings, our results suggest that the sociohistorical and political context in which veterans experienced combat



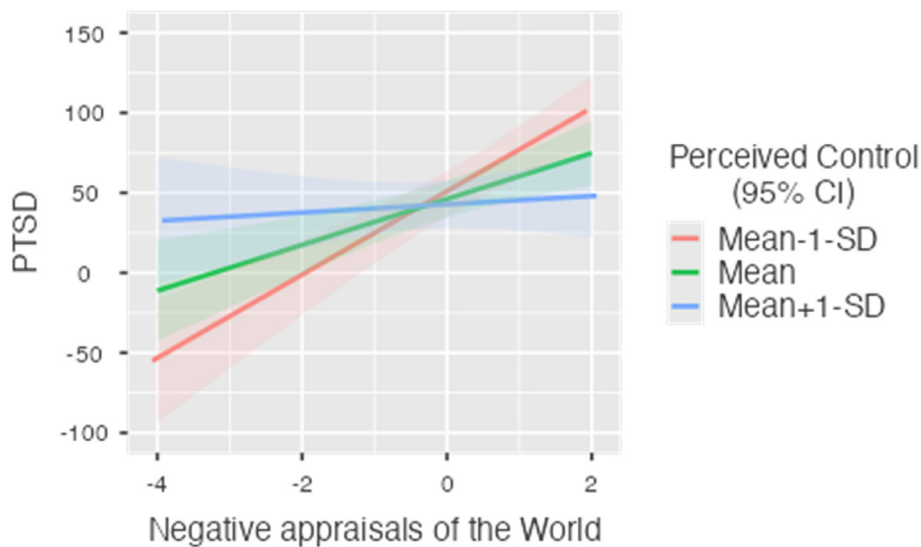


Fig. 1. Moderating effects of perceived control on the predictive relationship between negative appraisals of the world and PTSD symptoms among AFES.

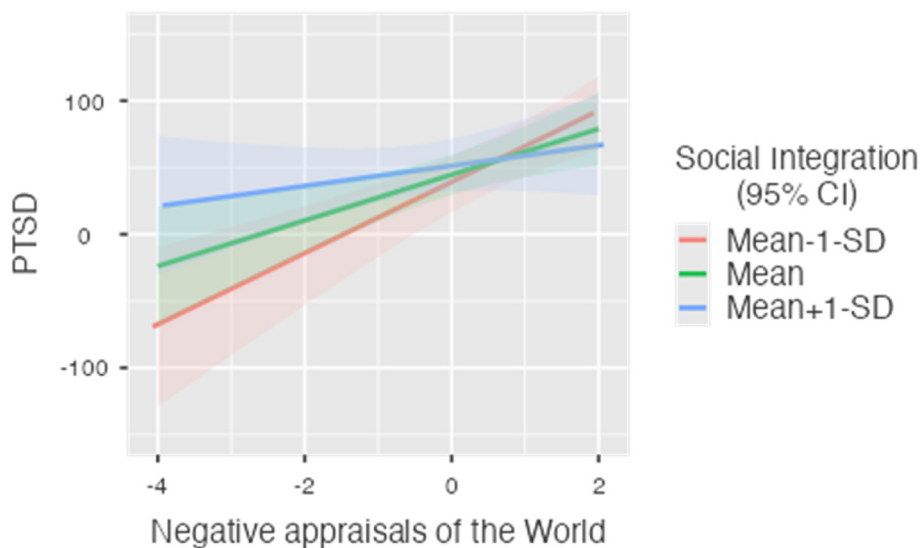


Fig. 2. Moderating effects of social integration on the predictive relationship between negative appraisals of the world and PTSD symptoms among AFES.

Table 6  
Parameter estimates for the FMNL.

Names	Estimate	SE	95% Confidence Interval		$\beta$	t	p	$\eta^2_p$
			Lower	Upper				
(Intercept)	39.186	1.457	36.315	42.056	0.000	26.901	<.001	
Negative appraisals of the Self	7.273	1.081	5.142	9.404	0.424	6.726	<.001	0.172
Negative appraisals of the World	0.725	0.963	-1.172	2.623	0.048	0.753	0.452	0.003

likely played a role in shaping their experiences and the development of PTSD symptoms. This highlights the importance of considering such contextual factors in order to accurately predict and treat PTSD symptoms in this population.

Consistent with our predictions, our study found that perceived control and social integration moderated the relationship between negative appraisals and PTSD symptoms in the two groups of ex-combatants. The relationship between negative appraisals of the world and PTSD symptoms among members of the AFES was moderated by perceived control, suggesting a buffering effect when individuals perceived themselves as competent to achieve important life goals.

Similarly, social integration also moderated this relationship, suggesting a buffering effect when individuals perceived a high-quality relationship to society. Both moderators yielded a large effect size, with perceived control having a larger effect than social integration.

