Review

Temporality and psychopathology: a critical analysis of the perception of time from a phenomenological perspective

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SUMMARY

Temporal perception plays a key role in phenomenological psychopathology, and its features are altered differently in the different mental disorders. The assessment of temporality is often neglected in the psychic examination. Furthermore, in specialist training in psychiatry these aspects are often neglected. In this article, our aim is to develop some reflections on the role of temporality in some major mental disorders: schizophrenia-spectrum disorders, mood disorders, borderline personality disorder and addiction. A careful evaluation of the psychopathology of temporality is of great semiological relevance, allowing a different perspective on patients. The patient's perception of time should be held in great importance, both on the diagnostic and psychopathological level, as well as on the rehabilitation side, reflecting on increasingly personalised therapeutic projects. Research should play a key role in this regard, integrating, and not neglecting, the phenomenological approach in clinical studies.

Key words: temporality, phenomenology, time perception, psychopathology

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Temporality is a crucial element in phenomenological psychopathology, and can be considered as an aspect that is often altered in several ways in mental disorders[1,2]. In phenomenological terms, temporality is conceived as an entity that constitutes the mind, and not merely one of its contents[3]. On the level of time, Jaspers defined the concept of continuity of the ego throughout time, understood as a well-defined identity in the flow of time[4]. Furthermore, Heidegger distinguished between '*the time of the ego*', i.e., the time that the subject lives with itself, which is immanent, and *'the time of the world*', i.e., the time the subject lives in relation to others and the environment[3].

Time, in this sense, constitutes human existence: there could be no music if there was no time, there could be no human experience without the conception of time. In Binswanger's words, the temporal sequence constitutes an element that establishes the existence of every human being[5]. Edmund Husserl considerably contributed to the development of the concept of time in a psychopathological key, with the definition of '*retentio'* (what once was and no longer is, but still influences what is), '*protentio*' (what is not yet, but attracts the intentionality of what is), and '*presentatio*' (what is around us, influenced by the past and stretching into the future)[6]. Normally, these three concepts are interspersed in a unique and coherent human experience. Ludwig Binswanger well described this concept in his

book '*Melancolia and mania*': '*while I am speaking, e.g. in the presentatio, I already have protentio, otherwise I could not terminate the sentence; similarly, I also have the 'retentio', otherwise I do not know what I am talking about*[7] (p.38).

Henri Bergson was one of the first philosophers who highlighted the dichotomy between chronological (objective) time and subjective time[8]. His concepts later led Eugène Minkowski to develop his ideas about temporality in his book '*The lived time*'[9], where temporality is identified as the founding element of existence and the structural root of the phenomena of consciousness and life. In his discussion of "lived time" versus the "scientific" clock-time, Minkowski wanted to recover our lost sense of lived time, which played such a great role in Husserlian conception of time[10].

Moreover, Kimura Bin, a Japanese phenomenologist and musician, described three basic concepts, recalling Husserl's concepts: *ante-festum*, *intra-festum* and *post-festum*[11]. The *ante-festum*, according to Kimura, represents the moment of expectation, where *'everything is travelled joyfully in anticipation of the event of the festivity, or, conversely, dramatically when it is its desolating failure that is anticipated by anguish'*[11] (p. 40).

The *post-festum*, on the other hand, is a moment of taking stock '*after the fact',* linked to the situation that comes (literally) *'after the feast*', or to the '*regret of an irreparable mistake*'[11] (p.40). From last, *intra-festum* means literally '*in the course of the feast* ', which refers to the possibility of grasping the present as such, in its pure duration characteristic of immediacy.

These three characteristics can be altered in different ways in the various psychiatric disorders: in melancholia the *post-festum* prevails; schizophrenia, specifically in its prodromal phase, is characterised by a continuous '*waiting*', typical of the *ante-festum* condition. Conversely, mania,addiction and borderline personality disorder exalt the *intra-festum* with a chaotic immediacy and the search for a momentary and morbidly illusory ecstasy [11,12].

