

Graph-Theoretical Model of the Information-Psychological “Mental War”

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Abstract

The objective of this work is to develop a model of "mental wars." Generative artificial intelligence is employed to modernize the basic hierarchical model. The proposed methodology involves expanding the model with new concepts, categories, and connections between them, generated through artificial intelligence systems and large language models. By applying clustering based on modularity classes and node ranking within the "mental wars" network model, the authors enhance and extend the basic hierarchical model, uncover new aspects, and deepen the understanding of the content, objectives, and consequences of information-psychological mental wars.

Keywords: *mental wars, hierarchical model, generative artificial intelligence, large language models, semantic network, clustering, modularity*

Introduction

Mental wars represent a complex, multifaceted phenomenon that encompasses various aspects of societal life, including politics, economics, culture, and more. In the current context of Russia's real war against Ukraine, it is increasingly important to consider not only traditional methods of propaganda's negative influence but also modern technological tools. The aim of this work is to expand and refine the model of mental wars, taking into account the contemporary state of information-psychological warfare, through the use of generative artificial intelligence (AI) and large language models (LLMs).

In recent years, generative artificial intelligence [1, 2] has made a significant impact on cognitive and information theories, opening up new possibilities for analyzing and modeling complex systems. The use of AI not only allows for the refinement of existing models but also reveals new aspects that have previously gone unnoticed by researchers [3].

We view the category of "mental war" as a complex system with a hierarchical structure [4]. This model serves as a mathematical abstraction, with levels and elements defining the essence of the problem.

Let H be a finite partially ordered set with a greatest element b . H is a hierarchy if the following conditions are met [5]:

1. There exists a partition of H into subsets L_k , $k = 1, 2, \dots, h$, где $L_1 = \{b\}$.
2. From $x \in L_k$, follows that $x^- \in L_{k+1}$, $k = 1, 2, \dots, h-1$.
3. From $x \in L_k$, follows that $x^+ \in L_{k-1}$, $k = 2, \dots, h$.

Here, x^- – is the element that follows element x , and x^+ – is the element that precedes element x in the hierarchy levels.

In this case, the problem can be decomposed into simpler components, followed by the evaluation of the relative degree of interaction between the elements of this hierarchical structure [6]. In the complex system of "mental warfare," five levels L_i can be distinguished, where $i=1,2,\dots,5$.

In our case, the traditional view of mental war as a hierarchical structure assigns the following roles to each level: at the first level (L_1 Goals of the mental war), a single element—focus—is considered, and it is placed at the top of the hierarchy (war for identity transformation); at the second level (L_2 Forces and means of the mental war), economic, political, and social forces that influence the outcome are depicted (finances, literature, art in general, media, the Internet, etc.); the third level (L_3 Actors of the mental war) consists of actors who manipulate these forces (government, artists, patrons, etc.); the fourth level (L_4 Goals of actors) defines the objectives of each actor (changing perceptions, values, attitudes, stereotypes, traditions, archetypes of national consciousness); the fifth level (L_5 Policies implemented by actors) describes possible scenarios or outcomes that each actor strives to achieve through their policies, primarily focusing on the recoding of both the state's civilizational identity and the cultural values of society and individuals.

Hierarchical decomposition allows for structuring the system into subsystems, each responsible for specific objectives. For each level, concepts are defined that form clusters, which interact with each other to achieve the overall goal. The mathematical model helps formalize interactions between subsystems through graphs, connection matrices, and objective functions that describe the system's overall efficiency.

Levels L_1 and L_4 of the hierarchy include certain sets of goals and subgoals. Let at level i , there be a set of goals $T_i = \{ T_{i1}, T_{i2}, \dots, T_{imi} \}$, where $j = \{ 1, 4 \}$, and mi is the number of goals at level i . In turn, each goal T_{ij} corresponds to a set of subgoals $F_{ij} = \{ F_{ij1}, F_{ij2}, \dots, F_{ijn} \}$, where ijn is the number of subgoals for goal T_{ij} . Thus, the global goal of the first level T_{1i} is the final and irreversible dissolution of Ukrainian identity into the "all-Russian" and the rejection by Ukrainians as a political nation of their claims to statehood, in the absence of awareness of their own uniqueness. Meanwhile, the goals of the actors T_{4i} , while remaining subordinate to the global goal of Russia's "mental war" against Ukraine, may vary depending on the era, primarily in form and certain characteristics, while remaining unchanged in essence.

The elements and subgoals at each level perform specific functions (informational, economic, organizational, etc.) and may be connected to other elements and subgoals F_{ijk} at the same or other levels, forming a network of interconnections. This is described by a set of functional links between elements and subgoals:

$$\text{Links} = \{ (F_{ijk}, F_{i'j'k'}) \mid F_{ijk} \text{ is linked to } F_{i'j'k'} \}.$$

The set of functional links between elements, goals, and subgoals forms a directed graph, where the vertices are the elements, subgoals, and goals F_{ijk} , and the edges are the links between them. Let this be denoted as $G=(V, E_G)$, where V is the set of vertices, and $E_G \subseteq V \times V$ is the set of

directed edges that describe the functional dependencies between elements, subgoals, and goals [7].

For each element of the system F_{ijk} , a function $f(F_{ijk})$ is defined, which describes its role in the system. The functions can be represented as a set of relationships or formulas that describe how these elements interact with each other within the network.

The relationships between elements, goals, and subgoals at different levels can be represented through a connection matrix between levels. Let A_{ij} be a matrix of size $m_i \times m_j$, where each element a_{ij} , a_{ij} describes the presence or absence of a link between the goals and subgoals T_{ij} and $T_{i'j'}$.

To model the process of achieving the main goals at each level, the objective function of the "mental war" system Φ can be defined, which depends on the fulfillment of goals and subgoals at different levels:

$$\Phi = \alpha f(T_{ij}) + \beta(F_{ijk}),$$

where α, β are weight coefficients in the interval with values in the range [0,1].

