

# Trauma-informed approach for bridging ethnic distance in post-conflict societies: A pilot study and intervention evaluation

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## Abstract

The article presents a pilot study based on intervention conducted in Croatia in 2022. Despite intensive peacebuilding efforts, ethnic tensions in post-conflict societies remain high, suggesting that current strategies may be missing critical components. This experiment integrated recent neurophysiological findings, particularly polyvagal theory, into peacebuilding intervention. The intervention involved a two-day seminar in Zagreb, where trauma-informed, body-based techniques were used to address post-war trauma. Participants learnt to recognise and manage trauma reactions by promoting their interoceptive awareness and a felt sense of safety. The seminar included both theoretical and experiential components, focusing on the impact of trauma on the autonomous nervous system and interpersonal dynamics. The study used an experimental design with intervention and control group to investigate the effects of the seminar. Measures included interoceptive awareness, autonomic reactivity, ethnic distance, perspective taking and mental well-being. The results showed that the participants in the intervention group showed significant improvements in interoceptive awareness, particularly in not worrying and emotional awareness subscales compared to the control group. However, ethnic distance scores did not decrease as expected, highlighting the complexity of changing deep-rooted attitudes. The study faced some challenges, including participant recruitment and the short duration of the intervention, which may have limited its effectiveness. Despite these limitations, the findings suggest that integrating trauma-informed approaches into peacebuilding efforts holds promise for improving interethnic relations. Future research should focus on longer interventions and diverse participant groups to better understand the potential of these methods in various contexts.

**Keywords:** trauma-informed peacebuilding, ethnic distance, interoceptive awareness, polyvagal theory, post-conflict societies

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## 1. Introduction

Years after the end of an armed conflict, societies shattered by wars remain divided. Although intensive peacebuilding efforts are made in such places—including reconciliation programmes as one of the cornerstones—peacebuilding is rarely successful, and relations between ethnic groups remain tense, if not hostile. Peacebuilding, which, according to Lederach (1997), encompasses a full array of processes, approaches, and stages needed to transform conflict toward more peaceful relationships, is costly. The Secretary-General's Peacebuilding Fund UN has allocated nearly \$1.47 billion for peacebuilding activities in 62 recipient countries from 2006 to 2020 (United Nations, 2021). The question of how to reduce ethnic distance and improve interethnic relations, thus, remains one of the key issues in peacebuilding, both in academic research and practical activities aimed at improving interethnic relations and build peace.

Wars and other forms of intense political upheaval, structural oppression, economic collapse, natural disasters, unprecedented threatening events such as pandemics, environmental disasters and other large-scale stressors dramatically affect both individuals and communities. They radically threaten the basic functioning of societies and the mental and physical health of individuals. At the same time, they have a profound and lasting impact on ethnic, social, political, and economic divisions within the community (Zupančič et al., 2021). When major armed violence has occurred it is often difficult to improve relations between groups as social cohesion is weakened, if not destroyed—not only between those involved in the conflict, but also in subsequent generations (Warner, 2022). Negative narratives about the “others” and deep divisions hinder reconciliation between citizens and (possibly) lead to further cycles of violence (Botcharova, 2001; Noor et al., 2012; Vollhardt, 2012). Justad (2006) argues that it is crucial to develop a critical mass of people who can combat stereotypes, prejudice, and group hatred within respective identity groups.

In the countries of the former Yugoslavia, where massive violence and destruction in the 1990s led to dramatic changes in the economic and political spheres, as well as in the social fabric of everyday life, and to deepening divisions between ethnic and religious groups. Relations between these groups have not been exclusively negative in the past. The concept of “Brotherhood and Unity”—a state-/ideologically-endorsed doctrine to promote good relations between the Yugoslav peoples—over the years became increasingly ineffective in convincing people to accept the Yugoslav identity and system. At the end, the events turned violent and reached the point of “no return”, when ethnic, religious and/or cultural identities prevailed over the Yugoslav idea. Last, but not least, there have been several examples of pragmatic but solid coexistence (Djordjević & Zupančič, 2024; Hayden, 2002; Kočan et al., 2024)—although various longitudinal studies have confirmed a degree of ethnic distance between the groups in the former Yugoslavia (Rašković & Vuchkovski, 2016). Despite intensive peacebuilding efforts in the region, relations between ethnic groups remain highly polarised and conflictual to date (Ajduković & Čorkalo Biruški, 2004; Čorkalo Biruški & Ajduković, 2012; Funk & Berry, 2020).

Based on this we argue that peacebuilding efforts, as they have been conceived and conducted in the last decades, are missing an important component, which might be essential for better outcomes in peacebuilding efforts. Namely, the integration of knowledge that emerged recently in neuroscience (neurobiology and neuropsychology in particular) into the existing paradigm of peacebuilding could yield better results in the attempts to improve inter-ethnic relations. To test our assumption that challenges the current peacebuilding paradigm, we developed and tested an original, practical approach to reducing ethnic distance. This method draws upon trauma-informed, body-based techniques within a

group-based intervention framework.

