



A model for the development and enhancement of psychological resilience in Marine Corps service personnel of the Armed Forces of Ukraine through coping strategies

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◆ **Abstract.** The relevance of this study is conditioned by the need to revise classical paradigms of combat mental health preservation in the context of the radical transformation of the combat stress ecology brought about by Russia's full-scale aggression, the mass employment of advanced weaponry, and chronic allostatic load. The aim of the study was to empirically investigate the transformation of the structural and level characteristics of psychological resilience and the coping strategy repertoire of Marine Corps service personnel of the Armed Forces of Ukraine under conditions of high-intensity combat operations, and to develop and theoretically and mathematically substantiate a comprehensive structural-functional model for the optimisation of coping behaviour. The study was based on a rigorous methodological design comprising a series of sequential cross-sectional surveys conducted between 2020 and 2024. The empirical base consisted of Marine Corps service personnel of the Armed Forces of Ukraine: a baseline survey conducted under conditions of positional warfare (2020-2021, $n = 115$) and an extended survey from the period of full-scale invasion (2023-2024, $n = 120$). The study employed a battery of contemporary psychodiagnostic instruments in their Ukrainian adaptations: the Behavioural Self-Regulation Style Questionnaire (SRQ), the Big Five Locator, the coping strategy diagnostic tools of E. Heim and R.S. Lazarus & S. Folkman, the S.R. Maddi Hardiness Survey, the CD-RISC-10 resilience scale, and the Spiritual Health Assessment Scale (SHAS). Statistical processing (IBM SPSS Statistics) included analysis of variance, the Kruskal-Wallis H-test, Spearman's correlation analysis, and multiple linear regression. On the basis of the baseline survey data (2020-2021), it was mathematically demonstrated that the coping strategy repertoire – in particular, autonomous planning and positive reappraisal – acts as a powerful predictor accounting for 54% of the variance in the overall level of an individual's psychological resilience. By contrast, the comparative analysis of the extended survey revealed a decline in the Integral Psychological Resilience Index (IPRI) under the impact of full-scale warfare. Increases in neuroticism were recorded, along with the emergence of a “cognitive narrowing” phenomenon characterised by a reduced capacity for long-term autonomous planning, and a substantial compensatory shift towards strategies of emotional distancing and social support-seeking (collective resilience). On the basis of the identified empirical deficits, an original four-block (target, diagnostic, content-formative, and outcome-criterion) structural-functional model for resilience development has been elaborated

◆ **Keywords:** hardiness; psychological readiness; combat stress; mental health; full-scale warfare

◆ Introduction

Russia's full-scale armed aggression against Ukraine has fundamentally transformed the operational-tactical, existential, and psychological reality in which units of the Armed Forces of Ukraine (AFU) function. The ecology of

contemporary combat stress is characterised by an extreme level of vital threat generated by the mass employment of innovative multi-domain weaponry – strike unmanned aerial systems (FPV drones), precision-guided aerial

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bombs, heavy artillery, and other high-precision armaments. The specific nature of the combat trajectory of modern infantry imposes massive and continuous pressure on the cognitive and emotional resources of service personnel, demanding innovative approaches to sustaining their mental readiness. Under these unprecedented conditions, service personnel of elite units, including Marine Corps units, face extreme allostatic load. Chronic deprivation of basic physiological needs (sleep disruption, thermal discomfort, irregular nutrition) and the sustained accumulation of blast and concussive injuries accelerate the permanent depletion of the adaptive resources of the central nervous system, the physiological cost of maintaining which is extraordinarily high. As O. Hukovskyy *et al.* (2024) noted, the combat path of the contemporary Ukrainian warrior is accompanied by the continuous erosion of mental readiness, necessitating a systematic revision of approaches to mental health preservation at all stages of service. A. Karachevskyy (2023) has likewise emphasised that the provision of psychological and psychiatric care to service personnel in conditions of active combat operations faces a shortage of unified protocols capable of effectively mitigating the consequences of accumulated traumatic experience.

Contemporary scientific discourse regards psychological resilience not merely as a static personality trait or innate capacity to withstand stress, but as a dynamic integrative phenomenon encompassing neurological-cognitive, emotional, and existential levels of adaptation. The study by M. Bocharov *et al.* (2023) demonstrated that the physiological cost of performance by officers of the Defence Forces of Ukraine under conditions of hyperstress is directly correlated with the development of cardiovascular and psychosomatic disorders, making the problem of allostatic load a central target for psychological interventions. Of particular relevance are the findings of V.V. Stasiuk & R. Seheida (2025), who investigated the specific effects of combat stress factors on the psychological readiness of assault units. These researchers emphasised that massive sensory depletion and prolonged exposure to enemy artillery fire destroy classical patterns of stress resistance, necessitating the formation of new compensatory survival mechanisms. Investigating these mechanisms, L. Oviedo *et al.* (2022) and J. Kovalenko (2024), in their empirical studies, found that constructive coping strategies serve as critical predictors of the preservation of personal integrity both among combatants and among civilians affected by the brutality of the Russo-Ukrainian war. Of considerable significance within the context of military psychology is the contribution of O. Kokun *et al.* (2022) and O. Kokun (2023), whose large-scale longitudinal studies of service personnel's stress reactivity prior to rotation into the combat zone, and of personal growth resources, formed the conceptual foundation for the validation of psychodiagnostic instruments within the AFU context. A separate line of research is represented by the work of O. Chykhantsova & A. Denchyk (2024), who demonstrated a close relationship between the resilience of Ukrainian military personnel and their actual

personal capacities, highlighting the significance of the dispositional factor in the adaptation process. Concurrently, N. Makarchuk *et al.* (2024) pointed to the objective need for the development of specialised psychological support programmes that would account for the unique, non-standardised combat experience of different units. An important complement to this body of work is provided by the research of N.V. Rodina *et al.* (2022) on scales for assessing coping behaviour in situations of existential danger, as well as the study by R. Zueger *et al.* (2023), which empirically confirmed the effectiveness of implementing mentoring programmes and resilience training at the early stages of military personnel preparation.

