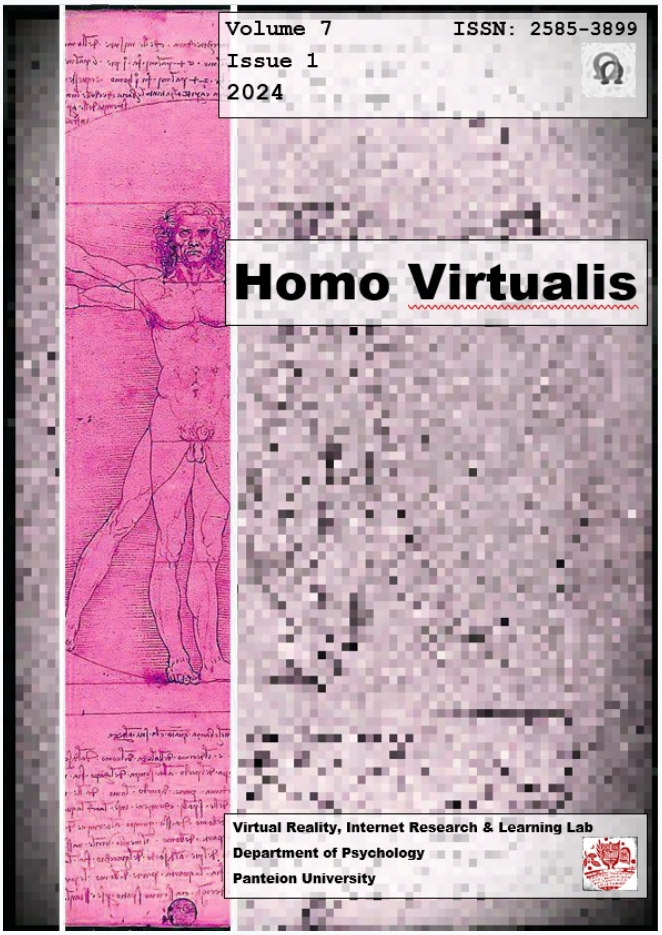
Homo Virtualis

Vol 7, No 1 (2024)

Vol. 7 No. 1 (2024)



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doi: 10.12681/homvir.39832

To cite this article:

Szymańska, A. (2024). Exploring the connections between dissociation and psychosis: A psychocybernetic perspective. *Homo Virtualis*, *7*(1), 21–46. https://doi.org/10.12681/homvir.39832

Homo Virtualis 7(1): 21-46, 2024
ISSN 2585-3899 ∫ doi: 10.12681/homvir.39832

Exploring the connections between dissociation and psychosis: A psychocybernetic perspective

Agnieszka Szymańska [1]

Abstract: This article aims to explore the application of the cybernetic model within the context of explaining the mechanisms behind the development of dissociation and psychosis. The analysis focuses on the cybernetic model, with particular attention to the autonomic system as proposed by Professor Marian Mazur. Priority is given to the role of the homeostat and the feedback mechanism, demonstrating how the homeostat is regulated through tension across the entire autonomic system. Additionally, the impact of the homeostat on tension regulation is discussed in the context of resistance phenomena, especially in situations where the system resists increasing emotional potential in the face of high sensory potential. The conclusions derived from the cybernetic model, presented in the final part of the article, shed new light on the possibility that dissociation may precede psychosis, challenging dominant beliefs in this area.

Keywords: cybernetics, autonomic system, resistance, dissociation, psychosis.

Introduction

The application of cybernetic models to the analysis of psychological phenomena has a long and rich history, dating back to the early days of cybernetics. As early as the mid-20th century, pioneers in this field, including many prominent psychiatrists who participated in the famous Macy conferences, recognized the potential of cybernetics in understanding human psychological processes. One significant example of this integration is the double-bind theory, developed by Gregory Bateson and his

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colleagues. This theory suggested that schizophrenia could result from chronic exposure to conflicting messages in interpersonal relationships, leading to psychological disorientation. Bateson, as a leading figure in cybernetic thought, analyzed these interactions as disturbed feedback loops within a communication system, making the theory an important example of the application of cybernetics to psychology. Although the double-bind theory is less popular today, its impact on the development of psychology from a cybernetic perspective remains undeniable.

Similarly, Marian Mazur, a strong advocate of the use of cybernetics in psychology, made a significant contribution by creating a model of human temperament based on cybernetic principles. The psychocybernetic model presented in this paper is theoretical and based on Mazur's concepts of the autonomous system. While it offers a new perspective on dissociation and psychosis, it requires further empirical validation to confirm its clinical effectiveness. These historical achievements have laid the solid foundations upon which the current resurgence of interest in cybernetic models in psychology is built, as observed in recent years (Biernacka et al., 2023; De Young, Colin, 2022; DeYoung, 2015; DeYoung & Krueger, 2018, 2021). The author of the article delves into the potential of cybernetics to elucidate the workings of personality functioning in the context of dissociation and psychosis, employing a cybernetic model of the autonomous system introduced by Professor Marian Mazur, a leading figure in Polish cybernetics. This model describes the dynamics of autonomous or self-regulating systems (Mazur, 1966, 1976). This model has been applied in the analysis of social phenomena (Kossecki, 1975, 2005), educational contexts (Wilsz, 2013), and has been used in the context of temperament theory (Biernacka et al., 2023) as well as the functioning of depressive personalities (Szymańska, 2023).

The increased interest in the cybernetic model stems from several factors. Firstly, cybernetic concepts such as organism homeostasis have already been utilized in psychology (Cannon, 1932). Feedback interactions within the system, especially in the psychology of family systems, have been long discussed (Bowen, 1978, Minuchin, 1974). Secondly, the development of artificial intelligence enables a deeper and more precise understanding of various phenomena (Russell, Norvig, 2016). Algorithms not only support the verification of existing theoretical models but also provide new information that can lead to the construction of new models or the refinement and precision of existing ones. By discovering patterns previously unseen in large datasets, algorithms can reveal relationships between variables, not only enabling the verification of existing models and hypotheses but also uncovering new dependencies that were previously undescribed. This, in turn, contributes to the development of new theoretical models. Szymańska (2019) demonstrated how structural SEM models used for verifying theoretical concepts can be combined with artificial neural networks, leading to a more precise analysis of complex psychological processes. Additionally, decision trees are used to describe previously uncharted psychological processes and to construct measurement scales (Rzechowska, 2004; Rzechowska, Szymańska 2017).

Cybernetics allows for the reconstruction of potential courses of various phenomena, using knowledge about the mechanisms of self-regulating systems, including humans. As noted by Professor Marian Mazur, one of the pioneers of Polish cybernetics: "*The question was not 'what is a human' but 'what must a human be?'. By asking the right questions, it would be determined that in order to understand humans, one must not focus on humans but on a more general entity. From the postulates that this more general entity would have to fulfill, it would follow that every specific entity, including humans, must fulfill them. However, this required waiting for cybernetics*" (Mazur, 1976, pp. 264-265). Thus, cybernetic models are not only useful for creating new theoretical concepts but also for supplementing and verifying existing models.

The article focuses on utilizing the cybernetic model of the autonomic system to describe the phenomena of dissociation and psychosis. Dissociation is a psychological process in which there is a partial or complete loss of integration among thoughts, feelings, memories, and the perception of reality. It can manifest in various forms, such as dissociative amnesia, dissociative fugue, or multiple personality identification in dissociative disorders (American Psychiatric Association, 2013). Psychosis, on the other hand, is a state in which a person experiences a loss of contact with reality, manifesting as hallucinations, delusions, thought and perception disorders (World Health Organization, 2019).