Transition from Hierarchical to Network Model

In the context of the hierarchical structure of mental warfare, both sub-goals and concepts at the corresponding level can be defined by experts, including virtual experts, who help create and refine the system of goals and their corresponding concepts. If individual concepts can simultaneously belong to several different levels of the hierarchy, the system of connections, which previously formed a hierarchy, ceases to be merely hierarchical and transforms into a network. This allows for a more efficient transition from the initial state (goal) to the outcomes using the network structure of connections.

Let us formalize this idea for further expansion of the model using LLMs. As before, let $T=\{T_1, T_2, \dots, T_n\}$ be the set of levels in the primary hierarchy, and $F=\{f_1, f_2, \dots, f_k\}$ be the set of concepts. Experts, including virtual ones, define these concepts based on the analysis of levels in the primary hierarchy of the mental warfare model. Concepts can belong to several levels at once (including the goals defined above), which makes the connections between the levels of the model more complex. If a concept f_i belongs to multiple levels simultaneously, this introduces new connections between levels. The system's structure thus shifts from a pure hierarchy to a network model.

To formalize this transformation, we use the graph $G=(T,E)$, where T are the vertices representing levels, and E is the set of edges, where each edge between two levels signifies the presence of a common concept between them.

If the concept f_i belongs to levels T_a and T_b , there is a connection between them:

$$E = \{(T_a, T_b) \mid f_i \in F, f_i \in T_a \cap T_b\}.$$

The weight of each edge (T_a, T_b) is determined by the number of common concepts between these levels:

$$w(T_a, T_b) = |T_a \cap T_b|.$$

Thus, the more common concepts correspond to different levels, the stronger the connection between them.

By utilizing the network structure, final results can be achieved more efficiently. The shortest paths in the network between levels (in particular, between the initial goal and outcomes) allow for reduced time and resources to achieve these outcomes. This can be expressed through the function of minimizing the path in the graph:

$$\tau(T_i) = \min_{P \subseteq G} \sum_{(T_a, T_b) \in P} w(T_a, T_b),$$

where P is the path from the initial goal to the desired result through other levels/concepts.

Virtual experts can assist not only in defining concepts but also in dynamically updating the network. This means that experts can add new links or modify existing ones depending on the context of mental warfare. Formally, this is described by the dynamic change of the model's graph:

$$G' = \{G \cup (T_i, T_j) \mid f_i \in F, f_i \in T_i \cap T_j, \text{new links}\}.$$

At the same time, the transformation of the hierarchy into a network allows for more flexibility and quicker adaptation to changes, as well as better utilization of available resources to achieve results. Connections between levels of the primary hierarchy through common concepts become the basis for choosing the most effective path from goal to outcome. This approach provides the opportunity to use shared concepts across multiple levels, optimize processes with the help of virtual experts, and dynamically adapt to new conditions.

The above formalization corresponds to a sequence of actions that includes the possibility of repeating the process under expert supervision until the final understanding of the domain is achieved:

1. Presentation of the initial scheme, which includes the formation of the initial scheme in CSV format, displaying basic semantic connections between concepts.
2. Generation of prompts for LLMs, i.e., creating prompts for large language models to generate new concepts and connections.
3. Integration of new connections into the initial scheme, using formulas to strengthen the connections.
4. Linguistic data processing to evaluate new and existing connections and rank nodes.
5. Data analysis and visualization, specifically uploading data into a graph analysis system (e.g., Gephi), conducting clustering by modularity classes.

6. Formation and refinement of clusters, determining their names using LLM, verifying consistency, and removing unnecessary elements.
7. Final verification and validation of the expanded model, ensuring its consistency and correctness.

Thus, for the expansion of the primary hierarchical model based on the application of large language models, the following steps are proposed:

1. Representation of the initial scheme in CSV format

The initial scheme of "mental wars" is presented in CSV format, where each row reflects a semantic connection between the primary levels in the format "Concept 1; Concept 2", for example:

Goals of the mental war; Forces and means of the mental war
Forces and means of the mental war; Actors of the mental war
Actors of the mental war; Goals of actors
Goals of actors; Policies implemented by actors
Policies implemented by actors; Results of the mental war

2. Formation of prompts for generating new concepts

Prompts are created to expand all levels of the initial model, taking into account mental wars. Responses are obtained from ChatGPT, Gemini, and Llama-3 systems. Below is a list of prompts for the 6 levels of the base model (see Appendix):

Prompt 1

The main goal of the mental war against Ukraine is to change the identity of the people. What other goals are there in this mental war?
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Prompt 2

The main forces and means of the mental war against Ukraine are literature, art, media, and social media. What other forces and means are there specifically for the mental war, influencing the mentality of Ukrainians?
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Prompt 3

I know that the main actors of the mental war against Ukraine are artists, the government, and painters. What other actors are there in this mental war, who influences the mentality of Ukrainians?

Prompt 4

I know that the objectives of certain actors in the mental war are to change Ukrainians' perceptions, values, attitudes, and national consciousness. What other objectives do actors in the mental war against the mentality of Ukrainians have?

Prompt 5

I know that the means used by certain **actors in the mental war to achieve their goals** include language, faith, culture, and historical memory. What other means do enemies use to achieve their objectives in the mental war?

Prompt 6

I know that the enemies see the **results of the mental war** as the reprogramming of Ukrainians' perceptions regarding the state, society, and the individual. What other results of the mental war could there be according to the enemies?

In response to the given prompts, generative artificial intelligence systems provide answers. An example of ChatGPT's response to Prompt 1 is provided below:

Here are some other potential goals of the mental war against Ukraine:

1. **Spreading Misinformation:** To confuse and mislead the population, undermining trust in reliable sources of information.
2. **Sowing Discord:** To create divisions within the society, turning people against each other and weakening national unity.
3. **Undermining Morale:** To lower the morale of the population and the military, making them less resilient and more susceptible to external control.
4. **Discrediting Leadership:** To tarnish the reputation of the country's leaders and institutions, reducing their effectiveness and legitimacy.
5. **Influencing Elections and Policy:** To sway public opinion and political outcomes in favor of the aggressor's interests.
6. **Cultural Erosion:** To diminish the significance of Ukrainian culture, language, and traditions, promoting the aggressor's culture instead.
7. **Economic Destabilization:** To create economic uncertainty and hardship, making the population more vulnerable and less able to resist external pressures.
8. **Isolation from Allies:** To weaken Ukraine's international relationships and support networks, making it easier to influence or control the country.