Despite the methodological refinement of Ukrainian scholarly developments, the dynamics and character of full-scale warfare demand the creation of a narrowly specialised integrative model specifically tailored to Marine Corps units, whose distinctive profile involves conducting high-intensity assault and amphibious operations. Contemporary service personnel preparation confronts the empirically documented phenomenon of "cognitive narrowing" in combatants, which precludes the use of complex cognitive constructs during acute stress. Given the multidimensional, polysemantic nature of the phenomenon of psychological resilience, there is an urgent need to develop an original structural-functional model that is initiated through automated somatic stabilisation skills before progressing to deep cognitive reframing and existential meaning-making. The aim of this study was to examine the dynamics of psychological resilience and coping strategies amongst Marine Corps service personnel of the AFU under conditions of high-intensity combat operations, and to develop a comprehensive model for the optimisation of coping behaviour. To achieve this aim, a number of research objectives were formulated. First, to conduct a theoretical and methodological analysis of contemporary scientific discourse on the formation of psychological resilience in combatants and to systematise approaches to the assessment of coping behaviour under conditions of permanent existential threat. Second, to develop and implement an empirical research programme to obtain reliable data on the structural and level characteristics of resilience and the dominant coping strategies of personnel during different periods of combat operations. Third, using methods of multivariate statistical analysis, to identify the determinational and causal relationships between coping strategy selection and the overall level of an individual's adaptive potential and hardiness.

◆ Materials and Methods

The process of conceptualising and empirically verifying the psychological mechanisms underlying the development of psychological resilience in service personnel under conditions of high-intensity combat operations requires the application of a rigorous, mathematically and theoretically validated methodological design. Such a design was developed with the aim of ensuring a high level of ecological validity, reliability, and representativeness of the

scientific findings obtained. The research programme was implemented through a series of sequential cross-sectional surveys conducted between 2020 and 2024, enabling coverage of both a baseline survey under conditions of positional warfare (the Joint Forces Operation, JFO) and an extended survey from the period of full-scale armed invasion. The criteria for inclusion in the sample were: membership of Marine Corps units of the AFU, whose activities involve the performance of tasks under extreme multi-domain conditions. The first, baseline phase (2020-2021) encompassed 115 service personnel with varying levels of experience at the line of contact. The second, extended phase (2023-2024) involved 120 service personnel, 100% of whom had direct experience of high-intensity combat. To preclude the distorting effects of acute sympatho-adrenal hyperactivation on paper-based testing, the procedure was conducted exclusively during periods of temporary withdrawal of units from the combat zone to recovery stages. The study was conducted in strict accordance with international ethical standards for scientific research. All stages of the psychological and psychometric examination of service personnel complied with the ethical principles of the World Medical Association Declaration of Helsinki (WMA, 2024). Each participating service member was guaranteed absolute confidentiality of personal information, as well as respect for their dignity, inviolability, and autonomy. The testing procedure was entirely voluntary, conducted following the receipt of participants' informed consent, and the results obtained were used by the organisers exclusively in an aggregated, anonymised form for scientific research and psychoprophylactic purposes. Additionally, paper-based testing was conducted solely during periods of temporary withdrawal of units from the combat zone to recovery or combat consolidation stages. From a psychophysiological standpoint, this made it possible to avoid the distortion of results by acute sympatho-adrenal hyperactivation and to preserve the ecological validity of the measurements.

The study employed a battery of psychodiagnostic instruments and international scales in their Ukrainian adaptations. The operationalisation of the resilience phenomenon was achieved through its decomposition into five core components. The investigation of the regulatory component – which determines the capacity for autonomous behavioural management – was carried out using the Behavioural Self-Regulation Style Questionnaire (SRQ) in the Ukrainian adaptation of M.V. Yatsiuk (2023). Assessment of personality dispositions was based on the use of the Big Five Locator express questionnaire, validated in the context of contemporary psychological assessment by D.K. Korolyov (2019). For the multidimensional diagnostic assessment of the coping behaviour repertoire, classical coping strategy measurement instruments were employed: specifically, the transactional behavioural effort assessment tool of R.S. Lazarus & S. Folkman (1984) in a standardised translation, as well as the adapted Coping Strategy Diagnostic Inventory of E. Heim (1988).

The most extensive block of the study – concerned with the spiritual-existential dimension of psychological resilience in combatants – comprised a combination of several scales. The individual's basic capacity for adaptive recovery was measured using the CD-RISC-10 resilience scale of K.M. Connor & J.R. Davidson (2003), supplemented by the S.R. Maddi (2002) Hardiness Survey. To provide a holistic picture of value-meaning integration in the individual during intensive combat operations, the Spiritual Health Assessment Scale (SHAS) was employed in the Ukrainian-language adaptation of O. Lazorko (2021). IBM SPSS Statistics 20.00 specialist software was used to process the empirical data arrays. Normality of distribution was assessed using the Shapiro-Wilk test, and homogeneity of variance was evaluated using Levene's test. For comparison of mean values across independent samples, parametric one-way analysis of variance with Tukey's post-hoc test and the non-parametric Kruskal-Wallis H-test with the Mann-Whitney U-test were applied. Causal relationships were established using Spearman's correlation analysis and multiple linear regression analysis. To minimise the probability of a Type I error and to confirm the high reliability of the results, the threshold level of statistical significance for key regression models and correlations was set at $p \leq 0.001$. To reduce the results of all five differently scaled dimensions (regulatory, personal, emotional-cognitive, behavioural, and spiritual-existential) to a single mathematical denominator, an intermediate procedure of mathematical standardisation of raw scores was implemented. The standardised scores thus obtained were then proportionally transformed into a single, readily interpretable 3-point scale. This permitted the calculation of a valid Integral Psychological Resilience Index (IPRI), in which values are interpreted along a continuum from 1 (critical deficit) to 3 (optimal level of resilience).

