

COGNITIVE AND EMOTIONAL FEATURES OF DECISION-MAKING BY MILITARY PERSONNEL UNDER COMBAT STRESS (literature review)

Klymkiv R.I.¹, Kulmatytskyi A.V.², Bilobryn M.S.²

¹Communal Institution of Lviv Regional Council "Andrey Krupynsky Lviv Medical Academy",
Lviv, Ukraine

²Danylo Halytsky Lviv National Medical University, Lviv, Ukraine

<https://doi.org/10.35339/ic.2025.12.2.kkb>

ABSTRACT

In the context of combat operations, military personnel are constantly in situations that require psychological resilience. Encountering combat stress is an integral part of military activity, accompanied by significant physical and psycho-emotional strain, and often leads to the deterioration of soldiers' mental health, complicating the decision-making process. This creates an urgent need to develop effective strategies for psychological support and adaptation after combat stress exposure. The aim of this study is to search for and analyse modern scientific literature to systematise data concerning the cognitive and emotional features of decision-making by military personnel under combat stress. In the process of research, the method of system analysis, comparative and bibliosemantic methods were used. The cognitive and emotional characteristics of decision-making under combat stress were examined. The study highlights the complexity and variability of behavioural, cognitive, and emotional reactions to combat stress. It was found that cognitive and emotional factors are key components of the decision-making process, emphasising the importance of timely and effective psychological support following combat stress. It is emphasised that personal traits of military personnel – such as psychological resilience, adaptability, resilience (hardiness), internal potential, emotional regulation, motivation and persistence, as well as high levels of positive emotions and low levels of anger, impulsivity, anxiety, and vulnerability – contribute to effective decision-making in stressful conditions. It was established that the effects of combat stress can vary significantly depending on individual traits and the cognitive and emotional characteristics of the military personnel. Further research will focus on studying the effectiveness of various psychological interventions aimed at reducing the negative consequences of combat stress, as well as analysing their impact on the cognitive and emotional characteristics of military personnel.

Keywords: *post-traumatic stress disorder, stress management, stress resistance, individual characteristics.*

Introduction

War leads to a variety of injuries among both military personnel and civilians in combat zones. These include both physical and psychological harm, and are accompanied by destruction, significant economic and social losses, all of which have long-term negative consequences [1; 2]. Combat

injuries and stress can result in serious physical and mental disorders. Soldiers on the front line are exposed to events that may negatively affect their mental health, causing conditions such as stress, depression, anxiety, emotional disorders, and the development of post-traumatic stress disorder [3–7].

Stress arises when an individual feels that the demands of a situation – environmental or social – exceed their adaptive capacity. Stressful situations are often new, uncontrollable, unpredictable, or threatening. Military personnel frequently face the challenge of maintaining cognitive abilities in complex and uncertain conditions. Maximum effectiveness in such situations requires enhanced cognitive control, which enables individuals to stay focused and act in line with their goals. Research

Corresponding Author:

Klymkiv Roksolana – MD, PhD, practical psychologist of the Department of mental and physical health of the Communal Institution of Lviv Regional Council "Andrey Krupynsky Lviv Medical Academy", Ukraine.

✉ Ukraine, 79000, Lviv, P. Doroshenko str., 70.

E-mail: r.klymkiv@gmail.com

shows that moderate or high levels of stress can negatively affect performance on tasks that require executive functions, memory retrieval, and the functioning of the prefrontal cortex of the brain [8].

Service members in stressful situations must exercise extreme caution when making important decisions that concern not only their duties but also their personal lives. In such conditions, objectivity is significantly impaired, as behaviour is mainly driven by emotions rather than logic. Stressful situations often provoke risky decisions that may seem justified at the time.

The **aim** of the study was to conduct a search and analysis of contemporary scientific literature to systematise data regarding the cognitive and emotional characteristics of decision-making by military personnel under combat stress.

Materials and Methods

The study employed analytical methods, including systemic comparative analysis and bibliosemantic methods, which enabled the study of data from modern scientific literature on the cognitive and emotional aspects of decision-making by military personnel under combat stress. The research was conducted through searches in electronic databases, including Web of Science, PubMed, Scopus, and Google Scholar.

Results

During wartime, military personnel must prepare daily for crisis situations that threaten life and must be able to respond effectively. This way of life places a significant burden on service members, especially those who are isolated from support systems and other resources available under combat stress conditions. Combat stress is a response to extreme conditions that may result in the loss of another person's life or even pose a threat to one's own life. Thus, combat stress may result from a range of stressors, including life-threatening events, injuries, or the death of fellow soldiers.

Combat stressors include such traumas as injury, attempted attacks on one's unit, killing, witnessing death, and the death of a unit member. Feelings of guilt, horror, anger, and hopelessness are natural in civilian life, and in a military context, these stresses are compounded by other stressors. Deployment in harsh climates with limited resources leads to problems such as malnutrition and dehydration, physical exhaustion, and separation from family and social support. The military service may cause sensory overload and/or sensory deprivation [9; 10]. Furthermore, sol-

diers may experience a shift in moral values, leading to emotions such as shame, guilt, anger, and the breakdown of core beliefs, including self-blame, disillusionment, and loss of faith and trust in others. Emotional distress arising from the discrepancy between high moral beliefs and forced low-moral behaviour is defined as moral injury [6; 11].