The difference between dissociation and psychosis primarily lies in the nature of the symptoms and their impact on reality perception. Dissociation involves the disconnection or separation of psychological processes that are normally integrated. Psychosis is characterized by a profound disturbance in reality interpretation, often including auditory hallucinations or delusional beliefs that have no basis in the real world (van der Hart et al., 2006). The author questions the consequences of such a description for the psychotherapeutic and medical sciences and examines whether the cybernetic model supports existing conclusions and knowledge about these phenomena. Based on cybernetic knowledge about the functioning of self-regulating systems, the article provides a cybernetic description of dissociation and psychosis.

The study of the interdependence between dissociation and psychosis within a cybernetic framework, especially from 2000 to 2023, represents a unique scholarly endeavor. The author was unable to locate publications that directly describe the phenomena of dissociation and psychosis from a cybernetic perspective, specifically one emphasizing a systemic approach to control mechanisms and interactions within psychological structures. Unlike standard approaches, the cybernetic perspective requires the application of concepts such as feedback, homeostasis, regulation, and the systemic analysis of behaviors as holistic structures managed through dynamic processes of control and information exchange.

This approach assumes that mental functions and pathological processes, such as dissociation and psychotic states, arise from disruptions in regulatory systems, a loss

of effective internal control, and interactions among various 'subsystems' of the psyche. Thus, a cybernetic framework demands a thorough analysis of interdependencies, control mechanisms, and the ways in which an individual responds to internal and external stimuli, whether adaptively or dysfunctionally.

The difficulty in finding such perspectives in the available literature underscores the need for an innovative approach. This work addresses this gap by developing a unique model based on cybernetics, laying the foundation for further research into these complex mental states.

Dissociation and Psychosis: Exploring Similarities and Differences

In discussions on psychopathology, dissociation and psychosis often become the subjects of detailed research due to their complex nature and impact on individuals' experience of reality. A historical analysis and comparison of these phenomena will illuminate the evolution of perceptions of mental dysfunctions and will facilitate a better understanding of their mechanisms.

The concept of dissociation was introduced into psychological discourse by Pierre Janet (1907), who investigated the disconnection of areas of consciousness as a defense against trauma. Dissociation encompasses processes where there's a separation of consciousness, memory, identity, or perception, affecting the cohesion of personal experience.

Conversely, psychosis, understood as a reality perception disorder, was described in antiquity, but its modern interpretation as part of the schizophrenia spectrum and other mental disorders was shaped by the works of Emil Kraepelin (1919) and Eugen Bleuler (1911). Psychosis is characterized by delusions, hallucinations, and significant thought disorder.

Dissociation manifests as a feeling of emotional numbness or detachment from one's experiences, contrasting the often intense, though situationally inappropriate, emotions observed in psychotic experiences (World Health Organization, 2024). Both dissociation and psychosis affect emotions in an extreme way, yet they differ in the nature of the experienced emotions and their relation to reality.

Dissociation alters the sense of reality through modified perceptions of time, space, and identity, without leading to the creation of new, false beliefs characteristic of other mental states (World Health Organization, 2024). It is a process in which an individual might feel separated from their thoughts, body, or experiences, yet without direct erroneous sensory perceptions. On the other hand, psychosis is a phenomenon where delusions and hallucinations dominate. Delusions are evidence-lacking, erroneous beliefs, persisting despite clear and convincing evidence to the contrary, while hallucinations are sensory experiences perceived without the presence of an actual stimulus (World Health Organization, 2024). Such hallucinations may include hearing

voices that do not exist or seeing things that aren't present in reality, constituting direct erroneous perceptions. Thus, the difference between dissociation and psychosis lies in the cognitive mechanisms that are disrupted. Dissociation affects the continuity and cohesion of personal experience, whereas psychosis disrupts the ability to distinguish what is real and what is not, leading the individual to experience intense, though reality-inappropriate, emotions (World Health Organization, 2024).

Therefore, although both states affect reality perception and can co-occur, they have distinct bases and manifestations. Dissociation may manifest through feelings of separation from one's body or surroundings, while psychosis less frequently has direct somatic manifestations. Both states can affect the body, but they differ in the cause and nature of bodily experiences.

Contemporary psychopathology recognizes the complexity of the relationship between dissociation and psychosis, indicating that they can not only occur independently but also coexist, affecting the psyche of an individual in diverse ways. This is particularly noticeable in the context of certain forms of schizophrenia and borderline personality disorder, where dissociative elements can coexist with psychotic symptoms, such as delusions and hallucinations. Recognizing such coexistence is crucial for diagnostics and therapy, underscoring the need for individually tailored therapeutic approaches. These observations, based on the latest editions of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association, 2013), highlight the complexity of the mental mechanisms underlying these disorders and emphasize the importance of understanding these phenomena in the context of developing effective therapeutic strategies.

In some forms of schizophrenia, dissociative aspects, such as a sense of detachment from reality or thought fragmentation, can be combined with psychotic symptoms, including delusions and hallucinations (American Psychiatric Association, 2013). For example, a patient may experience a dissociative sense of detachment from their body (depersonalization) or reality (derealization), which intensifies their psychotic experiences, such as hearing voices commenting on their behavior. This coexistence affects the individual's perception, making the internal and external world even more complicated and difficult to understand.

Similarly, in borderline personality disorders, dissociative aspects can merge with psychotic episodes, especially in high-stress situations (Putnam, 1989). Individuals with this disorder often experience intense emotions, which can lead to momentary psychotic states, such as transient delusions or hallucinations. In this case, dissociation may act as a defense mechanism, allowing the mind to temporarily "escape" from the intensity of emotions, which may be misinterpreted as psychosis symptoms.

For instance, a person with borderline personality disorder may experience strong dissociation in response to emotionally difficult events, during which they lose a sense of time and identity. In this state, they may also experience transient delusions or

hallucinations, such as hearing voices without an external source (Putnam, 1989). Such dissociative-psychotic experiences require special attention in the diagnostic and therapeutic process, as they can significantly affect functioning and quality of life.

The contemporary approach to treating such complex psychopathological states, where both dissociative and psychotic aspects are present, requires individually tailored therapy, taking into account both spheres of experience. Understanding how dissociation and psychosis co-occur is crucial for developing effective intervention strategies that address the unique needs and experiences of patients (American Psychiatric Association, 2013; Putnam, 1989).

The Structure of the Autonomic System

The autonomic system, according to Marian Mazur's theory, is crucial for analyzing psychological processes such as dissociation and psychosis (Mazur, 1966). In this model, feedback mechanisms play a central role in allowing the system to self-regulate. Every autonomous system strives to maintain internal balance, reacting to external stimuli through a complex network of interactions between its components. The main elements of this system – the correlator, homeostat, and accumulator – work together to manage sensory stimuli, emotions, and decision-making.