This article presents methodological reflections on an intervention conducted in Croatia in 2022. In a context where the scars of war have not yet been overcome and interethnic relations remain difficult, we focused on the development and implementation of body-based interventions to address trauma in post-conflict settings.

The article is structured as follows. In the first section after the introduction, we explain the rationale for implementing such an intervention in the context of overcoming ethnic distance. We then give a detailed overview of the organisation and course of the seminar in which we tested the new approach. The main part of the article is dedicated to explaining the methodology, highlighting the challenges encountered with regard to the intervention, including participant acquisition, and the quality of the measurement instruments used.

### *1.1. A trauma-informed approach to peacebuilding: A description of the pilot seminar programme*

Various methods are used to build peace and achieve reconciliation between conflictual groups, such as truth-telling, restorative justice, reparation, and dialogue processes. The basic assumption of these approaches (current paradigm of peacebuilding) is that the search for truth will automatically heal damaged relationships and promote reconciliation (Biggar, 2001; Lederach, 1999). However, many authors (e.g., Lie et al., 2007; O'Connell, 2005) point out that these processes usually do not provide a psychological basis for overcoming emotional barriers to reconciliation. Years of violence leave deep emotional scars, as well as feelings of anger, sadness, desire for revenge, etc., which are not addressed or are even ignored by existing peacebuilding approaches (Kočan & Zupančič, 2024).

Over the past two decades, there has been a slow but steady growth in awareness and understanding that sustainable peace cannot be created without working directly on the trauma caused by violent conflict (e.g., Good & Funk, 2020; Hart, 2008; Novakovic, 2013; Puljek-Shank, 2007; Schirch, 2004; Yoder, 2020). Unaddressed trauma creates a constant sense of victimisation and/or denial of history, leading to polarisation, mistrust, and hostility between groups (Hook, 2020). Therefore, trauma healing should be prioritized after war trauma.

Leading-edge views of trauma contribute to an additional understanding. In particular, polyvagal theory (Porges, 2001, 2009, 2011, 2021; Porges & Dana, 2018) has made an important contribution to the field of trauma and provides important insights that can be applied in the context of reconciliation (Blakeslee & Nickerson, 2021). Polyvagal theory states that there is a neurophysiological framework rooted in the phylogenetic heritage of humans for the body to determine whether an environment is safe (neuroception). Stress leads to defensive reactions at the level of autonomic nervous system that bias neuroception towards the recognition of threat cues, while it is less sensitive to the recognition of safety cues. In contrast, physical experiences of felt safety disarm the defensive autonomic nervous system (ANS) reactions. Feeling physically and emotionally safe is a prerequisite for accessing higher brain structures—facilitating rational responding, creativity, language, and perception of reality that promotes connectedness with others and feelings of empathy and compassion (Porges, 2017).

War and post-war conditions (e.g., economic destabilization, general societal and political uncertainty, a constant threat of potential further intergroup conflict) are perceived as a threat at the level of the ANS, leading to defensive reactions that take the form of anger, aggression, or us-them division.

According to polyvagal theory, body-based methods lead to more regulation of auto-

onomic nervous system. They support the nervous system's transition from traumatic stress physiology back to the person's natural baseline state of regular breathing, heart rate and balanced metabolic function (Taylor et al., 2010), thus allowing for greater psychological and physiological flexibility and reducing emotional and behavioural reactivity (Porges, 2017). Several studies, using body-based methods, have demonstrated various improvements in different patient groups and conditions (e.g., migrants, survivors of natural catastrophes, people with chronic pain), including in the context of group work (e.g., Arici Özcan, 2021; Briggs et al., 2018; Flores & Porges, 2017; Leitch et al., 2009). Somatically focused interventions can reset the potentially dysregulated ANS by cultivating interoceptive awareness and felt sense of safety (Levine, 1997, 2010, 2015; Menakem, 2017; Ogden & Fisher, 2015; Ogden et al., 2006; Van der Kolk, 2014). Learning to recognise and change psychophysiological states leads to changes in emotions and behaviours and to a reinterpretation (appropriate evaluation) of concrete situations and change in prejudices (Craig, 2015; Elliott, 2021; Mehling et al., 2011).

### *1.2. A pilot study of a trauma-informed peacebuilding seminar program in Croatia*

In the field of peacebuilding, few interventions (e.g., Mansfield, 2020; Močnik, 2020; Ross, 2019) are or have been based on body-based methods, but to our knowledge none of them have explicitly incorporated recent neurophysiological findings, so as to evaluate whether they can contribute to the decrease of ethnic distance. Moreover, they have not been systematically and scientifically evaluated.