◆ Results and Discussion

The study encompassed two significant chronological surveys, allowing the influence of the combat stress ecology on the development of resilience to be traced. Within the first, baseline survey (2020-2021), the aim of which was to obtain an initial array of empirical data on the structural and level characteristics of psychological resilience and the dominant coping strategies of personnel under conditions of low-intensity positional warfare (JFO), 115 Marine Corps service personnel were examined. Differentiation of the sample by status and rank category ensured the necessary representativeness: 28 individuals (24.34%) were officers, 32 individuals (27.82%) were contract service personnel, and 55 individuals (47.82%) were conscript service personnel. The conscript category was treated as a scientifically valid analogue group for contemporary recruits aged 18-25 undergoing basic general military training. At this stage, 28.57% of officers, 12.50% of contract personnel, and 100.00% of conscripts had no direct combat experience at the line of contact. Given the fundamental transformation of the operational-tactical, social, and existential reality brought about by the onset of the full-scale invasion, there

arose an objective necessity to expand the methodological scope of the study. In 2023-2024, an additional, extended empirical survey was organised and conducted, directed at analysing the mechanisms of individual survival under conditions of extreme allostatic load. The survey involved 120 service personnel from a separate Marine Corps unit: 50 officers (41.67%) and 70 other ranks and non-commissioned officers (58.33%). A critically important methodological condition was that 100% of the current study sample had direct experience of high-intensity combat, with the absolute majority (84.00% of officers and 82.86% of other ranks) having continuous combat experience exceeding 12

months. The testing procedure was conducted exclusively during periods of temporary withdrawal of units from the combat zone to recovery stages. This made it possible to avoid the distortion of results by acute sympatho-adrenal hyperactivation and to record the deep, genuine changes in the structure of psychological dispositions and the prodromal symptoms of cumulative combat fatigue. With the aim of identifying the key causal relationships between a combatant's specific coping behaviour repertoire and their overall resilience level, correlation analysis and multiple linear regression were applied to the baseline survey data (JFO period, $n = 115$) (Table 1).

Table 1. Intercorrelation matrix of key components of psychological resilience (based on data from the 2020-2021 survey)

Predictor variable 1	Target variable 2	Spearman's coefficient (r_s)	Significance level (p)
Planning (SRQ subscale)	Overall resilience (CD-RISC-10)	0.62	≤ 0.001
Positive reappraisal	Self-actualisation (SHAS)	0.55	≤ 0.001
Escape-avoidance	Overall resilience (CD-RISC-10)	-0.59	≤ 0.001
Escape-avoidance	Neuroticism (Big Five Locator)	0.61	≤ 0.001
Confrontative coping	Self-realisation (SHAS)	-0.48	≤ 0.05

Source: developed by the author

The highly significant correlational relationships established demonstrate the coherence of the adaptation mechanisms. A high level of internal cognitive structuring – “Planning” as per M.V. Yatsiuk (2023) – positively determines the capacity for adaptive recovery (CD-RISC-10) ($r = 0.62$). The synergy between “Positive reappraisal” and existential “Self-actualisation” confirms the unity of cognitive reframing and meaning-making processes ($r_s = 0.55$).

Concurrently, a strong negative relationship was identified between the avoidance strategy and overall resilience ($r_s = -0.59$), which mathematically illustrates the mechanism of psychological maladaptation. To mathematically demonstrate the predictive weight of each strategy in the formation of overall resilience, multiple linear regression analysis (stepwise method) was applied. The overall resilience index served as the dependent variable (Table 2).

Table 2. Results of multiple linear regression of predictors of psychological resilience (based on data from the 2020-2021 survey)

Independent variables (predictors)	Standardised β -coefficient	t-statistic value	Significance level (p)
Planning (self-regulation style)	0.41	4.85	≤ 0.001
Positive reappraisal	0.35	4.12	≤ 0.001
Distancing and escape-avoidance	-0.38	-4.56	≤ 0.001

Source: developed by the author

The resulting regression model proved highly significant: $R^2 = 0.54$ (Adjusted $R^2 = 0.52$; $F = 43.43$; $p \leq 0.001$). It corroborates the research hypothesis: 54% of the variance in the integral resilience level within the Marine Corps sample is accounted for exclusively by the specific coping strategy repertoire employed. The greatest constructive contribution is made by the capacity for autonomous planning ($\beta = 0.41$) and positive reappraisal of traumatic experience ($\beta = 0.35$). A thorough theoretical and mathematical analysis of the baseline survey data confirmed the presence of significant structural differences in the psychological architecture of resilience as a function of service personnel's status and age. Investigation of the personality component using the Big Five Locator subscales revealed a phenomenally high level of “Conscientiousness” among the officer corps: 96.4% demonstrated the highest level of development of this factor. From the perspective of military stress psychology, this indicator determines the

capacity for continuous cognitive structuring of combat activity algorithms and strict adherence to safety protocols. In synergistic combination with low and moderate levels of “Neuroticism” (only 7.1% of officers exhibited a high level of anxiety), this dispositional matrix guaranteed a high degree of composure and rationality in command decisions. Conversely, the presence of elevated neuroticism among conscript personnel (16.4%) was attributed to the cumulative effect of primary neurotic sensitisation resulting from exposure to the harsh stressors of the military environment.