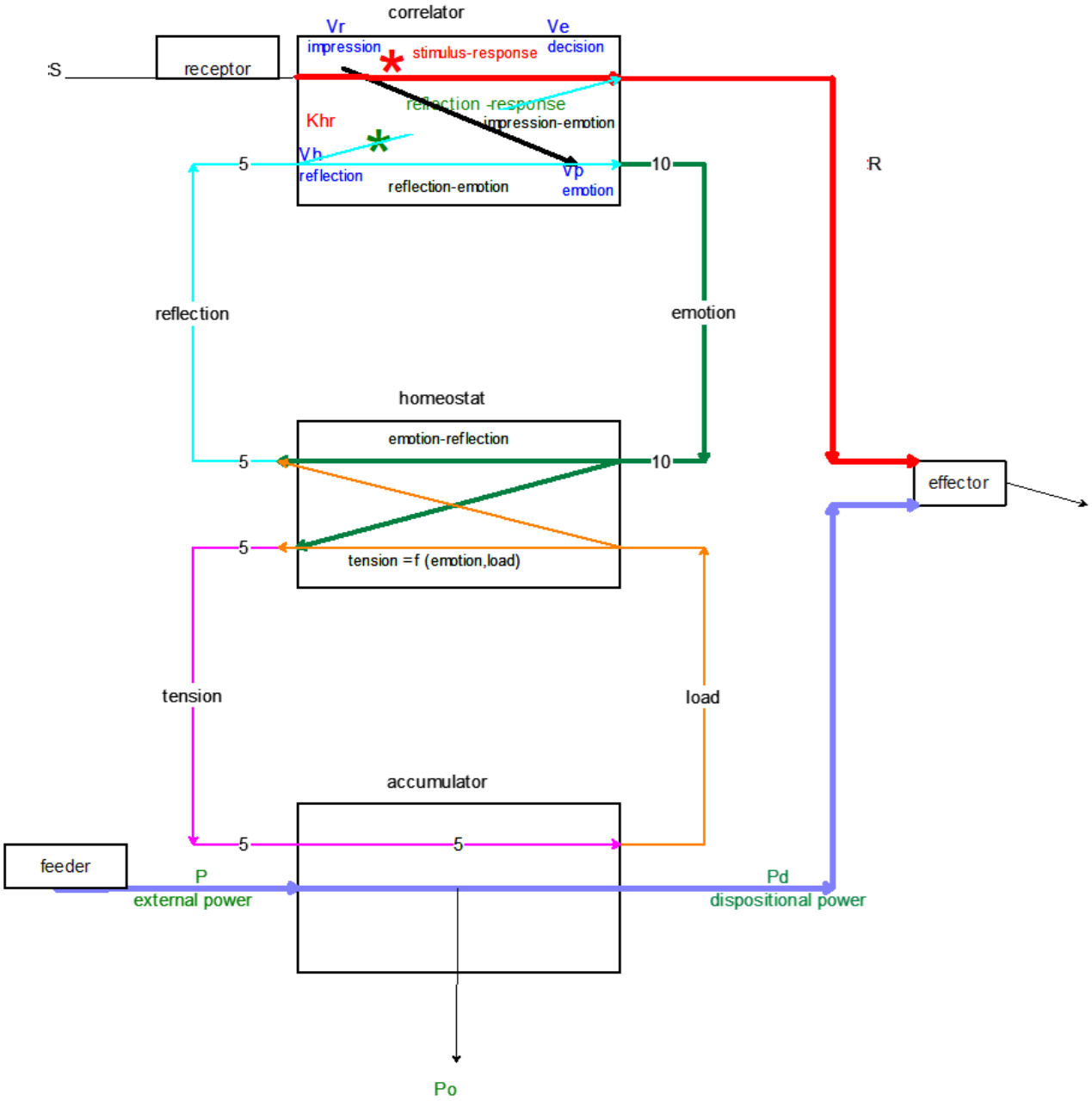
In simplified terms, the correlator processes information and integrates stimuli, the homeostat regulates emotional and reflective tensions, and the accumulator functions as an energy storage unit. In response to external disturbances, this system aims to restore balance through intricate interactions between the sensory, emotional, and reflective centers. This process can be compared to the human body's response to stress, where appropriate tension regulation allows for homeostasis, and disruptions to this balance can lead to phenomena such as dissociation or psychosis.

In the following sections, we will explore the structure of the autonomic system and the mechanisms responsible for generating and regulating tensions, which will help us understand how this model can be applied to the analysis of psychological phenomena such as dissociation and psychosis.

The autonomic system, subject to intense analysis, plays a crucial role in examining the subtleties of dissociation and psychosis through the cybernetic paradigm. This article focuses on a detailed consideration of the structure of the autonomic system model, which lays the groundwork for developing a model of dissociation and psychosis. Figure 1 illustrates the detailed diagram of Mazur's autonomic system, highlighting the complex interrelations between the correlator, homeostat, and accumulator, as well as their feedback mechanisms. According to Marian Mazur, the creator of the autonomic system concept, the autonomic system, in its complex form, comprises three main components: the correlator, the homeostat, and the accumulator. The detailed diagram of Mazur's autonomic system is presented in Figure 1.

The correlator, serving as a cognitive equivalent to the head, is structurally based on two inputs (VR - the sensory center, Vh - the reflective center) and two outputs (Ve - the decision-making center, Vp - the emotional center) (see Figure 1). In the sensory center, the receptor potential Vr is generated; in the emotional center, the perturbatory potential Vp; in the reflective center, the homeostatic potential Vh; and in the decision-making center, the effector potential Ve.

Figure 1: The Autonomous System according to Mazur (1966, 1976).



Source: Own work based on Mazur (1966, 1976)

The dynamic flow of correlational power between these centers acts as a catalyst for complex decision-making, emotional, and cognitive processes. The stimulus-response, precisely illustrated in Figure 1, represents the individual's immediate response to

external stimulation. Another flow of correlational power, from the sensory center Vr to the emotional center Vp (path Vr -> Vp), leads to the generation of emotions as a result of exposure to external stimuli, as depicted in Figure 1. Finally, the stream of correlational power between the reflective center Vh and the decision-making center Ve (path Vh -> Ve) illustrates the subtleties of thought-decision processes (Mazur, 1976), (see Figure 1).

In Mazur's autonomic system, key concepts such as **tension**, **load**, and different forms of **power** play a fundamental role in maintaining the system's balance. **Tension** represents internal emotional or reflective pressure that arises when the system faces challenges in restoring equilibrium, and its regulation is managed by the homeostat. On the other hand, **load** refers to external pressures or stimuli that the system's accumulator must process, which in psychological terms can be compared to stress that a person needs to manage in response to external stimuli.

Additionally, three types of power are essential: **external power**, **dispositional power**, and **idle power**. **External power** is the energy that comes from outside the system, which can be used to handle loads or restore balance. **Dispositional power** refers to the energy stored within the system, which can be accessed during critical moments, providing flexibility in the system's responses. Finally, **idle power** describes the minimal amount of energy required to maintain the system's basic functions – both physical and psychological – even when the system is not actively under load (Mazur, 1966, 1975).

These elements – tension, load, and power – collectively form a mechanism that allows the autonomic system to self-regulate, which is crucial for understanding psychological phenomena such as dissociation or psychosis.

The autonomic system, as conceptualized by Mazur, connects with the external world through three key components: the **receptor**, the **effector**, and the **feeder**. The **receptor** and the **feeder** supply the system with critical input – the receptor brings in **stimuli** and **information** from the environment, while the feeder supplies **energy** necessary for the system's functioning. This external energy is essential to handle loads and maintain the system's balance. On the other hand, the **effector** serves as the output mechanism through which the system interacts with the external world, allowing it to **transmit its responses** and **actions** back to the environment. Together, these three components ensure that the system remains in constant interaction with its surroundings, enabling it to adapt, respond, and maintain homeostasis effectively (Mazur, 1966, 1975).

