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A spatial-mnestic model of deviant behaviour: The topology of phenomenological space and the associativity of memory in the context of deviant behaviour

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✦ **Abstract.** The article examined the development of a trichotomous spatial-mnestic model of deviant behaviour in the context of memory associativity. The theoretical foundation of the study was the conception of phenomenological space as a primary matrix of consciousness, within which thinking, memory, and behaviour are organised topologically. Space was considered not as a physical given, but as a structured field of experience formed through the interaction of perception and mental functions. Particular attention was paid to the associativity of memory as the capacity to make transitions between elements of experience, ensuring the meaningful coherence of consciousness. The relevance of the study stems from the growing interest in the problem of cognitive maps and the spatial organisation of memory in contemporary science. The aim of the study was to theoretically and empirically substantiate the existence of a correlation between the associativity of memory, the topological characteristics of phenomenological space, and forms of deviant behaviour. The methodology included phenomenological analysis, theoretical modelling and empirical research. The empirical stage was carried out using the Word Association Test. A procedure was developed for operationalising the topological characteristics of space based on associative indicators (indices of continuity, extent, structuredness, three-dimensionality, and infinity). The results of the study showed that, for the majority of respondents, moderate values of continuity and structuredness of phenomenological space predominate, alongside relatively high extensiveness and an average level of its openness. It was found that the variability of associative transitions reflects the degree of organisation of mental space and may be linked to regulatory mechanisms of behaviour. Based on an analysis of topological parameters and the nature of associative links, a typology of potential deviant manifestations has been proposed. Four types of deviation have been identified: situational, associated with local disruptions of continuity; value-existential, caused by a reduction in the structure of the semantic space; cyclical, arising from repetitive associative trajectories; and intellectual-symbolic, manifested in excessive abstraction and the expansion of associative space. The results obtained indicate the possibility of using topological characteristics of phenomenological space as indicators of the cognitive prerequisites of deviant behaviour. The practical value of this work lies in the possibility of using the proposed model for the diagnosis and prediction of deviant forms of behaviour in psychological practice, as well as in research in cognitive psychology, psychotherapy and behavioural sciences

✦ **Keywords:** systems approach; structure of phenomenological experience; cognitive-spatial organisation; patterns of behavioural regulation; psychological rigidity

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✦ Introduction

According to contemporary cognitive science, space is the primary matrix that determines human thinking. A person does not simply live in space; they think in spatial categories. The perception of physical space and, consequently, human behaviour depend on the imprint imposed on it by mental functions such as memory, thinking, attention, and others. As a result of the physical perception of real space, the interaction of this perception with mental functions, and the projection of the result onto external space, phenomenological space emerges. Among all known mental functions, memory is one of the most essential and fundamental characteristics contributing an emergent role in the formation of consciousness. Thus, the systematic study of correlations between phenomenological space, represented topologically, memory (selectivity, associativity, durability, reproducibility, contextuality), and formats of deviant behaviour is a highly relevant topic, intersecting with recent research.

Thus, J. Colelli (2025) attempts to integrate a phenomenological description of experience with cognitive theories. The author speaks of "pure experience" – this is not subjective experience, but that which remains after all individual and contextual features have been discarded. "Pure experience" serves as a bridge between lived experience and cognitive science. The study investigates which structures of experience make possible, for example, attention or memory as phenomenal phenomena. The concept of adaptation does not apply here, as the focus is on functional changes arising from alterations in the structures of lived experience. In the article, the topology of space is characterised by several features – extension, continuity, and structure – and is understood as the structure of phenomenal experience. Associativity is the ability to move from one content of experience to another. The author demonstrates that associative memory is possible only in phenomenal space with the properties of extension, continuity and structure. This is the spatial logic of associative memory. Associativity will be defined differently by different topologies of space. The article does not consider a complete system of topological characteristics, nor does it analyse how deviations in associativity lead to the deformation of the topology of space; furthermore, it does not address the question of the connection between spatial topology, the associativity of memory, and forms of deviant behaviour.

B. Marome *et al.* (2025) investigate the connection between the phenomenology of inner experience and the structure of memory. The article confirms the idea of the importance of phenomenological space and memory: the process of memorisation is not merely a mechanical recording of data, but active "navigation" within a space of internal images and thoughts. The authors demonstrate that deviant or maladaptive cognitive states (distraction, loss of focus) can be viewed as errors in this "topology of encoding", leading to a loss of coherence in experience. T. Solodovnyk *et al.* (2026) analyse the mechanisms of adaptation in veterans, with particular attention to the "rupture" between the inner space of military experience and the external space of peaceful life. S. Shinan-Altman (2024) demonstrates how a radical change of space (captivity/war) disrupts the "cognitive maps" of the individual. The author identifies a dichotomy between inner and outer space, illustrates the topology of phenomenological space, and shows that disturbances in spatial perception lead to maladaptive behaviour. A. Melnyk & T. Haliant (2026), in their work, propose an analysis of the process of "rewiring" traumatic memory and restoring temporal perspective. Reintegration is understood as the restoration of psychological and behavioural integrity. This work supports the idea of memory associativity, showing how veterans reinterpret combat experience in order to "integrate" it into a new social framework of coordinates.