Drawing on recent advances in trauma research we developed and piloted a peacebuilding seminar programme. This programme was a synthesis of contemporary findings on trauma management, aimed at alleviating personal trauma symptoms while improving interethnic relations.

Using methods that have been proven to alleviate trauma symptoms in different contexts (e.g., migrants, veterans and people with chronic pain), the seminar provided a comprehensive understanding of trauma. While theoretical understanding formed the basis of the seminar, equal emphasis was placed on experiential exercises that drew on contemporary somatic techniques that focus on trauma. Participants learned about the impact of trauma on the nervous system, perception, emotions, identity and the dynamics of relationships.

We taught them to understand, recognise and manage trauma reactions using tools that promote interoceptive awareness and create a felt sense of safety. The curriculum included somatic awareness-raising activities pertaining to (post-)war trauma and related identity issues. In addition, exercises were conducted to foster emotional and cognitive openness when imagining encounters with "the other". They were trained to recognise potential triggers related to past events, biases, or current interethnic stimuli and to move from immediate reactions to a more neutral perspective. The seminar was held on 10 and 11 June 2022 in Zagreb, the capital of Croatia, with an ethnically homogeneous group. The programme was spread over two days: on Friday 10 June, sessions were held from 9.00 to 13.00 and from 14.30 to 17.30, with the first hour dedicated to welcoming participants and processing the questionnaire. The sessions continued Saturday 11 June from 10.00 to 13.00 and from 14.30 to 17.30. A hotel was chosen as the venue, where participants were provided with drinks and snacks. The lead instructor of the seminar was Elisabeth Schneider Kaiser, expert in somatic and trauma therapy, who has been teaching groups for more than 20 years. Metka Kuhar and Zrinka Smolčić, experienced somatic and trauma therapists, also supported the seminar process. The working language in the seminar was English.

### *1.3. Testing short-term intervention*

The primary objective of this study's experimental design was to test the following hypothesis: Participation in the seminar intervention results in increased interoceptive awareness and decreased autonomic reactivity compared to baseline measures, as well as reduced ethnic distance, improved perspective taking, and improvement in mental wellbeing.

In our study design, we used both an experimental group and a control group to ensure a comprehensive evaluation of the effects of the intervention. The experimental group participated in the seminar intervention so that we could measure its direct impact. The control group, on the other hand, did not participate in the intervention and served to compare and contrast the outcomes observed in the experimental group.

After the conclusion of the survey study, participants in the control group were offered an e-seminar to thank them for their participation and to ensure that they too had access to the information and techniques taught during the intervention.

## **2. Method**

### *2.1. Procedure*

We faced challenges in recruiting participants, although that process began two months before the seminar. Our initial idea was to conduct a workshop in Vukovar, a hardly affected town during the war in Croatia. Due to the increased depopulation trends in the city, and the relative smallness of the town, the local interlocutors advised us not to try to organise a workshop there because the probability of not attracting enough participants appeared significant. Hence, we began organising the seminar in Osijek, a much bigger city, which is not far from Vukovar and was also highly affected during the war. Unfortunately, we were unsuccessful in attracting enough participants. Hence, we decided to try Zagreb, the Croatian capital, which was significantly less affected during the war, as the city itself, contrary to Vukovar and Osijek, has never been occupied by foreign troops.

We used our personal networks to recruit participants. A written invitation explaining the purpose of the seminar, the programme and the subsequent evaluation was disseminated. Principal investigators approached academic colleagues (in fields of political science, defence studies, sociology, social work, psychology, law, and pedagogy), and therapeutic community (via colleagues in different psychotherapeutic modalities and psychotherapeutic associations), as well as others with whom they were already in contact through previous research projects and collaborations in the region. In addition, these contacts were encouraged to spread the invitation further in their circles. Finally, our sample consisted predominantly of professionals such as social workers, educators and psychotherapists.

Participants were first asked to complete an online application form in which they entered their personal demographic information. They were randomly assigned to the intervention group and the wait-list control group. After the follow-up assessment, participants from the control group were offered the opportunity to participate in a one-day online programme, also in an ethnically homogeneous group. Participants have signed an informed consent form to participate in the intervention and/or assessments.

The questionnaires were written in English and designed and distributed using the 1ka web tool. Participants in the intervention group completed the first survey in an online form (on their mobile phones) immediately before the seminar began (10 June 2022). Participants in the control group received an invitation to complete the first survey on the morning of the first day of the experimental group's seminar (their responses were collected until 14 June 2022). The time needed for completing the first survey (T0) was approximately 45

minutes. Participants in the intervention group were invited to complete the second survey (T1) immediately after the two-days seminar ended. Participants in both the experimental and control groups were requested by email to complete the third survey (T2) approximately three months after the seminar (5 September 2022; the responses were collected until 15 September 2022). The time needed for completing the second and the third survey was shorter and estimated to 10–15 minutes.