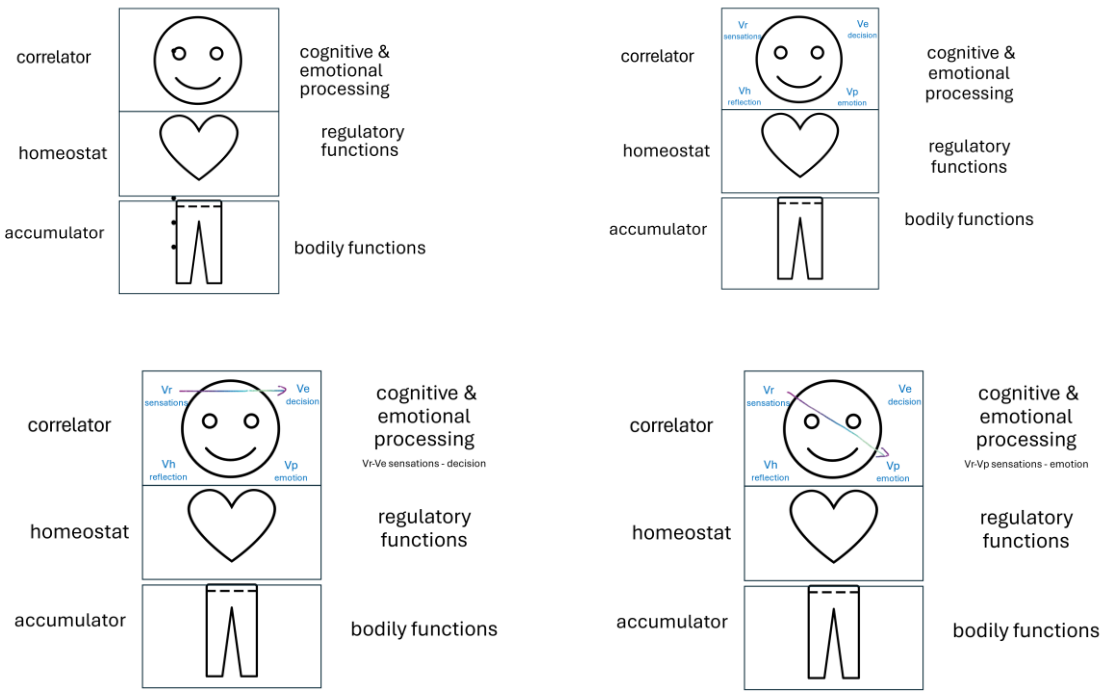
Figure 2 visualizes a simplified and symbolic representation of the autonomic system, focusing on how it relates to human cognitive and physical functions. This model illustrates the flow of correlational power between its components and relates it to the human system. The correlator functions as the brain's equivalent, responsible for managing complex processes such as cognition, emotional responses, sensory

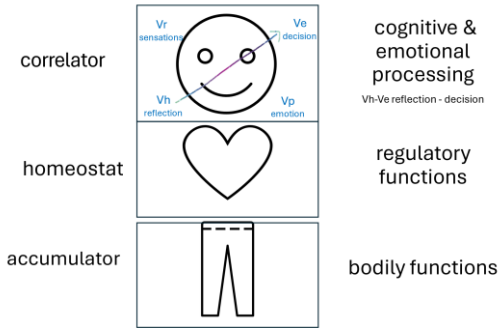
perception, and decision-making. The homeostat operates similarly to the regulatory mechanisms of the ego, maintaining psychological and emotional balance by adjusting tensions within the system. Finally, the accumulator reflects the body, serving as an energy storage unit, highlighting the interaction between mental processes and physical energy.

The simplified version emphasizes key feedback loops and control mechanisms to explain how psychological processes, such as dissociation and psychosis, can emerge as a result of disturbances in the flow and regulation of these tensions.

In the diagram, the correlator is labeled as "Cognitive & Emotional Processing," highlighting its role in managing thought, emotion, sensation, and decision-making. The homeostat is labeled "Regulatory Functions," reflecting its role in maintaining balance within the system. The accumulator is labeled "Bodily Functions," emphasizing its connection to the physical body and energy management.

Figure 2: Relationships between elements of the autonomic system with the psyche and the body and the flow of potentials in the correlator.





Source: author's own work

The homeostat always operates in an anticorrelational manner relative to the correlator, meaning that if the correlator exhibits a low perturbatory potential (Vp) at its output, directing it to the homeostat, the latter increases its homeostatic potential (Vh) and conversely, sends a high potential back to the correlator (Mazur, 1976). This phenomenon is illustrated in figure 3a through a red arrow with increasing oscillations between the center Vp and Vh, showing how the homeostat regulates tension.

In a situation where the correlator shows a high perturbatory potential Vp at its output, the homeostat decreases its homeostatic potential and sends a low potential to the correlator. This process is depicted in figure 3b through a red arrow with decreasing deviations between the center Vp and Vh, indicating the homeostat's antiproportional action to maintain balance.

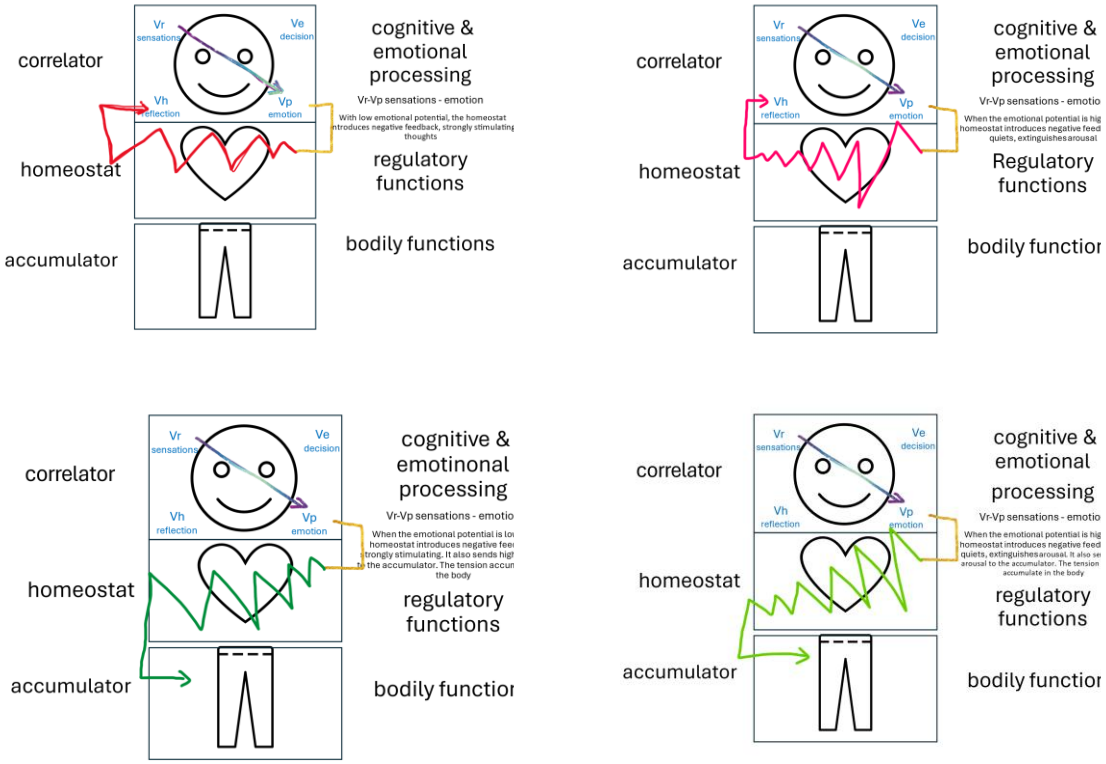
When there is too low an emotional perturbatory potential, the homeostat increases it, whereas when the emotional perturbatory potential is too high, the homeostat reduces it. These opposite actions are crucial not only for the functioning of the autonomic system but also for the psyche, as the cybernetic model describes the operation of each self-regulating system. This article details how anticorrelation leads to psychotic phenomena.