A group of authors led by R. Heinen *et al.* (2025) demonstrate that the brain creates "cognitive representational spaces" (cognitive maps), in which information is organised according to a specific topology. As a result of their study, the authors found that the "distance" between objects in this mental space directly affects the strength of associations and the accuracy of memory. The article shows that behaviour (decision-making) is determined precisely by the structure of this "map". If the map is distorted (for example, due to stress or war), behavioural "routes" become inadequate to reality, which manifests as deviation. L. Marku (2025) investigates how topological constraints (the structure of connections) and the phase dynamics of neurons make it possible to form stable associative memory. The article describes how network topology "imposes" certain patterns of memory retrieval. This provides a mathematical and neurobiological justification for why memory associativity is not chaotic, but rigidly tied to spatial structure (topology). The work logically leads to the idea that "deviant" behaviour may result from consciousness becoming "trapped" in certain topological attractors (memory traps), from which a person cannot escape due to the rigidity of established connections.

Thus, the literature review makes it clear that the exploration of various aspects of the relationship between space, memory associativity, and forms of deviant behaviour is a topic of considerable scientific interest. It should be noted that memory is a complex mental function, encompassing such aspects as selectivity, associativity, durability, reproducibility, and contextuality; in earlier work, the authors examined its selectivity and constructed a spatial-mnestic model of deviant behaviour for this aspect of memory. The aim of the present study was to develop a trichotomous spatial-mnestic model of deviant behaviour for memory associativity. Achieving this aim involved, first, theoretically and analytically demonstrating the relationship between memory associativity, spatial characteristics, and forms of deviant behaviour; and second, proposing an empirical investigation of the issue.

✦ Materials and Methods

The study was based on phenomenological, theoretical and empirical methodological approaches. It was conducted in 2025 and included several stages. Due to the fact that memory is a complex mental process requiring a differentiated research approach, at the first stage of the study the focus was directed towards one of its fundamental aspects – associativity. To demonstrate the functioning of associative memory in the norm, a phenomenological analysis was carried out using the example of a 2nd-century work of art – the image "The Prophet before the Mother of God with the Infant," located in the Roman Catacombs of Priscilla. The analysis, in which space was considered as a unified, undivided field, demonstrated how the transition of meaning occurs from one element of the composition to another, forming an organic symbolic-thematic order. At the second stage, an analysis of a text by V. Frankl (2023) was proposed, examining the relationship between memory associativity, phenomenological space – expressed through topological characteristics (continuity, extent, structuredness, three-dimensionality, infinity) – and behavioural forms, including deviant behaviour. The possibility of presenting a unified phenomenological space in the form of specific topological characteristics, as well as the analytical transition from the topology of space to its phenomenological perception, was based on the work of D. Arabadzhy (2025). The third stage involved the selection of a psychodiagnostic method for the empirical study of memory associativity. This method was the Word Association Test, as it allows each associative transition to be interpreted as movement within phenomenological space, where the stimulus is the entry point into the space, the response is the point of actualisation, reaction time is the length of the trajectory, and the type of connection is the form of the route. Through the Word Association Test, it is possible to carry out a topological reconstruction of phenomenological space on the basis of associative indicators, after which the characteristics of space can be linked to forms of deviant behaviour.

The fourth stage included the organisation and conduct of an empirical study in a remote format using a digital platform for individual testing. The study involved 44 individuals aged 20 to 50 years living in one city. The inclusion criteria were compliance with the specified age range and residence within a single urban social space. No specific exclusion criteria were established, since the study did not involve clinical diagnosis and was aimed at identifying general patterns of the relationship between memory selectivity and the spatial organisation of experience. The choice of the 20-50 age group is explained by the fact that this period is characterised by relative cognitive stability. In terms of deviant behaviour, this stage was considered not as a phase of primary formation, but as a period of practical manifestation of deviant forms in social and psychological space. The factor of participants living in the same city was taken into account in order to reduce the influence of heterogeneous socio-cultural conditions and to ensure relative homogeneity of the external space. All participants completed the Word Association Test remotely, in a familiar environment of their own choosing. Before the procedure, they were provided with standardised written instructions, fully identical in content and wording. The instructions explained the purpose of the task, the procedure for its execution, and the requirements for the responses provided. The fifth stage involved calculations and analysis of the obtained empirical data. The phenomenological concepts of continuity, extent, structuredness, three-dimensionality, and infinity of space were operationalised, calculated, and described in terms of possible forms of deviant behaviour for 44 individuals, and conclusions were drawn.

Data processing was carried out using descriptive statistical methods with the use of Excel software. The study was conducted in accordance with the ethical requirements established by the WMA (2024). All participants provided informed consent in electronic form prior to testing, were informed about the voluntary nature of participation, as well as the possibility of withdrawing at any time without negative consequences. The obtained data were used exclusively in aggregated form in accordance with the principle of confidentiality.