Phenomenologists also highlighted the semiological and diagnostic value of temporality of the delusion[13]: for instance, in schizophrenic delusion there is usually a prospective, the delusion evolves and involves new elements. Conversely, the paranoid delusion is characterised by a circularity of time, and the delusion does not evolve, but remains static[14,15]. Melancholic delusion, on the other hand, is retrospective, projected into an unattainable past. Conversely, during mania it is characterised by remaining in the moment, or, in Husserl's words, in the *presentatio*[6].

If a growing body of research focused the analysis of temporality in various mental health disorders, a few works analyzed neurological disorders from a phenomenological point of view. For example, in a recent book by Stanghellini and Tewes, the Authors focused on the impairment of temporal experience in dementia. Patients with dementia lose the continuity of time experience, which results in disorientation and difficulty performing routine activities[16]. Furthermore, memory deficits disrupt the ability to construct a coherent personal narrative, leading to fragmentation of identity.

The concept of temporality is often neglected in the psychic interview and in the patient history collection. A careful assessment of the psychopathology of time is of great semiological and practical relevance, allowing the mental health practitioner to have different perspectives on patients[17].

Also, specialist training in psychiatry nowadays is often limited to the notions of psychopharmacology and clinical psychiatry, whereas these phenomenological aspects are often neglected[18]. Based on these premises, the aims of this article are to develop some reflections on the role of temporality in several mental disorders and to highlight the importance of a careful evaluation of time perception, in a phenomenological approach. Specifically, we will review the main psychometric assessment of time perception and we will focus on the role of temporality in different mental health conditions: schizophrenia-spectrum disorders, mood disorders, borderline personality disorder and addiction.

Assessment instruments for temporality

In recent times, several psychiatrists and psychologists have become interested in the concept of temporality and its relation to psychopathology. It is on the basis of the importance of these concepts that a number of psychometric scales have been developed. The Zimbardo Time Perspective Inventory (ZTPI), is a 56-item scale that measures the patient's perspective on the past, present and future[19]. It was developed by Philip Zimbardo and John Boyd, two American psychologists, in 1999. It measures an individual's orientation towards time and how it influences their thoughts, feelings, and behaviors. The scale is designed to assess five distinct time perspectives: -Past-Negative: a focus on negative events from the past, often leading to feelings of regret, bitterness, or pessimism.

-Past-Positive: a focus on positive aspects of the past, strengthening a sense of nostalgia, sentimentality, and comfort in memories.

-Present-Hedonistic: a focus on the present moment, characterized by pleasure-seeking, impulsivity, and risk-taking behaviors.

-Present-Fatalistic: a belief that the future is predetermined and not influenced by one's actions, leading to a sense of helplessness or fatalism.

-Future: A focus on future goals and rewards, often as-

sociated with future planning, delayed gratification, and conscientiousness.

Another relevant assessment instrument recently developed on this purpose is the Transdiagnostic Assessment of Temporal Experience (TATE)[20]. This scale is designed to facilitate its understanding and administration by researchers and clinicians without a comprehensive phenomenological background. The instrument is composed of 7 domains: anomalies of synchrony, anomalies of time structure, anomalies of implicit and explicit time flow, anomalous experience of the past, the presence and the future. TATE was conceptualized to assess abnormal experiences of temporality without any reference to specific psychopathological conditions or diagnostic categories. Currently, anomalous lived temporality is not considered in the main diagnostic criteria or standard symptom checklists. Therefore, the Authors suggest that when extensive data and studies are available, it will be possible to define the psychiatric conditions in terms of a different lived temporality. In a recent paper[21], the TATE was adapted into a structured phenomenological interview. The study conducted empirical testing of the TATE interview's psychometric properties, demonstrating its reliability and validity. The article is the first validation of the assessment instrument in individuals with diverse mental health conditions, and its adaptation for the Polish language. The descriptions of the assessment instruments is summarized in Table I:

The perception of time in schizophrenia-spectrum disorders

Relevant features of schizophrenia-spectrum disorders are the fragmentation and the disarticulation of the sense of time, associated with disturbances of the self[15,22,23]. Some research found abnormalities in the explicit structure of time in a sample of schizophrenic subjects, with missing integrations between past, present, and future, also associated with neurobiological abnormalities in enteroception[24,25].