Numerous studies show that performance under stress is influenced by various human parameters, including physical, cognitive, social, emotional factors, and health status. Stress arises when the novelty, uncontrollability, unpredictability, or threatening nature of a situation exceeds or burdens an individual's adaptive resources [9; 12; 13]. Cognitive abilities include various characteristics that allow individuals to acquire, retain, and flexibly use information. Evidence suggests that these traits affect performance during cognitive and physical stress. For example, people with lower working memory capacity at rest often demonstrate improved working memory after physical exercise, indicating that the impact of physical stress may vary depending on individual cognitive traits. Individual differences in the ability to perform executive functions may explain variations in self-regulation of physical endurance. Cognitive factors contribute to maintaining individual decision-making effectiveness under stress [12].

Military personnel often face the challenge of maintaining cognitive abilities under complex and uncertain conditions. Maximum performance in such stressful situations requires enhanced cognitive control to maintain focus and carry out goal-directed actions. Research shows that moderate or high levels of stress can negatively impact task performance and decision-making abilities, particularly those requiring executive processes, memory retrieval, and prefrontal cortex functioning [9].

Numerous studies have led to the development of the concept of cognitive resilience, which refers to the extent to which cognitive functions can withstand or be resistant to stress. Cognitive resilience is defined as "the ability to overcome the negative consequences of failure and associated stress on cognitive functions or performance". This definition retains the core characteristics of psychological resilience in the face of adversity – or, in this case, stress – and positive adaptation [10].

It has been established that different individuals respond to stress differently and regulate their emotions in various ways. In some cases, an acute stress reaction is observed, followed by rapid reco-

very without changes to one's usual way of life. Meanwhile, others require support and face serious mental health challenges. All of this affects the decision-making process.

The concept of "decision-making" encompasses a fundamental skill or instrumental ability that enables a person to choose an appropriate course of action from several alternatives [14–16]. A growing body of research suggests that individuals have an inherent tendency to rely on either rational or intuitive processes when making decisions [17].

The decision-making process involves both cognitive and emotional components. This conscious process is linked to executive functions and requires high-level cognitive abilities to regulate emotions, thoughts, and behaviour. For military personnel to make decisions, a balance between logic and emotion must be achieved. The ability to manage emotions is a key skill that supports reasoned decision-making in stressful conditions, especially during combat stress. "Emotion regulation" involves strategies such as cognitive reappraisal, reducing reactivity, and mindful observation of one's own emotional processes. "Positive emotions", in turn, contribute to favourable decision-making, foster resilience to challenges, and are associated with personality traits such as extraversion, openness, and agreeableness.

Stress has a variety of consequences for cognitive and emotional functions. One of the professional activities that is particularly susceptible to acute cognitive changes caused by stress is work under high-stress conditions (for example, military service). These individuals often have to maintain maximum cognitive performance, including memory, spatial navigation, and decision-making, in threatening and uncertain conditions [18]. Neuroimaging studies suggest that brain areas involved in decision-making are sensitive to changes caused by stress responses, and behavioural studies support the hypothesis that stress affects decision-making processes [17].

Research shows that the socio-emotional domain is crucial to the decision-making process. It includes emotional competence (such as self-awareness, social awareness, and emotion regulation) and relational/prosocial skills (such as the ability to build relationships and resolve social problems). Individual differences in socio-emotional functioning influence performance outcomes in stressful situations. Additionally, a high level of detail orientation promotes more effective decision-making. Personal characteristics such as the ability to regulate emotions, resilience, achieve-

vement motivation, and perseverance, along with high levels of positive emotions and low levels of anger, impulsivity, anxiety, and vulnerability, contribute to enhanced cognitive performance under combat stress [12].

Combat and operational stress reactions are psychological and biological effects that develop over time and may lead to psychological disorders, including post-traumatic stress disorder [9]. Emotional responses to stress, such as in the case of combat stress, may occur automatically, before cognitive appraisal, and negatively impact decision-making. Acute stress enhances protective responses designed to safeguard the body from threats (such as heightened startle reflexes or increased environmental vigilance), while simultaneously impairing higher-level cognitive processes that are less critical for immediate harm avoidance. For example, attention bias and excessive threat vigilance may create competition for attention and sensory resources, leading to impaired performance on tasks involving working memory and cognitive flexibility [8].

Under combat stress conditions, the ability of military personnel to successfully cope with difficulties is associated with levels of resilience, stress-coping skills, emotional flexibility, self-efficacy, as well as levels of aggression and endurance [7; 19, 20]. Resilience is the process by which a person demonstrates positive adaptation despite experiencing significant stress in adverse situations [21]. It can also be defined as a trait that reflects certain personal qualities which support successful adaptation to change [10]. An individual's resilience is formed through a combination of internal "assets" (inherent personality characteristics such as problem-solving skills) and external "resources", among which the quality of social support plays an important role. In the face of serious challenges, particularly under combat stress, resilience serves a protective function by helping to reduce the harmful short-term effects of potentially traumatic events and prevent the development of negative mental health outcomes. It has been proven that personal resources and the ability to solve problems are key predictors of psychological response to stress [21].