Analysis of the regulatory component confirmed the direct causal relationship between dispositional conscientiousness and autonomous behavioural management skills. On the “Planning” subscale, 64.3% of officers demonstrated a high level of goal-setting maturity, whilst the scores of conscripts were markedly lower (36.4% at the high level). A gap was also recorded on the “Results evaluation” subscale: 60.7% of officers attained a high level, compared

with only 21.8% among conscripts, with 32.7% of the latter falling at a critically low level. This empirical dataset statistically corroborates the neurobiological hypothesis concerning the incomplete structural maturation and myelination of the prefrontal cortex in the 18-25 age group (early adulthood). Accordingly, the limited capacity for reflection and affect inhibition in recruits gives rise to their objective need for external management and detailed algorithms during basic training. Investigation of the emotional, cognitive, and behavioural components of coping behaviour revealed that in all three groups, “relatively productive” coping strategies predominated (50.0% in officers, 68.7% in contract personnel, 69.1% in conscripts). This indicates that within the military environment, ideal “productive” models are frequently unattainable in energetic terms, and individuals resort to compensatory mechanisms. Based on the R.S. Lazarus & S. Folkman (1984) model, 25.0% of officers and 40.6% of contract personnel demonstrated high engagement with the problem-focused strategy of “Planful problem-solving”. Conscripts, by contrast, were oriented towards the strategy of “Seeking social support” (80.0% at the moderate

level) and defensive “Distancing” (76.4% at the moderate level) as an attempt at derealisation from traumatic circumstances. Investigation of the existential dimension using the CD-RISC-10 “Resilience” scale showed that 64.3% of officers and 50.0% of contract service personnel confidently demonstrated a high level of overall adaptive recovery capacity. On the S.R. Maddi (2002) Hardiness Survey, a high level of “Commitment” (82.1% in officers) served as a catalyst for the transition to an active, subjective position of “author of one’s own life”. On the SHAS, 50.0% of officers attained a high level of “Self-realisation”, which functioned as the most powerful internal safeguard against personal disintegration. Given that the regression analysis had confirmed the critical significance of planning and reappraisal strategies for the preservation of combat effectiveness, the next task was to investigate the state of these mechanisms under conditions of the extreme allostatic load of full-scale warfare. The extended empirical survey (2023-2024, $n = 120$) revealed a systemic, mathematically confirmed tendency towards a decline in higher executive functions and extreme entropy in multi-domain combat (Fig. 1).

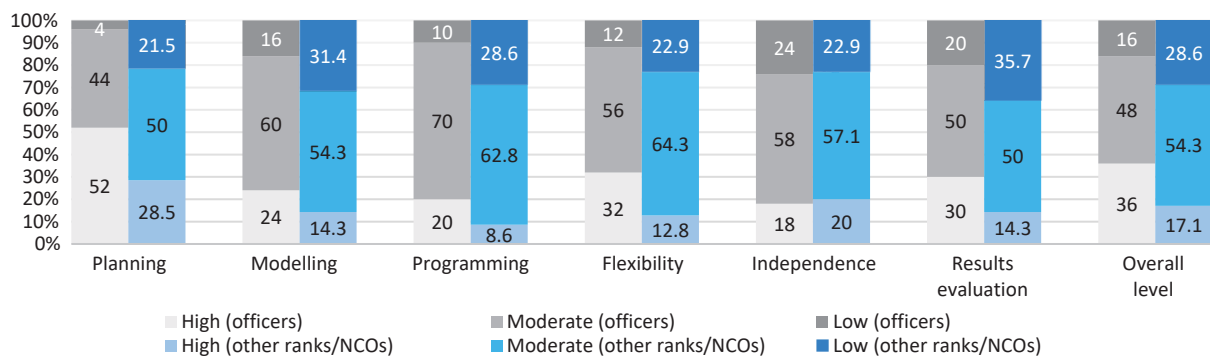


Figure 1. Distribution of service personnel by levels of development of the regulatory component (2023-2024 survey)

Source: developed by the author

Analysis of variance confirms a decline in autonomous cognitive structuring of activity. On the “Planning” sub-scale, the percentage of officers with a high level decreased from 64.3% (during the JFO period) to 52.0%. Among other ranks, the decline was to 28.5% at the high level, with a rise to 21.5% at the low level. This empirical finding substantiates the phenomenon of “cognitive narrowing”: under conditions of unpredictable artillery bombardment, the service member’s brain abandons macro-level planning, reducing the horizon of anticipation to the nearest hours in order to conserve physiological resources. Figure 2 illustrates how various aspects of personal and spiritual resilience change under conditions of extreme stress.

Analysis of the personality component revealed a surge in “Neuroticism” scale scores. Whereas in peacetime only 7.1% of officers exhibited high emotional instability, under conditions of full-scale warfare this figure rose to 28.0% among officers and 40.0% among other ranks. In accordance with the allostatic load concept,

this represents a biologically appropriate response of a traumatised nervous system to chronic sympatho-adrenal hyperactivation, rather than evidence of personal deterioration. At the same time, officers manage to maintain a high level of “Conscientiousness” (82.0%), which functions as a disciplinary exoskeleton sustaining unit command. The existential profile demonstrates substantial transformation. A decline is observed in the “Control” scale of the S.R. Maddi (2002) test (to 28.6% at the high level among other ranks), which is a rational reflection of the uncontrollability of macro-level threats. However, a high level of “Commitment” (76.0% in officers) and spiritual “Self-realisation” (44.0%) compensates for this loss. The presence of a higher existential meaning to the struggle acts as a defence against moral injury and enables the pain of loss to be integrated into a heroic narrative. Figure 3 illustrates the intensity of behavioural coping strategies as assessed by the R.S. Lazarus & S. Folkman (1984) instrument.