Binswanger defined the concept of delusion as an imaginative scheme blocked by the arbitrary choice of a perspective that disregards the world's references[24]. Binswanger's ideas, which took up and deepened Hus-

TABLE I. *Main assessment instruments of temporal experience.*

Scale	Description	Key Domains/Time Perspectives	Purpose/Use
Zimbardo Time Perspective Inventory (ZTPI)[19]	A 56-item scale measuring an individual's perspective on the past, present, and future. Developed by Zimbardo and Boyd (1999). Assesses how one's orientation to time influences thoughts, feelings, and behaviors.	- Past-Negative: Focus on past negative events (regret, pessimism). - Past-Positive: Focus on positive past events (nostalgia, comfort). -Present-Hedonistic: Focus on present pleasure-seeking behaviors. - Present-Fatalistic: Belief that the future is predetermined, leading to helplessness. - Future: Focus on future goals, planning, and delayed gratification.	Used to evaluate an individual's general orientation towards time, providing insight into psychological states, behaviors, and potential disorders related to time perception.
Transdiagnostic Assessment of Temporal Experience (TATE)[20]	A scale designed to assess abnormal temporal experiences across different psychiatric conditions without reference to specific disorders. It is composed of 7 domains related to time perception.	- Anomalies of Synchrony: Issues in the synchronization of personal and external time. - Anomalies of Time Structure: Disruptions in how time is organized or understood. - Anomalies of Implicit and Explicit Time Flow: Disruptions in subjective flow of time. - Anomalous Experience of the Past, Present, and Future: Disturbances in perceiving the temporal states across time.	The TATE aims to assess anomalous lived temporality in individuals across a variety of mental health conditions, providing an accurate understanding of temporal perception from a phenomenological perspective.

serl's and Heidegger's concepts on temporality, had been subsequently recalled and deepened by Danilo Cargnello, one of the most important Italian psychopathologists[27].

In the schizophrenic delusion, the present time is not constituted, there is always a horizon of expectation, of the imminent end of the world, which Kimura Bin defined as '*leaning towards anticipation and foreboding*'[28] (p.34). Delusion in paranoia, on the other hand, is not developmental. It is a '*cold'* delusion and not a *'hot'* delusion, in contrast to the classical conception of paranoid delusion as dynamic and changing[14]. It is a repeating assumption, not an evolving story.

In Kimura Bin's conception, the patient with schizophrenia lives in the *'ante-festum*', feeling called to experience a mission or an exceptional task that will mark a miraculous change in their state. These subjects thus pursue metaphysical or utopian ideals, or a discovery that will change their fate or even that of humanity. The characteristic themes of schizophrenic psychopathology are punctuated by the presence of an alien world, where facts, situations and events are interspersed in a morbid and qualitatively different structure. The patient with schizophrenia, thus, has an alteration of anthropological proportion, where verticality (height of inspiration) is not supported by the basis (breadth of experience)[29].

Also characteristic in this sense is Minkowski's description of a patient, whom he followed by moving directly into his home and breaking down the usual distance between doctor and patient through cohabitation[14,30]. This subject '*lived in expectation of punishment*', imagining that the French authorities would imprison him, arrest and expose him to public ridicule, feeling guilty for '*not having chosen France*' [30] (p.78). The aspects of guilt and indignity were characterised by a temporal cyclical nature: each day the patient's waiting would begin again, each day the patient would conclude that the condemnation was only postponed, that it would surely take place the next day. Minkowski noted how it was impossible for his patient to learn from experience and integrate the fact that life can continue beyond what is expected, ceasing to be creation and becoming destiny.