The homeostat, acting as a dynamic regulator, also converts the transferred potential to the accumulator. When the homeostat receives a low potential from the emotional center Vp, using established positive feedback, it transforms and sends it to the accumulator as a potential of increased force. This process is illustrated by a green arrow whose intensity increases as it moves from the emotional center Vp to the accumulator, demonstrating how the homeostat amplifies tension and passes it on to the accumulator. It is important to emphasize that at the same moment, the homeostat amplifies the potential, directing it both to the reflective center Vh and to the accumulator. This action is illustrated in figures 3a and 3c.

Conversely, when high voltage from the correlator, from the emotional center Vp, reaches the homeostat, then the homeostat, using established negative convergent feedback, reduces this voltage, moderating or buffering its potential. This process is illustrated by a green arrow whose deflection decreases as it moves from the emotional

center Vp to the accumulator, this suggestion is presented in figure 3d. As a result, the potential transferred from the emotional center Vp to the reflective center Vh and to the accumulator is simultaneously decreased. The conclusion is that it is at this time that the processes shown in figures 3b and 3d occur, which illustrate the feedback conducted by the homeostat to stabilize tension (Mazur, 1976).

Figure 3: Divergent positive feedback and convergent negative feedback conducted by the homeostat to increase and decrease tension.



Source: author's own work

Dissociation and Psychosis: Understanding Two Complex Phenomena

Dissociation and psychosis are two phenomena present in the field of psychiatry, which have attracted the attention of researchers and clinicians for years. Both dissociation and psychosis are characterized by various symptoms and significantly impact an individual's functioning.

The first accounts of the phenomenon of dissociation come from Pierre Janet, a French psychiatrist from the 19th century, who highlighted the stratification of consciousness and its divisions as defensive mechanisms against traumatic experiences (van der Kolk & van der Hart, 1989). Dissociation can take various forms, including hysteria, psychogenic amnesia, and so-called "fugue." The fundamental aspect of dissociation is the loss of personality cohesion and the division of psychic processes, which can

result in the appearance of diverse symptoms such as amnesia, disorientation, or loss of identity (van der Kolk & van der Hart, 1989). Psychogenic amnesia, a form of dissociation, manifests as partial or complete memory loss of events, usually associated with traumatic experiences. Individuals affected by psychogenic amnesia may have difficulty recalling important past events, leading to significant psychological discomfort and impairing daily functioning (van der Hart et al., 2006).

Eugen Bleuler, a Swiss psychiatrist, introduced the term "psychosis" in the context of descriptions of mental disorders. Psychosis is characterized by a loss of contact with reality and by various symptoms, such as hallucinations, delusions, thought disorganization, and emotional disturbances. The clinical picture of psychosis can be varied, containing specific symptoms characteristic of individual mental disorders, such as schizophrenia (Peralta & Cuesta, 2011).

Auditory hallucinations, one of the most common psychotic symptoms, involve the perception of sounds, voices, or conversations that do not have a real external source. Individuals experiencing auditory hallucinations may feel that they hear voices commenting on their behavior or instructing them to perform specific actions, which can significantly disrupt their daily functioning (Waters, Fernyhough, 2017).

Although dissociation and psychosis are two distinct phenomena, they often occur together or share similar etiopathogenetic mechanisms. They may result from severe stress or traumatic experiences, leading to the disintegration of psychic processes and a loss of contact with reality. However, the fundamental difference between them lies in how they manifest and their clinical specificity. Dissociation focuses on the breakdown of personality cohesion, while psychosis is associated with profound disturbances in thinking and perception processes (Calciu et al., 2024).

Dissociation and psychosis require an interdisciplinary approach and holistic diagnosis and treatment. Despite clinical differences, both have a significant impact on an individual's life and require appropriate therapeutic intervention.

The Emergence of Dissociation: A Cybernetic Model Perspective

Considering how the couplings described in the first chapter contribute to the emergence of dissociation, it is worthwhile to examine how the cybernetic model can help explain this phenomenon. Building on the autonomous system developed by Marian Mazur, which describes the mechanisms of self-regulating entities, including humans, this article presents a development that utilizes Mazur's model to analyze the psychological phenomena of dissociation and psychosis. The following sections describe theoretical developments grounded in Mazur's cybernetic model, which have yet to be empirically tested in therapeutic contexts. The focus is on understanding dissociation and psychosis through the lens of this theoretical framework.

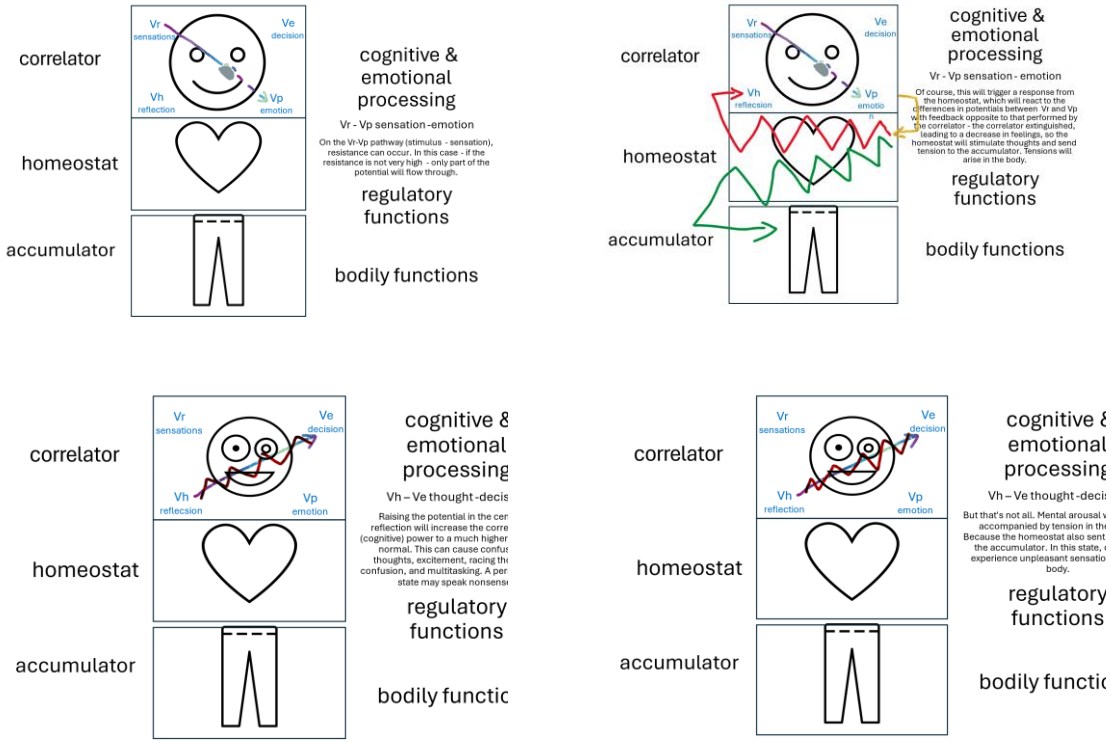
Previous research on the functioning of depressive personality within a cybernetic framework (Szymańska, 2023) served as an inspiration for further exploration of psychological mechanisms, including the relationship between dissociation and psychosis, leading to new conclusions and interpretations. The theoretical developments presented in this article are the result of these studies, offering new perspectives and suggesting further research opportunities in this area.

External stimuli, denoted as S, flowing into the system – in this case, a human – increase the sensory potential Vr. This leads to a potential difference between the sensory center, where the receptor potential Vr is high due to the received stimulus S, and the emotional center, where the perturbatory potential Vp is low. The principles of physics state that where a potential difference appears, current flow must occur. As Mazur emphasizes, "every phenomenon requires energy flow, and energy flow requires a potential difference; thus, any change must result from a potential difference" (Mazur, 1976, p.177). To balance these potentials, from the sensory center where the potential Vr was created, so-called correlational power spreads, raising the perturbatory potential Vp in the emotional center. The impression caused by the stimulus (S) thus generates emotions. If the emotions are very strong, then, as Mazur points out, the homeostat, through negative feedback close to the set point (aiming at stabilization), lowers this potential. The low homeostatic potential (Vh) is transferred to the reflective center and the accumulator, which can lead to a state of catharsis, characterized by body relaxation and calming of thoughts.