✦ Results and Discussion

A phenomenological analysis of memory associativity in the normative case is illustrated using the example of a 2nd-century work of art, the image of the Virgin Mary in the Catacombs of Priscilla. If, in the case of the selectivity of memory, what matters is what exactly is selected, then in the case of memory associativity what is important is how the selected information is connected, that is, how the transition from one fragment of information to another occurs. As an example of the functioning of associativity under normal conditions, the earliest monument of Christian art of the 2nd century is presented, located in the Catacombs of Priscilla – the image "The Prophet before the Mother of God with the Infant" (Fig. 1).

Figure 1. *The Prophet before the Mother of God with the Infant. Catacombs of Priscilla, 2nd century*
Source: *I. Foletti (2011)*

This example demonstrates cultural associative memory, understood as a set of historically formed, collectively

assimilated semantic connections between images, symbols, and texts, which ensure the recognition and correct interpretation of an image within a particular tradition (Ohiyenko, 1962; Panofsky, 1962). It is this memory that determines which elements are connected and in what direction the transition of meaning occurs. Cultural associative memory between the elements of the composition ensures the understanding that the central image should be correlated with the historical image of the Virgin Mary, rather than with any other figure or with an abstract representation of a female figure. The system of elements – the star, the prophet with the scroll, and the Infant – being thematically interconnected, allows the central image to be recognised.

The figure of the Old Testament prophet is identified primarily through an iconographic feature – the scroll in his hand. In the Christian tradition, the scroll is a sign of the prophetic word, and the specific text associated with this image comes from the Book of the Prophet Isaiah: "Behold, a Virgin shall conceive, and bear a Son, and shall call His name Emmanuel" (Isaiah 7:13-14). It is precisely this quotation that has become fixed in the cultural memory as a prophecy of Christ's birth; therefore, the presence of the scroll automatically narrows the range of possible interpretations of the figure – this is not an abstract old man, but the prophet Isaiah. The gesture of the right hand, pointing towards the star, reinforces this semantic connection. In Christian symbolism, the star signifies the sign of the Messiah's birth in Bethlehem. Thus, a double associative chain emerges: the prophetic word (Isaiah's text) – its fulfilment in history (the birth) – the cosmic sign of fulfilment (the star).

As a result, the star and the prophet with the scroll function as interpretative markers. They do not merely accompany the central figures, but guide the viewer's perception, establishing the correct direction of associative transition. Through this, the figures of the Woman and the Infant are identified not as a generalised image of a mother and child, but as specific historical and theological figures – the Mother of God and Jesus Christ. Associativity here functions as a mechanism linking prophecy, symbol, and event into a unified semantic structure. There is also an aspect of the narrative that should be attributed to the operation of cultural-collective, unconscious associative memory. The depiction of the Christ Infant as naked is a specific feature of images belonging to the first three centuries; from the 4th century onwards, the Infant is predominantly depicted clothed. One possible explanation is as follows: clothing conceals human nakedness and provides a sense of protection. The early centuries were a period of persecution of Christians; the Church experienced vulnerability, lack of protection, and exposure to external aggression. Thus, the Infant, as an image of the Church of Christ, is associatively linked to a naked depiction. When the Church historically rose to the level of a state religion, becoming protected – this occurred from the 4th century onwards – the Infant began to be depicted clothed (Warburg, 1999).

Thus, this example illustrates the functioning of symbolic cultural associative memory in the normative case. Memory associativity is a mechanism of meaningful connection between selected elements, ensuring the transition from fragments to a coherent whole; in the example of the image "The Prophet before the Mother of God with the Infant" from the Catacombs of Priscilla, the star, the prophet with the scroll, and the Infant form a thematically coherent system that allows the identification of the Mother of God and Christ. Associativity has a cultural-collective dimension: the recognition of the prophet is based on the text from the Book of the Prophet Isaiah, while the change in the depiction of the Infant (naked-clothed) reflects the historical state of the Church. Under normal conditions, associativity is characterised by logical transitions, historical rootedness, and symbolic coherence, ensuring the integrity of the interpretation of the image.

The relationship between the topology of space in its five characteristics, memory associativity, and deviant behaviour is illustrated using the example of the text by V. Frankl (2023). Continuity of phenomenological space consists in the fact that the transition from one point to another occurs without gaps, ruptures, or jumps. In the context of memory associativity, continuity of space determines the integration of discrete elements into a flow of meaning. From the analysed text describing the psychology of camp experience, V. Frankl notes that at times an external stimulus can trigger a "withdrawal into oneself", an "escape inward". However, such withdrawal should not be interpreted as a rupture with reality, since the connection with it remains, and a person can consciously move between inner and outer reality. Inner reality is, as it were, superimposed upon external reality without any abyss between them, so it would be incorrect to speak of derealisation in this case. V. Frankl attributes the tendency to withdraw into oneself to intellectually inclined individuals of a "fragile constitution", and for this reason they "withstand camp reality better than those who are outwardly strong and robust".