Thomas Fuchs highlighted that schizophrenia is characterized by a disturbance in the pre-reflective experience of time, leading to fragmentation of self-awareness and intentionality[31]. In schizophrenia, the protentional function is 'overwhelmed', and perplexity results when the patient attempts to interpret the meaning of what intrudes on them. More specifically, an impairment of the continuous intertwining of succeeding moments, leads to a loss of the implicit or operative intentionality that allows the acts of perceiving, thinking and acting[32].

Moreover, when the patient with schizophrenia is in a context of hospitalisation, his or her temporal experience is characterised by a '*suspended*' temporality[33], given by the altered perception of time that characterises a state of psychopathological relapse and by the suspension of the temporal routine given by admission to the hospital. The patient's temporal suspension in the hospital is therefore made up of two components: one subjective (the pathology) and the other objective (the suspension of daily activities). As temporality is altered in schizophrenia, the clinician should restore a temporal rhythmicity closer to that of common sense.

Temporality in mood disorders and OCD

Temporality in mania is characterised by an acceleration of ideational processes, the coherence and direction of ideas are never maintained. Temporality is kept to the present moment, which expands into a succession of unconnected fragments of time. Everything that can happen happens in the moment, in the '*presentatio*' or '*intra-festum*'. The characteristic delusion is that of megalomania, where '*I am everything*'[34]. Binswanger's description of his patient, Olga Blum, is illustrative in this sense. Admitted to a psychiatric hospital and intent on reading Goethe's Faust while the doctor was examining her, she replied to him: '*Doctor, I am glad I did not live before Goethe, otherwise it would have been my turn to write Faust*'[7] (p.90). The delusion of the patient in mania, typically, expands (in a gas-like manner) and the patient has, to paraphrase Kimura Bin, '*a fissional contact with the whole*'[35] (p.105), with a continuous '*being in the moment*', living fixed in the '*presentatio*'[36].

Binswanger described the concept of momentarisation of time, i.e. the condition in which the patient with mania is immersed in the *'hic et nunc*', and is therefore unable to anticipate and make correct predictions of the future and cannot even rely on the past due to the difficulty of recalling it[7]. In this regard, Binswanger reports the words of a person accompanying a patient to the clinic: *'the patient manifests excessive spontaneity: she immediately and definitively forgets the past, she does not think about the future'* [7] (p.76). Regarding another case described by Binswanger, Elsa Strauss, a 37-year-old patient admitted for a manic breakdown, the Author wrote: *'Elsa Strauss lives in mania, in pure isolated present moments, without habitual relationships and without the possibility of ordering those present moments in an internal biographical continuity'* [7] (p.76). On the other hand, the patient with melancholic depression lives in the *post-festum*, where everything has already taken place in an absolute and definitive way, the future is only the repetition of the already given, the already done and the already decided, with a view to the preservation of the pre-established order[28]. The character of

irremediability, in the melancholic world, is experienced in a perspective of guilt and error, with the loss of any existential possibility of the future. If the anthropological disproportion of the schizophrenic patient was given by revelation, in the melancholic depression it is given by confirmation, by the prevalence of the already given and already happened. The past then becomes a kind of prison from which it is impossible to escape[37]. The inability to synchronise one's time with the outside world makes all encounters impossible, so much so that the disease becomes one's only companion in life[38,39].
In other words, we might conclude that the Husserlian *retentio* expands, to the point of suffocating the *presentatio*, preventing even access to the *protentio*, where the *protentio* moments become possible only in the light of a hypothetical reappraisal of the past, which will never be possible. Binswanger identified in these concepts the real essence of the melancholic disorder: the *'threads*' that make up the fabric of subjective temporality are loosened, causing the various temporal planes to intertwine, until the loss of the temporal continuum in its vital characteristics of consequentiality. The individual therefore suffers time, and can do nothing more than continue to observe it passively [7].
Similarly, a few studies focused on the role of temporality in obsessive-compulsive disorder. For example, Doerr-Zegers described a case of 28-year old woman with OCD, adopting a phenomenological and psychodynamic perspective[40]. In the paper, the Author highlighted how time is experienced as circular and sterile, in contrast to the linear progression typical of creativity and healthy temporal engagement. In this light, rituals and compulsions often represent a submission to chronological time, rather than an attempt to transcend it. This perpetuates anxiety, as the compulsions fail to achieve the intended relief from obsessive thoughts . Another paper highlighted that in patients with OCD, the relationship to the environment must be managed rigorously and systematically, in reference to an external and abstract set of rules (undergoing continuous improvement)[41]. Therefore, OCD symptoms emerge due to a mismatch between the experience and the set of rules through which OCD patients perceive themselves.