In cases of resistance, the flow of correlational power may be hindered, resulting in only part of the correlational power being transferred, and the perturbatory potential (Vp) in the emotion center not being fully raised. This mechanism was illustrated in Figure 4a. As Mazur points out, the homeostat reacts to the potential difference between the sensory and emotional centers, aiming to restore balance through further negative feedback close to the set point, which aims to raise the homeostatic potential (Vh) in the reflection center and accumulator (see Figure 4b). This phenomenon—according to the author of this article—on a cybernetic level, resembles dissociation, understood as a process of blocking experiences resulting from felt sensations. The interpretation of this phenomenon as a process of dissociation is an original concept by the author, based on Mazur's assumptions regarding the functioning of the autonomous system.

Based on the cybernetic model, it can be inferred that dissociation results from the blocking of experiences, which leads to a potential difference between the sensation center and emotions. The homeostat, reacting to this difference, triggers a strong response, leading to intense thoughts and bodily tensions – characteristic of dissociative states. These states range from mild tensions to severe disorders, and the cybernetic model allows for understanding and explaining their mechanism. The interpretation of these mechanisms as a process of dissociation is an original concept developed by the author, based on Mazur's assumptions.

Figure 4: Dissociation depicted according to the operation of the cybernetic model.



Source: author's own work

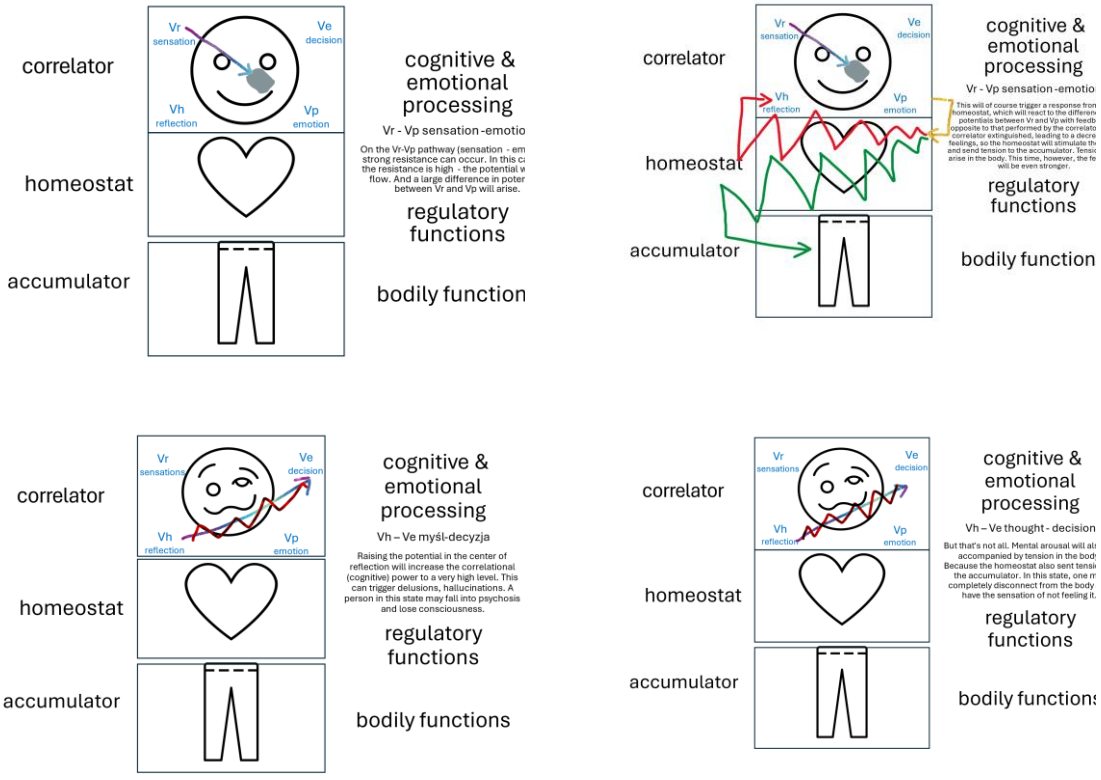
The Emergence of Psychosis: A Cybernetic Model Perspective

Psychosis is a complex mental disorder, the mechanisms of which continue to be a subject of research. Theories suggest that psychosis may result from dysfunctions in various brain areas and from disorders in processing external and internal stimuli. The analysis of neurobiological mechanisms and emotional and cognitive processes offers one of the possible perspectives on the genesis of psychosis (Howes & Murray, 2014).

Based on the cybernetic model, the emergence of psychosis can be described as follows: When the perturbatory potential (Vp) at the output of the correlator, in the emotional center, is significantly low and when there is a clear difference between it and the receptor potential in the sensory center (suggesting strong dissociation), a regulating feedback is triggered in the homeostat. This process increases the homeostatic potential (Vh) in the reflective center, which can lead to a state known as 'thought racing,' associated with conditions of delusions, hallucinations, and illusions. Mazur noted that 'in the processes of correlation, various special cases can be distinguished, such as correlation circulation along unusual paths (fantasizing), with low correlational power (daydreaming), or with high correlational power

(hallucinations)' (Mazur, 1976, p. 220), which can occur only with a potential difference between the input and output of the correlator. Thus, impressions that are not fully processed by the emotional center, preventing the appropriate raising of the perturbatory potential, may result in an increase in potential in the reflective center, which in turn may induce symptoms of psychosis. The interpretation of this process as a mechanism leading to the emergence of psychosis is an original concept developed by the author, based on Mazur's assumptions.

Figure 5: Psychosis depicted according to the operation of the cybernetic model.



Source: author's own work

Figure 5 illustrates an original interpretation of the process of psychosis emergence, developed based on the cybernetic model and derived from the mechanisms described in Mazur's autonomous system. A crucial aspect of psychosis in this context is the presence of strong tensions in the accumulator – the equivalent of the body. These tensions can manifest through intense muscle tension and even contribute to body numbness. It is also important to consider the decision-making processes occurring in the brain. Mazur emphasizes that from the reflective center Vh in the correlator, correlational power flows towards the decision-making center, where the effector potential Ve is generated. Strong activation of thinking can increase the effector potential Ve to exceed the estimation threshold, initiating a response in the decision-making center. Interpreting this phenomenon in line with the author's

developments, individuals affected by psychosis may experience this process not only internally but also exhibit behaviors reflecting their mental state. Among these behaviors, impulsive reactions may occur, or – in the case of very strong bodily tension – extreme reactions leading to freezing in immobility. Such observations are presented in Figures 5c and 5d.

In summary, the emergence of psychosis is a complex process involving neurobiological mechanisms as well as emotional and cognitive processes. A better understanding of these mechanisms can contribute to deeper knowledge of this disorder and the development of more effective therapeutic methods.

The Impact of the Cybernetic Model on the Therapy of Dissociation and Psychosis: Analysis and Clinical Implications

In the context of cybernetics, based on the autonomous system described by Mazur, this article applies the principles of that system to analyze the relation between dissociation and psychosis while considering possibilities for psychotherapeutic interventions. The concepts described are grounded in the rules governing the autonomous system; however, they require further empirical research to confirm their effectiveness and validity in therapeutic practice.

