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ORIGINAL PAPER

Impact of combat trauma on motivational types in military personnel facing life-threatening danger

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ABSTRACT

Introduction and aim. The motivation of soldiers actively fighting during war is very important. Long-term participation in battles do not have a positive effect on maintaining motivation. The purpose of this study was to determine the motivational types of military personnel with different attitudes toward danger in conditions of a real threat of death after participating in long-term intensive battles.

Material and methods. A cross-sectional, descriptive study was conducted among military personnel from the Ukrainian Defense Forces (225 males, 40.73±9.81 years). The Mississippi Scale for Combat-Related Posttraumatic Stress Disorder (MSCRPTSD) was used to diagnose posttraumatic stress disorder (PTSD), the "Disadaptation Express Questionnaire" (DEQ) to identify signs of a violation of the adaptability of the soldier's personality, the 'Resilience to Combat Mental Trauma Questionnaire" (RCMTQ) was used to assess the impact of combat stress, as well as the 'Perspectives assessment of professional motivation in Military Personnel Questionnaire" (APPMMPQ) for a comprehensive assessment of military personnel, including the attitude to danger in conditions of a real threat of death.

Results. The relationships between motivational characteristics of conscious attitude towards danger of military personnel and indicators of posttraumatic stress and resistance to combat mental trauma were determined. Two groups (motivational types) of CAD were identified, to which 214 (95.11%) of the participants were assigned: group 1 with low profile 191 (84.89%) and group 2 with a medium-high profile 23 (10.22%). The profile of negative emotional reactions and states of group 2 was located mainly in the range of 1.5–3.5 points with peaks on the scales of "Anxiety", "Unwillingness to communicate" and "Irritability". The profile of subgroup 1.2 was located in the range of 2-4 points and was quite close to the profile of group 2 with peaks on the scales of 'Anxiety' and "Distrust of commanders".

Conclusion. A high level of motivation for a conscious attitude toward danger can reduce the risk of injury to military personnel. Unformed or depleted motivation for a conscious attitude to danger under the conditions of a real threat of death of military personnel increases the risk of mental trauma.

Keywords. military personel, motivation, post-traumatic stress

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Introduction

The Russian war against Ukraine, which began on February 24, 2022, requires a growing mobilization of the Ukrainian civilian population for military service. Combat operations are always associated with a high level of danger to the health and life of military personnel, and many experience combat stress.[1-4] However, direct participation in the battles is not the only threat to the life and health of personnel, the occurrence of post-traumatic stress (PTS), or a necessary and sufficient cause of mental disorders.[5,6] It is important to take into account life-threatening military incidents during military deployment, psychological characteristics of the personality, as well as the conditions of the social environment of post-traumatic recovery.[7,8]

The experience of Israeli specialists has shown that a high existential threat leads to an increased willingness of military personnel to engage in life-threatening behavior.[9,10] It was found that soldiers with combat experience, when under threat of death, were more concerned about not letting down their comrades and subordinates than about fear of death.[11] But for soldiers without combat experience, these results were the opposite. This paradox can be explained using terror management theory (TMT), which attempts to explain a wide range of human behavior in terms of the defense mechanisms by which people protect themselves from fear of their own death.[12,13] The authors of TMT argued that a person's ability to predict the future and self-reflectively lead to an awareness of one's mortality, which, in turn, can manifest itself emotionally in increased anxiety and fear.[14,15]

The concept of appeasement indicates that some people have 'supersocial activity' that allows them to take control of their emotions when faced with a real threat to life, suppress the natural 'fight / flight / freeze' stress response, and formulate interactions in such a way as to reduce the likelihood of provoking aggression toward themselves and help de-escalate the situation.[16]

One of the factors in the formation of PTS and its chronicity is the personality of a serviceman, which influences the results of professional activity through motivational processes.[17] Such a specific type of professional motivation as a conscious attitude to danger indicates the ability of an individual to realize motivation in conditions that threaten health and life.[13] This motivation is important for the formation of resilience to combat mental trauma, is associated with the identification of the role of a serviceman in protecting his country, and forms a sense of duty. Studying the motivational characteristics of military personnel in life-threatening danger will allow adjustment of military and psychological training activities. In the future, this will increase the psychological resilience of the soldiers and reduce the psychogenic losses of the military personnel during combat operations. However, the role of such motivation when military personnel participate in long-term, intensive combat operations has not been studied.