Temporality in borderline personality disorder

Time, for the patient with borderline personality disorder (BPD), can be considered as a place of meaninglessness[42]. In time, as well as in space, the person's identity is constructed and defined. According to Otto Kernberg's conception, borderline patients are characterised by a *'diffusion of identity*', where their identification involves the presence of the other and is dependent on him/her[43]. Time has revolved around being able to be significant in the relationship with the other. This perception of '*not being meaningful*' if the other is absent means that time is only meaningful and saturated in the presence of the other. The saturation of time, on the other hand, doesn't allow the patient to see the other's emotions and feelings. Time, therefore, can be distressing and meaningless in the absence of a significant other, since borderline psychopathology is characterised by feelings of identity emptiness and boredom[44].
Borderline patients have enormous suffering in not finding themselves, they often have very few memories of their past that are difficult to recall[45]. From this point of view, it is essential in the recovery process of these patients, to find moments in which they have the perception of being helpful and important to someone.
The patient with a BPD can be thus considered as an '*episodic subject*', where time is fragmented as the presence of the other is not continuous[46]. As Kimura Bin wrote, '*even when they thematise their future and their past, they experience it most often as an expanded form of the immediate present*'[36] (p.51). The borderline patient, therefore, lives in the '*intra-festum',* finding himself in instant-by-instant fragmentation, having lost the ability to organise his existence in a historical-narrative sense, being in the present, but in a discontinuous and fragmentary manner[36]. However, living in immediacy is not to be understood in the sense of seeking serenity and spirituality, since the fragmentary present presupposes the absence of a future project. As Viktor Von Gebsattel also noted in his studies of substance-abusing patients, all satisfaction is ephemeral, since every experience of excess carries with it the character of inconsistency and unreality, repeating the present in an impulsive and insatiable manner[47].
Patients with BPD must therefore feel '*worthy*'. If they do not feel meaningful their time is determined by others, if only the patient is present in time, their time becomes empty and interminable and the subject becomes '*diffuse*' among others. In this sense, time becomes an undefined place and the subject merges with the other, not identifying himself.
In the rehabilitation pathway of these subjects, therefore, we should avoid being too much or too little meaningful for the patient, whereas it is very important to make their time somehow meaningful for them.
The borderline patient therefore lives in the *presentatio*, instant by instant, being incapable of giving continuity to his/her own time[6]. In the words of Kimura Bin, the borderline is '*absorbed in immediacy', 'trapped in the present*'[35] (p.105).
His/her existence seems to be punctuated by a series of unrelated events. Frequently, the person with a borderline personality disorder is unable to integrate past

events within him or herself and experience them in a coherent, narrative identity with his or her present. Having this lack of integration also makes it difficult to produce significant changes in one's life and personality. Borderline temporality conveys a sense of lack of experiential consistency, which is only partially filled with the characteristic symptomatology, as a mechanism of defence: dysphoria, anger, impulsivity[48].

Therefore, a therapeutic project with a patient with a BPD should see the clinician as the trustee of the continuity of the patient's existence. The clinician has the responsibility to become the depositary of the patient's history, giving it a continuity that the subject is unable to develop. The task of the clinician in this perspective is to become capable, as far as possible, of giving a name and a temporal meaning to the emotions that the patient feels, inserting the existence of the borderline subject into a spatio-temporal coherence, holding together a historical memory that in itself is fragmentary. For this reason, even more than other patients, these subjects need therapeutic continuity, a therapist who remains and is continuous in time, giving continuity to a temporally and spatially fragmented identity[39].