These goals work together to weaken the nation's cohesion, resilience, and ability to resist external influence or control.

In accordance with the responses from the AI systems, additional files in CSV format are generated. For the given example, it will look like this:

Goals of the mental war; Spreading Misinformation
Goals of the mental war; Sowing Discord
Goals of the mental war; Undermining Morale
Goals of the mental war; Discrediting Leadership
...

3. Integration of Obtained Responses with the Initial Schema

The newly obtained connections are integrated with the initial schema. The network consists of related concepts and is non-causal; the consistency of the new connections can be verified using the following approaches: The detection approach is implemented automatically—if a new concept or connection is already represented in the network, the weight of that node or connection increases. At this stage, the new connections obtained from the LLM are integrated with the initial schema. To account for the significance of the connections, an iterative weight correction formula is used:

$$S_{new} = \alpha \cdot S_{old} + \beta \cdot S_{new},$$

where:

S_{new} – new weight coefficient of the connection,

S_{old} – weight of the existing connection,

α – weight coefficient for old connections,

β – weight coefficient for existing connections.

The old connection S_{old} represents the weight of the existing connection between concepts in the semantic network.

The new connection S_{new} is the weight coefficient calculated for new connections added based on new data from the LLM.

The coefficients α and β allow controlling the influence of each type of connection on the overall network.

Calculation of the New Weight Coefficient: The formula allows for calculating the new weight coefficient as a combination of the weight values of old and new connections, where the coefficients α and β help adjust the balance between existing and new data.

Conflict Checking: Within this approach, conflict checking is implemented by involving a human expert, who verifies whether the new connections introduce contradictions in the context of already existing ones by checking for similarities or differences in the connections between concepts.

4. Linguistic Data Processing

Linguistic data processing and node ranking enable the combination of concepts that are synonyms, derivatives of one another, etc. For this purpose, specialized software embedded in the CSV2Graph graph analysis and visualization service (<http://bigsearch.space/uli.html>) is used. Here is an example of new connections obtained after linguistic processing:

Morale; Moral relativism
 Morale; Erode morale
 Morale; Undermining morale
 Morale; Psychological demoralization
 Morale; Decreased morale
 Morale; Moral decline
 Morale; Demoralizing the population
 Morale; Demoralization

5. Data Analysis and Visualization in Gephi

Node ranking corresponding to different levels, including target levels, as well as concepts, is carried out using a ranking approach based on the PageRank-TextRank algorithms [8, 9]:

$$PR(A) = \frac{1-d}{N} + d \sum_{i \in M(A)} \frac{PR(i)}{L(i)},$$

where: $PR(A)$ – PageRank of node A , d – damping factor, N – total number of nodes in the graph, $M(A)$ – set of nodes pointing to A , $L(i)$ – number of outgoing links from node i .

The first term of the formula $\frac{1-d}{N}$ provides the base level of PageRank for all nodes, where the numerator corresponds to the probability of the state when a user randomly selects a node from the graph, and N is the total number of nodes.

The second term $d \sum_{i \in M(A)} \frac{PR(i)}{L(i)}$ is the part of the formula from which the PageRank of node A is computed based on the PageRank of nodes pointing to it. For each node i in the set $M(A)$, its PageRank is divided by the number of links $L(i)$ it has, and this value is summed for all nodes pointing to A .

The combined data is uploaded into the Gephi environment [10] for clustering based on modularity classes. Various types of modularity [11] can be applied in Gephi; the authors applied the Potts model [12], which takes into account the so-called resolution parameter, based on which the required number of concept classes (clusters) is automatically determined.

According to this model, the quality function $H(G,P)$, or briefly $H(P)$, for the partition P into modules (clusters) of the graph G is written as:

$$H(P) = -\sum_C e_C - \gamma n_C^2,$$

where each cluster $C \in P$ consists of e_C edges and n_C nodes, and γ is the resolution parameter, which significantly influences the partitioning of the graph into clusters.

The procedure for determining modularity classes is carried out according to the following algorithm, which defines the steps:

1. Initialization: Initial distribution of nodes into initial clusters.
2. Evaluation: Determining the modularity for the current distribution of nodes.
3. Merging Clusters: Connecting nodes or groups of nodes to see if modularity improves.
4. Iteration: Repeating the process of merging clusters and evaluating modularity until maximum modularity is reached or it is found that further merging does not improve the outcome.
5. Finalization: The obtained modularity classes represent groups of nodes that have high internal cohesion and low external cohesion.

6. Determining Cluster Names:

The expanded network is optimized by determining names for the clusters based on the generated concepts. The following prompt is used:

Come up with a name for the cluster based on the included concepts: ...

7. Creating the Final Model:

At this stage, the verification of the expanded model is carried out, checking its consistency and correctness in the context of new and old concepts. Insignificant elements are removed, and the final model is displayed as a graph. The final model reflects the expanded network of concepts and their connections in the context of the category of "mental wars" (Figure 1).

Results

The expanded model of mental wars demonstrates a comprehensive network of interconnections between core and additional concepts. Clustering and ranking of nodes allow highlighting key connections and concepts that influence the understanding of ethical aspects in cybersecurity.

After analysis and clustering, several additional concepts were identified that had not been considered in previous models. For example, the concepts of "information asymmetry" and "cognitive traps" proved to be key to understanding mental wars in this network model.

The semantic network was divided into several clusters, each representing a distinct aspect of mental wars. The modularity algorithm allowed for the identification of significant connections between nodes and the determination of key components of the network.

Node ranking using the PageRank algorithm enabled the identification of the most influential concepts in the model. This helped to determine which elements are most significant for further study and refinement.