Symptomatic therapy aims to reduce tension in the reflective center Vh and in the accumulator, which corresponds to the physical body. Since high potentials in these areas are often the result of dissociation, their reduction can provide relief. In the case of psychosis, pharmacological therapy often becomes necessary (Kane, 1999).

Reducing potentials in the accumulator (body) can be achieved through physical activity, bioenergetics exercises, massages, or warm baths. However, working with the body can affect the mental processes hence the importance of maintaining balance in psychotherapy (Lowen, 1975).

On the basis of the cybernetic model, one can infer that individuals with a strong physical foundation may better adapt in extreme situations. In this context, based on Lowen's bioenergetics, grounding—strong connection with the body through work on muscular tension—is crucial. Lowen emphasizes that reducing muscle tension through physical exercises allows individuals to process emotional stress more effectively. He also argued that physical exercises play a significant role in restoring balance to the body and psyche, as they help release stored tension (Lowen, 1975).

Causal treatment aims to prevent dissociation by increasing the perturbatory potential Vp in the emotional center. Based on Mazur's autonomous system model, it can be inferred that focusing the patient on their experiences and gradually exposing them to situations they have lived through may increase the correlational conductivity between the reflective center, where the homeostatic potential Vh occurs, and the emotional center, where the perturbatory potential Vp is crucial for the healing process.

Additionally, therapy may include teaching the patient to tolerate previously unacceptable sensations, which directly counters resistance. Based on Mazur's autonomous system model, it can be inferred that gradually evoking these sensations in the sensation center, i.e., controlled increase of the Vr potential along with the simultaneous increase in correlational conductivity G and raising the perturbatory potential in the emotional center Vp, allows the patient to gradually tolerate previously suppressed experiences.

An example of applying the cybernetic model in therapy might involve a patient suffering from psychosis related to auditory hallucinations. Based on the theoretical assumptions of the model, focusing on bodywork, such as through bioenergetics, along with efforts aimed at increasing tolerance for difficult emotions and thoughts, could help reduce the intensity of experienced hallucinations and improve the patient's ability to function in everyday life.

Based on Mazur's autonomous system, it can be inferred that three effective treatment paths exist: a) by lowering potentials in the accumulator body, b) by working with thoughts and raising the emotional perturbatory potential Vp, and c) by learning to experience previously repressed sensations and increasing the correlational conductivity G on the Vr-Vh path. Although the third path is the most effective, it is also the most difficult to achieve, indicating the value of using all three methods, especially at the beginning of therapy (Szymańska, 2023).

Dissociation and Psychosis: A Psychocybernetic Model Perspective - Challenges and Discussion

The presented psychocybernetic model of the emergence of dissociation and psychosis is not an empirical model but a theoretical one, based on cybernetic knowledge that describes the operation of autonomous systems (Mazur, 1976). Conclusions drawn from this model can be useful for empirical verification in further studies. It is important that the psychocybernetic model imposes certain thinking about dissociation and psychosis, considering the laws of operation of systems described by cybernetics.

According to this model, dissociation results from the inability to experience feelings caused by sensations reaching the system. In other words, any sensation that is too difficult for a person to live through can lead to dissociation. The strength of this sensation often decides not only whether it will be possible to experience it but also, when the experience is impossible for the system due to resistance, then the strength of the resistance decides how strong it must be to stop the potential of that sensation. Additionally, the potential difference between the sensory and emotional centers, which determines the strength of dissociation, is also important.

Paradoxically, all people are somewhat dissociated. If dissociation is perceived as a potential difference between sensation and emotion, then we all experience some level

of dissociation, as completely regulating these potentials is impossible, and resistance is a natural process.

Resistance is inherent in the functioning of all autonomous systems, including human activity. Why? Because without resistance, we would have perfect sensitivity to every stimulus, and every regulator - as stated by Marian Mazur - has an insensitivity zone where it does not react to disturbances. "*The reason for the existence of the insensitivity zone is that there are resistances in the operation of the regulator, to overcome which sufficiently large forces are needed, arising under the influence of disturbance. Therefore, if the disturbance is so small that the forces it induces are not enough to overcome these resistances, the regulator will not react, i.e., it will behave as if there were no disturbance. Only disturbances extending beyond the insensitivity zone will be counteracted by the regulator. Constructing a "perfect regulator" that removes all, even the slightest disturbances, is impossible because there are no regulatory processes in which there would be no resistances at all. It's like with a knife; it is sharper, the thinner its blade is, hence a "perfect knife" would have to have a blade thickness equal to zero, i.e., not existing at all ("the paradox of perfection"). The homeostat is also a regulator; it must, therefore, have an insensitivity zone. Thanks to the operation of the homeostat, a person distinguishes situations consistent with his dynamism from situations inconsistent with his dynamism.*" (Mazur, 1976, p. 364-365)

According to the concept of resistance in the functioning of autonomous systems, as described by Mazur, resistance is an inherent feature of all autonomous systems, including the human body. As Mazur notes, every regulator has an "insensitivity zone" in which it does not react to minor disturbances. Only when the disturbance exceeds a certain threshold does the system activate regulatory mechanisms to restore balance (Mazur, 1976, pp. 364-365). Similar ideas can be found in other regulation and adaptation theories.

For example, Jean Piaget's theory of assimilation and accommodation describes the adaptive processes of the mind in a comparable way. Assimilation involves integrating new information into existing cognitive structures, while accommodation requires modifying these structures in response to new experiences (Dorko, 2019). In Mazur's theory, resistance functions similarly as a filter—new information does not trigger a response unless it exceeds a certain threshold.

The autopoiesis theory by Humberto Maturana and Francisco Varela also emphasizes the role of resistance and self-regulation in biological systems. Autopoietic systems, such as living organisms, preserve their structure by responding to environmental changes only when those changes threaten their function (Maturana & Varela, 1972). Like Mazur's theory, disturbances that do not exceed a certain threshold do not provoke a system response.

The paradox and double-bind theories proposed by Gregory Bateson and developed by Paul Watzlawick also highlight the importance of resistance and adaptation in social

and psychological systems. Similar to Mazur's model, these theories suggest that systems can become "insensitive" to certain types of contradictory information until it crosses a threshold, at which point it causes disruptions that lead to psychological disorders (Watzlawick, 1967).

Mazur observes that a "perfect regulator" cannot exist because every disturbance must overcome a threshold of resistance to trigger a reaction (Mazur, 1976). Similarly, in Piaget's, Maturana's, and Bateson's theories, resistance to disturbances is a key mechanism that enables systems to maintain stability and avoid hypersensitivity to changes.

Resistance, therefore, is a natural process that must occur so we are not overwhelmed by every minor potential difference; similarly, the homeostat does not react to minor potential differences. A reaction occurs only when the difference becomes significant. It is assumed that any intense sensation that is too negative for an individual and which they are unable to accept may potentially trigger dissociation. The psychocybernetic model further confirms that the intensity of dissociation can vary, which is consistent with current knowledge. It also shows that in cases of intense dissociation, psychosis may occur as a result of the homeostat reversing potentials – which also aligns with observations. Krzemiński noted that psychosis can occur even when a person is intensely frightened. Various intense emotional experiences, including strong anxiety, can affect a person's mental state, potentially leading to the development of psychosis (Krzemiński, 1988). Hence, there has long been an observed connection between experiences and the occurrence of psychosis.