Temporality in addiction

Substance-related symptomatology often falls outside the '*classic*' nosographic categories. It represents a condition that is frequently associated with other disorders where the temporal dimension is often distorted, including psychotic spectrum disorder[49].

From a temporal standpoint, the primary objective of substance abuse is to evade the customary circumstances of biographical temporality[50], to the extent that it can be considered a temporal disorder, resulting in a lack of balance between natural, individual, and social temporal cycles [51,52]. Viktor Emil von Gebsattel argued that addictive behaviors exhibit a distorted temporal character. Lived time progresses fluidly towards the future, which becomes a means of escaping a meaningless present. Lived time fragments into dissociated moments. All substances, albeit in different ways, ultimately strip the human being of their historical situation in the world[47].

During acute episodes, individuals with dependency personalities are unable to develop within an objective timeframe and are reduced to the level of cyclical temporality[53]. On one hand, the subject is incapable of envisioning the future and experiencing the passage of time in a linear and fluid manner. On the other hand, they may undergo constant and compulsive repetition of the same event. In the temporal structure of addiction, the moment of repetition is crucial. The dependent individual loses the overall continuity of their inner life history and exists only in moments, in instances of illusory satisfaction, and therefore in a disjointed manner. Danilo Cargnello, when describing patients who used cannabis, recounted that they arrived on a non-existent island, made of absolute temporality, an experience of time that fluctuates without direction[54].

Under the influence of psychotropic substances, one person has the possibility of instantaneously managing the dimensions of temporality, sometimes allowing its expansion and sometimes its deconstruction, causing a subversion of the mechanisms of *retentio, protentio* and *presentatio*[6].

Guihllerme Messas, a Brazilian structuralist psychopathologist, analysed these phenomena at length in his textbook '*The Existential Structure of Substance Misuse*'[50].

Messas described substance intoxication as a sudden suspension of consciousness, leading to a timeless state. Intoxication disrupts the usual ternary structure of time (past, present, and future), with an emphasis on the present moment while distancing from the historical trajectory. The twilight state is a narrowing of the field of consciousness according to Jaspers, which can promote illusions, hallucinosis, deliroids, visual and auditory dispersions[4]. Every drug abuser can experience this vulnerable condition, every day for several days.

Messas further defined substance abuse as a condensation of reality, an intensification of the present moment that erases waiting time. This '*continuous present*' dominates the scene and disrupts the pre-reflective experience of time. As a result, the temporal horizon, which provides a background for imagining the future, contracts, and the future becomes both actualized and dissociated. The lived future, which typically encompasses aspirations and plans, loses its continuity with the present, leading to a narrowing of temporal distances and the collapse of all experiences into a single, infinite present.

In relation to the realm of tension and deconstruction of the triad of temporality, it is pertinent to consider the contribution of Moskalewicz, who identified four characteristic elements in individuals with substance addiction: a) a traumatic past, where an unwanted invasion of negative past experiences impacts the present; b) reduced temporal horizons, resulting in difficulties envisioning long-term concrete scenarios and impairing the ability to generate plans and fulfil desires; c) a subjective experience of slow time flow, requiring constant acceleration; d) a dissociated future, characterised by a rupture in the continuity of an individual's life story[55]. A dissociated future can be interpreted as the outcome of a dependent person's attempt to escape from a painful past and a vacant present[47]. It differs from normal hope in the way it severs the connection between the present and the future. Thus, it can be hypothesised that a dissociated future serves a compensatory function.

Particularly, adolescents are at risk of a subversion of substance-related temporality, since their age is characterised by a '*temporal imbalance*', with multiple possibilities for future life forms. The action of the temporality of substances is, in this case, combined with an already present situation of temporal imbalance inherent in the adolescent subject [50].