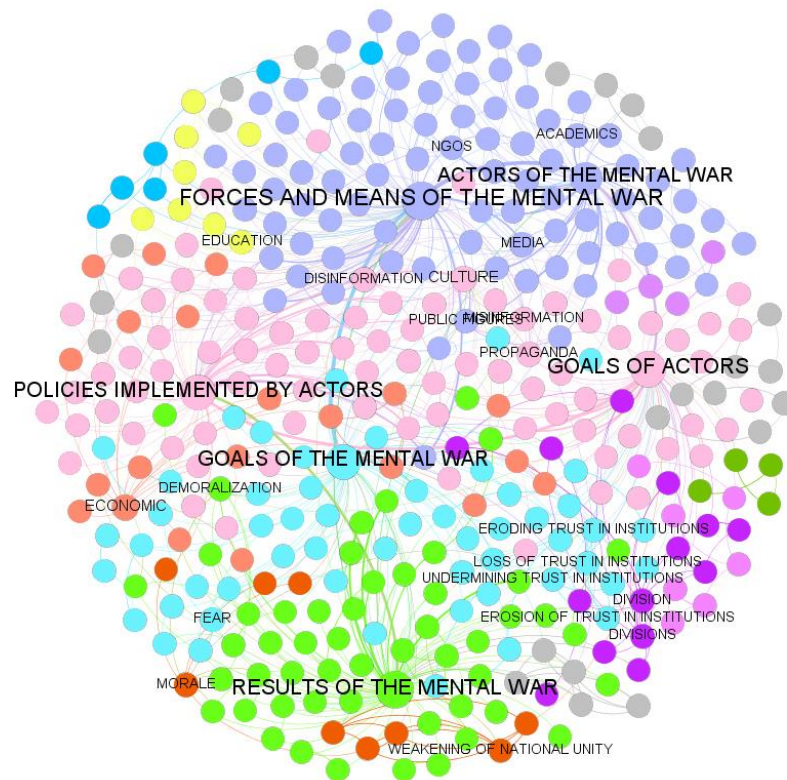


Figure 1 – Network Corresponding to the Expanded Model of Mental Wars

Conclusions

New concepts identified using generative AI allowed for a deeper understanding of the category of "mental warfare." The concepts of information asymmetry and cognitive traps opened new perspectives for analyzing the impact of information campaigns and manipulations.

The application of clustering and ranking algorithms facilitated the creation of a structured hierarchy of concepts and connections in the mental wars model. This eases data analysis and interpretation, making the model more comprehensible and functional.

The use of a "swarm of virtual experts" [3, 13] demonstrated its effectiveness in generating new concepts and connections. Each agent contributes uniquely, allowing for a multifaceted picture of mental wars.

Using artificial intelligence to refine and enhance mental warfare models is a promising area of research. The presented methodology allowed for the identification of additional concepts, clustering the semantic network, and ranking nodes by their significance. This improved the understanding of the content, goals, and consequences of mental wars.

Further research could focus on integrating more artificial intelligence agents, applying additional clustering and ranking methods for a deeper understanding of information-psychological warfare.

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Appendix

Concepts Complementing the Levels of Mental Warfare

Prompt 1. The main goal of the mental war against Ukraine is to change the identity of the people. What other goals are there in this mental war?

Goals of the mental war; Change of the people's identity	Goals of the mental war; Propagating Misinformation
Goals of the mental war; Change of the people's identity	Goals of the mental war; Suppressing Resistance
Goals of the mental war; Change of the people's identity	Goals of the mental war; Inducing Economic Hardship
Goals of the mental war; Change of the people's identity	Goals of the mental war; Altering Historical Narratives
Goals of the mental war; Change of the people's identity	Goals of the mental war; Undermining International Support
Goals of the mental war; Spreading Misinformation	Goals of the mental war; Promoting Cultural Assimilation
Goals of the mental war; Sowing Discord	Goals of the mental war; Encouraging Emigration
Goals of the mental war; Undermining Morale	Goals of the mental war; Eroding trust
Goals of the mental war; Discrediting Leadership	Goals of the mental war; Promoting division
Goals of the mental war; Influencing Policy	Goals of the mental war; Inducing fear
Goals of the mental war; Influencing Elections	Goals of the mental war; Inducing panic
Influencing Elections; Influencing Policy	Goals of the mental war; Controlling the narrative
Goals of the mental war; Cultural Erosion	Goals of the mental war; Discrediting opponents
Goals of the mental war; Economic Destabilization	Goals of the mental war; Manufacturing consent
Goals of the mental war; Isolation from Allies	Goals of the mental war; Demoralizing the population
Goals of the mental war; Erode National Unity	Goals of the mental war; Inducing fatigue
Goals of the mental war; Erode Morale	Goals of the mental war; Isolating the target nation
Goals of the mental war; Create Political Instability	Goals of the mental war; Justifying actions
Goals of the mental war; Create Social Instability	Goals of the mental war; Blaming the victim
Social Instability; Political Instability	Goals of the mental war; Denying atrocities
Goals of the mental war; Undermine Trust in Institutions	Goals of the mental war; Demoralization
Goals of the mental war; Disrupt Decision-Making Processes	Goals of the mental war; Disinformation
Goals of the mental war; Encourage Defeatism	Goals of the mental war; Propaganda
Goals of the mental war; Encourage Apathy	Disinformation; Propaganda
Goals of the mental war; Exploit Economic Vulnerabilities	Goals of the mental war; Fear
Goals of the mental war; Isolate the Country Internationally	Goals of the mental war; Anxiety
Goals of the mental war; Control the Narrative	Goals of the mental war; Polarization
Goals of the mental war; Suppress Resistance Movements	Goals of the mental war; Loss of National Pride
Goals of the mental war; Influence Future Generations	Goals of the mental war; Psychological Manipulation
Goals of the mental war; Undermining National Unity	Goals of the mental war; Influence on Decision-Making
Goals of the mental war; Demoralizing the Population	Goals of the mental war; Erosion of Trust
Goals of the mental war; Eroding Trust in Institutions	Goals of the mental war; Promotion of Russian Interests
Goals of the mental war; Disrupting Social Cohesion	Goals of the mental war; Preparation for Physical Conflict
Goals of the mental war; Influencing Political Outcomes	

Prompt 2. The main forces and means of the mental war against Ukraine are literature, art, media, and social media. What other forces and means are there specifically for the mental war, influencing the mentality of Ukrainians?