Aim

The purpose of this study was to determine the motivational types of military personnel with different attitudes toward danger in conditions of a real threat of death after participating in long-term intensive battles.

Material and methods

Study design and participants

A a cross-sectional, descriptive study was conducted among military personnel from Ukrainian Defense Forces (225 males, between 18 and 59 years of age, 40.73±9.81 years). All of included participants were sent after participating in intensive combat operations to undergo a two-week psychological recovery program at a rehabilitation center.[18] The rehabilitation center was created in June 2022 in one of the sanatoriums of the Kharkiv region for the psychological recovery of military personnel after participating in hostilities. The main objective was to relieve the negative impact of combat stress on the psyche of combatants, strengthen their mental health and mobilize their psychological resources, improve adaptation to combat conditions, and quickly return to combat activities. After completion of this program, all servicemen returned to the combat zone to continue performing tasks.

All participants gave their informed consent to be included before participating in the study. The approval of the ethics committee was obtained before the initiation of the study (meeting date; 17/04/2024, decision number; 2024/7). All procedures involving human participants were conducted in accordance with the ethical standards specified by the institutional and national research committee and with the Declaration of Helsinki and its later amendments or comparable ethical standards.

In the study group 118 (52.44%) of the participants were married, 7 (3.11%) were in a common law marriage, 79 (35.11%) were bachelors, 20 (8.89%) were divorced, and 1 (0.44%) were widowers. According to military rank, 161 (71.56%) were privates, 58 (25.78%) were sergeants, and 6 (2.67%) were officers. The mean military service for 60 (26.67%) of the participants was 1.35±0.66 years: they were mobilized at the beginning of large-scale military operations without military service experience. The mean military service for 165 (73.33%) of the participants was 3.47±3.66 years: They served as conscripts or under contract before the beginning of large-scale military operations.

Participants were identified: with various manifestations of acute stress reactions; significant negative experiences, including signs of depression and suicidal ideation; the presence of PTS symptoms; sleep problems 123 (54.67%); somatic complaints 201 (89.33%),

wounds and contusions more than 169 (75%); difficulties in returning to combat missions due to the consequences of illness, injury, and wounds. Participants were randomly selected for the study. Female military personnel were not included in this study because, over the entire program period, less than 0.5% of female combatants participated.

Instruments

The study used psychodiagnostic tools to study the impact of traumatic experiences on the mental state of military personnel after participating in intense combat operations and to identify the characteristics of their attitude toward danger in conditions of a real threat of death.

The Mississippi Scale for Combat-Related Posttraumatic Stress Disorder (MSCRPTSD)[19] was used to diagnose posttraumatic stress disorder (PTSD) in military personnel on missions in the war zone, translated into Ukrainian.[20] The scale consists of 35 statements (4 subsets), the answers to which were given on a 5-point Likert scale (Cronbach's α 0.887). Subset 1 (11 statements) describes the symptoms of the 'intrusion' group when the traumatic event is repeatedly repeated in the experience in one (or more) ways. Subset 2 (11 statements) relates the symptoms of the group when there is a constant avoidance of stimuli associated with trauma, blocking of emotional reactions, and numbness, which was not observed before trauma. Subset 3 (8 statements) describes the symptoms of 'excitability' when persistent symptoms increased that were not observed before the injury. Subset 4 (5 statements) describes symptoms associated with guilt and suicidal tendencies. Despite the grouping of statements into four subsets, one general indicator was calculated taking into account the conversion of the answer into a score for direct and inverse statements, reflecting the severity of PTSD symptoms (range from 35 to 175 points, where 35–80 points is a variant of the norm; 81–114 points – separate symptoms of PTSD; 115–175 points – clinical manifestations of PTSD, a psychiatric examination and inpatient examination were recommended).