An example of such inward escape is provided by V. Frankl through recourse to personal memories: "We marched at dawn from the camp to the construction site"; commands are heard; "we pass through the camp gates"; unbearable cold; "searchlights are directed at us"; "in the darkness we continue walking, stumbling"; "the guards constantly shout at us"; "the wind cuts our faces, preventing speech"… "And before me appears the image of my wife…" "Through the thick clouds, the pink light of the morning dawn begins to break through. And before my inner gaze stands my beloved. My imagination has managed to render her so vividly, so clearly, as never before in my previous, normal life". After some time, "…the one walking in front of me falls, those behind him also lose their footing. The guard is already there, already striking us to restore order. Within seconds my inner contemplative life is destroyed. But the soul is again capable of rising; it once more breaks free from the immediate camp existence,

beyond it, and resumes its dialogue with the beloved". From this it is evident that the world, with its harsh conditions, remains present – it is felt and experienced. The transition between inner and outer reality occurs easily in both directions. This indicates that phenomenological space is continuous. A "return to the past", when "the imagination is occupied with reconstructing past impressions" – sometimes "details of everyday life" – was important for prisoners, as it "brought them light". V. Frankl (2023) also describes the experience of those whose phenomenological space was disrupted, that is, whose associations were broken and whose flow of experience became fragmented – they ceased to feel, lost interest in life, existence became mechanical, and states of "stupor" and "apathy" emerged. Thus, the loss of associativity leads to deviant behaviour.

The extent of phenomenological space is revealed through its dimensionality. If space is measurable, then it becomes important to what degree it is extended. In the context of associativity, the length of phenomenological space is determined by extended associative connections. Analysis of the text shows that associative memory possesses length in two directions – temporal and existential. Temporal length is the capacity of associations to extend into the past or the future. It is a chain of memories in which transitions occur from one image to another, either towards the past or the future. "Here," writes V. Frankl (2023), "you are riding in a tram; here you arrive home, open the door; here the telephone rings, you pick up the receiver; switch on the light".

Existential length implies the breadth of associative coverage. A given event is capable of triggering a long associative chain of images. V. Frankl (2023) writes about this as follows: "I speak with my wife, I ask, she answers. I see her smile, her encouraging look, and – even if this look is bodiless – it shines more brightly for me than the rising sun at that moment". "You dig the ground for hours… and once again begin a dialogue with your beloved. And you feel her presence more and more, feel ever more distinctly that she is near. And it seems that you could touch her, that one need only stretch out a hand – and her hand will reach out towards you". The extension of phenomenological space reflected in these examples should be contrasted with the camp's reduction of space to a narrow corridor of bodily survival, which in its manifestations may be regarded as deviant behaviour.

The structuredness of phenomenological space presupposes the subordination of its content to a hierarchy of meanings. In the context of associative memory, structuredness means that associative transitions occur not according to randomness, but according to the principle of existential significance. Associativity preserves the structure of space from disintegration. Phenomenological space is organised around such important value nodes as love, meaning, and responsibility. V. Frankl (2023) demonstrates how love becomes a fundamental principle of phenomenological space: "I understood, I accepted the truth – that only love is the ultimate and highest that justifies our existence here, that can elevate and strengthen us… I now know that a person who has nothing left in this world may still, if only for a moment, possess spiritually the most precious thing: the image of the one he loves".

Personal meaning is the centre that participates in the structuring of phenomenological space. V. Frankl (2023) writes of the necessity of taking a stance towards suffering and violence – "to take a position with regard to this form of extreme coercive limitation of one's existence". And further: "A person always and everywhere stands against fate, and this resistance makes it possible to transform suffering into an inner achievement". This refers to the meanings that shape suffering in the here and now. But there are meanings that determine the necessity of living through the future, meanings that look ahead. V. Frankl describes the horror of suffering in the camp, when the body is filled with unbearable pain and everyday concerns are tied to survival: "And it is here that I employ my method: in the next moment I see myself standing at a lectern in a large, brightly lit, beautiful, warm hall. I am giving a lecture – and the audience sitting before me in comfortable, soft chairs listens with interest. And I speak about the psychology of the concentration camp. And everything that oppresses and torments me now somehow becomes objectified for me, is seen from the height of scientific analysis". When associative structuredness is disrupted, memory loses its hierarchy of meaning: images and experiences cease to be connected with values. In such a case, a person loses responsibility for their actions, participates in violence, and justifies cruelty and moral relativism.

The text of V. Frankl (2023) allows to speak of the three-dimensionality of phenomenological space. The first axis is bodily-present: cold, fatigue, pain. The second is the past as lived experience, filled with relationships and values. The third is the future as direction, expectation, and task. Associative memory moves freely between these dimensions without destroying their distinction. Moreover, it is precisely memory that allows the depth of space to be maintained, preventing its reduction to the plane of the "here and now". For example, when V. Frankl turns to the image of his wife and enters into communication with her, or when he sees himself at the lectern delivering a lecture, this is movement within phenomenological space that reflects its depth. V. Frankl writes that the loss of the future leads to behavioural degradation. A person develops repetitive traumatic scenarios, loses life values, and abandons socially significant roles.

