Survey of Ukrainian veterans' ATO wives during "Overcoming Shock Trauma and PTSD" Bodynamic Training. Report on the results

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1. RESEARCH DESCRIPTION.

The training is designed for veterans' ATO wives and focused on work with shock experience. The main goal of the training is to convey knowledge and skills to participants to work with personal experiences for a better understanding of themselves and their feelings, and also as a tool for supporting others.

Time frame. The training consisted of 4 modules::
1 module: 08.09 – 10.09.2017
2 module: 12.10 – 15.10.2017
3 module: 01.11 – 05.11.2017
4 module: 30.11 – 03.12.2017

Composition of the group - 27 wives of veterans. The husbands of six participants have already completed the similar training.

The project has happened with the support of the Bodynamic International Aps, the Canada Fund for Local Initiatives (CFLI) and the Embassy of Canada in Ukraine.

Methodology. In order to evaluate the effectiveness of the training at different stages of the training, an assessment of the participants' psychological state was made by the methods:

1. Probability of PTSD, manifestation of PTSD symptoms: PCL-5, PTSS-10, Screening of PTSD.
2. Dissociation disorders: DES.
3. Depressive disorders: PHQ-9.
4. Evaluation of post-traumatic growth: PTGI.

The evaluation was carried out using Google-forms before each of the 4 modules and at the end of the training, 5 times in total.

Psychological status of the participants was studied taking into account the changes in the criteria distribution of the symptoms manifestation level, for example, "absent, low, medium, high", in some cases - arithmetic average per group; relative, and not absolute number of participants (the number of persons varied in the 5 cases). Mathematical statistics methods were used for data processing: Student's t-test and U Mann-Whitney (reliability of changes), Pearson correlation coefficient (mutual dependence of the indicators) of the statistical package SPSS 17.0.

2. STATISTICAL ANALYSIS OF DATA

The reliability of the changes between the test scores at different stages of the course was determined by the Student's t-test. With the samples size n_1=27, and n_2=27, $t_{кр}$ =2,007 (for $p<0.05$); $t_{кр}$ = 2,674 (for $p<0.01$); $t_{кр}$ = 3,488 (for $p<0.001$). For n_1=27 and n_2=25, $t_{кр}$ =2,009 (for $p<0.05$).

2.1. Data Processing PCL-5

The PCL-5 questionnaire was used (8/14/2013) Weathers, Litz, Keane, Palmieri, Marx, & Schnurr - National Center for PTSD, www.ptsd.va.gov.

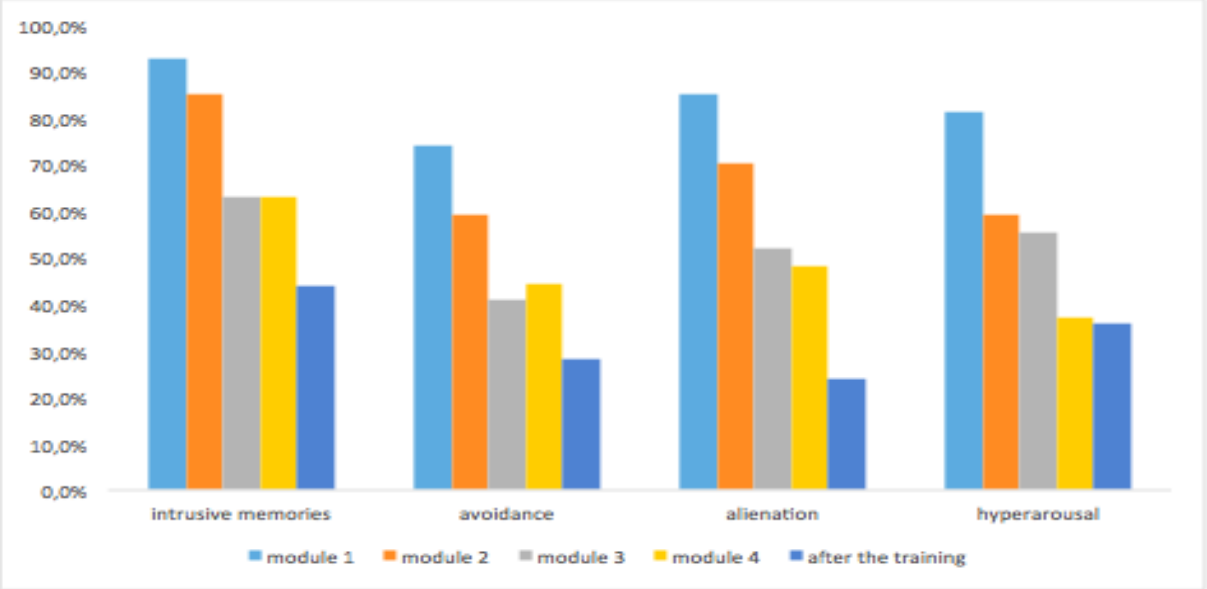
Scale contains 20 questions. A total symptom severity score (range - 0-80) can be obtained by summing the scores for each of the 20 items.

DSM-5 symptom cluster severity scores can be obtained by summing the scores for the items within a given cluster, i.e., cluster B (items 1-5), cluster C (items 6-7), cluster D (items 8-14), and cluster E (items 15-20).