The "Disadaptation Express Questionnaire" (DEQ) is an abbreviated modified version of the Multilevel Personality Questionnaire 'Adaptation'[20] The DEQ made it possible to identify signs of a violation of the adaptability of the soldier's personality: violation of the regulatory function of the emotional-volitional sphere and self-esteem; lack of prospects for continuing life and the ability to overcome life's difficulties (probability of committing suicidal attempts); loss of moral convictions, the likelihood of committing addictive and delinquent acts; loss of communicative potential (comrade support, reduced ability to accept the help of one's team). DEQ consists of 45 statements included in 5 subscales (Cronbach's α=0.848): "Sincerity of answers', 'Violation of behavioral regulation", and 'Probability of committing suicide attempts", "Violation of moral normativity and "Loss of communicative potential'. Each positive response was worth 1 point, and negative 0 points. The general DEQ scale was calculated as the sum of scores on 4 scales (values on the "Sincerity of answers" scale were not included). The results of the overall DEQ scale were evaluated as follows: 1–10 points – high adaptation to combat operations, sufficient tolerance to adverse mental and physical stress, including under conditions of severe combat stress; 11–14 points – average adaptation, unstable level of performance, especially in combat conditions; 15 points or more – low adaptation (distress and adjustment disorders) that does not meet the requirements for soldiers in combat conditions.

The 'Assessment of Negative Mental Reactions and Conditions in Military Personnel Questionnaire' (ANMRCMPQ) was developed to determine negative emotional experiences in military personnel after participation in hostilities.[21] The ANMRCMPQ contained 16 items: 'Irritability', 'Anger', 'Anger', 'Inattention', 'Self-doubt', 'Devastation', 'Apathy, 'Concern', 'Concern', 'Sense of guilt", "Sense of powerlessness", "Lack of concentration, 'Unwillingness to communicate", "Lack of trust in comrades in the service, 'Lack of trust in commanders", "Inability to perform the assigned tasks" (Cronbach's α=0.944). Self-assessment of the psychological state of the participants rated on a 10-point Likert scale, where 0 is the state is not expressed at all and 10 is expressed to the maximum extent. The results were evaluated separately for each feature as follows: 1–3 points – the condition is not expressed; 4–6 points – the condition is expressed moderately; 7–10 points – the condition is expressed at a high level, and it is necessary to conduct an individual consultation.

The 'Resilience to Combat Mental Trauma Questionnaire" (RCMTQ) was used to assess the impact of combat stress on the mental health of military personnel.[20] RCMTQ is the modified Combat Experience Scale (CES).[22] CES is a 33-item measure that assesses deployment-related experiences. RCMTQ is a 45-item measure combined into 3 scales, answered on a 6-point Likert scale that assesses resilience to combat mental trauma based on combat experience gained (Cronbach's α=0.887). 'The expectation of participating in hostilities scale' allowed us to assess the professional potential of military personnel in possible combat situations. 'The scale to overcome a stressful situation' made it possible to assess the mechanisms to overcome stressful (combat) situations. The scale 'Realization of the acquired combat experience" made it possible to assess the ability to process the acquired combat experience. The general indicator of resilience to combat mental trauma (RCMT) was calculated as the sum of points on 3 scales, taking into account the conversion of the answer into a score for direct and inverse statements. The ob-

tained results of the RCMT indicator were evaluated as follows: 193–225 points – a high level of RCMT, even with a significant complication of the combat situation, such military personnel are able to cooperate and provide assistance to colleagues; 144–192 points – the average level of RCMT reflected a reduced ability to provide support to colleagues; do not always maintain the effectiveness of their activities and control over their mental state; 0–143 points – low level of RCMT reflected psychological unpreparedness to participate in hostilities.

The 'Perspectives assessment of professional motivation in Military Personnel Questionnaire" (APPMMPQ) was used for a comprehensive assessment of military personnel, including the attitude to danger in conditions of a real threat of death.[23] The APPMMPQ contains 180 statements combined into 7 scales: 'Altruistic orientation of a military man", "Professional orientation of a military man", "Self-efficacy of a military man", "Localization of the meaning of life and energy resources of a military man", "Conscious attitude to danger", "Conscious desire for professional communication of a military man", "Satisfaction of a military man with professional activity" (Cronbach's α=0.934). The 'Conscious attitude to danger" (CAD) scale contains 24 statements combined into 4 subscales: 'Desire for safety", "Awareness of mortality', 'Resistance to non-lethal stressors", and "Tolerance of uncertainty" (Cronbach's α=0.786). The responses were evaluated using a six-point Likert scale (0 to 5 points) for each subscale, and the overall indicator of a serviceman's conscious attitude to danger was determined (the results for all subscales were summarized). The results were assessed as follows: 0–15 points – low level of a serviceman's conscious attitude to danger, 16–24 points – average level, 25–30 – high level. The CAD scale was developed taking into account the provisions of TMT.[12,14,15] The scale made it possible to determine the characteristics of the professional motivation of a serviceman in dangerous conditions with or without a real threat of death, as well as in a situation of uncertainty.