Incurring chronic substance abuse therefore means, in phenomenological terms, closing from vital temporalization and becoming prey to existential instability, rejecting authentic temporality. The outcome of this process is what Messas defined '*biographical undifferentiation'*, e.g. the difficulty in growing up of many substance abusers. In the long run, substance abusers find themselves unable to maintain stable professional or love relationships, to adhere to treatment and to take on many responsibilities in life. Maturation over time implies the need to give up some elements of '*retentio*' in order to admit new experiences and rebalance time proportions. Substance abuse impedes this structural reshaping of existence, hindering entry into new phases of life.

Addiction can be conceived as a disturbance of the '*presentatio*' or '*intra-festum'*. Messas described the substance intoxication as a sudden a-temporalization of consciousness, a discontinuity of temporal characteristics. The '*presentatio'* becomes an exclusive feature of the structure of addictive existence. The substance abuser thus lives in a '*continuous present*', with an anthropological disproportion characterised by a densification of the present, which continually overrides other dimensions[50]. Moreover, the presentification of temporality affects both the spatiality of Dionysian experiences and their materiality, as what is present and visual is also sensory and perceptual, leaving out what is intuitive and imaginative. Present, in its Latin etymology, derives from '*prae est'* (all that is around us), offering a direct, immediate and uninterrupted relationship between the self and the world. If this dimension is accentuated, one person will end up neglecting all that is imaginative and abstract.

Messas suggests that in order to make a good differential diagnosis between '*exogenous*' and '*endogenous*' psychosis, it is necessary to be able to go and assess the subject's time frame. If this was already previously impaired, the damage from taking the substance may have worsened further, constituting a negative prognostic index. Rather than symptomatology, it is therefore important to assess how the subject structures his or her temporal existence. The substance abuser has what Mes-

TABLE II. *Key-concepts of the main Authors' contributions to the phenomenology of time,*

Aspect	Key Findings	Cited Author(s)
Temporal Character	Substance abuse is a temporal disorder involving imbalance between natural, individual, and social temporal cycles[47].	Viktor Emil von Gebsattel
Lived Time	Substance abusers experience fragmented lived time, with the future serving as an escape from a meaningless present. Their life history becomes discontinuous[47].	
Cyclical Temporality	Acute episodes reduce individuals to repetitive cycles, where they compulsively relive moments of illusory satisfaction without envisioning a coherent future[54].	Danilo Cargnello
Temporal Structure of Addiction	Substance intoxication subverts retentio (past), protentio (future), and presentatio (present), disrupting the temporal triad[50].	Guilherme Messas
Continuous Present	Addiction induces a hyper-presentification of time, erasing waiting and future planning. Reality becomes "frozen" and hypermaterial, with no scope for imaginative or abstract thought[50].	
Temporal Imbalance in Adolescents	Adolescents with addiction experience heightened vulnerability due to pre-existing temporal imbalances, making them prone to temporal distortions exacerbated by substance use[50].	
Biographical Undifferentiation	Chronic addiction prevents maturation by hindering the restructuring of past experiences and future planning, leading to existential instability[50].	
Traumatic Past	Past traumas invade the present, contributing to reduced temporal horizons and inability of oneseldìf to project in a future[55].	Marcin Moskalewicz

sas calls *'hyperpresentification'* (and hypofuturation) of time[50]. Present time becomes gelled, frozen, there is no time of waiting. Reality is hypermaterial, and substance delusion does not *'evolve'*, remaining stable and crystallised, not encompassing different aspects like the delusion of the paranoid.

A summary of the key-concepts described by the Authors is presented in Table II:

Conclusions and future suggestions for research

In the Greek language, there are two different ways of defining time: one is '*kronos',* e.g. the chronometric time, which characterises the existence according to social conventions. The term has a negative meaning, referring to the Greek God who eats his children by consuming their freedom and creativity. It is an entity invented by man, with an artificial cadence. The other Greek term for time is '*kairos*', in which every event happens at the right time. If recognised and accepted, the Kairos allows us to realise our existential project by '*seizing*' the moment. Kairos is a '*time beyond time*', and '*beyond death*'. This concept is in line with the Bergson's and Minkowski's concept of time. It is essential, in psychiatric contexts, to increase as much as possible the '*kairos*' moments, subjectivised and personified according to the needs of the patient. It would be important to go in the lines of a '*time care*' perspective, conducting patients to attribute more meaning to their temporality[14].