In V. Frankl (2023), associative memory reveals the experience of the infinity of phenomenological space even under conditions of external limitation. The camp is a confined space: fences, barracks, regime, death. Yet the inner space does not close. Associations have no final point: the image of a loved one, the meaning of life, responsibility for the future are inexhaustible. For this reason, V. Frankl emphasises that a person cannot be deprived of the freedom of attitude: "The spiritual freedom of a person, which cannot be taken away from them until their final breath, allows

them until their last moment to fill their life with meaning." Thus, the analysis of the text makes it possible to conclude that associative memory can be considered in terms of the topological indicators of phenomenological space (Table 1).

Table 1. *The relationship between the topology of space, memory associativity, and possible forms of deviant behaviour*

Topological characteristic of space	Manifestation in the text	Nature of memory associativity	Disturbance of associativity	Possible forms of deviant behaviour
Continuity	A free transition from camp reality to the image of the wife and back; a "withdrawal into oneself" without a rupture with the external world	Coherence of associative transitions; absence of gaps between inner and outer reality; preservation of the flow of meaning	Break in the flow of experience; interruption of associations; apathy, "stupor"	Mental passivity; loss of interest in life; mechanical existence; behavioural degradation
Extent (temporal and existential)	Extended chains of memories (past – wife; future – lecture hall and presentation); internal dialogue	Long associative chains; movement into the past and the future; broad existential scope	Narrowing of the associative range to bodily survival; reduction to the "here and now"	Behaviour oriented exclusively towards biological survival; loss of perspective; regression
Structuredness	Centring of space around love, meaning, and responsibility; a hierarchy of values	Associations organised according to existential significance; presence of semantic nodes	Loss of hierarchy of meanings; chaotic associations; devaluation of values	Moral relativism; participation in violence; loss of responsibility
Three-dimensionality (present – past – future	Simultaneous holding of bodily pain, the image of the wife, and the image of a future speech	Free movement of memory across dimensions; preservation of depth of experience	Loss of the future dimension; fixation on a traumatic present	Behavioural degradation; recurring traumatic scenarios; rejection of social roles
Infinity	Inner freedom of attitude towards fate; inexhaustibility of meaning even within the camp	Openness of associative connections; absence of a final point to the horizon of meaning	Closure of inner space; a sense of ultimate hopelessness	Existential capitulation; refusal of meaning-making; destruction of one's life stance

Source*: compiled by the authors based on V. Frankl (2023)*

The analysis of the text makes it possible to elaborate the functioning of associative memory and, at the same time, to relate spatial characteristics to possible forms of behaviour, particularly, in cases of disturbances in memory associativity, to deviant forms of behaviour. The problem lies in the need to move from phenomenological interpretations to clear, formalised results. There arises a need to operationalise memory associativity in such a way that, on its basis, it becomes possible to describe the spatial phenomenological characteristics and, subsequently, to provide a grounded analysis of forms of deviant behaviour. To address this issue, it is appropriate to employ the Word Association Test as a tool for recording and quantitatively analysing associative connections.

The transition from Word Association Test indicators to spatial characteristics and forms of deviant behaviour can thus be established. For the study of memory associativity, it is effective to make use of the Word Association Test. From the test results obtained, it is possible to analytically proceed to the properties of the associative field, and from these, the spatial characteristics – continuity, extent, structuredness, three-dimensionality, and infinity. Table 2 presents a synthesis of five parameters that describe the phenomenological associative space: continuity as the temporal coherence of the flow; extent as the scope of the unfolding of experience; structuredness as hierarchical organisation; three-dimensionality as the multidimensionality of association; and infinity as structural openness and non-cyclicity.

Table 2. *Transition from Word Association Test indicators to topological characteristics of phenomenological space*

Spatial parameter	Operationalisation (formulae)	Empirical indicators	Theoretical meaning	Interpretation
Continuity	$KR = R / N$; $\bar{L} = (1/n)\Sigma L_i$; $CV = SD(L) / \bar{L}$; $LS = 1 / (1 + CV)$; $IC = KR \times LS$	N – number of stimuli; R – number of responses; L_i – latencies	Degree of preservation of the associative flow over time; a combination of completeness of responding and uniformity of tempo	IC > 0.8 – high continuity; 0.6-0.8 – moderate; 0.4-0.6 – strained; <0.4 – fragmentation
Extent	P_total = P_long + P_hor + P_vert (each axis scored 1-5 points; total 3-15)	Mean reaction time (M); number of semantic fields; levels of generalisation of responses	Distance of mental unfolding: temporal, thematic, and abstract-hierarchical	3-6 – reduced; 7-10 – moderately developed; 11-13 – developed; 14-15 – highly developed space
Structuredness	$Kc = Nc / N$; $Ir = \Sigma(ni$ where $ni \geq 2) / N$	Nc – responses in stable clusters; ni – category frequencies	Degree of ordering and centralisation of the associative field; presence of stable semantic cores	Low values – fragmentation; medium – moderate organisation; high – pronounced centralisation