The study was carried out in two stages. In the first stage, correlation analysis was used, allowing us to determine the relationships between the motivational characteristics of a conscious attitude to danger and PTS, maladaptation, negative emotional experiences, and RCMT indicators in the general sample of study participants. Using cluster analysis in the second stage of the study, the main groups of participants with different types of conscious attitudes to danger under conditions of a real threat of death were identified. For the data presented, basic descriptive statistics (arithmetical mean M, standard deviation SD) were used. The reliability of the differences in the results of the mean values was determined using the Student's t test. For the assessment of the statistical significance of the differences, we used the level of significance from $p<0.01$ to $p<0.001$. The statistical analysis of the study results was carried out using the SPSS 20.0 (IBM, Armonk, NY, USA).

Table 1. The relationships between motivation for a conscious attitude to danger and PTS, maladaptation, and RCMT indicators in the general sample of study participants

Scale name	Conscious attitude to danger				
	Desire for safety	Awareness of one's death	Resistance to non-lethal stressors	Tolerance for uncertainty	General indicator of CAD
MSCRPTSD					
General indicator of PTSD	-0.16*	-0.21**	-0.33***	-0.16*	-0.33***
DEQ					
Disruption of behavioral regulation	-0.22**	-0.28***	-0.42***	-0.21**	-0.43***
The likelihood of committing suicide attempts	-0.03	-0.18**	-0.32***	-0.23**	-0.30***
Violation of moral norms	-0.24***	-0.09	-0.25***	-0.01	-0.22**
Loss of communicative potential	-0.25***	-0.10	-0.29***	-0.18**	-0.30***
General indicator of maladaptation	-0.22**	-0.21**	-0.41***	-0.21**	-0.40***
ANMRCMPQ					
Irritability	-0.14*	-0.20**	-0.26***	-0.17*	-0.28***
Anxiety	-0.06	-0.25***	-0.33***	-0.19**	-0.33***
Aggressiveness	-0.14*	-0.10	-0.17*	-0.19**	-0.20**
Anger	-0.16*	-0.13*	-0.13*	-0.14*	-0.18**
Inattention	-0.05	-0.19**	-0.23***	-0.13*	-0.23***
Self-doubt	-0.07	-0.18**	-0.27***	-0.17*	-0.26***
Devastation	-0.16*	-0.19**	-0.29***	-0.11	-0.29***
Apathy	-0.12	-0.21**	-0.15*	-0.12	-0.20**
Concern	-0.09	-0.23***	-0.33***	-0.21**	-0.33***
Guilt	-0.02	-0.19**	-0.17*	-0.27***	-0.23***
Powerlessness	-0.02	-0.22**	-0.21**	-0.33***	-0.27***
Lack of concentration	-0.09	-0.21**	-0.23***	-0.18**	-0.25***
Unwillingness to communicate	-0.07	-0.20**	-0.21**	-0.19**	-0.24***
Distrust of comrades in the service	-0.10	-0.21**	-0.14*	-0.10	-0.19**
Distrust of commanders	-0.12	-0.10	-0.20**	-0.04	-0.18**
Inability to perform the assigned tasks	-0.10	-0.29***	-0.25***	-0.08	-0.27***
RCMTQ					
Expectation from participating in hostilities	0.08	0.37***	0.36***	0.15*	0.37***
Overcoming a stressful situation	0.17*	0.36***	0.32***	0.21**	0.38***
Realization of the acquired combat experience	0.12	0.28***	0.32***	0.16*	0.33***
Overall indicator of RCMT	0.14*	0.39***	0.38***	0.20**	0.41***

[a] *p≤0.05, **p≤0.01, ***p≤0.001

Results

The results of the relationships between the characteristics of motivation for a conscious attitude towards danger and the PTS, maladaptation, negative emotional experiences and RCMT indicators in the general sample of study participants are presented in Table 1.