A provisional PTSD diagnosis can be made by treating each item rated as 2 = "Moderately" or higher as a symptom endorsed, then following the *DSM-5* diagnostic rule which requires at least: 1 B item (questions 1-5), 1 C item (questions 6-7), 2 D items (questions 8-14), 2 E items (questions 15-20). Preliminary validation work is sufficient to make initial cut-point score suggestions, but this information may be subject to change. **A PCL-5 cut-point score of 33 appears to be a reasonable value to propose until further psychometric work is available.**

Diagram 1 represents the change in the number of participants with PTSD symptoms by the PCL-5 (%). Cluster B - intrusion symptoms, cluster C - avoidance symptoms, cluster D - cognitions and emotions symptoms, cluster E - hyperarousal and reactivity symptoms. The calculation was based on the results that indicates on the the presence of a symptom according to the defined criteria (see the paragraph above).

Diagram 1. Change in the number of participants with PTSD symptoms by the PCL-5 (%)



The dynamics of the change in the number of participants with PTSD symptoms by the PCL-5 (%) during the training course is also presented in Table 1.

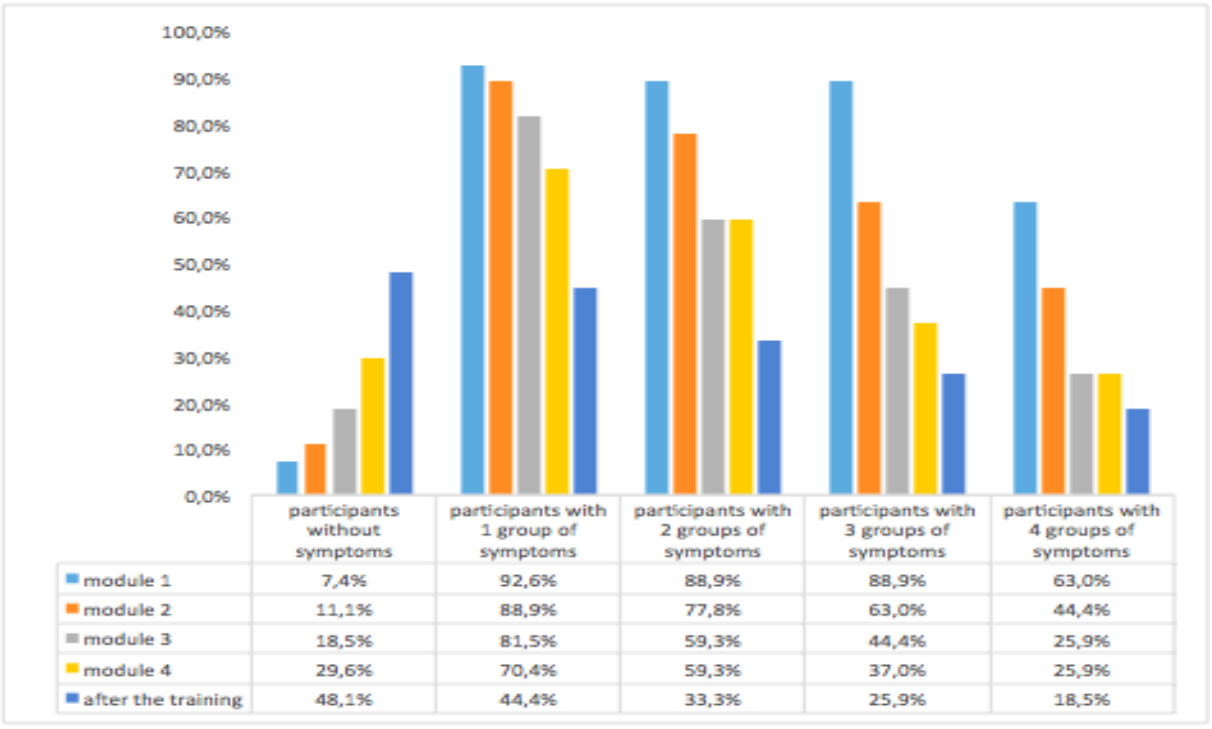
Table 1. Number of participants (%) with a certain PTSD symptom by the PCL-5 during the training course

Cluster of the symptoms	1 module	2 module	3 module	4 module	After the training
Intrusive memories	92,6%	85,2%	63,0%	63,0%	44,0%
Avoidance	74,1%	59,3%	40,7%	44,4%	28,0%
Alienation	85,2%	70,4%	51,9%	48,1%	24,0%
Hyperarousal	81,5%	59,3%	55,6%	37,0%	36,0%

Table 1 shows that the training course influenced the most on the reduction of the symptoms of alienation and the inability to experience positive feelings. At the beginning of the training course the relative number of such participants was 85.2%, then at the end - 24%. That means this symptom has disappeared in 61.2 % of participants. The symptoms of other three clusters were not found in 45-48% of participants. Obviously, this was facilitated by the communicative focus of the training course and the emphasis on creating an atmosphere of support and acceptance.

Diagram 2 shows an increase of the number of people without the symptoms of PTSD, and accordingly, a decrease of the number of the participants with some symptoms, as well as a decrease of the number of people with 4 groups of symptoms (from 63% to 18.5%) from the first to the last stage of the training course.