Table 2. *Continued*

Spatial parameter	Operationalisation (formulae)	Empirical indicators	Theoretical meaning	Interpretation
Three-dimensionality	$R_i = (D_i, M_i, G_i)$	D – semantic distance; M – affective modality; G – depth of personal involvement	Spatial model of association as a multidimensional point; integration of cognitive, emotional, and existential dimensions	Even distribution across three axes – pronounced three-dimensionality; reduction to one axis – flattening of space
Infinity	$O = N\_clusters / N\_total$; $C = \Sigma(p_j)^2$; $R_r = \Sigma(n_j - 1) / N\_total$; $II = O \times (1 - C) \times (1 - R_r)$	N_total – total number of responses; N_clusters – number of clusters; p_j – probabilities of clusters	Structural openness of the field: diversity of directions, low concentration, and low cyclicity	$II \to 0$ – closure, predictability, cyclicity; $II \to 1$ – structural openness, distribution, non-cyclicity

Source: *compiled by the authors*

All parameters are based on classical statistical operations (frequency, mean, variance, standardisation, concentration index), integrated into a phenomenological interpretation of cognitive space. The analytically obtained results, which describe the topological characteristics of phenomenological space, allow to proceed analytically to the forms of deviant behaviour corresponding to each characteristic of the space. Table 3 summarises the parameters of phenomenological space and possible forms of deviant behaviour.

Table 3. *Transition from the topological characteristics of phenomenological space to possible forms of deviant behaviour*

Parameter	Level	Behavioural correlate	Probable form of deviation
Continuity (IC)	High (>0.8)	Stable self-regulation	Minimal risk
	Moderate	Local tension	Situational affective reactions
	Low	Breaks in associations	Impulsivity
	Very low	Fragmentation of consciousness	Disorganised, aggressive behaviour
Temporal length (M)	Low	Reactivity	Impulsive forms
	Medium	Balance between reaction and reflection	Deviation unlikely
	High	Deep processing of experience	Anxious-ruminative forms
Horizontal extent	Low	Narrowness of meaning	Rigidity, stereotypy
	High	Thematic variability	Eccentricity
Vertical extent	Concrete level	Literalness	Primitive forms of response
	Symbolic level	Sensitivity to meaning	Ideological fixation, crisis-proneness
Structuredness (Kc, Ir)	Low	Inconsistency	Chaotic behaviour
	Moderate	Flexible organisation	Deviation unlikely
	High	Rigid value system	Dogmatisation, scenario-based behaviour
Three-dimensionality (X – Y – Z)	Semantic compression (X ↓)	Normativity	Conformism
	Semantic expansion (X ↑)	Non-standardness	Eccentricity
	Affective amplitude (Y ↑)	Emotional polarity	Affective outbursts
	Depth of meaning (Z ↑)	Meaning-centredness	Existential crises
Infinity (II)	Low (closure)	Cyclicity	Recurring conflicts
	Medium	Moderate openness	Situational forms
	High (openness)	Expansiveness	Identity instability

Source: *compiled by the authors*

The analytical transition from the parameters of phenomenological space to forms of deviant behaviour is based on the assumption of the regulatory function of the spatial organisation of consciousness. Changes in the structural parameters of space lead to specific deficits in integration, temporal perspective, affective modulation, or semantic centralisation, which manifest in typologically distinct forms of deviant response. The results of the empirical study of the relationship between memory associativity, the topology of space, and forms of deviant behaviour are presented. The analytically derived topological reconstruction of phenomenological space and its connection with possible forms of deviant behaviour make it possible to turn to the Word Association Test and, at this stage, obtain practical results both for individual cases and for groups. Taking into account the interpretations provided in Table 2, the results of the calculations of the distribution of psychometric indicators for the entire group (44 participants) are presented as percentages (Table 4). Calculation of the group distribution shows that, according to the data, the majority of participants demonstrate average values. Continuity (IC): mean ≈ 0.70-0.73, indicating moderate continuity. Extent: 13-15, indicating a high level. Kc/Ir: 0.52-0.56, indicating moderate structuredness. Three-dimensionality: $\bar{D}/\bar{M}/\bar{G}$: 3.2-3.7, predominantly average, with some higher values. Infinity (II): 0.38-0.41, indicating a medium to low level.

Table 4. *Distribution in % (44 participants)*

Indicator	High	%	Medium	%	Low	%
Continuity (IC)	2	5	40	91	2	5
Extent	35	80	9	20	0	0
Structuredness (Kc/Ir)	0	0	44	100	0	0
Three-dimensionality D̄	10	23	34	77	0	0
Three-dimensionality M̄	20	45	24	55	0	0
Three-dimensionality Ḡ	12	27	32	73	0	0
Infinity (II)	0	0	44	100	0	0

Source*: compiled by the authors*

From Table 4 it can be seen that continuity shows that almost the entire group has moderate values (IC 0.6-0.8), indicating a stable associative flow, but with latent "jumps"; extent shows that the overwhelming majority are highly developed, with associations covering broad temporal, thematic, and level-based ranges; structuredness indicates that all participants have moderately expressed centres of meaning, with no instances of low-structured space; three-dimensionality shows that the M̄ (45%) and Ḡ (27%) axes demonstrate high involvement and emotionality among participants, while the remainder have average values, whereas D̄ (77%) is predominantly average, indicating a moderately varied semantic distance; infinity (II) shows that the entire group falls within the medium range (0.38-0.41), reflecting partial openness with recursion present.