When participants completed the online questionnaire for the first time, they were given a code to enter into the questionnaire. This code had to be entered again the next time they completed the questionnaire. Those who forgot or lost the code were instructed to contact the researcher's academic colleague, who was the only one who had the link between the participant and the code, while not having access to the database. The workshop providers and researchers did not have access to the codes and the completed questionnaires of the participants.

## 2.2. Participants

Our final sample size included 50 participants, 29 in the intervention group and 21 in the control group. As this was a pilot study and we were limited in resources, we were only able to run one seminar at this point. Hence, the number of included participants reflects the maximum group size that we estimated as still adequate in order to conduct the seminar.

There were 86 % of female participants in the sample. The mean age of the participants was 37.40 years ( $SD = 13.31$ ). In terms of education, 34 % had secondary education and 66 % had post-secondary or tertiary education (including Bachelor's, Master's, and Ph.D. degree). In terms of employment status, 36 % were students, while 58 % were employed full or part-time. Most participants (88 %) were studying and/or working in a profession that helps people (e.g., educator, social worker, psychologist).

Participants also provided a self-assessment of their own material status. 18 % indicated that their material status is worse than of their peers, 56 % reported that their material status is about the same as their peers', while 26 % perceived their material status as better or much better than of their peers. 60 % participants spent most of their lives in Zagreb (the capital of Croatia) or another city with more than 100 000 inhabitants, 22 % spent most of their lives in medium-sized towns, and 16 % in smaller towns. 38 % participants stated that their parents/carers lived in an area that was severely affected during the war. In Table 1 we present the participants' characteristics breakdown by intervention and control group. As indicated by t-tests and chi-square tests, we did not find any statistically significant differences in observed characteristics between both groups.

**Table 1.** Socio-demographic characteristics of the intervention and the control group.

Characteristic	Interven- tion	Control	Stat	<i>p</i>
Age	39 (12.94)	35 (13.65)	-1.22	0.228
Gender			0.77	0.319
Male	3 (10.30)	4 (19.00)		
Female	21 (89.70)	17 (81.00)		
Education			9.99	0.077

*Continued on next page*

**Table 1.** Socio-demographic characteristics of the intervention and the control group. (Continued)

Characteristic	Intervention	Control	Stat	<i>p</i>
Secondary	7 (24.10)	10 (47.60)		
Post-secondary/tertiary	22 (75.90)	11 (52.40)		
Employment status			2.27	0.340
Students	9 (31.00)	9 (42.90)		
Employed full- or part time	17 (58.60)	12 (57.10)		
Other	3 (10.30)	0 ( 0.00)		
Study/had studied and/or work in a profession that helps people	25 (86.20)	19 (90.50)	9.99	0.501
Material status			0.89	0.340
Worse than peers	4 (13.80)	5 (23.80)		
About the same	17 (58.60)	11 (52.40)		
Better than peers	8 (27.60)	5 (14.30)		
Spent most of life			3.16	0.733
In Zagreb or other town with more than 100 000 inhabitants	19 (65.50)	11 (52.40)		
In a medium-sized town	7 (24.10)	4 (19.00)		
In a smaller town	3 (10.30)	5 (23.80)		
In a village or rural settlement	0 ( 0.00)	1 ( 4.80)		
Parents/carers live in an environment that was severely affected during the war	19 (34.50)	12 (42.90)	9.99	0.306

Notes: Stat = test statistic (t-test or  $\chi^2$  test).

### 2.3. Measures

**2.3.1. Interoceptive awareness—assessed at T0, T1, and T2.** Interoceptive awareness is the ability to sense and perceive the inner state of one's own body. It was assessed with the Multidimensional Assessment of Interoceptive Awareness, Version 2 (Mehling et al., 2018, MAIA 2, ). MAIA 2 is an 8-scale state-trait self-report questionnaire that measures several dimensions of interoception (subscales): (1) Noticing (awareness of body sensations; 4 items, exemplary item "I notice when I am uncomfortable in my body."), (2) Not-Distracting (tendency not to ignore or distract oneself from sensations of pain or discomfort; 6 items, exemplary item "I distract myself from sensations of discomfort."), (3) Not-Worrying (tendency not to experience emotional distress or worry with sensations of pain or discomfort; 5 items, exemplary item "I can notice an unpleasant body sensation without worrying about it."), (4) Attention Regulation (ability to sustain and control attention to body sensation; 7 items, exemplary item "I can maintain awareness of my whole body even when a part of me is in pain or discomfort."), (5) Emotional Awareness (awareness of the connection between body sensations and emotional states; 5 items, exemplary item "I can maintain awareness of my whole body even when a part of me is in pain or discomfort."), (6) Self-Regulation (regulating

psychological distress through paying attention to body sensations; 4 items, exemplary item “When I feel overwhelmed I can find a calm place inside.”), (7) Body Listening (actively listening to the body for insight; 3 items, exemplary item “I listen for information from my body about my emotional state.”) and (8) Trust (experiencing body as safe and trustworthy; 3 items, exemplary item “I feel my body is a safe place.”). It includes a total of 37 items. The response options of MAIA 2 are on a 5-point Likert scale, with a higher score corresponding to a stronger perception of body sensations.