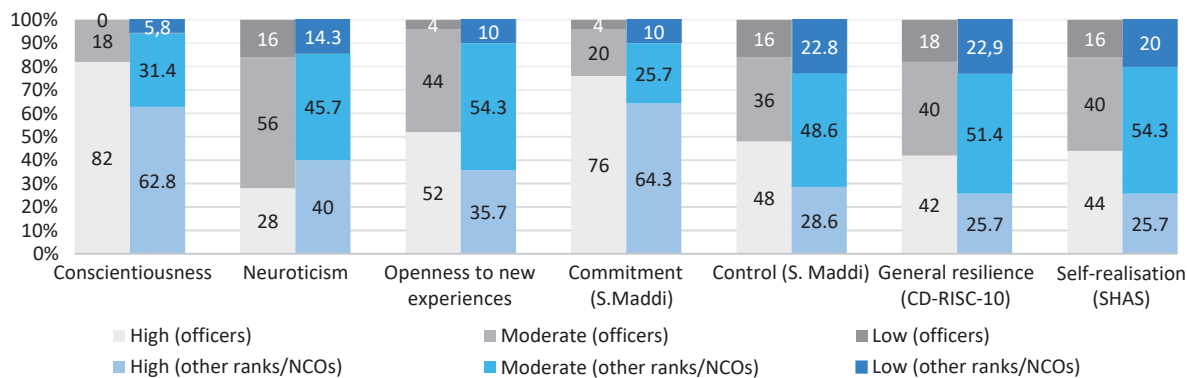


Figure 2. Distribution of service personnel by levels of development of the personality and spiritual-existential components (2023-2024 survey)

Source: developed by the author

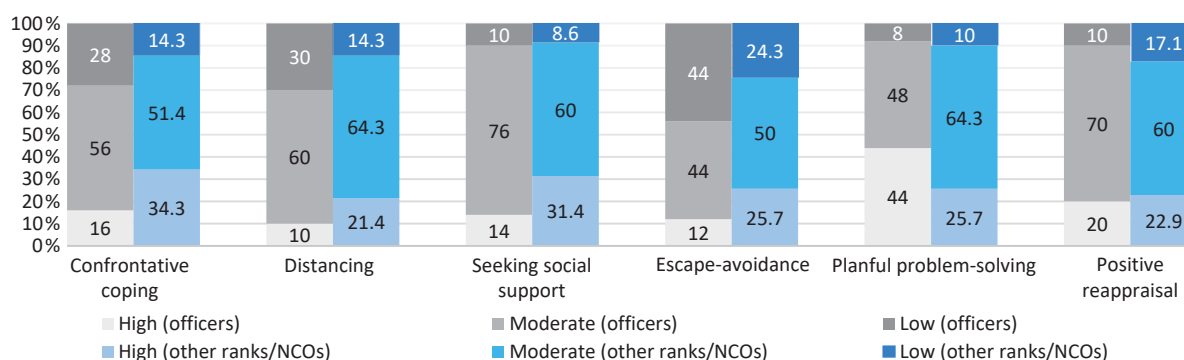


Figure 3. Levels of intensity of behavioural coping strategies (2023-2024 survey)

Source: developed by the author based on the R.S. Lazarus & S. Folkman (1984) instrument

Analysis of the transactional model of R.S. Lazarus & S. Folkman (1984) confirms the objective decline in the use of the problem-focused strategy of “Planful problem-solving”. In lieu of instrumental control over objectively uncontrollable stressors, other ranks resort to an ambivalent combination: a rise in “Confrontative coping” (34.3% at the high level) alongside the macro-strategy of “Seeking social support” (31.4% at the high level, 60.0% at the

moderate level). The increase in social support-seeking demonstrates an evolutionary transition from individual survival to collective resilience (combat fellowship). The E. Heim (1988) instrument records a concerning rise in non-productive emotional coping strategies (up to 35.7% among other ranks), such as emotional suppression or dissociation, which serve as a temporary but destructive shield against traumatic reality (Fig. 4).

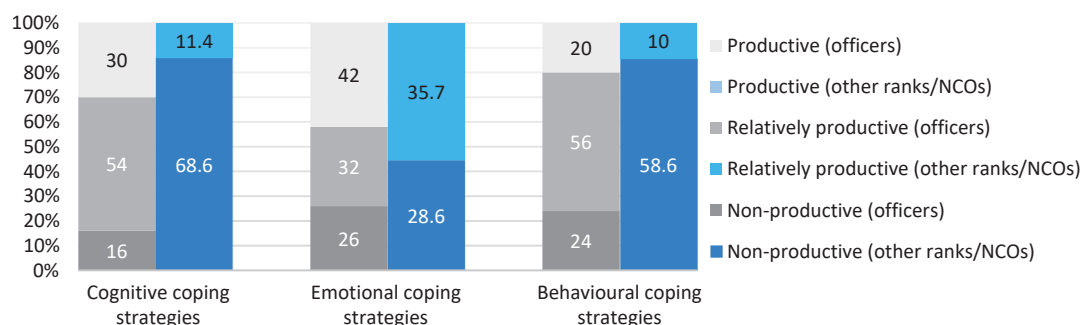


Figure 4. Level of adaptiveness of coping strategies (2023-2024 survey)

Source: developed by the author based on the E. Heim (1988) instrument

For an objective assessment of the “Overall resilience” of combatants, the standardised results obtained were proportionally represented on a 3-point scale, where values

are interpreted along a continuum from 1 (critical deficit) to 3 (optimal level of resilience). This permitted the calculation of a valid IPRI (Table 3).