Based on the calculations of the participants' phenomenological space and the logic of transitioning from spatial characteristics to possible forms of deviant behaviour, a table of percentage distribution of potential deviations can be constructed (Table 5). The table identifies four main types of deviation. Situational/impulsive deviation refers to local emotional surges and short-term departures from the norm. Value/existential deviation involves norm violations motivated by values, principles, or symbolic meanings. Cyclical/repetitive deviation refers to habitual patterns of deviation and recurring events within familiar domains. Intellectual-symbolic/creative deviation refers to philosophical, creative, or idealised forms of deviation. Table 5 shows that situational deviation rarely manifests to a high degree; consequently, most participants are not prone to impulsive behaviour, though some exhibit moderate, short-term deviations. Value/existential deviation is the most pronounced, meaning that many participants are inclined towards actions motivated by principles or inner convictions. Cyclical/repetitive deviation is observed to a moderate extent, so habitual patterns are possible but do not dominate. Intellectual-symbolic deviation is evident in a third of the group; consequently, there is a possibility of non-standard, creative or philosophical violations of norms. Thus, the group is characterised by high cognitive and existential engagement, moderate continuity and moderate structural openness. Deviance manifests not impulsively, but more often through value-based, symbolic and repetitive patterns. Members are capable of creative and philosophical deviance, which may manifest as non-conventional thinking, idealisation or creative norm-breaking. Group dynamics reveal a balance between structure and openness, indicating a relatively stable yet potentially flexible associative field.

Table 5. *Percentage distribution of possible forms of deviation (44 participants)*

Type of deviation	High probability, %	Medium, %	Low, %
Situational/impulsive	9	84	7
Value/existential	32	61	7
Cyclical/repetitive	14	75	11
Intellectual-symbolic/creative	27	66	7

Source*: compiled by the authors*

Comparing existing relevant research on the topic with the results obtained whilst working on the trichotomous spatial-mnestic model, it should be noted that the authors of the studies proceed from the spatial metaphysics of consciousness: they understand memory and thinking as processes unfolding within a structured phenomenological or cognitive space. In J. Colelli (2025), the topology of the phenomenal field (length, continuity, structure) enables associativity. B. Marome *et al.* (2025) note that memory is navigation within an internal space. In S. Shinan-Altman (2024) and T. Solodovnyk *et al.* (2026), impaired behavioural adaptation is explained by a disconnect between internal and external space. In R. Heinen *et al.* (2025), "cognitive maps" describe the topological organisation of representations. In L. Marku (2025), the topology of the neural network determines stable patterns of associations. In all cases, space acts as a regulatory principle of memory and behaviour. On the other hand, the idea that behaviour depends on the structure of the associative field is evident in all the works. Distortions in topology – stress, trauma, distraction or phase fixation of neural dynamics – lead to maladaptive forms of response. This establishes a general thesis: deviation is a consequence of a structural disruption in the space of experience.

Nevertheless, and this is very important, the present study combines phenomenological (experience), cognitive (associations), psychometric (indices) and behavioural (deviation) levels of analysis into a single model, unlike, for example, M. Merleau-Ponty (1981), whose focus is on phenomenological and bodily experience, and intersubjective orientation. For most authors, these levels remain disconnected. E. Husserl (1952) defines the phenomenological field of consciousness in which objects are situated within subjective perception. He describes the qualitative properties of experience (duration, direction, context), but does not introduce formal quantitative parameters. This is purely descriptive phenomenology, as D. Moran (2000) agrees. The spatial-mnestic model differs in the systematic nature of its topological description: in most works, analysis is limited to two or three characteristics (most often continuity and structuredness). The spatial-mnestic model introduces a complete system of five topological parameters: continuity, length, structure, three-dimensionality, and infinity – as presented in the work of N. Reichenbach (1958). This allows a transition from particular observations to the broader architecture of phenomenological space. Unlike K. Lewin (1939), the concept of "psychological space" is general and heuristic. It describes psychological forces, directions of motivation and behavioural barriers. Researchers K. Danziger (2000) and B. Burnes & B. Cooke (2013) argue that K. Lewin does not propose specific topological parameters and does not formalise space into numerical or qualitative characteristics, which complicates the direct prediction of behaviour based on his model.

In recent, thematically related studies, deviance is mentioned as a consequence of distortion (addiction, aggression, maladaptation), but no formalised model of the relationship between "spatial parameter and type of deviation" has been developed. The study proposes an analytical transition from each topological indicator to a specific regulatory deficit and further to typologically distinct forms of deviant behaviour (situational, value-based, cyclical, intellectual-symbolic). This creates a diagnostic matrix. Unlike purely theoretical or neurobiological models, the proposed study formulates a concrete tool for the empirical reconstruction of phenomenological space via the Word Association Test. In doing so, it bridges the gap between phenomenology, psychometrics and behavioural analysis.