Diagram 2. Number of participants (%) with the symptoms of PTSD at different stages of the training course (1-2-3-4-after the course) by the PCL-5



	participants without symptoms	participants with 1 group of symptoms	participants with 2 groups of symptoms	participants with 3 groups of symptoms	participants with 4 groups of symptoms
module 1	7,4%	92,6%	88,9%	88,9%	63,0%
module 2	11,1%	88,9%	77,8%	63,0%	44,4%
module 3	18,5%	81,5%	59,3%	44,4%	25,9%
module 4	29,6%	70,4%	59,3%	37,0%	25,9%
after the training	48,1%	44,4%	33,3%	25,9%	18,5%

The reliability of the changes in the total score of PTSD symptoms manifestation by the PCL-5 was determined by the Student's t-test.

Table 2. Reliability of the changes in the total score of PCL-5 according to Student's t-test

MODULES	1	2	3	4	After training
1		2,16*	3,87***	3,76***	4,7***
2			-	-	2,85**
3				-	-
4					-

* - p<0.05; ** - p<0.01; *** - p<0.001

Table 2 shows that reliable and significant changes are observed from the first module (t = 2,16, p <0.05), and with each subsequent step the significance of the changes remains the same or becomes bigger. The period between 2 and 4

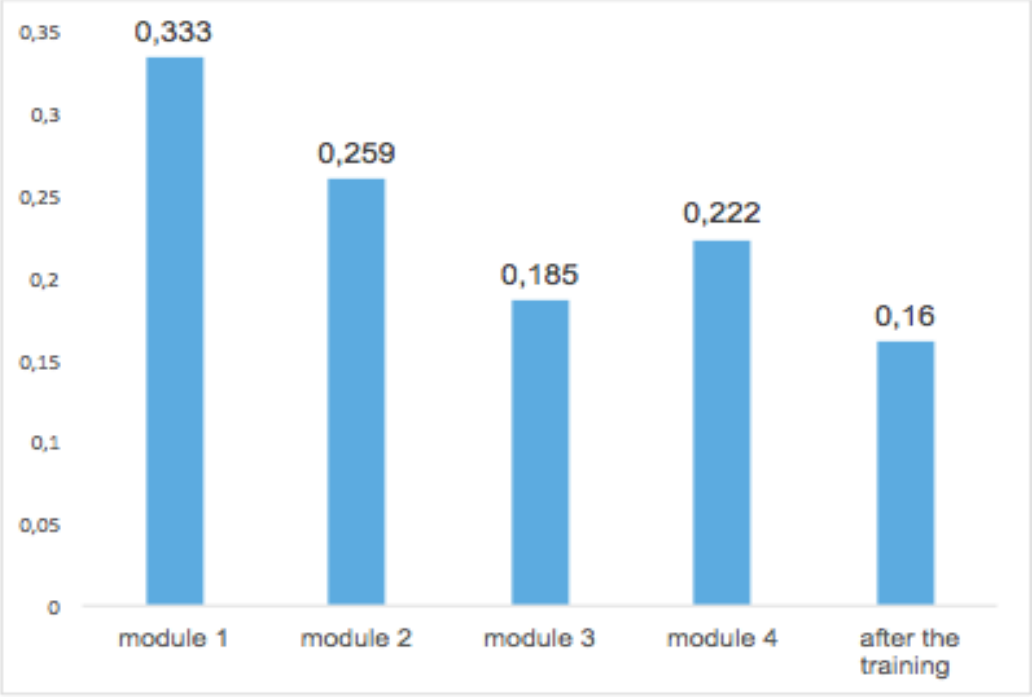
module ($t = 2.85$, $p < 0.01$) influenced significantly on the PTSD symptoms after the training course.

2.2. Data Processing PTSD Screening

According to the recommendations of the Unified clinical protocol of primary, secondary (specialized) and tertiary (highly specialized) medical care (UCPMC), in case of the presence of certain PTSD symptoms in the risk group patients the standardized questionnaire is used for PTSD verification. The questionnaire includes 7 questions (Appendix 1 to the Unified clinical protocol of primary, secondary (specialized) and tertiary (highly specialized) medical care "Severe stress reaction and adaptation disorders. Post-traumatic stress disorder" approved by the Ministry of Health of Ukraine (№ 121, 23.02.2016). A positive answer to 4 or more questions indicates the probability of PTSD.

Diagram 3 represents the number of people with the score of PTSD symptoms 4 points and more at different modules of the course (% of the total number of participants). Apparently, number of people with high scores on the PTSD screening decreased twice from module 1 to the end of the training course (from 33.3% to 16%).

Diagram 3. Number of people (%) with the score of PTSD symptoms 4 points and more at different modules of the course by PTSD Screening



The statistical analysis of the reliability of changes in PTSD symptoms using Student's t-test has found that reliable and significant changes are only between modules 1 and 2, and the end of the course ($t = 2.45$ and $t = 2.03$, $p < 0.05$ respectively). It can be assumed that the 1st and 2nd modules, as a start of the course, were the most important for reducing the symptoms of PTSD.

