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A comparison of persons with Posttraumatic stress disorder and the normative sample with the Trauma Symptom Inventory

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Abstract – The Trauma Symptom Inventory [TSI] has been translated and adapted for use in the Republic of Croatia. The TSI consists of 100 items and serves for the evaluation of acute and chronic trauma symptoms which include, but are not limited to, the consequences of rape, spousal abuse, physical assaults, serious accidents and natural disasters, permanent consequences of abuse in childhood as well as other early traumatic experiences. This paper deals with the existence of differences in TSI scales between the normative sample of males (N = 235) and war veterans (N = 51) who suffered from Posttraumatic stress disorder (PTSD). The normative sample consisted of non-traumatized males aged between 18 and 54. The patient sample consisted of males aged between 38 and 61. The statistical significance of the differences was determined using a simple analysis of variance for independent samples. Statistical significance was determined in all cases, namely the values of all scales of the Posttraumatic stress disorder (PTSD) sample were higher in comparison to the control sample. The results show that the Croatian version of the TSI has good diagnostic validity in the assessment of persons with PTSD.

Key words: Posttraumatic stress disorder, trauma, Trauma symptom inventory

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Introduction

The Trauma Symptom Inventory [1] (TSI) consists of 100 items and serves for the evaluation of acute and chronic trauma symptoms which include, but are not limited to, the consequences of rape, spousal abuse, physical assaults, serious accidents and natural disasters, permanent consequences of abuse in childhood as well as other early traumatic experiences. The TSI includes 10 clinical scales and 3 validity scales. The various scales of the TSI assess a wide range of psychological impacts, and five of the ten clinical scales measure symptoms closely related to the Diagnostic and Statistical Manual of Mental Disorders [2] (DSM-IV-TR) symptoms of posttraumatic stress disorder. Clinical scales include not only symptoms typically associated with Posttraumatic Stress Disorder (PTSD), but also those for the Acute Stress Disorder (ASD), and intra- and interpersonal difficul-

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ties often associated with more chronic psychological trauma.

In this research we wanted to evaluate the TSI, based on whether it is a good diagnostic instrument for diagnosing PTSD. The TSI does not generate DSM-V diagnoses; instead, it is intended to evaluate the relative level of various forms of posttraumatic distress. In 2014, the American Psychiatric Association revised the PTSD diagnostic criteria in the fifth edition of its Diagnostic and Statistical Manual of Mental Disorders. [2] Diagnostic criteria for PTSD include a history of exposure to a traumatic event meeting two criteria and symptoms from each of three symptom clusters: intrusive recollections, avoidant/numbing symptoms, and hyper-arousal symptoms. Fifth criterion concerns duration of symptoms and a sixth assesses functioning. It is estimated that the prevalence of PTSD in general population is between 1 and 7% (depending on the diagnostic criteria), while in Vietnam veterans, firemen, rape victims, and persons who have been exposed to extreme stressful situations, frequency of PTSD is somewhere in between 20 and 40%. [3-7]

In validation studies done by Briere, [8] all of the clinical scales were higher in samples of PTSD group, compared to the normative non-PTSD sample. In the research done by McDevitt-Murphy, Weathers and Adkins, [9] PTSD and non-PTSD groups differed on seven TSI clinical scales and one validity scale, with Cohen's *d* ranging from 0.26 to 0.53. In that research, the largest effect sizes and best diagnostic utility were found on two clinical scales: Defensive Avoidance and Anxious Arousal scale. We wanted to further investigate, whether the same scales are equally important in Croatian PTSD sample. It is confirmed that there is a substantial evidence of the cross-cultural validity of PTSD. [10] However, evidence of cross-cultural variability in certain areas suggests the need for further research. Also we were interested whether the symptoms stated in the DSM-V for PTSD is also valid and do they have similar frequency in Croatian.

The aim of this study was to examine whether the scales are related to PTSD symptoms, and which scales would best predict the diagnosis of PTSD.

Subjects and Methods

Subjects

In this research we gathered the data for 235 participants, of which all of them were males (average age: 33 years) from the community. All of the participants gave their written consent for the participation in this research.

The clinical sample consisted of 51 males, between 38 and 61 years of age (average age: 48.5 years). The participants were hospitalized based on a diagnosis of PTSD. All of those patients developed PTSD during the war, as they were Croatian soldiers in the Croatian War of Independence (1991 – 1995).