Table 3. IPRI of Marine Corps service personnel

Structural component	Officers (2020-2021)	Officers (2023-2024)	Other ranks/NCOs (2020-2021)	Other ranks/NCOs (2023-2024)
Regulatory (SRQ)	2.54	2.15	2.13	1.95
Personality (Big Five Locator)	2.61	2.25	2.33	2.05
Emotional-cognitive (E. Heim)	2.38	2.10	2.36	2.01
Behavioural (R.S. Lazarus & S. Folkman)	2.25	2.05	2.06	1.98
Spiritual (CD-RISC, SHAS)	2.58	2.58	2.25	2.25
IPRI	2.47	2.22	2.22	2.04

Note: to ensure the statistical correctness of the comparative analysis, the baseline scores for other ranks/NCOs for the JFO period were calculated as the weighted mean value of the aggregated sample of contract service personnel

Source: developed by the author

Mathematical analysis of the IPRI reliably establishes a systemic decline in psychological resilience as a consequence of the extreme intensification of combat operations. The integral index for officers declined from an optimal level of 2.47 to 2.22. The index for other ranks declined to 2.04, approaching a high level of maladaptation. At the same time, the spiritual-existential component among officers remained at a consistently high level (2.58), which corroborates the thesis concerning the inexhaustible nature of the value-meaning resource even in conditions where the organism's biological capacities are approaching their absolute limit. The empirical data on the profound transformation of coping behaviour in combatants, obtained through the sequential cross-sectional surveys of 2020-2024, require extensive existential and theoretical revision in the context of comparison with classical paradigms of stress psychology. The fundamental theoretical basis for analysing coping mechanisms has traditionally been the transactional multicomponent model of R.S. Lazarus & S. Folkman (1984), which dichotomously divided behavioural efforts into problem-focused (directed at the instrumental elimination of the stressor) and emotion-focused (directed at the regulation of internal distress). According to classical views, actively supported in the works of C.S. Carver *et al.* (1989) and J.D.A. Parker & N.S. Endler (1992), active, direct problem-solving is regarded as the most adaptive, "mature" approach. However, the results of this empirical study demonstrate that the direct, uncritical extrapolation of the transactional model to the specific context of Marine Corps combat activity in conditions of full-scale war of attrition is methodologically limited. Under conditions of prolonged artillery bombardment or mass drone attacks, the external macro-stressor is objectively and absolutely uncontrollable by an isolated infantryman. Accordingly, the deployment of the "Planful problem-solving" strategy proves physically and tactically impossible. This explains the empirically recorded significant decline in scores on this cognitive scale.

In this context, those strategies commonly stigmatised as maladaptive – such as rigid emotional distancing, temporary suppression of affect, or episodic derealisation – acquire, directly within the epicentre of combat, a critically important compensatory function. They serve as the only physiologically accessible protective mechanisms capable

of preventing the irreversible psychotic disintegration of the individual under colossal vital pressure. This observation finds conceptual support in the findings of A.G. Billings & R.H. Moos (1984), who demonstrated that emotion-focused coping and behavioural avoidance can serve as effective life-preserving mechanisms in the context of massive, subject-uncontrollable trauma. The adaptiveness of a coping strategy in contemporary combat is measured not by the ability to achieve emotional catharsis, but exclusively by the ability to conserve residual energy for the purpose of basic biological survival and functional combat effectiveness. This energetic survival paradigm is most fully explained through the lens of the resource-salutogenic paradigm and S.E. Hobfoll's (1989) Conservation of Resources theory. According to this conceptual framework, under conditions of intense, permanent distress, individuals instinctively seek to minimise resource losses. The study empirically demonstrated that exposure of combatants to conditions of vital threat for over 12 consecutive months without deep rotation inevitably triggers a "loss spiral". The adaptive resources of the central nervous system are depleted many times faster than they can be replenished during the brief intervals between active combat operations. This is directly manifested in the recorded rise in neuroticism. Comparing the findings with the resilience reintegration model of G.E. Richardson *et al.* (1990), which described the process of staged response to unexpected "life disruptions" and subsequent post-traumatic growth, it is necessary to note its limitations within the military context. The G.E. Richardson *et al.* model conceptualises stress predominantly as a singular, episodic event. However, the harsh conditions of multi-domain warfare represent a state of chronic allostatic load in which basic physiological homeostasis is practically unattainable over many months. In this situation, the salutogenic approach of A. Antonovsky (1979) proves more apposite, with its emphasis on the identification of sources of health and the individual's capacity for a sense of coherence in their own existence even within an extreme, lethal, pathogenic environment. This is directly corroborated by the findings of the present study: the high scores for "Commitment" and existential "Self-realisation" among experienced officers function as the most powerful internal antidote against the development of moral injury. The results obtained closely

correlate with the longitudinal research of P.T. Bartone (1999), who demonstrated the exceptional protective role of dispositional hardiness in military units, which prevents the onset of combat psychoses.

Examining the comprehensive neurobiological and psychosocial resilience model of S.M. Southwick & D.S. Charney (2018), the present study is consistent with the identification of 10 key resilience predictors (such as realistic optimism, the presence of a moral compass, and strong social support). However, the aforementioned model is predominantly descriptive in character, ideally representing the psychological profile of an already formed, mature veteran personality. Given the current manning conditions of the AFU, where mass conscription predominates, there exists an acute and objective need for procedural, didactic tools – step-by-step algorithms for cultivating these qualities within the constrained timeframes of basic training.

The professional activity of a Marine Corps service member is accompanied by the macro-factor of “active hostile intention” – the presence of an intellectually and technologically capable adversary whose sole objective is the physical elimination of the subject. The psychological readiness model of V.V. Stasiuk & R. Seheida (2025), encompassing the capacity for volitional effort and military fellowship, has demonstrated its high effectiveness for career officers, but requires urgent adaptation and the operationalisation of specific behavioural indicators for mobilised other ranks in wartime conditions. The analysis conducted regarding the applicability of classical theories to the harsh realities of full-scale warfare substantiated the acute necessity of developing innovative instruments. Drawing on this analysis and the research findings, a four-block “Model for the development and enhancement of resilience in Marine Corps service personnel” was developed (Fig. 5).