Table 3. Reliability of changes in PTSD Screening results between modules 1-4 of the training course, according to Student's t-test

MODULES	1	2	3	4	After training
1		-	-	-	2,45*
2			-	-	2,03*
3				-	-
4					-

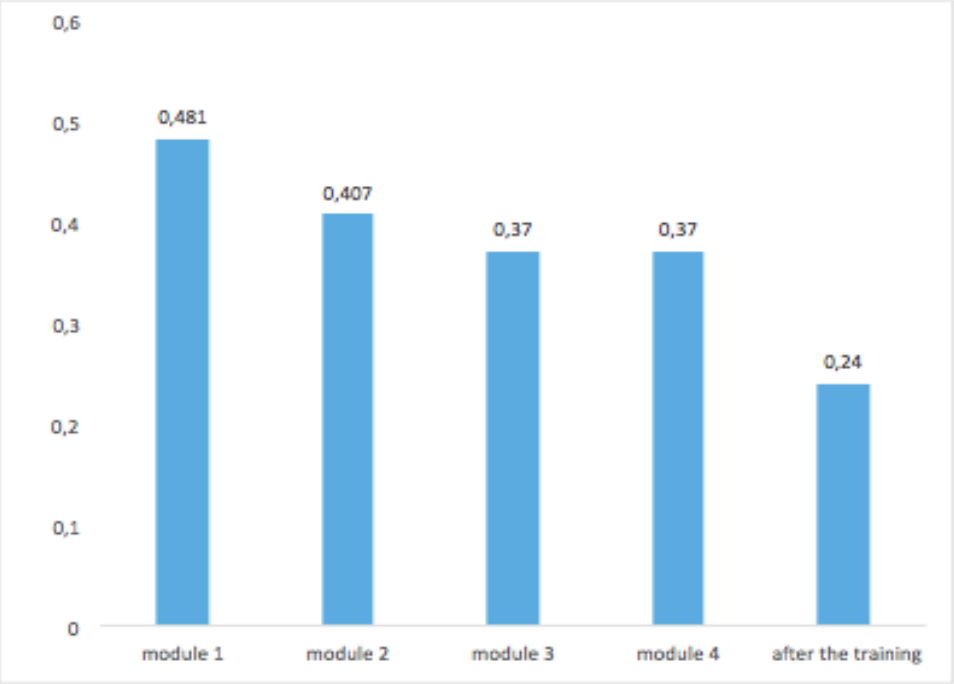
* - $p<0.05$

2.3. Data Processing PTSS-10

If the total score of PTSS-10 is 12.5 points and above, the diagnosis of "PTS" (post-traumatic stress) (according to Stoll et al., 1999) is suspected.

Diagram 4 shows a decrease of PTS manifestation from the 1st module to the end of the course: the number of participants with a diagnostic score of 12.5 points and above decreased twice (from 48.1% to 24%).

Diagram 4. Dynamics of change in the number of participants (%) with diagnostic score of 12.5 points and above during the course



At the same time, statistical analysis using Student's t-test did not reveal any significant and reliable changes.

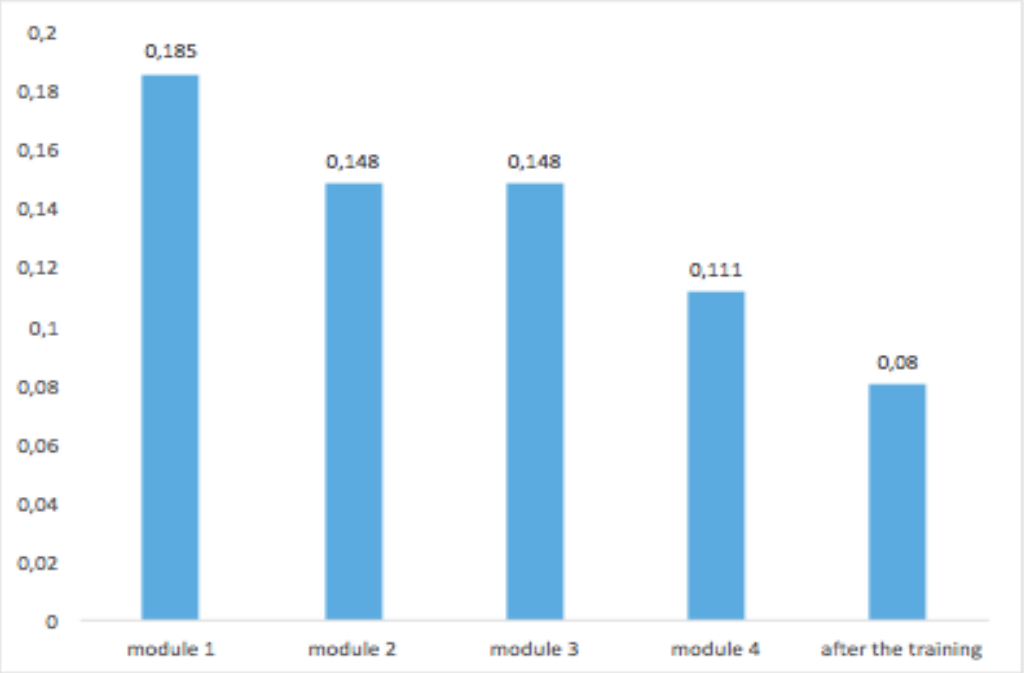
2.4. Data Processing DES

The DES test is aimed at measuring of the frequency of dissociative experiences. If a person gains 25 or more points, we can suspect the presence of severe dissociation disorders, which requires further assessment.

Diagram 5 shows a steady tendency for decreasing the number of people (%) with diagnostic score of 25 points and above by DES test during the course.

The statistical analysis of the reliability of changes in PTSD symptoms using Student's t-test did not reveal any reliable and significant changes. Comparison of the indicators of the module 1 and after the course showed that $t=1,37 < t_{кр}=2,009$ for $p<0.05$, so there are no statistically significant changes in the group.