All of the participants completed the Croatian version of TSI. [1]

Measurement

The TSI has a total of 100 items and contains 10 clinical scales. In the manual[1] for the TSI are stated the reliabilities for the scales: Anxious Arousal (AA; 8 items, alpha = 0,81), Depression (D; 8 items, alpha = 0,79), Anger/Irritability (AI; 9 items, alpha = 0,87), Intrusive Experiences (IE; 8 items, alpha = 0,84), Defensive Avoidance (DA; 8 items, alpha = 0,87), Dissociation (DIS; 9 items, alpha = 0,78), Sexual Concerns (SC; 9 items, alpha = 0,78), Dysfunctional Sexual Behavior (DSB; 9 items, alpha = 0,81), Impaired Self-

Reference (ISR; 9 items, alpha = 0,84), and Tension Reduction Behavior (TRB; 8 items, alpha = 0,54). Respondents are asked to indicate how often each symptom has occurred within the past 6 months on a four-point scale ranging from 0 (never) to 3 (often). In addition, the inventory includes three validity scales. The scale can be self-administered by anyone with a fifth-grade reading level or higher. Most of the subjects complete the TSI in below of 20 minutes. In table 1. there is a summary of TSI clinical scales, according to the manual for TSI. [1]

Results

All the descriptive and statistical analysis was done in IBM SPSS, version 21. Descriptive statistics for the community sample and the clinical sample are presented in Table 1. It can be seen at a glance, that all of the scales in the clinical sample are elevated.

We have compared the means for these samples Students t-test for large independent samples. The results can be seen in Table 2. We have also calculated Cohen's *d* to measure practical significance.

Table 1. Description of TSI clinical scales.

TSI scale	Description
Anxious Arousal (AA)	symptoms of anxiety, including those associated with posttraumatic hyperarousal
Depression (D)	depressive symptomatology, both in terms of mood state and depressive cognitive distortions
Anger/Irritability (AI)	angry or irritable affect, as well as associated angry cognitions and behavior
Intrusive Experiences (IE)	intrusive symptoms associated with posttraumatic stress, such as flashbacks, nightmares, and intrusive thoughts
Defensive Avoidance (DA)	posttraumatic avoidance, both cognitive and behavioral
Dissociation (DIS)	dissociative symptomatology, such as depersonalization, out-of-body experiences, and psychic numbing
Sexual Concerns (SC)	sexual distress, such as sexual dissatisfaction, sexual dysfunction, and unwanted sexual thoughts or feelings
Dysfunctional Sexual Behavior (DSB)	sexual behavior that is in some way dysfunctional, either because of its indiscriminate quality, its potential for self-harm
Impaired Self-reference (ISR)	problems in the "self" domain, such as identity confusion, self-other disturbance, and a relative lack of self-support
Tension Reduction Behavior (TRB)	the respondent's tendency to turn to external methods of reducing internal tension or distress, such as self-mutilation, angry outbursts

Table 2. Descriptive statistics for the community and clinical sample

	Clinical sample[a]		Community sample[b]	
Scale	*M*	SD	*M*	SD
Anxious Arousal	17.49	4.70	4.03	2.95
Depression	17.02	5.44	2.30	2.44
Anger/Irritability	18.78	6.10	4.48	3.77
Intrusive Experiences	18.53	4.53	2.77	3.19
Defensive Avoidance	16.78	4.59	3.53	3.69
Dissociation	16.84	6.48	2.21	2.63
Sexual Concerns	10.35	7.14	1.57	2.15
Dysfunctional Sexual Behavior	7.31	5.87	2.65	3.40
Impaired Self-Reference	16.94	5.85	3.57	3.46
Tension Reduction Behavior	10.08	5.04	2.29	2.31

[a] $N = 51$; [b] $N = 235$

As we can see from Table 2., the clinical sample group had higher scores on all of the scales, compared to community sample. All of the Cohen's *d* values are moderate, and for some scales effect sizes are high. The biggest

Table 3. Students t-test between the community and clinical samples.

TSI Scale	*t*	*df*	Sig. (2-tailed)	Cohen's *d*
AA	23.682	490	0.00	0.73
D	29.110	490	0.00	0.79
AI	19.951	490	0.00	0.66
IE	29.722	490	0.00	0.80
DA	19.130	490	0.00	0.65
DIS	27.118	490	0.00	0.77
SC	17.970	490	0.00	0.62
DSB	10.199	490	0.00	0.42
ISR	21.731	490	0.00	0.70
TRB	20.317	490	0.00	0.67

Note. AA = Anxious Arousal; D = Depression; AI = Anger/Irritability; IE = Intrusive Experiences; DA = Defensive Avoidance; DIS = Dissociation; SC = Sexual Concerns; DSB = Dysfunctional Sexual Behaviour; ISR = Impaired Self-Reference; TRB = Tension Reduction Behavior

effect size emerged for scales: Depression and Intrusive Experiences.

Discussion

Consistent with the previous research, [1,8-9] there was a significant difference in all of the TSI scales when comparing PTSD and non-PTSD samples. In comparison with the research of McDevitt-Murphy et al., [9] in which the largest effect sizes were found for Defensive Avoidance and Anxious Arousal scales, in our sample the largest effect sizes were found for Depression, Intrusive Experiences and Dissociation.