The Cronbach’s  $\alpha$ s were as follows: 0.81 (Noticing), 0.85 (Not Distancing); 0.86 (Not Worrying), 0.91 (Attention Regulation), 0.82 (Emotional Awareness), 0.90 (Self-Regulation), 0.87 (Body Listening), and 0.87 (Trust). Estimated reliability coefficients are higher in comparison to the validation study Mehling et al. (2018) where reported Cronbach’s alphas are between 0.64 (Noticing) and 0.83 (Attention Regulation and Trust). Assessed convergent and discriminant validity showed positive associations with postural awareness and mindfulness, while negative with anxiety, neuroticism, and alexithymia (Da Costa Silva et al., 2022; Teng et al., 2022).

*2.3.2. Autonomic reactivity—assessed at T0 and T2.* The Body Perception Questionnaire Very Short Form Kolacz et al. (2023) is a tool for the measurement of subjective experiences of autonomic state and reactivity. For example, one of the 12 items addressing the question, “How often are you aware of the following sensations?” is “Muscle tension in my arms and legs”. The response options are on a 5-point Likert scale from “never” to “always”.

The Cronbach’s  $\alpha$  was 0.94. Questionnaire validations Cabrera et al. (2018) and Poli et al. (2021) indicated moderated associations with uncomfortable visceral or somatic reactions as well as with stress, anxiety, and depression symptoms. In previous studies, higher autonomic reactivity has also been linked to previous personal trauma experience (Kolacz, Dale, et al., 2020; Kolacz, Hu, et al., 2020).

*2.3.3. Ethnic distance—assessed at T0, T1, and T2.* Ethnic distance is a measure of an individual’s attitude towards and level of comfort with people from different ethnic backgrounds. In this study, we adapted Bogardus’s (1925) Social Distance Scale to assess respondents’ attitudes and well-being towards Serbs. Participants were asked to indicate their agreement with various statements on a 5-point Likert scale that depict their attitude toward the other ethnic group, ranging from *strongly agree* to *strongly disagree*: “I would be willing to accept a Serb as a close relative by marriage”, “I would be willing to accept a Serb as a close personal friend”, “I would be willing to accept a Serb as a neighbour in the same street”, “I would be willing to accept a Serb as a coworker”, “I would be willing to accept a Serb as a citizen of my country”, “I would be willing to accept a Serb as a visitor in my country”, “I would not exclude a Serb from my country”.

The Cronbach’s  $\alpha$  was 0.85. This measure has been widely used in intergroup relations studies measuring attitude toward various groups across different countries (Parrillo & Donoghue, 2013; Wark & Galliher, 2007).

*2.3.4. Perspective Taking—assessed at T0, T1, and T2.* To measure perspective-taking ability, this study used the Perspective Taking scale of the Interpersonal Reactivity Index (Davis, 1980, IRI, ). An exemplary item is: “When I’m upset at someone, I tend to ‘put myself in his shoes’ for a duration.” The IRI is a widely used and validated measure of empathy, and its perspective-taking scale specifically assesses an individual’s tendency to adopt the psychological point of view of others. The scale consists of seven items, each rated on a 5-point Likert scale (from “strongly disagree” to “strongly agree”) and captures the extent to which the participant considers the feelings, thoughts and experiences of others when in a



situation.

The Cronbach's  $\alpha$  for this scale was 0.84. The proposed IRI factor structure (Davis, 1980) was also confirmed in a later study (Pulos et al., 2004). Perspective taking was linked to lower social dysfunction and greater social competence as well as moderately linked to self-esteem (Davis, 1983).

*2.3.5. Mental Wellbeing—assessed at T0 and T2.* Subjective mental health was assessed by Short Warwick Edinburgh Mental Well-Being Scale (SWEMWBS; Taggart et al., 2015; Tennant et al., 2007) with 7 items on a 5-point Likert scale from “none of the time” to “all of the time”. An exemplary item is: “I’ve been feeling optimistic about the future.”

The Cronbach's  $\alpha$  for this measure was 0.85. SWEMWBS is showed sufficient psychometric properties in comparison to WEMWBS (Stewart-Brown et al., 2009) and was moderately correlated with Happiness Index (Ng Fat et al., 2017).

#### 2.4. Data analysis

The three databases corresponding to each assessment were reviewed technically and in terms of content by applying data cleaning and editing procedures. We merged the databases using the personal codes of the participants and then permanently destroyed the link between the codes and the participants.