In the second stage of the study, based on the results of the cluster analysis, two groups (motivational types) of CAD were identified, to which 214 (95.11%) of the participants were assigned (Table 2): group 1 with low profile 191 (84.89%) and group 2 with a medium-high profile 23 (10.22%). Another 11 (4.89%) of the study

participants were assigned to different groups of 12 people in each, but due to the small number of these groups, their data were not used in a further analysis.

Table 2. Indicators of the motivation of CAD in the two most typical groups of military personnel who were in conditions of a real threat of death (points)

CAD subscales	Groups of participants		Differences between groups	
	Group 1 191 (84.89%)	Group 2 23 (10.22%)	t	p
Desire for safety	18.79±3.65	26.39±2.06	15.08	0.001
Awareness of one's death	17.92±4.22	24.30±2.60	10.27	0.001
Resistance to non-lethal stressors	16.68±4.33	27.13±2.05	19.71	0.001
Tolerance for uncertainty	16.81±3.55	20.74±3.89	4.62	0.001
General indicator of CAD	86.87±14.3	125.70±8.12	19.57	0.001

Then, group 1 was divided into 3 subgroups. 101 (52.87%) participants in subgroup 1.1 had low scores on all subscales of motivation for CAD. 79 (41.36%) participants in subgroup 1.2 had average points on all subscales of motivation for CAD. 11 (5.76%) participants in subgroup 1.3 had predominantly low points on all subscales of motivation except for the "Desire for safety" subscale (high points). The main motivational types (profiles) of study participants who were under real threat of death are presented in Figure 1.

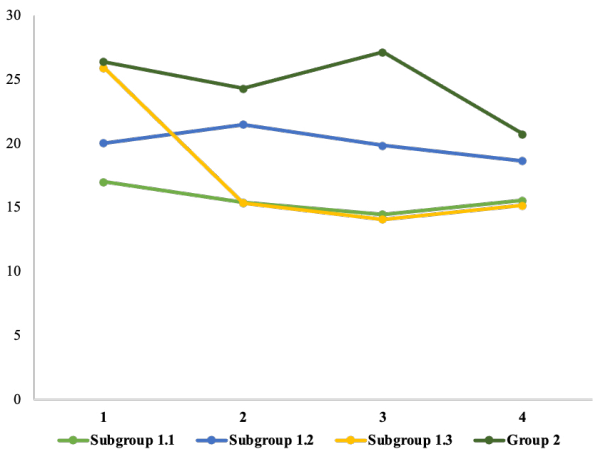

Fig. 1. Main motivational types (profiles) of the study participants who were under conditions of a real threat of death (points): 1) desire for safety; 2) Awareness of one's mortality; 3) resistance to non-lethal stressors; 4) Tolerance of uncertainty

The intensity of PTS symptoms of study participants with different CAD motivational types of CAD who were under real threat of death is presented in Table 3.

Maladaptation indicators and reliability of differences between groups of participants with different types of motivation CAD who were in conditions of a real threat of death are presented in Tables 4 and 5.

Table 3. Intensity of PTS symptoms of the study participants with different motivational types who were under conditions of a real threat of death

Intensity of PTS symptoms	Subgroup 1.1	Subgroup 1.2	Subgroup 1.3	Group 2
Norm	33 (17.24%)	67 (35.08%)	35 (18.32%)	10 (43.48%)
Separate symptoms of PTSD	90 (47.13%)	83 (43.45%)	52 (27.23%)	8 (34.78%)
Clinical manifestations of PTSD	68 (35.63%)	41 (21.47%)	104 (54.45%)	5 (21.74%)

Table 4. The maladaptation indicators of the participants with different motivational types who were in conditions of a real threat of death (points)

Scale name	Subgroup 1.1	Subgroup 1.2	Subgroup 1.3	Group 2
Disruption of behavioral regulation	4.85±2.28	3.52±2.32	4.55±2.62	1.94±1.95
The likelihood of committing suicide attempts	3.15±2.48	2.11±2.74	3.91±3.27	1.13±1.67
Violation of moral norms	4.05±1.95	3.36±1.84	4.09±2.47	1.69±1.40
Loss of communicative potential	4.18±2.01	3.14±2.03	4.00±3.03	2.31±1.99
General indicator of maladaptation	16.23±6.84	12.13±6.53	16.55±10.23	7.06±5.51

Table 5. Reliability of differences in indicators of maladaptation of participants with different types of motivational CAD who were in conditions of a real threat of death (Student's t test) a