This is an important addition, as the literature often presents psychosis and dissociation as separate phenomena. However, the psychocybernetic model shows that this does not have to be the case. It seems there is no point in trying to determine exactly which experiences trigger dissociation and psychosis. According to the psychocybernetic model based on Mazur's assumptions, it should be assumed that any negative situation too difficult for a person to live through may lead to dissociation. Based on this model, it is possible to attempt to distinguish certain experiences that are more or less likely to be considered negative, and therefore may promote dissociation, increasing the risk of its occurrence. The interpretation of this phenomenon as a factor promoting dissociation is an original concept, developed based on Mazur's assumptions.

Such distinguished experiences can create a certain typology, but still in the form of a probabilistic definition, i.e., as behaviors increasing the risk of dissociation. For such behaviors, only the probability of dissociation occurring can be defined. It is important to remember that not all experiences will be negative for every person. Hence the necessity of using a probabilistic definition, whose operationalization uses fuzzy logic, as presented by Szymańska (2017).

The psychocybernetic model also explains how psychotherapy for dissociation and psychosis can proceed – both at the level of treating the symptoms and the causes of these disorders.

Psychocybernetic models have been attracting attention in psychology and psychotherapy for some time, inspiring a new look at mental phenomena. Previous practice focuses on attempts to describe various mental processes using cybernetic models (Szymańska, 2023). Research conducted by Szymańska has shown that the model of the autonomic system can be useful in describing personality disorders and explaining the mechanisms underlying them (Szymańska, 2023). Such conclusions may find confirmation in the works of Professor Marian Mazur, one of the pioneers of Polish cybernetics.

"*Psychology is an empirical science and, as such, its procedure relies on observing human behavior symptoms to draw conclusions about the internal mechanism, its structure, operation, and principles that cause these symptoms. On the other hand, cybernetics approaches this from the opposite direction. It starts with the mechanism it knows and from this tries to deduce what symptoms must be present in what is happening within the mechanism. How does cybernetics know this mechanism that psychologists are still debating over? It's because everything that happens in humans – in terms of the connection between human behavior and its causes – is a control process. And cybernetics – as it is known – is the science of control and has derived, isolated some control laws that must be met everywhere, no matter whether it concerns a machine, a human, a plant, or society*" (Mazur, 1983, 1:03-2:10).

These words highlight the fundamental nature of processes occurring in any self-regulating system. Cybernetics crosses the boundaries of a single model, serving as a common denominator for the functioning of all self-regulating organisms and machines. These processes are inevitable. The cybernetic model presents a pattern, an operational schema that must occur under given circumstances.

Mazur's approach to cybernetics reflects a significant shift in understanding control processes, especially in comparison to empirical sciences like psychology. Mazur places cybernetics as a more systematic and universal approach, deriving conclusions from known mechanisms of control that apply across machines, organisms, and human behaviors. This was revolutionary because it positioned cybernetics not only as a framework for understanding machines but also for interpreting human systems.

Similar ideas emerged during the Macy Conferences (1946–1953), where leading scientists such as Norbert Wiener, Gregory Bateson, and Warren McCulloch discussed theories of control and feedback within the context of biology, psychology, and technology (Wikipedia, 2024). These conferences were the birthplace of cybernetics as an interdisciplinary field, and participants emphasized aspects of self-regulating processes similar to those later described by Mazur. This approach combined both

machines and organisms, laying the groundwork for understanding not only technical systems but also social and biological systems.

Through these interdisciplinary discussions, concepts such as feedback and self-regulation were redefined, contributing to the development of cybernetics as the science of control processes. Thinkers at these conferences significantly influenced the shaping of cybernetics as a fundamental theory encompassing both living and non-living systems. In his works, Mazur referred to these same principles, emphasizing that regulation and resistance are key processes in all autonomous systems.

An example is the relationship between dissociation and psychosis, where intense dissociation can potentially lead to psychosis. The cybernetic model suggests a possible dependency between these phenomena. Moreover, according to this model, there may be cases where psychosis is preceded by dissociation, making it a necessary condition for psychosis to emerge. However, dissociation does not always lead to psychosis; it can exist independently. A lower level of dissociation does not necessarily result in psychosis. If the emotional potential Vp is not too lowered, the homeostat will not significantly increase the reflective potential Vh, and consequently, psychosis will not occur.

The emotional perturbatory potential Vp is not significantly lowered in two cases: a) the stimulus is not overly strong and does not induce intense sensations; or b) the resistance to the flow of correlational power from the sensory center is not high, and a part of the potential Vr from the sensory center reaches the emotional center, increasing the perturbatory potential Vp.

An interesting implication of the cybernetic model, seldom discussed in literature, is its significance not only for describing individual psychological phenomena but also for understanding their interrelations. Traditional literature often treats psychosis and dissociation as separate phenomena, overlooking their mutual relations. However, the cybernetic model proposes that there is a dependency between them, which could be crucial for clinical practice. Although there is a tendency to distinguish between psychosis and dissociation, the model suggests that dissociation may precede the onset of psychosis, which could indicate a certain dependency between these phenomena. However, according to the cybernetic model, further empirical research is necessary to confirm the direct relationship between these processes.

Cybernetic models can be exceptionally useful not only in describing psychological phenomena and personality disorders but also have educational and practical significance. They can provide important insights for the treatment process and possess potential for verifying certain hypotheses.

Understanding cybernetic models can be invaluable for clinicians. According to this model, they have at their disposal various methods of intervention for a person experiencing psychosis. They can focus on working with the body, i.e., the physical aspect, or concentrate on working with thoughts and feelings, acting at the level of

the Vh–Ve and Vh–Vp pathways. Alternatively, they may aim to break through resistance by stimulating stimuli that will distribute correlational power on the Vr–Vp path. This opens the way to explore alternative methods of breaking through dissociation.

Suppose we are dealing with a person who has difficulty feeling discomfort but easily experiences sadness and compassion caused by the suffering of others – emotions that stem from discomfort. When this person begins to feel discomfort resulting from the suffering of others, it can cause the dispersion of correlational power on the Vr–Vp path and lower the level of potentials that were active due to the suppression of their own unexperienced feelings of discomfort.

This can be compared to opening a faucet—when the valves are open, all the water pours out, including what was left in the pipes. It is suggested that with the emergence of a new potential, coming from the observation of others' suffering, there may be a dispersion of correlational power, created by previously unexperienced stimuli and stored in the correlator as correlational power. This hypothesis might explain why people who have experienced great suffering often want to help others. It is possible that compassion allows them to deal with emotions they themselves might find unbearable, such as regret or sadness caused by their own suffering.

The presented theoretical scenario is just one of many perspectives suggested by the cybernetic model. This concept is considered innovative. From the cybernetic model, there is an implication of using alternative stimuli for faster dispersion of dissociation. Introducing a new stimulus with a positive emotional charge can cause the transfer of emotional potential from the previous stimulus, resulting in the dispersion of correlational power associated with that original stimulus. For example, expressing laughter in response to a new stimulus causing joy may help in the flow of emotional potential from the earlier stimulus, which was blocked. As a result, after intense joy, deep tears of relief may follow. It is clear that knowledge from the field of cybernetics opens new doors for mental therapy and contributes to a deeper understanding of psychological processes. Therefore, exploring these concepts is worthwhile to expand our understanding of the nature of human psyche.

Marian Mazur developed the autonomous system, which describes the functioning of self-regulating entities, including humans. According to his model, all human psychological processes can be described within this system, although Mazur did not directly address phenomena such as dissociation or psychosis.

It is important to note that in this article, the developments regarding the relationship between dissociation and psychosis, as well as the suggested mechanisms for dispersion and other theoretical conclusions, have been derived based on Mazur's system but were not directly suggested by Mazur himself. These concepts represent original developments and interpretations that require further empirical research to confirm their value and potential application in therapeutic practice. Thus, this article

expands the possibilities of utilizing Mazur's model in the context of contemporary psychology and therapy.

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