Differences in outcomes of the intervention group were tested at the baseline (T0), through post-intervention (T1), and 3 months follow-up (T2) using one-way ANOVA for repeated measures or paired-sample t-test in case of only two observations (T0 and T2). Due to control group not being assessed at T1, we only compared outcomes of both groups at T0 and T2 using t-tests for independent samples.

Data have been analysed using intention-to-treat principles, thus all participants that completed the first assessment (baseline) were included in the analysis. At T0, 29 participants in the intervention group and 21 in the control group completed the assessment. At T1, 26 participants in the intervention group completed post intervention assessment, while 20 participants in the intervention group and 15 in the control completed the assessment at T2. Missing values were imputed by expectation-maximization algorithm, a maximum likelihood based method for handling missing data, often applied in designs where repeated measures are taken (Dong & Peng, 2013). Descriptive statistics (means and standard deviations) presented in the following section were computed on imputed dataset.

Interpretation of results were based on both statistical significance ( $p < 0.05$  with Bonferroni correction for multiple testing) and Cohen's  $d$  measure of effect size (with  $d = 0.2$  indicating small effect,  $d = 0.5$  medium effect and  $d = 0.8$  large effect). The analysis was conducted using SPSS (IBM SPSS Statistics 25).

### 3. Results

Table 2 presents mean scale scores at all three assessment points with  $t$  test comparing intervention ( $n = 29$ ) and control group ( $n = 21$ ) at T0 and at T2, and one-way ANOVA for repeated measures or paired-sample  $t$  test comparing intervention group at all assessment points with Cohen's  $d$  measure of effect size (T0 – T1, T0 - T2).

**Table 2.** Mean scale scores and test of differences at all three assessments points.

	Intervention group			Control group			<i>t</i>	<i>p</i>	<i>t/F</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>d</i>	<i>M</i>	<i>SD</i>	<i>d</i>				
Autonomic Reactivity										
T0	29.72	10.54		33.19	12.01		1.08	0.284	0.28	0.781
T1	-	-	-	-	-	-				
T2	29.20	6.74	0.06	36.40	7.99	0.31	3.45	0.001		
Interoceptive Awareness: Noticing										
T0	3.83	0.96		3.68	0.88		-0.56	0.579	0.00	>0.999
T1	3.83	0.80	0.00	-	-	-				
T2	3.83	0.70	0.00	3.53	0.55	0.20	-1.58	0.120		
Interoceptive Awareness: Not Distancing										
T0	2.89	0.79		2.85	0.91		-0.17	0.863	0.92	0.403
T1	2.88	0.67	0.01							
T2	3.03	0.64	0.19	2.70	0.67	0.19	-1.78	0.081		
Interoceptive Awareness: Not Worrying										
T0	3.01	0.89	2.83	0.95		-0.71	0.48	4.580	0.01	
T1	3.03	0.82	0.02							
T2	3.33	0.67	0.41	2.40	0.64	0.53	-4.93	<0.001		
Interoceptive Awareness: Attention Regulation										
T0	3.14	0.97		3.22	0.93		0.32	0.754	1.64	0.511
T1	3.26	0.94	0.13	-	-	-				
T2	3.26	0.77	0.14	2.86	0.71	0.44	-1.90	0.063		
Interoceptive Awareness: Emotional Awareness										
T0	4.19	0.69		3.88	0.87		-1.40	0.168	3.88	0.027
T1	4.19	0.66	0.00	-	-	-				
T2	3.96	0.64	0.35	3.41	0.63	0.62	-3.00	0.004		
Interoceptive Awareness: Self Regulation										
T0	3.50	1.05		3.35	1.00		-0.53	0.602	1.56	0.218
T1	3.48	0.98	0.02	-	-	-				
T2	3.25	0.78	0.27	2.98	0.48	0.47	-1.39	0.173		
Interoceptive Awareness: Body Listening										
T0	3.16	1.11		3.25		1.01	0.30	0.763	0.43	0.651
T1	3.31	0.99	0.14	-	-	-				
T2	3.22	0.78	0.06	2.78	0.64	0.56	-2.12	0.039		
Interoceptive Awareness: Trust										
T0	3.62	1.03		3.40	1.15		-0.72	0.474	0.00	0.998
T1	3.63	0.98	0.01	-	-	-				

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**Table 2.** Mean scale scores and test of differences at all three assessments points. (Continued)