Scale name	Differences between groups					
	$t_{1.1\text{-}1.2}$	$t_{1.1\text{-}1.3}$	$t_{1.2\text{-}1.3}$	$t_{1.1\text{-}2}$	$t_{1.2\text{-}2}$	$t_{1.3\text{-}2}$
Disruption of behavioral regulation	3.86***	0.37	1.24	6.27***	3.27**	2.93**
The likelihood of committing suicide attempts	2.63**	0.75	1.74	4.74***	2.12*	2.66*
Violation of moral norms	2.42*	0.06	0.95	6.72***	4.67***	3.01**
Loss of communicative potential	3.43***	0.19	0.91	4.06***	1.75	1.68
General indicator of maladaptation	4.09***	0.10	1.39	6.86***	3.71***	2.88**

[a] *p≤0.05, **p≤0.01, *** p≤0.001

All the maladaptation indicators of subgroups 1.1–1.3 were in the average range, and the indices of group 2 were low.

The profiles of negative emotional reactions and states in participants with different motivational types of conscious attitude toward danger, who were under the conditions of a real threat of death, are shown in Figure 2.

The profile of negative emotional reactions and states of group 2 was located mainly in the range of 1.5–3.5 points with peaks on the scales of "Anxiety", "Unwillingness to communicate" and "Irritability". The profile of subgroup 1.2 was located in the range of 2-4 points and was quite close to the profile of group 2 with peaks on the scales of 'Anxiety' and "Distrust of commanders". This could indicate a relatively low number of symptoms of PTS and manifestations of maladjustment. The profile of subgroup 1.1 was located mainly

in the range of 3-5 points of the group and differed significantly from the profiles of group 2 and subgroup 1.2 with peaks on the scales of 'Anxiety', 'Irritability', 'Unwillingness to communicate" and "Concern". This could indicate a medium-high level of PTS symptoms and maladjustment. The profile of subgroup 1.3 was located mainly in the 5-6 point range and was characterized by high points with peaks of the scales 'Powerlessness', 'Anxiety', 'Concern' and "Inattention". This could indicate certain signs of mental and physical trauma and maladaptation during combat.

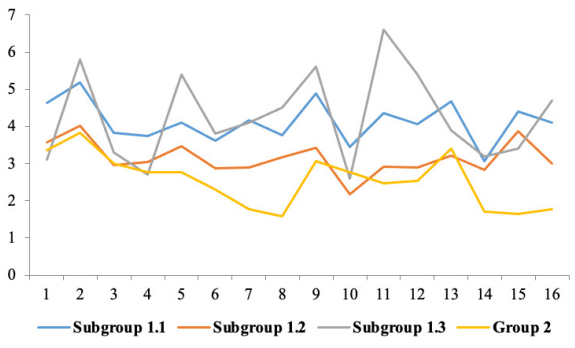

Fig. 2. Profiles of negative emotional reactions and states in participants with different motivational types of conscious attitude to danger, who were in conditions of a real threat of death (points): 1) Irritability; 2) Anxiety; 3) Aggressiveness; 4) Anger; 5) Inattention; 6) Self-doubt; 7) Devastation; 8) Apathy; 9) Concern; 10) Guilt; 11) Powerlessness; 12) Lack of concentration; 13) Unwillingness to communicate; 14) Distrust of comrades in the service; 15) Distrust of commanders; 16) Inability to perform the assigned tasks assigned

Tables 6 and 7 present the resilience indicators to combat mental trauma and the differences between groups of participants with different motivational types of conscious attitudes toward danger, who were in conditions of real death threat.

Table 6. Indicators of resilience to combat mental trauma in groups of participants with different types of conscious attitudes toward danger, who were in conditions of a real threat to death threat (points)

Scale name	Subgroup 1.1	Subgroup 1.2	Subgroup 1.3	Group 2
Expectation from participating in hostilities	41.80±10.8	47.56±9.07	44.77±9.03	53.75±13.77
Overcoming a stressful situation	46.04±11.13	51.51±9.52	48.00±12.23	59.06±11.95
Realization of the acquired combat experience	40.85±9.82	43.98±7.88	43.77±7.93	51.19±9.25
Overall indicator of RCMT	128.68±28.13	143.05±21.85	136.56±26.48	164.00±30.69

