

PSYCHOLOGICAL RESILIENCE FACTORS IN THE CONTEXT OF COGNITIVE WARFARE

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Abstract

In today's highly interconnected world, traditional concepts of warfare have undergone significant transformation. While cognitive warfare is not a new form of conflict, it has gained increased importance due to the rapid advancements in technology and highly intertwined global population. In this paper it is argued that the main goals of cognitive warfare are the manipulation of the cognitive and emotional states of individuals, the influence it has on their decision-making processes and perceptions, with the end goal of the destabilization of targeted societies. The author emphasizes that the factors of psychological resilience play a crucial role in defence, as both individuals and societies have to rely on them to be able to withstand the influence, propaganda and direct manipulation. Furthermore, the author conducts the qualitative analysis of the most important psychological factors of resilience and their role in withstanding the possible threats emerging from the domain of cognitive warfare. Additionally, the author elaborates on the different aspects in combating these modern challenges. Ultimately, the paper examines the broader implications of cognitive warfare and highlights the general significance of psychological factors in maintaining resistance to the consequences of modern cognitive warfare.

Keywords: cognitive warfare, psychological resilience, manipulation

The Concept of Cognitive Warfare

Cognitive warfare is a term that has been growing in recent decades, in both military and academic discourse. The term cognitive warfare is commonly used to describe specific conflict strategies that transcend and expand the scope of the traditional approaches to warfare. The words "cognitive" and "warfare" are joined to describe coordinated efforts that aim to influence how people think and behave, or to disrupt their mental processes, in order to gain an advantage over a rival (Drmotová & Kutej, 2024). Cognitive warfare represents a specific type of conflict, in which the boundaries between war and peace are blurred - it is a covert form of warfare which is aimed at influencing cognitive mechanisms of individuals and masses (Morelle et al., 2023).

Cognitive warfare is not a new concept - it stems from long-standing practices of manipulation and deception in political and military settings, seen as early as in the strategies of Sun Tzu, who noted

that a great military leader is the one who manages to achieve bloodless victory, without resorting to violence, through actions of subversion, stealth and subterfuge (Deppe & Schaal, 2024). Through technological advancements, these actions have significantly expanded their reach and precision: social networks, AI, and big data represent vital new territories for cognitive warfare (Nikoula & McMahon, 2024); because of this amplified reach, there is growing concern in both military and civilian sectors about developing effective resilience strategies, particularly psychological.

The concept of cognitive warfare encompasses different elements of psychology, communication, technology, and cybernetics to influence people's opinions, beliefs, and behaviors (Ferreira et al., 2025). This form of warfare relies on insights from multiple scientific domains, most notably cognitive and behavioral sciences, social and cultural sciences and neuroscience, which are known as "three pillars" in which is required to have knowledge in order to influence or modify target audiences (Knox, 2023).

The term cognitive warfare lacks a universally agreed-upon definition, although some of the common elements can be observed across various interpretations. The phrase "the mind has become a battlefield" is often used as a shorthand definition of cognitive warfare. It could be said that various operations that are carried against the human mind, and which are targeting either individual and/or collective cognition and decision-making processes could be interpreted as acts of cognitive warfare (Morelle et al., 2023). Claverie & Du Cluzel (2021) define cognitive warfare as "unconventional form of warfare that uses cyber tools to alter enemy cognitive processes, exploit mental biases or reflexive thinking, and provoke thought distortions, influence decision making and hinder action, with negative effects" (p. 2).

Cognitive warfare is also seen as its own domain in modern warfare, alongside the four military domains defined by their environment (land, maritime, air and space), all of which are further interconnected through the cyber domain (Claverie& Du Cluzel, 2021). According to Hung & Hung (2022), cognitive warfare should not be viewed as a standalone concept, as it is deeply intertwined with other forms of warfare, such as information warfare and cyber warfare. Cognitive warfare thus appears as information warfare, but with additional "layers" - what distinguishes cognitive warfare is its deliberate focus on cognitive processes, rather than targeting physical or informational systems alone. In other words, primary targets are cognitive processes involved in decision making, perceptions, and beliefs, including heuristics and biases (Borgeauddit Avocat, 2021). The objectives of cognitive warfare extend beyond traditional military goals, as they may include manipulating these very processes to achieve various outcomes, ranging from suppressing critical thinking and provoking specific behaviors within a target population to destabilizing societies. Such operations are particularly insidious because both the individuals targeted and the channels used to influence them are often unaware of the manipulation being used (Claverie & Du Cluzel, 2021; Morelle et al., 2023).

The concept of cognitive warfare has some major differences in military doctrines of Western and Eastern countries. According to Danet (2023) main difference is in the emphasizing the technical and scientific dimension - the Western countries focus on modern technological advancements, which include using bio-technologies and neuro-sciences as primary approach to cognitive warfare. On the other hand, countries from the Eastern bloc, such as Russia have more traditional "propaganda" approach, where the concept of cognitive warfare is part of informational warfare, and is tasked to

influence decision-making processes and to challenge the image, reputation or credibility of the targeted population (Danet, 2023).