	Intervention group			Control group			<i>t</i>	<i>p</i>	<i>t/F</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>d</i>	<i>M</i>	<i>SD</i>	<i>d</i>				
T2	3.62	0.95	0.00	3.20	0.86	0.20	-1.59	0.118		
Ethnic Distance										
T0	34.10	10.53		36.24	13.62		0.63	0.535	1.27	0.288
T1	37.04	12.06	0.26	-	-	-				
T2	35.80	10.43	0.16	42.47	11.99	0.49	2.10	0.042		
Perspective Taking										
T0	16.69	4.74		17.33	4.61		0.48	0.634	36.15	0.001
T1	21.33	4.56	1.00	-	-	-				
T2	20.00	3.70	0.78	20.20	4.41	0.64	0.17	0.863		
Mental Wellbeing										
T0	23.69	4.85		24.19	4.66		0.37	0.716	-1.79	0.084
T1	-	-	-	-	-	-				
T2	25.05	3.60	0.32	22.13	3.71	0.49	-2.78	0.008		

Notes: Huynh-Feldt correction for *p* value was applied when Mauchly's test showed that assumption of Sphericity was not met. For both intervention and control group Cohen's *d* indicates the effect size measure for T0-T1 and T0-T2 difference in scores, while *t*-test statistics tests the difference between intervention and control group at T0 and T2 separately. For the intervention group, one-way ANOVA for repeated measures was applied when data was collected at T0, T1, and T2, while paired sample *t* test was applied when data was collected at T0 and T2.

There were no statistically significant differences in the outcomes of the intervention and the control group at T0 assessment. At T2, we can observe intervention group scoring significantly higher in comparison to the control group on three subscales of the interoceptive awareness, namely Not Worrying ( $t(48) = -4.93$ ,  $p < 0.001$ ), Emotional Awareness ( $t(48) = -3.00$ ,  $p = 0.004$ ), and Body Listening ( $t(48) = -2.12$ ,  $p = 0.04$ ).

In the intervention group, outcomes on Not Worrying and Emotional Awareness subscales differed significantly across three assessment points ( $F(2, 84) = 4.58$ ,  $p = 0.02$  and  $F(2, 84) = 3.88$ ,  $p = 0.03$ , respectively). A post hoc pairwise comparison with Bonferroni correction for multiple comparisons showed that scores on Not Worrying subscale significantly increased from T1 to T2 (3.03 vs 3.33,  $p = 0.03$ ). On the other hand, scores significantly decreased on Emotional Awareness subscale from T1 to T2 (4.19 vs 3.96,  $p = 0.02$ ). On both subscales we can also observe lower scores for control group at T2 ( $d = 0.53$  and  $d = 0.62$ , respectively). There was no significant effect of time on Body Listening subscale in the intervention group, but we can note a medium effect size decrease in scores in the control group ( $d = 0.56$ ). Similar observation could be made for Attention Regulation and Self-Regulation subscales ( $d = 0.44$  and  $d = 0.47$ , respectively, for the control group), however, results at T2 did not differ significantly between both groups.

We found another statistically significant change across three assessment points, namely, on Perspective Taking scale ( $F(2, 84) = 36.15$ ,  $p < 0.001$ ). A post hoc pairwise comparison with Bonferroni correction for multiple comparisons showed that scores initially increased

from T0 to T1 (16.69 vs 21.33,  $p < 0.001$ ), but then decreased to T2 (16.69 vs 20.00,  $p < 0.001$ ). We can also observe a decrease in T0–T2 scores for the control group ( $d = 0.64$ ) and hence, at T2, intervention and control group did not differ significantly.

Results also indicated that participants in the intervention group scored significantly higher on Mental Wellbeing ( $t(48) = -2.78$ ,  $p = 0.01$ ) while lower on Ethnic Distance ( $t(48) = 2.10$ ,  $p < 0.001$ ) and Autonomic Reactivity ( $t(48) = -3.45$ ,  $p = 0.001$ ) in comparison to the control group.

For these outcomes, no significant effect of time was observed in the intervention group. In the intervention group scores on Ethnic Distance scale increased at T1, but then decreased at T2, while in the control group we can observe a medium effect size increase from T0 to T2 ( $d = 0.49$ ). Intervention group scored higher on Mental Wellbeing scale at T2 compared to T0 ( $d = 0.32$ ), while control group scored lower ( $d = 0.49$ ). Outcomes on Autonomic Reactivity scale were relatively stable in the intervention group, while they increased in the control group ( $d = 0.31$ ).

#### 4. Conclusions

The study presents the results of a peacebuilding seminar programme based on the latest understanding of resolving trauma. The programme aimed to address symptoms of personal trauma while improving inter-ethnic relations. It included a range of activities, including exercises to improve interoceptive awareness and emotional openness, and to recognise and regulate reactivity around interethnic issues. We hypothesised that the intervention group would outscore the control group in various domains such as Interoceptive Awareness, Perspective Taking, and Mental Wellbeing. Conversely, we expected a deterioration in the scores for Autonomic Reactivity and Ethnic Distance.