Table 7. Differences between groups in indicators of resilience to combat mental trauma of participants with different types of conscious attitude to danger, who were in conditions of a real death threat (student's t-test) a

Scale name	Differences between groups					
	$t_{1.1\text{-}1.2}$	$t_{1.1\text{-}1.3}$	$t_{1.2\text{-}1.3}$	$t_{1.1\text{-}2}$	$t_{1.2\text{-}2}$	$t_{1.3\text{-}2}$
Expectation from participating in hostilities	3.89***	1.02	0.96	3.90***	2.03*	2.27*
Overcoming a stressful situation	3.55***	0.51	0.91	4.78***	2.78**	2.49*
Realization of the acquired combat experience	2.37*	1.13	0.08	4.78***	3.39***	2.41*
Overall indicator of RCMT	3.86***	0.93	0.78	5.06***	3.06**	2.68*

[a] *p≤0.05, **p≤0.01, *** p≤0.001

Discussion

At the first stage of the study, the use of correlation analysis allowed us to determine the relationships between the characteristics of motivation of a conscious attitude to danger and PTS, maladaptation, negative emotional experiences, and indicators of RCMT in the general sample of study participants. It was found that in the general sample of study participants, the PTS symptom intensity indicator was statistically significantly associated with all subscales of a conscious attitude towards danger. Our results also intersect with other data, where it was found that modern servicemen prepare too carefully for a meeting with a threat in conditions of intense combat operations[24]. However, for most servicemen who participated in combat operations, everyday problems were more pronounced in their service experience than the potential impact of lethal threats. Furthermore, family support acted as a compensatory factor for both the situation of intense lethal threats and the situation, when instead of combat operations, servicemen immersed themselves in the daily routine.[24]

The cluster analysis in the second stage of the study allowed us to identify two main groups of participants with different types of conscious attitudes toward danger in conditions of a real threat of death. Due to the specificity of the study sample (all servicemen participated in intense and long-term combat operations), motivational types were identified mainly with reduced (depleted or insufficiently formed) motivation for a conscious attitude to danger. Group 1 was then divided into 3 subgroups based on the motivation indicators for a conscious attitude towards danger. Almost all participants in group 1 (subgroups 1.1, 1.2, 1.3) had low and moderate-low scores on all subscales of conscious attitude to danger motivation.

Participants in group 2 had moderate-high scores on all subscales of conscious attitude towards danger motivation. These participants more often than others preferred professional self-realization: They had higher rates of resistance to combat mental trauma and a low level of maladaptation. They had the lowest rates of apa-

thy, emptiness, mistrust of commanders and comrades, and inability to perform assigned tasks. Our results, in particular the motivational characteristics of the group 2 participants, to a certain extent find support in the TMT, proving that high self-esteem allows a serviceman to act rationally in conditions of a real threat of death.[12-15] And also with the theory of appeasement, according to which the ability to control your emotions increases the likelihood of survival.[16] The indicators of group 2 participants largely coincide with the results of a field study, which found that in situations of threat, higher identification with the Royal Netherlands Army has a positive relationship with higher acceptance of the risk of death, higher self-efficacy, and self-assessment of operational readiness.[13]

Participants in subgroup 1.1 showed the greatest depletion of motivation to perform tasks in dangerous (combat) conditions. For the most part, they had been in military service before the large-scale Russian invasion. Exhaustion and fatigue in this group negatively affected their ability to withstand the effects of combat stress factors. They lacked the energy to maintain the necessary level of control over their lives. It was the lack of strength in this group that was the basis for the loss of control and violation of moral normativity, behavioral regulation, and insufficient personal potential to maintain the usual level of communication.

Participants in subgroup 1.2 showed average indicators for a conscious attitude towards danger, fairly high indicators of RCMT, and high indicators of symptoms of PTS. They were also physically and mentally exhausted and did not have the resources for additional self-control, which was reflected in the indicators of maladaptation.