Diagram 5. Dynamics of changes in the number of persons (%) with suspicion of severe dissociation disorder by the DES test during the course

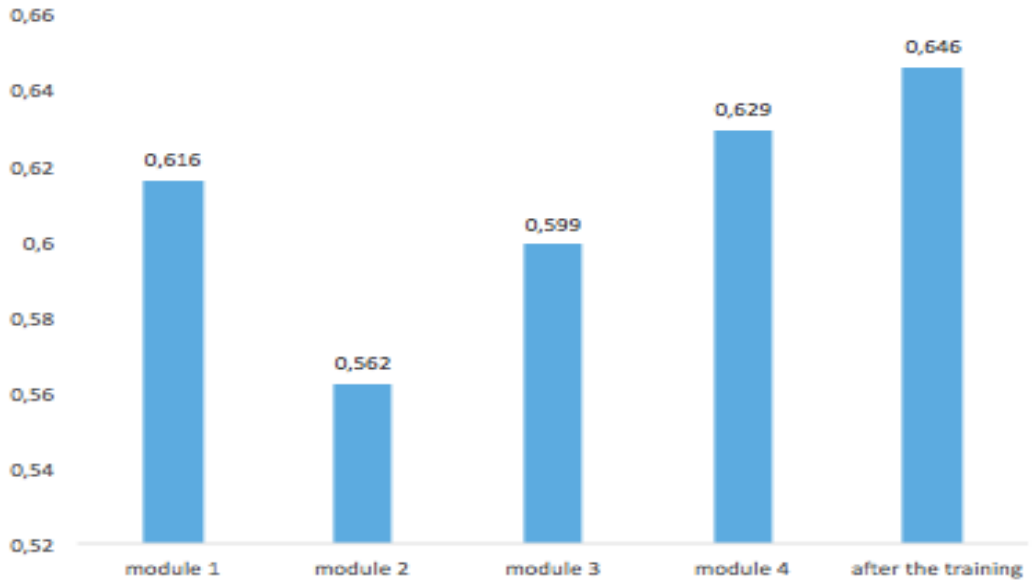


2.5. Data processing PTGI

PTGI is a Post-Traumatic Growth Inventory questionnaire, created by R. Tedeschi and L. Calhoun. The test contains 5 subscales: the attitude to others; new opportunities; personal strength; spiritual change; the appreciation of life. Since each subscale contains a different number of questions, the most important for us will be the relative change in scores on each stage, as well as the change in the total score by this test.

Diagram 6 shows the change in the arithmetic mean of post-traumatic growth during the course. As can be seen, after the 2 module, the gradual growth of the score starts from 56.2% to 64.6%. The difference in the scores between modules 1 and 2 may be explained by the fact that before the course participants could give socially desirable answers: as you know, some people, being objectively in an unsatisfactory psycho-emotional state, may want to look in front of others more "strong and stable" then they actually feel.

Diagram 6. Changes in the arithmetic mean of the participants` PTGI test during training



In a group atmosphere of acceptance and security, when others can also show their vulnerability and moments of weakness, the need to maintain the image of a "strong person" disappears. As a result, participants can deeply touch on their own anxiety and recognize the weaknesses. This opens up opportunities for outbound experiences and subsequent post-traumatic growth.

The statistical analysis of the total post-traumatic growth score using the Student t-test did not reveal significant and reliable changes during the course. So, comparing the results of the 1st module and after the course showed that $t = 0.43 < t_{кр}=2{,}009$ for $p < 0.05$, so we can not talk about statistically significant changes at the group level. Changes in PTGI indicators between 2nd module and after the course were also not detected ($t = 1.2 < t_{кр}=2{,}009$ for $p < 0.05$).

Diagram 7. Change in the arithmetic mean of the PTGI score for individual subscales during the training course