The DSM-V criteria for PTSD states that the person who is diagnosed with PTSD can have recurrent and intrusive distressing recollections of the event, recurrent distressing dreams of the event. The vast majority of intrusive memories can be interpreted as re-experiencing of warning signals that occurred moments before the trauma. Intrusive symptoms are one of the key symptoms of PTSD. It is clear that the scale Intrusive Experiences measure is highly elevated, since that scale measures the listed symptoms from the DSM-V for the PTSD.

Besides Intrusive Experiences, depression has high comorbidity with PTSD, [11-13] and that comorbidity has been documented in a diversity of trauma-affected populations. [14-15] The mechanisms linking PTSD and depression remain unclear, although the frequency with which comorbidity is observed suggests that the association is not simply coincidental. [15-16] Some researchers are arguing that PTSD is usually the primary disorder, with comorbid depression developing as a secondary reaction, [17] but there is an alternative hypothesis which says that the antecedents of depression and PTSD are relatively independent. [16] So it is expected that the Depression scale will also be highly elevated.

Another scale which was elevated was Dissociation. The scale measures dissociative symptomatology, such as depersonalization which is usually the most direct defense against overwhelming traumatic experience, and it is characteristic for PTSD. Dissociation is a defensive process in which an individual develops the capacity to separate himself or herself from the psychic and physical pain associated with exposure to traumatic events. [18] TSI Dissociation scale measures the processes of dissociation, and we can see that elevated results on this scales is something that is expected.

Defensive avoidance scale relates to measuring actions taken to avoid situations, places, as well as efforts not to think or feel about the traumatic event - basically anything that might cause re-experiencing the traumatic event. This scale had one of the highest elevations and effect size, and this result is confirmed by other researchers. [9] This is not unusual, since it is one of the symptoms closely related to DSM-V.

We have discussed some of the most elevated scales, but it is clear that TSI offers measurement of all of the three mayor diagnostic points for diagnosing PTSD, according to DSM-V. We can say that the TSI has a good sensitivity for PTSD symptoms.

It is notable that even the scales which measure sexual behaviour, namely Sexual Concerns and Dysfunctional Sexual Behaviour are elevated for the PTSD sample. But, as we can see from the results, both of the scales have very a low to moderate effect sizes. It is obvious that people with PTSD, in our sample, are stating less symptoms connected with dysfunctional sexual experiences and this could interpreted in context of the fact that we have included war veterans in our sample. We would probably get different re-

sults if the people in our sample were women, victims of sexual assault. [19]

A potential problem with conclusions in this research is that we have used only PTSD patients who have been to war. Another thing that we have to point out is that we didn't control whether our participants were or were not compensation seeking PTSD patients. It is confirmed that there are some differences in reporting of clinical symptoms between two groups. [20-21] Another problem with this kind of sample is that the other PTSD patients like from car accidents or similar, might have had some other problems that would be elevated on TSI in a different way. Also, in this research we gathered information only on males. In the future research it would be also good to find and compare women who have PTSD, with community sample.

In conclusion, in this study, we tried to investigate how well the TSI is measuring PTSD symptoms.

When we compared the PTSD and non-PTSD sample, the differences were moderate to high. The clinical sample group had higher scores on all of the scales, compared to community sample. All of the effect sizes (Cohen's d) are moderate, and for some scales effect sizes are high. The biggest effect size emerged for scales: Depression and Intrusive Experiences. Both of those scales measure symptoms that are stated in the DSM-V criteria for PTSD.

Overall the Trauma symptom inventory instrument is a good measure for traumatic experiences and for measuring trauma symptoms that can be crucial for PTSD diagnosis.

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None

Conflict of interest

None to declare

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Usporedba osoba sa posttraumatskim stresnim poremećajem i normativnog uzorka sa Inventarom simptoma traume

Sažetak – Inventar simptoma traume se sastoji od 100 čestica i služi za evaluaciju simptoma akutnih i kroničnih trauma, koje uključuju, između ostalog, posljedice silovanja, partnersko nasilje, fizičke napade, nesreće i prirodne nepogode, trajne posljedice zlostavljanja u djetinjstvu kao i druga traumatska iskustva. Ovaj rad se bavi sa postojećim razlikama u TSI ljestvicama između normativnog uzorka muškaraca (*N* = 235) i ratnih veterana (*N* = 51) koji boluju od posttraumatskog stresnog poremećaja (PTSP). Normativni uzorak se sastojao od ne-traumatiziranih muškaraca, dobi između 18 i 54 godine. Uzorak pacijenata se sastojao od osoba između 38 i 61 godine. Statistički značajne razlike su ispitane korištenjem analize varijance za ne zavisne uzorke. Statistička značajnost je nađena u svim slučajevima. Vrijednosti svih ljestvica kod PTSP uzorka su bile povišene u usporedbi s kontrolnim uzorkom. Rezultati su pokazali da hrvatska verzija TSI-a ima dobru dijagnostičku valjanost u procjeni osoba s PTSP-om.

Ključne riječi: posttraumatski stresni poremećaj, trauma, inventar simptoma traume