Apart from the theoretical distinctions between these concepts, it is also essential to differentiate the types of damage or harm which is caused by the modern cognitive warfare operations (Miller, 2023). Firstly, harm can be inflicted directly to human beings, which can be either physical or psychological in its nature. In this context, psychological damage should be understood in a broad sense, as it includes disruption of mentioned cognitive processes, which may lead to altered attitudes, acceptance of manipulation, and the internalization of false beliefs or misinformation. This can also involve inducing individuals to question their own thoughts, perceptions, or values, thereby weakening their psychological stability and decision-making autonomy (Schmid, et al., 2023; Miller, 2023). Second type of harm is related to damage done to infrastructure, nature environment which support individual and collective life (buildings, communication system, ICT hardware). Third type, the "cyber harm", is inflicted upon the non-physical digital components such as software, data integrity, and the functioning of information systems. This is aligned with early conceptualizations of cyberwarfare, where attacks are not kinetic by default, instead aim to undermine trust in digital infrastructure, distort information flows, or disable key services (Dipert, 2010). Lastly, the fourth type of damage is targeting government and other social institutions, with the intent to undermine and destabilize public trust and deepen societal polarization. According to Miller (2023), these attacks aim to degrade democratic processes and national social cohesion. Although all these forms of harm are important and often interconnected, this paper will be focusing on psychological aspects of defense against cognitive warfare and the importance of resilience as a protective factor.

Psychological Resilience

Although the concept of resilience has been applied in many different fields (political science, economics, sports etc.), it is still mainly associated with psychology. This broad use of the term has resulted in different meanings of the concept, which, due to its interdisciplinary nature, are dependent on the context and the scope of use. Resilience also encompasses broad range of phenomena, relating to everything from cells to individuals, organizations, nations, and nature (Southwick et al., 2014).

The need for resilience arises in the presence of actual or anticipated threats (Kont et al., 2024), and it is best understood as a dual construct involving both the experience of adversity and the capacity to achieve positive adjustment outcomes. Once confronted with adversity, resilience refers to the capacity to withstand, adapt to, and recover from challenging circumstances, thereby mitigating potential negative outcomes (Luthar & Cicchetti, 2000).

Resilience is most appropriately conceptualized as a developmental process and dynamic capacity rather than as a static outcome or trait (Yates et al., 2015). Resilience is essential for managing emotional and social difficulties which can occur during intensive stressors, high-risk operations and general physical and cognitive demanding tasks (Nindl et al., 2018).

When considering psychological resilience, it is necessary to recognize an individual's cognitive, emotional, and social capabilities, as well as their underlying motivations. It is necessary to understand that these factors are interconnected, that they all share a portion of the global level of resilience, and that they do not function in isolation (Fletcher & Sarkar, 2013). For example, one person might have the cognitive, emotional and social capacity to build psychological resilience, but

lacks the motivation to do so. Likewise, if the right motivation is present, but the person doesn't have adequate emotional or cognitive capabilities, the chances are that the resilience won't be fully realized – without the necessary skills to manage stress, process information, and regulate emotions, even strong motivation may not lead to effective action or better adaptation (Houck, 2024). Although some people have personality traits that make them inherently more resilient than others, newer research implies that resilience is prone to change over time and across different contexts and life experiences, and because of this it should be viewed more as a process than a static, unchanging trait (Fletcher & Sarkar, 2013). Also, it is important to remember that an individual's level of resilience is not solely determined by internal psychological traits or personal capacity - much of the human resilience is embedded in social connections, interpersonal relationships and general social support (Southwick et al., 2016). In other words, building resilience requires both individual efforts and community support to sustain mental health amid persistent adversity (Vishakha, 2024).

Key Psychological Factors and Mechanisms of Resilience in Cognitive Warfare

The concept of resilience can also be applied to the domain of informational and cognitive warfare, particularly in the context of resilience to disinformation. Some authors (Roozenbeek et al.,2022; Splidsboel Hansen, 2017) differentiate between cognitive and physical resilience, which can be used to counter informational and cognitive warfare. In the specific context of cognitive warfare, psychological resilience is a vital internal defense mechanism that enables individuals to resist manipulation, disinformation, and cognitive overload. In this context, cognitive resilience could be viewed as a specific form of "cognitive firewall" - a specific function that filters and process information and disinformation. On the other hand, physical resilience is more of a solid barrier type of defense, with a goal of putting barriers so the disinformation doesn't even reach people (Splidsboel Hansen, 2017). Although there is a theoretical difference between these two types of resilience, it can be said that they go hand in hand, and that the lack of one requires compensation for the other, and vice versa (Bjola & Papadakis, 2020). Humprecht et al. (2020) define resilience as a specific characteristic which should be understood as more advanced and complex phenomenon than simple individual trait, which also encompasses a group's capacity to overcome adversity. Particular emphasis is placed on social, political, and informational structures, such as the media system or the level of societal polarization, as key factors shaping a society's overall resilience (Humprecht et al., 2020).