Goals of the mental war; Forces and means of the mental war	Forces and means of the mental war; Cultural Appropriation
Goals of the mental war; Forces and means of the mental war	Forces and means of the mental war; Cultural Suppression
Goals of the mental war; Forces and means of the mental war	Forces and means of the mental war; Cultural Appropriation;
Goals of the mental war; Forces and means of the mental war	Cultural Suppression
Goals of the mental war; Forces and means of the mental war	Forces and means of the mental war; Propaganda
Goals of the mental war; Forces and means of the mental war	Forces and means of the mental war; Disinformation
Goals of the mental war; Forces and means of the mental war	Forces and means of the mental war; Economic Pressure

Goals of the mental war; Forces and means of the mental war	Forces and means of the mental war; Political Pressure
Forces and means of the mental war; Literature	Political Pressure; Economic Pressure
Forces and means of the mental war; Literature	Forces and means of the mental war; Cyber Warfare
Forces and means of the mental war; Literature	Forces and means of the mental war; Psychological Operations
Forces and means of the mental war; Literature	Forces and means of the mental war; Cultural Diplomacy
Forces and means of the mental war; Literature	Forces and means of the mental war; Soft Power
Forces and means of the mental war; Art	Forces and means of the mental war; Community Influence
Forces and means of the mental war; Art	Forces and means of the mental war; Religious Influence
Forces and means of the mental war; Art	Community Influence; Religious Influence
Forces and means of the mental war; Art	Forces and means of the mental war; Celebrity
Forces and means of the mental war; Art	Forces and means of the mental war; Influencer Endorsement
Forces and means of the mental war; Media	Forces and means of the mental war; Public Demonstrations
Forces and means of the mental war; Media	Forces and means of the mental war; Public Protests
Forces and means of the mental war; Media	Public Demonstrations; Public Protests
Forces and means of the mental war; Media	Forces and means of the mental war; Education
Forces and means of the mental war; Media	Forces and means of the mental war; Propaganda
Forces and means of the mental war; Social Media	Forces and means of the mental war; Textbooks
Forces and means of the mental war; Social Media	Forces and means of the mental war; Curriculum
Forces and means of the mental war; Social Media	Forces and means of the mental war; Propaganda Campaigns
Forces and means of the mental war; Social Media	Forces and means of the mental war; Influence Operations
Forces and means of the mental war; Social Media	Forces and means of the mental war; Corruption
Forces and means of the mental war; Education System	Forces and means of the mental war; Cyber Warfare
Forces and means of the mental war; Cultural Institutions	Forces and means of the mental war; Hacking
Forces and means of the mental war; Religion	Forces and means of the mental war; Cyber Attacks
Forces and means of the mental war; Entertainment Industry	Forces and means of the mental war; Hacking; Cyber Attacks
Forces and means of the mental war;	Forces and means of the mental war; Information Theft
Forces and means of the mental war; Public Figures	Forces and means of the mental war; Grassroots
Influencers; Public Figures	Forces and means of the mental war; Civic Manipulation
Forces and means of the mental war; Economic Leverage	Forces and means of the mental war; Infiltrating NGOs
Forces and means of the mental war; Psychological Operations	Forces and means of the mental war; Infiltrating Community Groups
Forces and means of the mental war; Misinformation	Forces and means of the mental war; Fake Grassroots Movements
Forces and means of the mental war; Disinformation Campaigns	Forces and means of the mental war; Diaspora Influence
Misinformation; Disinformation Campaigns	Forces and means of the mental war; Expatriate Influence
Forces and means of the mental war; Grassroots Organizations	Diaspora Influence; Expatriate Influence
Forces and means of the mental war; NGO	Forces and means of the mental war; Targeting the Ukrainian Diaspora
Forces and means of the mental war; Cyber Warfare	Forces and means of the mental war; State-controlled media
Forces and means of the mental war; Education System Manipulation	Forces and means of the mental war; Educational institutions
Forces and means of the mental war; Cultural Appropriation	Forces and means of the mental war; Religious institutions
Forces and means of the mental war; Historical Revisionism	Forces and means of the mental war; Psychological Operations
Forces and means of the mental war; Cultural Symbols	Forces and means of the mental war; Cyber warfare
Forces and means of the mental war; Historical Narratives	Forces and means of the mental war; Economic warfare
Forces and means of the mental war; Psychological Operations	Forces and means of the mental war; Diplomatic isolation
Forces and means of the mental war; Disinformation	Forces and means of the mental war; Covert Influence
Forces and means of the mental war; Misinformation	Forces and means of the mental war; Intelligence operations
Forces and means of the mental war; Economic Pressures	

Forces and means of the mental war; Sanctions	Forces and means of the mental war; Manipulation of basic human needs
Forces and means of the mental war; Trade Barriers	Forces and means of the mental war; Promotion of conspiracy theories
Forces and means of the mental war; Resource Manipulation	Forces and means of the mental war; Education Textbooks
Forces and means of the mental war; Political Manipulation	Forces and means of the mental war; History Textbooks
Forces and means of the mental war; Support for opposition groups	Forces and means of the mental war; Civil Society Organizations
Forces and means of the mental war; ethnic tensions	Forces and means of the mental war; Tourism
Forces and means of the mental war; religious tensions	Forces and means of the mental war; Travel
religious tensions; ethnic tensions	Forces and means of the mental war; Linguistics
Forces and means of the mental war; Exploitation of trauma	Forces and means of the mental war; Historical Revisionism
Forces and means of the mental war; Leveraging Social Factors	Forces and means of the mental war; Psychological Operations
Forces and means of the mental war; Leveraging Psychological Factors	Forces and means of the mental war; Influence Agents
Education Textbooks; History Textbooks	Forces and means of the mental war; Disinformation
Forces and means of the mental war; Cultural Events	
Forces and means of the mental war; Festivals	
Forces and means of the mental war; Religious Institutions	
Forces and means of the mental war; NGO	
Forces and means of the mental war; Research Institutions	
Forces and means of the mental war; Academic Institutions	
Research Institutions; Academic Institutions	
Forces and means of the mental war; Language	
Forces and means of the mental war; Fake News	
Forces and means of the mental war; Censorship	
Forces and means of the mental war; Self-Censorship	
Forces and means of the mental war; Economic Influence	
Forces and means of the mental war; Resource Dependence	
Forces and means of the mental war; Energy Dependence	
Energy Dependence; Resource Dependence	
Forces and means of the mental war; Intelligence Operations	

Prompt 3. I know that the main actors of the mental war against Ukraine are artists, the government, and painters. What other actors are there in this mental war, who influences the mentality of Ukrainians?