The small subgroup 1.3 consisted mainly of ordinary military personnel, and young people, most of whom were faced with the need to master military service only during a large-scale invasion. They had a pronounced desire for safety. It was combined with an unformed attitude towards their mortality, an inability to overcome stress factors and adequately act in an uncertain situation. Such personality traits of the participants of this group did not allow the formation of RCMT. They felt powerless in the face of life circumstances: the need to be in a combat zone and were often unable to concentrate and complete assigned tasks. Their mental state could probably be further deteriorated by the inability to rest due to sleep problems. However, they were not subject to sthenic reactions: aggression, anger, irritability, and negative attitudes toward commanders and colleagues. Participants in subgroup 1.3 had an uneven profile of negative emotional reactions and states. They can probably be classified as individuals with pronounced neuroticism, which affects motivation for activity related to goal setting, expectation of goal achievement, and a general sense of self-efficacy.[25,26]

We also have reason to believe that everyday stressors, such as bureaucracy, everyday difficulties, insufficient weapons, equipment, and ammunition, could act as the main source of negative experiences even in the face of a real and intense threat to life. Most servicemen who decided to defend their family and homeland resigned themselves to their possible death. However, bureaucracy, inability to organize daily service conditions, unprofessional orders of commanders, and other factors were often the main factors in the accumulation of combat stress.[27] Family was also an additional source of worry for servicemen who valued their family life.[28]

The results obtained revealed the presence of several types of motivational personality types in servicemen with low self-efficacy, who perceive social support from colleagues and commanders as a threat and confrontation. Similar conclusions related to the importance of self-efficacy in the moderating effects of social support in stressor-strain relationships were also made in another study.[29]

To mitigate the effects of depleted motivation and reduce PTS in military personnel, it is necessary to develop and adjust military and psychological training measures before deployment and participation in combat operations. The US military, for example, developed a combat and Operational Stress Control.[30] This is a coordinated program for the prevention of and actions taken by the military leadership to prevent, identify and manage adverse combat and operational stress reactions in units.[31] The UK has a peer support program for Trauma Risk Management that aims to promote help-seeking military personnel in the aftermath of traumatic events.[32] The Israel Defense Forces developed YaHaLOM training to teach service members how to manage acute stress reactions in team members. This is a novel, rapid, peer-based intervention specifically designed for use in a high-stress event.[10]

Study limitations

Of course, this study had some limitations. First, the study participants were extremely exhausted after participating in intense, prolonged combat operations. Therefore, we were forced to use questionnaires with a small number of questions/statements or express versions of psychodiagnostic methods. The use of questionnaires with a large number of questions/statements caused negative emotional reactions in study participants and further worsened their mental state. Second, women did not participate in the study, since less than 0.5% of female servicemen were sent for psychological recovery. Third, most of the participants had depleted motivation, so it was not possible to establish patterns characteristic of a high level of motivation and describe the corresponding types (the study identified only one small type of highly motivated servicemen). Fourth, the

correlation links and the structure of the study itself did not allow us to state unequivocally: either the underdeveloped motivation for a conscious attitude to danger in conditions of a real threat of death did not allow the formation of RCMT, or the unformed resistance and intense PTS symptoms led to the exhaustion of motivation to perform tasks in combat conditions. Fifthly, certain limitations in the analysis arose due to the small number of subgroup 1.3 and group 2. Therefore, the correlation analysis was used only for the general sample and a certain disproportionality arose when presenting information on subgroups as percentages.

Conclusion

The authors presented the influence of prolonged intensive traumatic combat experience on the formation of motivational types of servicemen with different attitudes to danger in conditions of real threat of death. It has been established that a high level of motivation for a conscious attitude toward danger in conditions of a real threat of death can be a factor in reducing the risk of physical and psychological injury in military personnel, but it does not eliminate this risk. The depleted motivation of a conscious attitude to danger in conditions of a real threat of death increases the risk of psychological and physical trauma. Probably, with unformed motivation, this risk is the highest. In servicemen who have formed a certain attitude to death, the threat to life did not cause an acute emotional reaction. However, they also developed symptoms of PTS, which did not decrease in a short time working with a specific trauma, which required searching for new ways of secondary prevention of PTSD and its chronic course. This partly explains the need for rapid psychological first aid to military personnel in combat operations. This care provides an unlimited wide range of activities and different levels of its provision compared to Critical Incident Stress Debriefing.

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Author contributions

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Conflicts of interest

The authors declare no competing interests.

Data availability

All data generated or analyzed during this study are included in this published article.

Ethical approval

The approval of the ethics committee was obtained before the initiation of the study (meeting date; 17/04/2024, decision number; 2024/7).

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