Among the personal factors that promote post-traumatic growth, maintaining a positive outlook on life is of critical importance as it facilitates successful overcoming of challenges. In addition, personality traits affect performance during stressful situations. Various cognitive, physical, and socio-emotional characteristics have been shown to

influence the task performance of military personnel. Intolerance of uncertainty, that is the inability to tolerate the discomfort caused by a lack of information, is a dispositional trait that may contribute to the development and maintenance of stress and anxiety disorders. Military personnel operating in high-stress, dangerous, and uncertain conditions exhibit greater intolerance of uncertainty compared to civilians. Research indicates that individual differences in this trait affect how potential threats are perceived and responded to, which may lead to different levels of anxiety even under similar conditions and influence decision-making ability [18; 22; 23].

Intolerance of uncertainty is a component of all anxiety disorders and is defined as "a dispositional incapacity of an individual to tolerate the negative response triggered by the perceived absence of important, key, or sufficient information, reinforced by the perception of uncertainty". It encompasses both an emotional component (an aversive reaction) and a cognitive assessment of certainty in each situation. The experience of emotions largely depends on one's beliefs about them. For example, if a person believes they are unable to control a negative emotion in a given situation, their negative emotional experience may intensify. This, in turn, reinforces the belief that uncertainty is inherently negative and should be avoided, thus maintaining and amplifying the vicious cycle of intolerance of uncertainty [23]. Studies by Giles G.E. et al. [13] showed that indicators such as healthy eating, agility, flexibility, cognitive updating, and positive emotions in military personnel predict improved spatial orientation, confidence, and decision-making ability.

Trait anxiety may act as a vulnerability factor for cognitive functioning in the context of post-traumatic symptomatology. Individuals with high anxiety levels report lower rationality and intuition in decision-making, while post-traumatic symptoms are associated with more intuitive strategies. Such individuals tend to make less rational decisions and more frequently display pronounced post-traumatic symptoms. Such individuals are more likely to opt for safer choices under uncertainty and evaluate situations more pessimistically. In contrast, individuals with lower anxiety levels usually demonstrate higher rationality even when experiencing elevated levels of post-traumatic stress [17].

Overall, the findings suggest that personal resources, traits, and inner potential can affect cog-

nitive abilities during stress, facilitate adaptation to stressful conditions, and support effective decision-making. Some of these resources include a positive attitude and positive emotions, the development of which helps maintain emotional balance, improve communication and relationships, increase self-esteem, support constructive conflict resolution, and promote informed decision-making [3; 13].

Psychological interventions for military personnel play a crucial role, along with the timely provision of professional assistance and the development of specialised programmes. Combat and operational stress control requires a comprehensive approach involving structured programmes and measures implemented by military leadership to prevent, detect, and manage combat stress. These programmes are aimed at individuals in risk groups, specific operational zones, and service members exhibiting behavioural signs of combat stress. The primary goal of these measures is to prevent or minimise the potentially negative consequences of stress on the health and combat readiness of military personnel [24].

Conclusions

Combat stress can cause physical, cognitive, and emotional disturbances in military personnel. Its most serious psychological consequences include an increased risk of developing post-traumatic stress disorder, anxiety and depressive disorders, as well as emotional instability. This, in turn, can negatively affect the decision-making process in military personnel. Personal characteristics and inner potential play an important role in cognitive performance during combat stress. In particular, the ability to regulate emotions, resilience, hope, motivation and perseverance, as well as higher levels of positive emotions and lower levels of anger, impulsivity, anxiety, and vulnerability contribute to better adaptation and more effective decision-making under stressful conditions.

The identified influence of cognitive and emotional characteristics on the decision-making process in military personnel highlights the importance of timely and effective psychological support following combat stress.

Further research should focus on examining the effectiveness of various psychological interventions in reducing the negative consequences of combat stress, as well as analysing their impact on the cognitive and emotional characteristics of military personnel.

DECLARATIONS:

Disclosure Statement

The authors have no potential conflicts of interest to disclosure, including specific financial interests, relationships, and/or affiliations relevant to the subject matter or materials included.

Statement of Ethics. The authors have no ethical conflicts to disclosure.

Data Transparency.

The data can be requested from the authors.

Funding Sources.

There are no external sources of funding.

Consent for publication

All authors give their consent to publication.

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Received: 13 May 2025

Accepted: 29 Jun 2025

Published: 30 Jun 2025

Cite in Vancouver style as: Klymkiv RI, Kulmatytskyi AV, Bilobryn MS. Cognitive and emotional features of decision-making by military personnel under combat stress (literature review). *Inter Collegas*. 2025;12(2):47-52. <https://doi.org/10.35339/ic.2025.12.2.kkb>

Archived: <https://doi.org/10.5281/zenodo.17491958>

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