Forces and means of the mental war; Actors of the mental war	Actors of the mental war; Corporation
Forces and means of the mental war; Actors of the mental war	Actors of the mental war; Online Trolls
Forces and means of the mental war; Actors of the mental war	Actors of the mental war; Cyber Actors
Forces and means of the mental war; Actors of the mental war	Actors of the mental war; Psychological Operations
Forces and means of the mental war; Actors of the mental war	Actors of the mental war; Media Outlets
Forces and means of the mental war; Actors of the mental war	Actors of the mental war; Social Media Influencers
Forces and means of the mental war; Actors of the mental war	Actors of the mental war; Educational Institutions
Forces and means of the mental war; Actors of the mental war	Actors of the mental war; Religious Leaders
Actors of the mental war; Artists	Actors of the mental war; NGOs
Actors of the mental war; Artists	Actors of the mental war; Foreign Governments
Actors of the mental war; Artists	Actors of the mental war; Cultural Figures
Actors of the mental war; Artists	Actors of the mental war; Community Leaders

Actors of the mental war; Artists	Actors of the mental war; Propaganda Campaigns
Actors of the mental war; Government	Actors of the mental war; Intellectuals
Actors of the mental war; Government	Actors of the mental war; Academics
Actors of the mental war; Government	Actors of the mental war; Propaganda Machines
Actors of the mental war; Government	Actors of the mental war; Government Officials
Actors of the mental war; Government	Actors of the mental war; Online Trolls
Actors of the mental war; Painters	Actors of the mental war; Bot Networks
Actors of the mental war; Painters	Actors of the mental war; Military and Intelligence Services
Actors of the mental war; Painters	Actors of the mental war; Media Outlets
Actors of the mental war; Painters	Actors of the mental war; Religious Leaders
Actors of the mental war; Painters	Actors of the mental war; Educational Institutions
Actors of the mental war; Media Outlets	Actors of the mental war; Cyber Actors
Actors of the mental war; Social Media Influencers	Actors of the mental war; Foreign Governments
Actors of the mental war; Educational Institutions	Actors of the mental war; Celebrities
Actors of the mental war; Cultural Institutions	Actors of the mental war; Public Figures
Actors of the mental war; NGOs	Actors of the mental war; Think Tanks
Actors of the mental war; Political Parties	Actors of the mental war; Research Institutions
Actors of the mental war; Politicians	Think Tanks; Research Institutions
Actors of the mental war; Religious Leaders	Actors of the mental war; Dividing society
Actors of the mental war; Religious Institutions	Actors of the mental war; Undermining trust
Actors of the mental war; Business Leaders	Actors of the mental war; Manipulating emotions
Actors of the mental war; Business Corporations	Actors of the mental war; Media
Actors of the mental war; Media	Actors of the mental war; Journalists
Actors of the mental war; Journalists	Actors of the mental war; Social media influencers
Actors of the mental war; Social Media Influencers	Actors of the mental war; Historians
Actors of the mental war; Educators	Actors of the mental war; Academics
Actors of the mental war; Academics	Actors of the mental war; Historians; Academics
Actors of the mental war; Activists	Actors of the mental war; Clergy
Actors of the mental war; NGOs	Actors of the mental war; Religious leaders
Actors of the mental war; Religious Leaders	Actors of the mental war; Business leaders
Actors of the mental war; Writers	Actors of the mental war; Entrepreneurs
Actors of the mental war; Poets	Actors of the mental war; NGOs
Actors of the mental war; Foreign Governments	Actors of the mental war; Civil society organizations
Actors of the mental war; Diplomatic Missions	Actors of the mental war; Russian media
Actors of the mental war; Celebrities	Actors of the mental war; Foreign media
Actors of the mental war; Public Figures	Actors of the mental war; Ukrainian diaspora
Actors of the mental war; Businesses	Actors of the mental war; Educational institutions
Actors of the mental war; Diplomats	Actors of the mental war; International organizations

Prompt 4. I know that the objectives of certain actors in the mental war are to change Ukrainians' perceptions, values, attitudes, and national consciousness. What other objectives do actors in the mental war against the mentality of Ukrainians have?

Actors of the mental war; Goals of actors	Goals of actors; Demoralizing the Population
Actors of the mental war; Goals of actors	Goals of actors; Influencing Political Outcomes
Actors of the mental war; Goals of actors	Goals of actors; Economic Destabilization