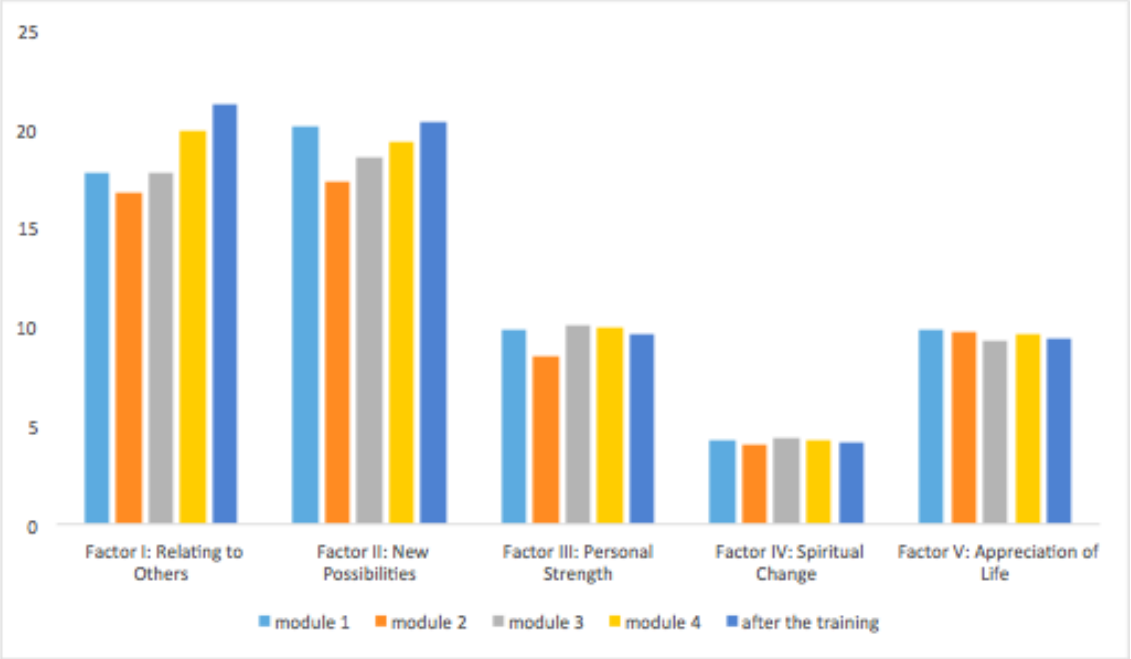


Diagram 7 presents the dynamics of the change in the scores for PTGI subscales. Since the number of questions in subscales is not the same, interpretation should be carried out within the frame of the change of each scale separately, without comparing the subscales` scores with each other. As can be seen, there is an increase in the subscales` scores "attitude to others" and "new opportunities", while the factors III-V do not change during the course.

Among the factors of post-traumatic growth during the training course, the factor №6, "I more clearly see that I can count on people in times of trouble" as well as №8 and №9, respectively, increased: "I have a greater sense of closeness with others. " and "I am more willing to express my emotions." Obviously, the content of the course and the group atmosphere contributed mostly to them, compared to other factors of the test. It is interesting that compared to the 1st and 2nd module and after the course, the significance of some factors has decreased, №2 "I have a greater appreciation for the value of my own life», № 13 “I can better appreciate each day”, № 19 “I discovered that I'm stronger than I thought I was”. It can be assumed that such results can be the result of empathic, supporting orientation of the training course, when personal growth goes through the feeling and recognition that people sometimes experience the states of helplessness and powerlessness.

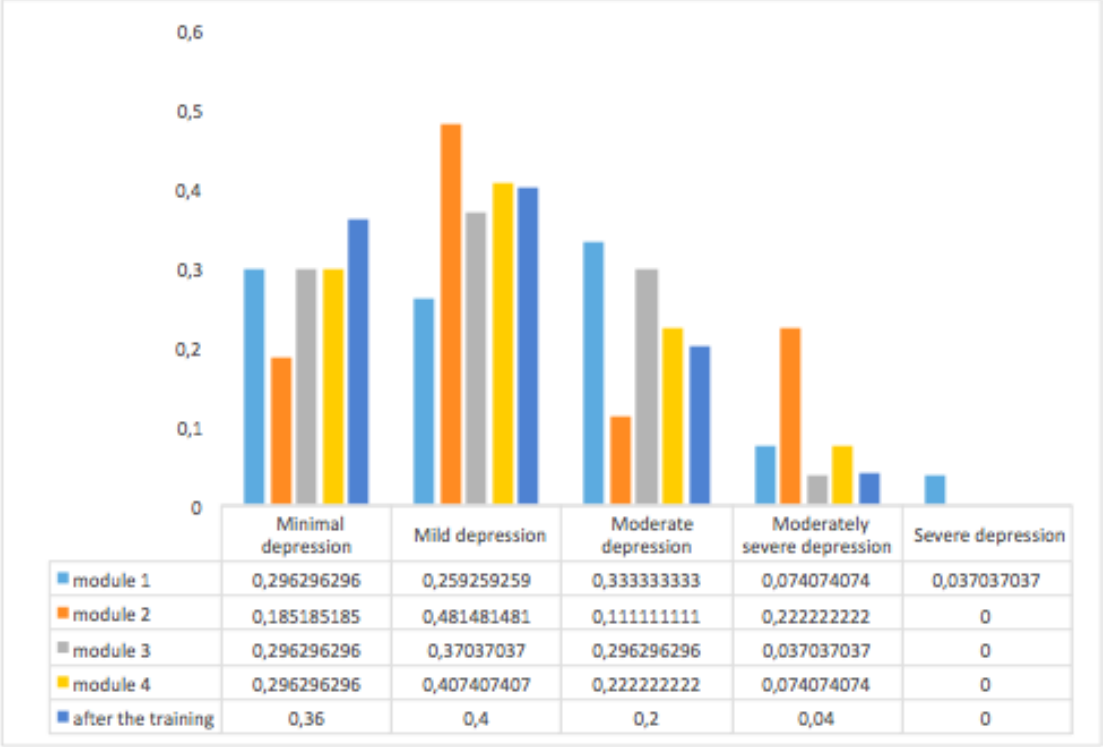
During the training course, 68% of participants showed an increase in post-traumatic growth scores, that indicates a positive dynamics. Accordingly, 32% of participants reported a decrease of the post-traumatic growth scores.

2.6. Data processing PHQ-9

The Patient Health Questionnaire (PHQ-9) - The nine-point self-report questionnaire for depression is effective in diagnostics, as well as for choosing a kind of treatment and monitoring results (an appendix to the unified clinical protocol of primary, secondary (specialized) and tertiary (highly specialized) medical care "Depression", developed by Drs. Robert, L. Spitzer, Janet B, Williams, Kurt Kroenke).

Diagram 8 represents the distribution of participants by severity of depressive symptoms at different stages of the training course. As can be seen, the number of participants who do not have symptoms of depression (scored 0-4 points) increases from module 2 to the last stage (from 29.6 % to 36%). There is a steady increase in participants with mild depression (from 25.9% to 40%) and a corresponding decrease in the number of participants with moderate and severe symptoms. Symptoms of severe depression are detected only in the module 1.