It should be noted that the proposed study forms part of a broader programme (previously on memory selectivity), gradually forming a coherent spatial-mnestic concept. This scientific novelty is cumulative rather than fragmentary in nature. Studies on veterans and trauma describe the phenomenon of dislocation, but do not propose a universal topological diagnostic algorithm. The spatial-mnestic model allows not only for the post-hoc description of spatial deformation, but also for the prediction of the type of deviation based on the parameters of the associative field, making it applicable in counselling and rehabilitation practice, particularly in wartime conditions.

✦ Conclusions

Memory associativity may be considered as a spatially organised process functioning within a phenomenological space characterised by topological properties: continuity, extent, structuredness, three-dimensionality, and infinity. Each of these characteristics performs a regulatory function: continuity ensures the coherence of experience; extent provides temporal and existential unfolding; structuredness establishes a hierarchy of meanings; three-dimensionality preserves depth (past-present-future); and infinity ensures openness and the non-cyclical nature of the associative field. Disturbances in individual topological parameters lead to specific deformations of memory associativity and manifest in different forms of deviant behaviour: fragmentation and impulsivity (with reduced continuity), narrowing of life perspective (with reduced extent), loss of value hierarchy (with deformation of structuredness), fixation on the present or traumatic experience (with flattening of three-dimensionality), and entrapment in repetitive patterns (with restricted infinity). A phenomenological analysis of an artistic image and the text of V. Frankl confirmed that the preservation of the topological integrity of space ensures behavioural stability even under extreme conditions. The application of the Word Association Test made it possible to operationalise phenomenological characteristics and to transition from associative indicators to a topological reconstruction of individual space. Empirical data (44 participants) demonstrated a predominance of moderate continuity and structuredness alongside high extent and moderate openness of space, corresponding primarily to value-existential and intellectual-symbolic forms of potential deviation, rather than impulsive deviations.

A systemic consideration of the issue directly leads to scientific novelty, and for this reason the construction of a trichotomous spatial-mnestic model of deviant behaviour within the context of memory associativity is particularly relevant. Such a model may serve as a foundation for further research. Moreover, the developed trichotomous spatial-mnestic model, possessing diagnostic value, prognostic potential, and the capacity for integration into psychotherapeutic practice, is especially significant in periods of war and social upheaval, when psychology seeks effective means of supporting the adaptation of military personnel and civilians in combat zones.

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Просторово-мнестична модель девіантної поведінки: топологія феноменологічного простору і асоціативність пам'яті в контексті девіантної поведінки

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✦ **Анотація.** Стаття присвячена розробці трихотомічної просторово-мнестичної моделі девіантної поведінки в контексті асоціативності пам'яті. Теоретичною основою дослідження виступило уявлення про феноменологічний простір як первинну матрицю свідомості, в якій мислення, пам'ять і поведінка організовуються топологічно. Простір розглядався не як фізична даність, а як структуроване поле переживання, що формується у взаємодії сприйняття і психічних функцій. Особлива увага приділялася асоціативності пам'яті як здатності здійснювати переходи між елементами досвіду, забезпечуючи смислову зв'язність свідомості. Актуальність дослідження обумовлена зростанням інтересу до проблеми когнітивних карт і просторової організації пам'яті в сучасній науці. Мета дослідження – теоретично та емпірично обґрунтувати існування кореляції між асоціативністю пам'яті, топологічними характеристиками феноменологічного простору та формами девіантної поведінки. Методологія включала феноменологічний аналіз, теоретичне моделювання та емпіричне дослідження. Емпіричний етап реалізовано із застосуванням Word Association Test. Розроблено процедуру операціоналізації топологічних характеристик простору на основі асоціативних показників (індекси безперервності, протяжності, структурованості, тривимірності та нескінченності). Результати дослідження показали, що у більшості респондентів домінують помірні значення безперервності та структурованості феноменологічного простору при відносно високій протяжності та середньому рівні його відкритості. Виявлено, що варіативність асоціативних переходів відображає ступінь організованості ментального простору і може бути пов'язана з регуляторними механізмами поведінки. На основі аналізу топологічних параметрів і характеру асоціативних зв'язків запропоновано типологію потенційних девіантних проявів. Виділено чотири типи девіації: ситуативну, що пов'язана з локальними порушеннями безперервності; ціннісно-екзистенційну, зумовлену зниженням структурованості смислового простору; циклічну, що виникає внаслідок повторюваних асоціативних траєкторій; та інтелектуально-символічну, яка проявляється у надмірній абстрактності та розширенні асоціативного простору. Отримані результати свідчать про можливість використання топологічних характеристик феноменологічного простору як індикаторів когнітивних передумов девіантної поведінки. Практична цінність роботи полягає в можливості використання запропонованої моделі для діагностики та прогнозування девіантних форм поведінки у психологічній практиці, а також у дослідженнях когнітивної психології, психотерапії та поведінкових наук

✦ **Ключові слова:** системний підхід; структура феноменологічного досвіду; когнітивно-просторова організація; патерни поведінкової регуляції; психологічна ригідність