Actors of the mental war; Goals of actors	Goals of actors; Promoting Cultural Assimilation
Actors of the mental war; Goals of actors	Goals of actors; Suppressing Resistance Movements
Actors of the mental war; Goals of actors	Goals of actors; Undermining National Unity:
Actors of the mental war; Goals of actors	Goals of actors; Eroding Trust in Institutions
Goals of actors; change perceptions	Goals of actors; Spreading Misinformation
Goals of actors; change perceptions	Goals of actors; Promoting Alternative Narratives
Goals of actors; change perceptions	Goals of actors; Demoralization
Goals of actors; change perceptions	Goals of actors; Exacerbating Cultural Divides
Goals of actors; change perceptions	Goals of actors; Influencing Political Processes
Goals of actors; change values	Goals of actors; Weakening Economic Stability
Goals of actors; change values	Goals of actors; Creating Dependency
Goals of actors; change values	Goals of actors; Disrupting Social Cohesion
Goals of actors; change values	Goals of actors; Weakening Ukrainian Society
Goals of actors; change values	Goals of actors; Dividing society
Goals of actors; change attitudes	Goals of actors; Demoralizing the population
Goals of actors; change attitudes	Goals of actors; Eroding trust
Goals of actors; change attitudes	Goals of actors; Supporting Military Objectives
Goals of actors; change attitudes	Goals of actors; Disrupting military operations
Goals of actors; change attitudes	Goals of actors; Targeting critical infrastructure
Goals of actors; change national consciousness	Goals of actors; Isolating Ukraine internationally
Goals of actors; change national consciousness	Goals of actors; Promoting Russian Interests
Goals of actors; change national consciousness	Goals of actors; Legitimizing Russian aggression
Goals of actors; change national consciousness	Goals of actors; Creating a favorable image of Russia
Goals of actors; change national consciousness	Goals of actors; Expanding Russian influence
Goals of actors; Sowing Discord and Division	Goals of actors; Discrediting Ukrainian institutions
Goals of actors; Division	Goals of actors; Discrediting Ukrainian authorities
Goals of actors; Spreading Misinformation	Goals of actors; Creating divisions
Goals of actors; Propaganda	Goals of actors; Polarization
Goals of actors; Undermining Trust in Institutions	Goals of actors; Undermining Ukrainian identity
Goals of actors; Promoting Fatalism	Goals of actors; Undermining Ukrainian culture
Goals of actors; Promoting Despair	Goals of actors; Promoting negative stereotypes
Goals of actors; Weakening Cultural Identity	Goals of actors; Promoting negative prejudices
Goals of actors; Influencing Electoral Outcomes	Goals of actors; Disrupting economic stability
Goals of actors; Encouraging Emigration	Goals of actors; Disrupting social stability
Goals of actors; Manipulating Economic Perceptions	Goals of actors; Creating a sense of hopelessness
Goals of actors; Undermining International Support	Goals of actors; Creating a sense of despair
Goals of actors; Exploiting Social Tensions	Goals of actors; Promoting alternative ideologies
Goals of actors; Exploiting Ethnic Tensions	Goals of actors; Promoting alternative values
Goals of actors; Creating Division Conflict	Goals of actors; Disrupting Ukraine's international relations
Goals of actors; Creating Internal Conflict	Goals of actors; Creating a sense of vulnerability
Goals of actors; Undermining Trust in Institutions	Goals of actors; Creating a sense of fear
Goals of actors; Misinformation	Goals of actors; Undermining Ukraine's ability to defend itself
Goals of actors; Propaganda	

Prompt 5. I know that the means used by certain actors in the mental war to achieve their goals include language, faith, culture, and historical memory. What other means do enemies use to achieve their objectives in the mental war?

Goals of actors; Policies implemented by actors	Policies implemented by actors; Sowing Discord
Goals of actors; Policies implemented by actors	Policies implemented by actors; Division
Goals of actors; Policies implemented by actors	Policies implemented by actors; Manipulation of International
Goals of actors; Policies implemented by actors	Policies implemented by actors; Economic
Goals of actors; Policies implemented by actors	Policies implemented by actors; Resource Manipulation
Goals of actors; Policies implemented by actors	Policies implemented by actors; Censorship
Goals of actors; Policies implemented by actors	Policies implemented by actors; Control of Information
Goals of actors; Policies implemented by actors	Policies implemented by actors; Co-opting Influencers
Policies implemented by actors; Language	Policies implemented by actors; Media Manipulation
Policies implemented by actors; Language	Policies implemented by actors; Cyber Operations
Policies implemented by actors; Language	Policies implemented by actors; Psychological Operations
Policies implemented by actors; Language	Policies implemented by actors; Educational Manipulation
Policies implemented by actors; Language	Policies implemented by actors; Economic Pressure
Policies implemented by actors; Faith	Policies implemented by actors; Diplomatic Influence
Policies implemented by actors; Faith	Policies implemented by actors; Co-opting Influencers
Policies implemented by actors; Faith	Policies implemented by actors; Opinion Leaders
Policies implemented by actors; Faith	Policies implemented by actors; Cultural Infiltration
Policies implemented by actors; Faith	Policies implemented by actors; Social Engineering
Policies implemented by actors; Culture	Policies implemented by actors; Legal Manipulation
Policies implemented by actors; Culture	Policies implemented by actors; Political Manipulation
Policies implemented by actors; Culture	Policies implemented by actors; Hybrid Warfare Tactics
Policies implemented by actors; Culture	Policies implemented by actors; Public Demonstrations
Policies implemented by actors; Culture	Policies implemented by actors; Protests
Policies implemented by actors; Historical memory	Policies implemented by actors; Information Manipulation
Policies implemented by actors; Historical memory	Policies implemented by actors; Disinformation
Policies implemented by actors; Historical memory	Policies implemented by actors; Propaganda
Policies implemented by actors; Historical memory	Policies implemented by actors; Censorship
Policies implemented by actors; Historical memory	Policies implemented by actors; Cyberattacks
Policies implemented by actors; Media Manipulation	Policies implemented by actors; Psychological Operations
Policies implemented by actors; Education System	Policies implemented by actors; Fear-mongering
Policies implemented by actors; Social Media Campaigns	Policies implemented by actors; Hate speech
Policies implemented by actors; Psychological Operations	Policies implemented by actors; Moral relativism
Policies implemented by actors; Economic Pressure	Policies implemented by actors; Cognitive warfare
Policies implemented by actors; Cyber Warfare	Policies implemented by actors; Economic Pressure
Policies implemented by actors; Diplomacy	Policies implemented by actors; Economic sanctions
Policies implemented by actors; International Relations	Policies implemented by actors; Energy blackmail
Policies implemented by actors; Grassroots Movements	Policies implemented by actors; Corruption
Policies implemented by actors; Intelligence	Policies implemented by actors; Education
Policies implemented by actors; Surveillance	Policies implemented by actors; Media
Policies implemented by actors; Entertainment	Policies implemented by actors; Propaganda
Policies implemented by actors; Pop Culture	Policies implemented by actors; Art
Policies implemented by actors; Disinformation	Policies implemented by actors; Entertainment

Policies implemented by actors; Fake News	Policies implemented by actors; Social networks
Policies implemented by actors; Cyber Warfare	Policies implemented by actors; Online platforms
Policies implemented by actors; Economic Pressure	Policies implemented by actors; NGOs
Policies implemented by actors; Psychological Operations	Policies implemented by actors; Community organizations
Policies implemented by actors; Propaganda	Policies implemented by actors;; NGOs
Policies implemented by actors; Political Manipulation	Policies implemented by actors; Economic manipulation
Policies implemented by actors; Cultural Infiltration	Policies implemented by actors; Psychological manipulation
Policies implemented by actors; Social Engineering	Policies implemented by actors; Historical revisionism
Policies implemented by actors; False Flag Operations	Policies implemented by actors; Symbolic manipulation
Policies implemented by actors; Intimidation	Policies implemented by actors; Cyber warfare
Policies implemented by actors; Cultural sabotage	Policies implemented by actors; Psychological operations
Policies implemented by actors; Historical falsification	Policies implemented by actors; Coercion
Policies implemented by actors; Ideological indoctrination	

Prompt 6. I know that the enemies see the results of the mental war as the reprogramming of Ukrainians' perceptions regarding the state, society, and the individual. What other results of the mental war could there be according to the enemies?