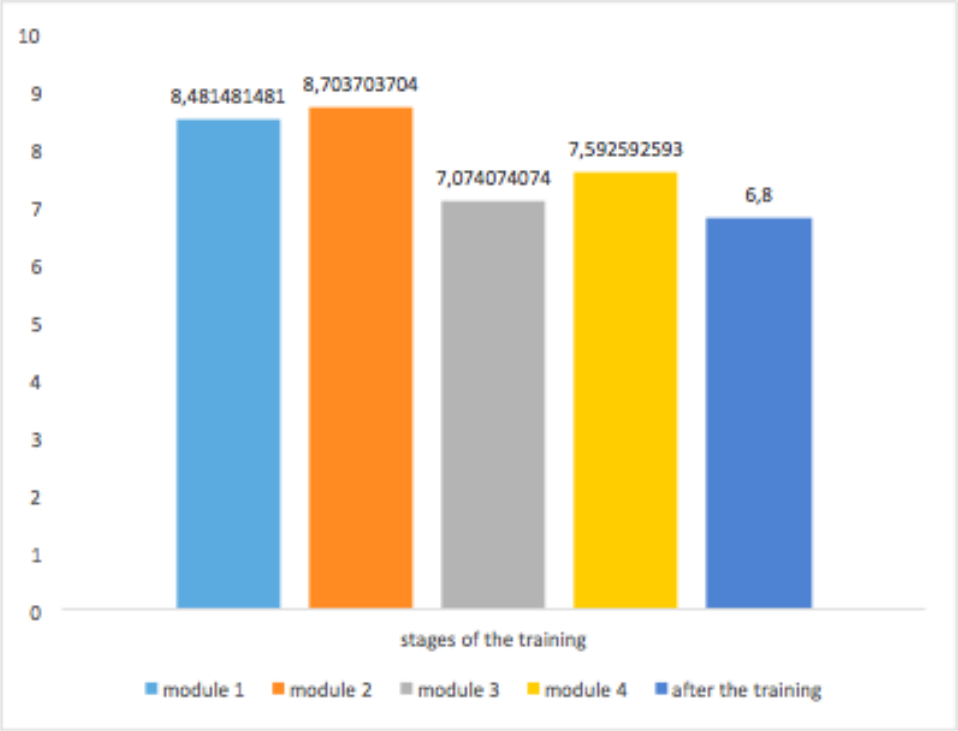
Diagram 8. Number of participants (%), that reveal depressive symptoms by the PHQ-9 test at different stages of the training course



	Minimal depression	Mild depression	Moderate depression	Moderately severe depression	Severe depression
module 1	0,296296296	0,259259259	0,333333333	0,074074074	0,037037037
module 2	0,185185185	0,481481481	0,111111111	0,222222222	0
module 3	0,296296296	0,37037037	0,296296296	0,037037037	0
module 4	0,296296296	0,407407407	0,222222222	0,074074074	0
after the training	0,36	0,4	0,2	0,04	0

Diagram 9 represents the distribution of the arithmetic mean of depressive symptoms scores among participants at different stages of the training course. As can be seen, there is a tendency of decreasing the scores from the 2nd module to the final stage of the study.

Diagram 9. Distribution of arithmetic mean of depressive scores in participants at different stages of the training course (by the PHQ-9 test)



The statistical analysis of changes in the depressive symptoms scores using the Student's t-test did not reveal reliable and significant significance during the course. Thus, comparison of scores at module 1 and after the course showed that t = 1.27 at $t_{кр}$=2,009, p <0.05.

3. CORRELATION ANALYSIS OF THE TEST RESULTS

A correlation analysis of the relationship between the test scores used for statistical analysis of the effectiveness of the training course was conducted by using the statistical package SPSS 17.0. Since module 2 has revealed the greatest changes in symptoms, the results of the tests of module 2 were taken for analysis. Statistical analysis data is presented in Table 4.

Table 4. Correlation coefficients between test indicators at module 2 of the training course (based on the Pearson correlation coefficient)

	PCL-5	Screening PTSD	PTGI	DES	PTSS-10	PHQ-9
PCL-5	1	0,477*		0,557**	0,568**	0,638**
Screening PTSD		1		0,461*	0,564**	0,454*

PTGI			1			
DES				1	0,469*	0,514**
PTSS-10					1	0,633**
PHQ-9						1

* Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed).

As can be seen from Table 4, PCL-5 test results are significantly related to PTSD screening (r_{xy}=0,477, p <0.05), dissociative disorders (r_{xy} = 0.557, p <0.01), PTSD symptoms for PTSS- 10 (r_{xy} = 0.568, p <0.01), as well as depressive disorders (r_{xy} = 0.638, p <0.01). Indicators of PTSD symptoms by Screening of PTSD and PTSS-10 tests are significantly associated with the growth of symptoms of dissociative and depressive disorders. Interestingly, the relationship between the indicators of post-traumatic growth and symptoms of PTSD and comorbid disorders were not detected for the 2nd module. At the same time, the increase in the desire and ability to express own emotions significantly affects the reduction of PTSD symptoms by the PCL-5 test (see Table 5, r_{xy} = -0.439, p <0.05).