Results revealed mixed outcomes. In the intervention group, Autonomic Reactivity did not change from T0 to T2, while Mental Wellbeing improved, but not significantly. On the other hand, contrary to our expectations, we can also observe changes in the control group, contributing to the final changes between both groups at T2. On Introspective Awareness subscales we can observe two statistically significant changes over time, intervention group increased their scores on the Not Worrying subscale and—contrary to the hypothesis—decreased them on Emotional Awareness subscale. But on the other hand, control group decreased their scores on five subscales, namely on Not Worrying, Attention Regulation, Emotional Awareness, Self-Regulation, and Body Listening subscales. In addition, we can observe an increase on Perspective Taking, which is in line with our hypothesis, but this change was also observed in the control group. Contrary to our predictions, Ethnic Distance scores increased, although the increase was even more prominent in the control group.

##### 4.1. Limitations

Our findings are inconclusive as our sample consisted mainly of professionals who work with people (e.g., social workers, educators, psychotherapists). This demographic bias was reflected in the already low ethnic distance at the beginning of the study, which posed a major challenge for testing our central hypothesis, especially in relation to the aspect of reducing ethnic distance. Considering the small sample size, this could suggest that even small individual changes in scores would affect the overall mean score.

If we had conducted the intervention with the persons scoring high on an ethnic distance scale (for example, in the most war-affected regions of post-conflict societies), the results might be different. A few studies (e.g., Pehar et al., 2020; Šiber, 2002; Svob et al., 2016) found that Serbs and Croats in Croatia have relatively high levels of ethnic distance from each

other.

Another limitation that should be acknowledged is small sample size. As explained earlier, this was due to limited resources available for this pilot study. Small sample size might be one of the reasons for failing to detect small effect sizes, which could have been expected in this intervention's outcomes.

Furthermore, our study's limited two-day duration may not have been adequate to address the complexity and deep-rooted nature of ethnic distance and trauma. When it comes to addressing trauma at the level of the nervous system, a more extended engagement is crucial. Short-term interventions may not provide the necessary space for the body's innate mechanisms to rebalance (Porges, 2011). Longer interventions may offer more holistic healing and allow for a more profound transformation in interethnic relations (Van der Kolk, 2014). For example, a 12-week programme for war veterans with posttraumatic stress symptoms has shown positive effects on mindfulness and interoceptive awareness (Mehling et al., 2017). Nevertheless, it was reasonable to expect that the two-day duration would show a significant difference in the outcomes.

#### *4.2. Implications and recommendations*

Our study expands beyond direct war trauma, exploring broader physiological manifestations of trauma. In line with polyvagal theory, by emphasising autonomic reactivity and interoceptive awareness, we aimed to find out how trauma-informed interventions can benefit not only those directly affected by traumatic events, but also populations who may have experienced trauma indirectly. Polyvagal theory states that trauma, regardless of its cause, can cause dysregulations in the autonomic nervous system (Porges, 1995). By measuring autonomic reactivity and interoceptive awareness, we aimed to explore the basic physiological processes that are usually affected by trauma, whether through direct experience or intergenerational inheritance (Danieli, 1998).

Considering the average age of the participants (mean 37.4 years), most of them were still young children during the war, so they did not personally experience this trauma. However, it is noteworthy that the parents of 38% of our participants lived in regions that were severely scarred by the war. While this fact does not directly indicate personal trauma to the participants, it does suggest possible indirect or intergenerational trauma consequences.

The implications of our research have a broader scope. Trauma-informed interventions have the potential to impact a wide range of populations, regardless of the type of trauma they may have experienced. By understanding the impact of our intervention on a diverse cohort, we can shed light on its likely applicability in different settings and groups.

To assess the effectiveness of the programme, it is important to emphasise that subsequent interventions must target specific population groups. The study should be conducted with people who score high on the ethnic distance scale, especially those from the regions most affected by the war. It should also include participants with no professional background in working with people. Even though this intervention has not produced the expected results, there is a strong case for further exploration of trauma-informed body-oriented approach. Evidence from previous research (Forner, 2017; Kelly & Garland, 2016; Lopez-Rodríguez et al., 2012; Lueke & Gibson, 2014) has shown that such approaches have enormous potential to enhance individuals' connection with their physiological and emotional states, fostering improved self-regulation capacities. This enhanced self-awareness and regulation, in turn, can contribute to a marked reduction in prejudicial attitudes and biases. Polyvagal theory (Porges, 2009, 2011, 2017) further supports the idea that body-oriented approaches can play a central role in conflict resolution by reducing prejudiced attitudes and biases.

By fostering interoceptive awareness and a felt sense of safety, these interventions can recalibrate a potentially dysregulated autonomic nervous system. Therefore, future studies related to war and post-conflict settings should continue to develop and refine programmes that guide participants to recognise and modulate trauma-related reactivity—autonomic, emotional, cognitive or behavioural—and lead them to adopt a neutral or open stance when activated in the context of past events, biases or current triggers.

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