Conversely, in the FMNL, only perceiving a high-quality relationship to society partially buffered the impact of negative appraisals of the self on PTSD symptomatology, and the effect size was smaller than that observed in the AFES.

Overall, these results suggest that for those ex-combatants whose PTSD symptoms are mostly associated with negative cognitions about the world, interventions focused on increasing perceived control may be

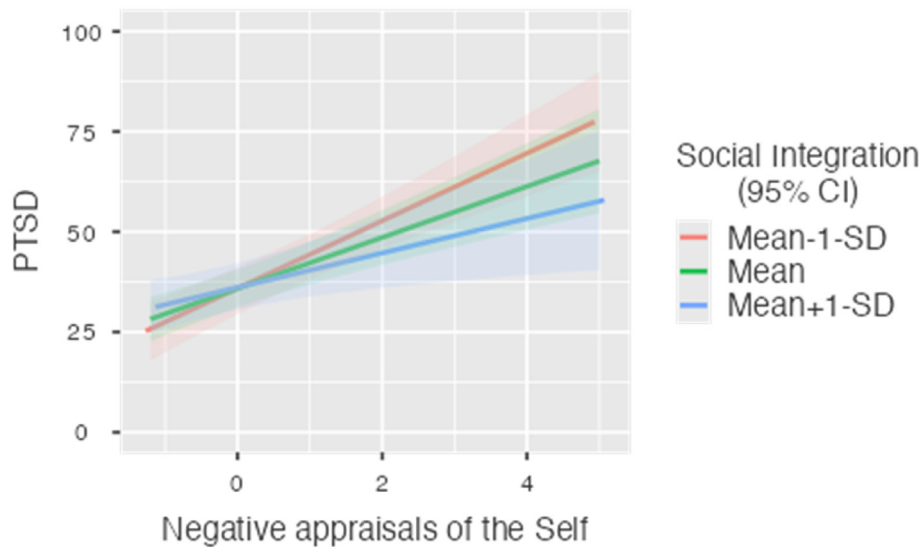


Fig. 3. Moderating effects of social integration on the predictive relationship between negative appraisals of the self and PTSD symptoms among FMNL.

particularly effective. On the other hand, interventions aimed at improving social integration may have a comprehensive impact, irrespective of the combat group to which the ex-combatant belonged.

The findings of this study suggest that the effectiveness of interventions for PTSD in ex-combatants is not a one-size-fits-all matter, as the most effective interventions may differ between groups of ex-combatants. This brings to the fore the relevance of considering not only the psychological impact of trauma on individuals, but also the wider sociohistorical context when developing interventions to address PTSD in this population.

This study is not without limitations, which must be mentioned. One of the main limitations of this study is the cross-sectional design, which prevents us from concluding causality from the associations observed. Future longitudinal research, such as cross-lagged panel models, should be conducted to better understand the mechanisms underlying the relationship between trauma-related appraisals, perceived control and social integration, and PTSD symptoms among ex-combatants.

Another limitation of this study is the use of a voluntary sample, which may have introduced self-selection bias. We do not have information about the proportion of people who agreed to participate among those who were approached, or about those who declined to take part in this study. It is possible that individuals with higher levels of PTSD symptomatology were more reluctant to participate, as predicted by Ehlers and Clark's (2000) cognitive model.

Finally, our study did not account for other mental health issues that can confound the results, such as anxiety and depression. Future research should consider the potential effects of these and other mental health problems on the relationship between trauma-related appraisals, perceived control and social integration, and PTSD symptoms among ex-combatants.

Despite these limitations, our study is one of the few to examine the psychological effects of civil war on wounded ex-combatants. Although future (longitudinal) research is needed to validate and extend our findings, this study provides an important foundation for future research on this hard-to-reach population.

In conclusion, this study provides empirical evidence that the predictors of PTSD symptoms among ex-combatants are not uniform and are significantly influenced by their sociohistorical and political context. Furthermore, the findings of our study reveal the subtleties of perceived control and social integration as moderators of the relationship between negative appraisals and PTSD symptoms, underscoring the importance of addressing not only the psychological impact of trauma but also the social and contextual factors that can affect recovery.

These insights suggest that fully capturing the complex ways in which individuals and groups/communities experience and recover from PTSD requires a comprehensive approach to PTSD treatment that involves addressing individual psychological processes, such as posttraumatic cognitions, within a wider sociohistorical and political context. Future research should continue to explore all these factors to enhance our understanding of PTSD and develop more effective interventions for those affected by it.

#### Author contributions

- Study conception and design: Amalio Blanco, José Luis Henríquez
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- Analysis and interpretation of results: Iván Cano
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#### Declaration of competing interest

There are no conflicts of interest around this work and it is not intended for a special issue.

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