Table 5 presents an attempt to identify the relationship between individual questions of the PTGI questionnaire, that have shown the largest change from module 1 to module 2, so we can assume that they are the most sensitive for this training course. It is expected that these answers to questions significantly correlate with the overall score on the PTGI scale. It is also evident that the growth of one of the factors is significantly related to growth of others.

Table 5. Indicators of correlation between post-traumatic growth questionnaire PTGI and some tests (based on Pearson correlation coefficient)

Tests	Numbers of questions in PTGI test			
	6. I more clearly see that I can count on people in times of trouble.	9. I am more willing to express my emotions.	13. I can better appreciate each day.	19. I discovered that I'm stronger than I thought I was.
PCL-5		-0,439*		
PTSD Screening				
PTGI	0,571*	0,781**	0,826**	0,635**
DES				
PTSS-10				
PHQ-9				

PTGI-№6	1	0,613**	0,478*	
PTGI-№9		1	0,604**	0,507**
PTGI-№13			1	0,466**

* Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed).

In order to investigate the impact of the training course on participants that mentioned the experience of a certain psychologically traumatic (severe) event during the survey, a statistical check of these individuals' data was conducted. There were 6 participants. As it was noted, the module 2 was the most significant for all participants (it showed the largest quantitative changes in the scores), the results of the module 2 were taken for the correlation analysis.

Table 6. Correlation analysis of the relationship between test scores for the participants, that mentioned the experience of a certain psychologically traumatic (severe) event during the survey, module 2

	PCL-5	PTSD Screening	PTGI	DES	PTSS-10	PHQ-9
PCL-5	1					
PTSD Screening		1				
PTGI			1			
DES				1		0,913*
PTSS-10					1	
PHQ-9						1

* Correlation is significant at the 0.05 level (2-tailed).

As can be seen, for this group of participants the growth of depressive symptoms is associated with an increase of the dissociative disorders scores r_{xy} = 0.913, $p < 0.05$).

The results of the statistical analysis of changes in the several tests scores for this subgroup of participants are presented in Table 7. For comparison, we use data between the module 2 and the end of the training course. Since the number of participants in this subgroup is small - 6 people, the statistical criterion U Mann-Whitney (for non-parametric samples) is used.

Table 7. Reliability of changes for PCL-5, PTGI and PHQ-9 tests scores of participants with heavily stressful experiences during the period: module 2 - end of the training course, U Mann-Whitney Criterion

	PCL-5	PTGI	PHQ-9
Mann-Whitney U	6,500	8,500	11,500

Wilcoxon W	27,500	29,500	32,500
Z	-1,848	-1,537	-1,046
Asymp. Sig. (2-tailed)	0,065	0,124	0,295
Exact Sig. [2*(1-tailed Sig.)]	0,065[a]	0,132[a]	0,310[a]

It was found that for these participants there were no significant changes between the PTSD scores by the PCL-5 test (0,065> 0,05), post-traumatic growth after the PTGI test (0,132> 0,05), symptoms of depressive disorders by the PHQ-9 test (0.31> 0.05).

4. CONCLUSIONS

1. During the training course participants have experienced a steady reduction in PTSD symptoms, which is confirmed by the dynamics of changes in the scores of all three tests: PCL-5, PTSS-10 and PTSD screening. Changes to the true level of significance are observed after the module 1: for PCL-5: t = 2.16, at $t_{кр}$ = 2.009, p <0.05, and with each subsequent step the significance of the changes is maintained or becomes higher; for PTSD Screening: t = 2.45, at $t_{кр}$ = 2.009, p <0.05.

2. The increase in the number of persons without symptoms of PTSD and, correspondingly, the reduction of symptoms manifestations, as well as the decrease of the number of persons with 4 groups of symptoms, were determined: from 63% to 18.5% (by PCL-5 test). There is a 2 times decrease in the number of people with high test scores. Screening of PTSD from module 1 to the end of the training course (from 33.3% to 16%). The PTSS-10 test revealed a decrease of the manifestation of PTSD symtoms: from the module 1 to the end of the course, the number of participants with a diagnostic score of 12.5 points and above was reduced by half (from 48.1% to 24%).

3. The training course has affected mostly the reduction of the symptoms of alienation and the trouble experiencing positive feelings (by the PCL-5 test): if at the beginning of the course number of such participants was 85.2%, then in the end - 24%. That means, this symptom disappeared at 61.2% participants. The other three symptoms have fallen below the level when there is a suggestion of a symptom, in 45-48% of participants. Obviously, this was facilitated by the communicative focus of the training course and the emphasis on creating an atmosphere of support and acceptance.

4. Modules 1 and 2 were crucial for the entire training course, since they had a significant impact on the reduction of the PTSD symptoms. They have created the necessary support and safety conditions in which participants were able to recognize their vulnerabilities and weaknesses. Because of their better awareness, they began to move to decrease depressive and dissociative symptoms, as well as move to the increase of post-traumatic growth scores (by the PTGI test).

5. Despite that there is a positive dynamics of all tests scores (PTGI, DES, PTSS-10, PHQ-9), statistically significant changes between the scores at module 1 and after the completion of the course is not found. The same applies to a separate group of 6 people that mentioned the experience of a certain psychologically traumatic (severe) event during the survey: there were no significant changes in the PCL-5, PTGI, PHQ-9 tests between the module 2 and the completion of the training course.

6. Increse of participants willingness to express own emotions (PTGI) significantly affects the reduction of PTSD symptoms (by PCL-5 test, $r_{xy} = -0.439$, $p < 0.05$).