Development of psychological resilience to cognitive warfare may be influenced by a wide range of factors (ranging from individual and social to cultural and economic). Given that the intersection between psychological resilience and cognitive warfare remains relatively underexplored, this paper will offer a conceptual overview of key psychological factors that are most relevant for strengthening individual resistance in this context, which are most commonly identified in the scientific literature as essential.

Critical Thinking

Critical thinking is one of the fundamental tools of information and psychological resistance, enabling individuals to defend themselves against cognitive warfare operations through critical perception of information. It serves as a mechanism for resisting manipulation and foster rational understanding of socio-cultural, historical, and political processes (Stepanenko, 2024). Although the

definition of critical thinking may vary, there is consensus that the main characteristics of critical thinking are: ability to process and evaluate information logically, make well-reasoned decisions and assessments, analyze content critically, overcome stereotypes of thinking, successfully solve problems in a non-standard way and remain focused on outcomes (Bilotserkovets et al., 2023; Stepanenko, 2024). According to Halpern (2013), critical thinking encompasses functions such as reasoning, logic, judgment, metacognition, thinking, questioning, and other mental processes related to reasoning that lead to a solution or conclusion in a justified manner. In the context of cognitive warfare, critical thinking acts as a protective filter: it interrupts the spread of misleading or manipulative messages by enabling individuals to detect inconsistencies, resist undue influence, and prioritize credible sources. This is particularly important for individual's ability to distinguish true information from fake news, manipulative messages and propaganda. It could be argued that critical thinking serves as a basic foundational component for several key concepts relevant to defending against cognitive warfare, including media literacy (Lewandowsky et al., 2020; Bilotserkovets et al., 2023;), identification of possible cognitive distortions and subconscious biases (Kurylo et al., 2023), information discernment and information security (Melnychuk & Horokhova, 2022; Kurylo et al., 2023).

Cognitive Flexibility

Among psychological attributes, cognitive flexibility is widely recognized as one of the key factors in mitigating vulnerability to cognitive attacks, making a significant contribution to individual resilience. Cognitive flexibility refers to the "ability to adapt attention, exert cognitive control, shift focus, and regulate responses in accordance with changing tasks or environmental demands" (Jøsok, 2019). In other words, cognitive flexibility is one of the three core cognitive control (or executive) functions, next to inhibition and working memory (Diamond, 2013), and it refers to ability to adapt thoughts and behaviors according to changes happening in environmental or internal states such as cognitive load, emotional arousal, motivation, etc. (Braem & Egner, 2018). Given these characteristics, it is not surprising that cognitive flexibility is regarded as one of the key psychological capacities in defending against cognitive warfare, as it enables individuals to reinterpret information and maintain adaptive thinking in the face of complex, ambiguous, or intentionally deceptive or manipulating messaging.

Emotional Regulation

Emotional regulationis also considered a crucial factor in defending individuals against the psychological impacts of cognitive warfare. The goals of cognitive warfare often are done with the intention to impair judgment and increase an individual's susceptibility to manipulation and increase cognitive overload, which are often done by provoking strong emotional reaction such as fear, anxiety, anger or empathy (Stoian-Karadeli & Dinu, 2023). Emotional regulation is regarded as a cognitive style of managing the intake of emotionally arousing information, and it encompasses different strategies that help regulate the initial emotional response and its subsequent course when individuals confront stressful life events (Garnefski &Kraaij, 2006). Psychological interventions such as stress management programs and community-based resilience initiatives have been shown to assist individuals in coping with the emotional and cognitive effects of psychological operations (Ecker et al., 2022). By enhancing emotional regulation and stress management capacities, which increase mental stability, individuals become better equipped to resist the typical tactics of cognitive warfare.

In addition to the mentioned psychological factors, psychological resilience is also reflected in behaviors which individuals might manifest when they are confronted with cognitive warfare techniques. Individuals are not always passive targets but can actively employ a range of psychological resistance strategies, which, according to Fransen et al. (2015), could be grouped into four major clusters: avoidance strategies (such as ignoring or distancing from persuasive content), contesting strategies (actively questioning the source, intent, or arguments of the message), biased processing strategies (selective information processing, favoring information that aligns with existing beliefs), and empowerment strategies (enhancing one's self-confidence, knowledge, or resistance through critical thinking and self-efficacy). These strategies are not mutually exclusive - collectively, these approaches reflect the psychological dimensions of resilience and play role in defending against manipulative tactics central to cognitive warfare.

Conclusion

Cognitive warfare represents a contemporary form of conflict in which information, perceptions, and emotional responses are central battlegrounds. Psychological resilience plays a crucial role in defending individuals and societies against manipulation, disinformation, and cognitive overload arising from this form of warfare. This paper has highlighted key psychological resilience factors, particularly critical thinking, cognitive flexibility, and emotional regulation.

Given the complexity of cognitive warfare, further research is needed to deepen our understanding of the interaction between psychological factors and to develop effective resilience-building programs at both individual and societal levels. Training programs aimed at recognizing and defending against cognitive warfare tools, as well as initiatives to strengthen psychological resilience, can be valuable across various sectors, including but not limited to the military and defense fields.

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