Another topic that would deserve future studies is the mental health professionals personal time perception. Indeed, our hypothesis is that the psychiatric institutions can change as far as the mental health professionals change their attitudes in a person-oriented care. In this view, not only the patients' time perception is crucial, but also the one of their carers. An *ante-festum* perspective inside clinicians, where hope is the crucial element could be worth of attention. Hope is the vision starting from a present certainty about a possibility of change in every human being, and it is directed to a future perspective[57]. In some way, it could be a mixed dimension of presentatio and protentio. Thus, the time of listening to the patients deep experiences is the time of presentatio, where the relationship between the psychiatrist and the patient grow and the hope for a change in the patient's life rises up. It is therefore essential to give a temporal constitution to the psychiatric facilities, too, moving away from the '*eternal and interminable*' time of asylum structures and trying to give a temporal sense and coherence to the planning of rehabilitation projects. Psychiatric institutions must not fall into the trap of a fixed and stable time, and as mental health workers we should therefore question to what extent we develop a temporal perspective and consider temporality in our services.

These are therefore notions that have considerable possible development, also in view of the evolution of society, where digitalisation is subverting the concept of temporality, and where everything is faster, connected and hyper-presented. Digitalization and societal changes have altered human perceptions of time, emphasizing speed and hyper-connectivity. Future research should explore how these shifts influence lived experience of time and the impacts on psychopathological symptoms. In this vein, it could be important to investigate how temporality is altered in conditions such as digital addiction or gaming disorder, where hyperconnectivity and immediate gratification reshape temporal experiences.

Moreover, future studies could focus on the analysis of some forms of psychotherapeutic treatment from a phenomenological perspective. For example, mindfulness-based therapies are tailored to reconnect patients with the present moment while fostering balanced past and future orientations[58]. Similarly, temporal resynchronization therapy might focus on restoring natural rhythms (e.g., circadian synchronization) in disorders like bipolar disorder[59].

Furthermore, an accurate knowledge of temporal impairment in mental disorders could help to develop tailored technology-based intervention like Virtual Reality or software applications for monitoring signs of relapse[60,61]. The integration of phenomenological concepts with the digitalization of the treatment in mental health could provide relevant insights and be crucial for the personalization of the treatment[62].

From last, accurate evidence-based studies are needed, taking into account the perception of time in large samples of patients, in order to evaluate both diagnostic and therapeutic effects, in a phenomenological perspective. Furthermore, a more frequent use of psychometric assessment instruments, such as the ZTPI or the TATE, that take temporality into account, would be important. In this sense, it is essential to develop more standardised assessment instruments regarding the patient's perception and relationship with time. Research should play a key role in this regard, integrating, and not neglecting, the phenomenological approach in clinical studies[63]. In this light, the development of protocols that integrate phenomenological framework with cognitive, biological and neuroscientific findings will be essential. The role of scientific associations and journals treating this topic could be crucial in promoting interdisciplinary collaboration and research projects. For example, encouraging the inclusion of temporality-focused topics in special issues of journals, workshops, and dedicated symposiums can foster focused dialogue. In the same way, considering that these concepts are often

neglected, specialist training programs for psychiatrists and psychologists should emphasize the role of phenomenology in understanding subjective experiences of time[64].

Considering the growing evidence highlighting the importance of temporal evaliìuation, an assessment of temporality should always be performed in the psychic interview, since it could lead to a different clinical perspective on patients, with positive effects on increasingly personalised recovery-oriented projects.

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Conflict of interest statement

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Author contribution

FB was responsible for the project and the writing of the main structure of the paper. JS was responsible for the general supervision of the study and provided critical revision of the manuscript. EF, GM and PP provided critical revision and significant edits of the manuscript.

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