Policies implemented by actors; Results of the mental war	Results of the mental war; Fragmented Social Cohesion
Policies implemented by actors; Results of the mental war	Results of the mental war; Normalization of Occupation or Control
Policies implemented by actors; Results of the mental war	Results of the mental war; Erosion of National Identity
Policies implemented by actors; Results of the mental war	Results of the mental war; Decreased Morale
Policies implemented by actors; Results of the mental war	Results of the mental war; Patriotism
Policies implemented by actors; Results of the mental war	Results of the mental war; Political Destabilization
Policies implemented by actors; Results of the mental war	Results of the mental war; Social Fragmentation
Policies implemented by actors; Results of the mental war	Results of the mental war; Economic Instability
Results of the mental war; Reprogramming perceptions regarding the state	Results of the mental war; Loss of International Support
Results of the mental war; Reprogramming perceptions regarding the state	Results of the mental war; Cultural Assimilation
Results of the mental war; Reprogramming perceptions regarding the state	Results of the mental war; Increased Influence of Foreign Powers
Results of the mental war; Reprogramming perceptions regarding the state	Results of the mental war; Weakening of Defense Capabilities
Results of the mental war; Reprogramming perceptions regarding the state	Results of the mental war; Manipulation of Historical Narratives
Results of the mental war; Reprogramming perceptions regarding the state	Results of the mental war; Suppression of Resistance Movements
Results of the mental war; Reprogramming perceptions regarding the state	Results of the mental war; Psychological Impact
Results of the mental war; Reprogramming perceptions regarding the state	Results of the mental war; Policy Changes Favorable to Aggressors
Results of the mental war; Reprogramming perceptions regarding the state	Results of the mental war; Weakening of National Unity
Results of the mental war; Reprogramming perceptions regarding the society	Results of the mental war; Cohesion
Results of the mental war; Reprogramming perceptions regarding the society	Results of the mental war; Divisions within society
Results of the mental war; Reprogramming perceptions regarding the society	Results of the mental war; Erosion of trust
Results of the mental war; Reprogramming perceptions regarding the society	Results of the mental war; Isolation of individuals
Results of the mental war; Reprogramming perceptions regarding the society	Results of the mental war; Destabilization of the Government
Results of the mental war; Reprogramming perceptions regarding the society	Results of the mental war; Legitimacy crisis
Results of the mental war; Reprogramming perceptions regarding the society	Results of the mental war; Insurrection or civil unrest
Results of the mental war; Reprogramming perceptions regarding the society	Results of the mental war; Collaboration
Results of the mental war; Reprogramming perceptions regarding the society	Results of the mental war; Psychological Warfare
Results of the mental war; Reprogramming perceptions regarding the society	Results of the mental war; Demoralization
	Psychological Warfare; Demoralization

Results of the mental war; Reprogramming perceptions regarding the individual	Results of the mental war; Fear
Results of the mental war; Reprogramming perceptions regarding the individual	Results of the mental war; Panic
Results of the mental war; Reprogramming perceptions regarding the individual	Results of the mental war; Loss of hope
Results of the mental war; Reprogramming perceptions regarding the individual	Results of the mental war; Surrender or collaboration
Results of the mental war; Reprogramming perceptions regarding the individual	Results of the mental war; Economic Damage
Results of the mental war; Reprogramming perceptions regarding the individual	Results of the mental war; Infrastructure Damage
Results of the mental war; Reprogramming perceptions regarding the individual	Economic Damage; Infrastructure Damage
Results of the mental war; Reprogramming perceptions regarding the individual	Results of the mental war; Cyberattacks
Results of the mental war; Reprogramming perceptions regarding the individual	Results of the mental war; Supply chain disruptions
Results of the mental war; Erosion of National Identity	Results of the mental war; Damage to critical infrastructure
Results of the mental war; Increased Polarization	Results of the mental war; Demoralization
Results of the mental war; Destabilization of Governance	Results of the mental war; Apathy
Results of the mental war; Loss of Social Cohesion	Results of the mental war; Loss of national identity
Results of the mental war; Cultural Assimilation	Results of the mental war; Social fragmentation
Results of the mental war; Moral Decline	Results of the mental war; Erosion of trust in institutions
Results of the mental war; Ethical Decline	Results of the mental war; Manipulation of public opinion
Results of the mental war; Economic Vulnerability	Results of the mental war; Psychological trauma
Results of the mental war; Psychological Impact	Results of the mental war; Stress:
Results of the mental war; Altered Historical Narratives	Results of the mental war; Disinformation
Results of the mental war; Subversion of Alliances	Results of the mental war; Confusion
Results of the mental war; Erosion of National Identity	Results of the mental war; Undermining of critical thinking
Results of the mental war; Political Destabilization	Results of the mental war; Loss of confidence in the future
Results of the mental war; Loss of Trust in Institutions	Results of the mental war; Weakening of social bonds
Results of the mental war; Increased Social Divisions	Results of the mental war; Subversion of National Sovereignty
Results of the mental war; Psychological Demoralization	Results of the mental war; Weakened Defense Capabilities
Results of the mental war; Economic Disruption	
Results of the mental war; Isolation from Allies	
Results of the mental war; Altered Historical Narrative	
Results of the mental war; Reduced Civic Engagement	
Results of the mental war; Cultural Assimilation	
Results of the mental war; Manipulated Public Opinion	