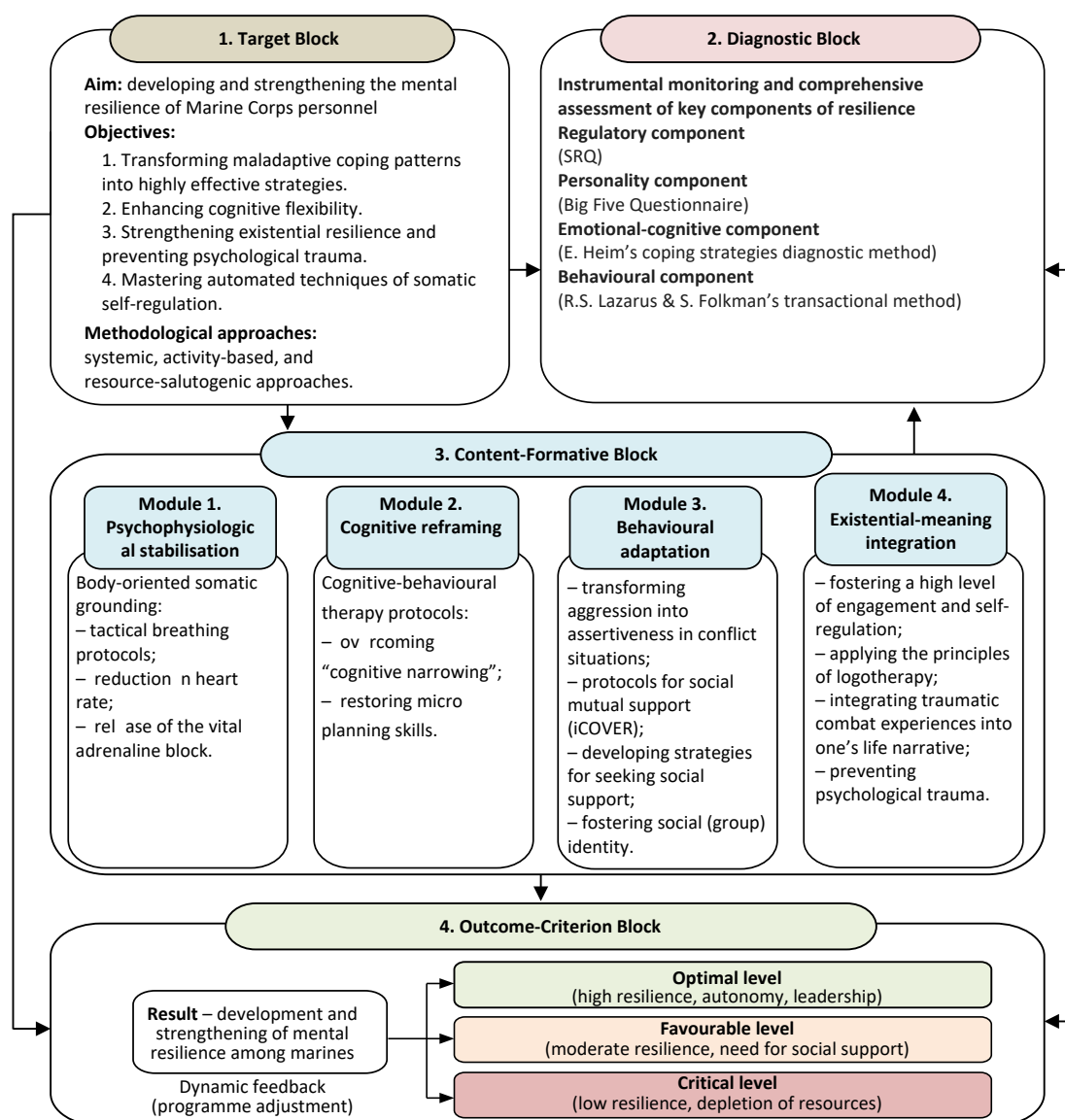


Figure 5. A model for the development and enhancement of psychological resilience in Marine Corps service personnel of the AFU through coping strategies

Source: developed by the author

The proposed original structural-functional resilience model is conceptualised in the form of four inter-related blocks:

1. The Target Block constitutes the key vector of the system, defining the purposeful transformation of maladaptive responses to multi-domain stress into a stable resilient profile on the basis of a resource-salutogenic approach. It shifts the focus away from the pathologisation of trauma towards the stimulation of post-traumatic growth mechanisms.

2. The Diagnostic Block provides instrumental monitoring through the integration of five dimensions (regulatory, personality, emotional-cognitive, behavioural, and spiritual-existential) by means of psychometric instruments and an algorithm for calculating the Integral Psychological Resilience Index.

3. The Content-Formative Block constitutes the therapeutic core of the model and has a multilevel structure comprising four modules. Module 1 (Psychophysiological stabilisation): building upon amygdala hyperactivation, interventions are initiated exclusively through body-oriented somatic grounding (tactical breathing protocols, heart rate reduction) to remove the vital adrenal block. Module 2 (Cognitive reframing): following regulation of the sympatho-adrenal response, cognitive-behavioural therapy protocols are applied to address “cognitive narrowing” and to restore micro-planning skills. Module 3 (Behavioural adaptation): diffuse aggression is transformed into combat assertiveness, and social mutual-support protocols (iCOVER) are implemented to crystallise combat cohesion. Module 4 (Existential-meaning integration): drawing on the logotherapy of V. Frankl (2020), this module provides deep-level sense-making of losses and the prevention of moral injury through the formation of a narrative of the conscious warrior-subject.

4. The Outcome-Criterion Block defines a comprehensive system of criteria and stratifies individuals into three levels of resilience formation: optimal, favourable (requiring social support), and critical (requiring medical-psychological evacuation and rehabilitation). An embedded dynamic feedback mechanism ensures continuous programme adjustment.

The advantage and specific relevance of this four-block model for the Marine Corps context lies in the fact that it does not disregard the physiological reality of combat trauma. It does not attempt cognitive or rational interventions prior to the restoration of basic neurobiological stability (via Module 1), which critically distinguishes it from existing general-theoretical analogues and ensures high implementation effectiveness within the constrained timeframes of basic general military training.

◆ Conclusions

The findings of the study confirmed the importance of developing psychological resilience among service personnel in the context of combat stress and its influence on coping strategies. In particular, the results demonstrated that

the capacity for planning and positive reappraisal of traumatic experience are the primary factors contributing to individual resilience in wartime. Through the application of multiple regression analysis to the baseline survey data (2020-2021), it was mathematically established that an individual's repertoire of productive coping strategies (planning, positive reappraisal) constitutes a powerful predictor accounting for 54% of the variance in the overall level of psychological resilience among Marine Corps service personnel. Multivariate comparative analysis of the datasets from the positional warfare baseline survey and the extended survey from the period of full-scale armed aggression (2023-2024) demonstrated a fundamental transformation in the ecology of combat stress. As a consequence of chronic allostatic load, a systemic decline in the IPRI of Marine Corps personnel was recorded, reaching a level of 2.04 among other rank combatants. The phenomenology of adaptation to hyperstress was identified: the emergence of the “cognitive narrowing” phenomenon, an exponential rise in dispositional neuroticism, and a compelled, biologically determined shift towards strategies of rigid emotional distancing and the pursuit of macro-social support (military fellowship) as a compensatory survival mechanism in response to the loss of instrumental control under conditions of mass employment of artillery, precision-guided aerial bombs, and other high-precision weaponry. On the basis of the identified empirical deficits and neurobiological regularities, an original four-block (target, diagnostic, content-formative, outcome-criterion) structural-functional “Model for the development and enhancement of psychological resilience in Marine Corps service personnel of the AFU through coping strategies” was elaborated. Its specific relevance and advantage lies in its non-linear architecture: psychological intervention is initiated with the restoration of somatic stabilisation of the autonomic nervous system, followed by a staged progression to cognitive reframing, the formation of combat cohesion, and existential-meaning logotherapy. Further research may focus on the development of methods for sustaining and restoring psychological resilience under conditions of high-intensity combat operations, including the expansion of social and psychological strategies to assist in the preservation of collective resilience.

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◆ Conflict of Interest

None.

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Модель розвитку та зміцнення резильєнтності особистості військовослужбовця морської піхоти Збройних Сил України за допомогою копінг-стратегій

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♦ **Анотація.** Актуальність роботи обумовлена необхідністю перегляду класичних парадигм збереження психічного здоров'я комбатантів у контексті радикальних змін екології бойового стресу, викликаних повномасштабною агресією Росії, масованим використанням новітніх засобів ураження та хронічним алостатичним навантаженням. Мета дослідження – емпірично дослідити трансформацію структурно-рівневих характеристик психічної резильєнтності та репертуару копінг-стратегій військовослужбовців морської піхоти Збройних Сил України під впливом високоінтенсивних бойових дій, а також розробити й теоретично та математично обґрунтувати комплексну структурно-функціональну модель оптимізації долаючої поведінки. Дослідження базувалося на чіткому методологічному дизайні і серії послідовних крос-секційних (поперечних) зрізів (2020-2024 роки). Емпіричну базу склали військовослужбовці підрозділів морської піхоти Збройних Сил України: констатувальний зріз умов позиційної війни (2020-2021, $n = 115$) та розширений зріз періоду повномасштабного вторгнення (2023-2024, $n = 120$). У дослідженні застосовано комплекс сучасних психодіагностичних методик в українських адаптаціях: «Опитувальник стилю саморегуляції поведінки» (SRQ), «Локатор Великої п'ятірки», методики діагностики копінг-стратегій Е. Heim та R.S. Lazarus & S. Folkman, тест життєстійкості S.R. Maddi, шкалу резильєнтності CD-RISC-10 та шкалу оцінки духовного здоров'я SHAS. Статистична обробка (IBM SPSS Statistics) включала дисперсійний аналіз, Н-критерій Краскала-Волліса, кореляційний аналіз Спірмена та множинну лінійну регресію. На матеріалі первинного зрізу (2020-2021) математично доведено, що репертуар копінг-стратегій (насамперед автономне планування та позитивна переоцінка) виступає потужним предиктором, який пояснює 54 % дисперсії загального рівня психічної резильєнтності індивіда. Натомість, порівняльний аналіз розширеного зрізу виявив зниження Інтегрального показника психічної резильєнтності під впливом повномасштабної війни. Зафіксовано зростання рівня нейротизму, виникнення феномену «когнітивного звуження» зі зниженням здатності до довгострокового автономного планування та масивний компенсаторний перехід до стратегій емоційного дистанціювання і пошуку соціальної підтримки (колективної резильєнтності). На основі ідентифікованих емпіричних дефіцитів розроблено авторську 4-блокову (цільовий, діагностичний, змістово-формульований, результативно-критеріальний) структурно-функціональну модель розвитку резильєнтності

♦ **Ключові слова:** життєстійкість; психологічна готовність; бойовий стрес; психічне здоров'я; повномасштабна війна