

Abnormal Time Experiences in Major Depression: An Empirical Qualitative Study

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Key Words

Abnormal time experience · Major depressive disorder · Qualitative method · Schizophrenia · Time perception

Abstract

Background: Phenomenological psychopathology, through theoretical and idiographic studies, conceptualizes major depressive disorder (MDD) as a disorder of time experience. Investigations on abnormal time experience (ATE) in MDD adopting methodologies requested by the standards of empirical sciences are still lacking. Our study aimed to provide a qualitative analysis, on an empirical ground and on a large scale, of narratives of temporal experiences of persons affected by MDD. **Methods:** We interviewed 550 consecutive patients affected by affective and schizophrenic disorders. Clinical files were analysed by means of consensual qualitative research. **Results:** Out of 100 MDD patients, 96 reported at least 1 ATE. The principal categories of ATE are *vital retardation* – the experience of a stagnation of endogenous vital processes (37 patients), the experience of *present and future dominated by the past* (29 patients), and the experience of the

slackening of the flow of time (25 patients). A comparison with ATE in schizophrenia patients showed that in MDD, unlike in schizophrenia, there is no disarticulation of time experience (disorder of temporal *synthesis*) but rather a disorder of *conation* or inhibition of becoming. **Limitations:** The interview style was not meant to make a quantitative assessment ("false negatives" cannot be excluded). **Conclusions:** Our findings confirm the relevance of distinctive features of ATE in MDD, support the hypothesis of an intrinsic disordered temporal structure in depressive symptoms, and may have direct implications in clinical practice, especially in relation to differential diagnosis, setting the boundaries between "true" and milder forms of depression, and neurobiological research.

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Introduction

General Background

Major depressive disorder (MDD) can be characterized by a variety of symptoms in different domains, including affective, cognitive, sensorimotor, and social do-

Table 1. Core philosophical concepts of temporality

Author [Ref.]	Core concept	Description
Husserl [22]	“Time as inner time consciousness”	Time as <i>inner</i> time consciousness belongs to the structure of experience itself, whose temporal flux, extension, duration, or spatiotemporal perspective are impossible without the temporal synthesis of primal presentational, retentive, and protentional intentions
von Gebattel [7]	“Time as heading towards the future”	The future dimension has a dominant role in time, and when the stream of life is disrupted, becoming is slowed down and has no more possibility of development
Heidegger [113]	“Time as being there (<i>Dasein</i>)”	Temporality regards our way of attuning to the world: it is the way of the <i>Dasein</i> (being there), projecting itself into the future (ahead of itself) in order to repeat the past (already in the world) in the present (being alongside) gives meaning to his existence
Merleau-Ponty [114]	“Time as intentional arc”	The life of consciousness is subtended by an “intentional arc” which projects around us our past, our future, our human setting, and our bodily, ideological, and moral situation, or rather which results in our being situated in all these respects
Fuchs [11]	“Time as implicit or explicit”	Implicit time is based on the constitutive synthesis between inner time consciousness and the conative-affective dynamics of life; it is based on a fluid and tacit bodily functioning and on affective synchronization with others; explicit (or conscious) time experience arises with an interruption of implicit time through states of desynchronization, e.g., retardation or acceleration of subjective time in relation to the social sphere

mains. The exact nature of these symptoms, their interrelations, and their underlying mechanisms remain unclear though. Biological approaches assume a strictly neuronal origin in the brain such as, for instance, in affective, cognitive, and sensorimotor networks [1–4]. Phenomenological psychopathology, in contrast, conceives abnormalities in time experience as the basic dysfunction underlying the various symptoms in the different domains [5]. While excellent idiographic descriptions of subjective time experiences have been provided in the past [6–9], investigations of abnormal time experience (ATE) in MDD adopting methodologies required by the standards of empirical sciences are still lacking.

Persons affected by MDD often report feelings of temporal stagnation, existential immobilization, and the predominance of the past over the future. Typical sentences are “All is timeless, unchanging”; “The future to me is remote”; “I feel hopeless.” Narrative evidence from patients affected by MDD points toward the hypothesis that the most significant symptoms and sufferings might result from a significant change of time experience. Consequently, MDD has been conceptualized as a *disorder of lived time* [6–8, 10–19].

Lived Time: Synthesis and Conation

Lived time is not the time of the clock (also named “objective” or “cosmic” time). Lived time is “to live time” [20] (see Table 1). It is the way one feels that time is streaming, e.g., the way we experience time (in a subjective way) rather than the way we observe it on the clock (in an objective way). There can be a deep contrast between the objective order of time and the way we personally experience the duration, flow, and speed of time. Every experience receives its specific significance and value from its temporal profile. Personal time is not homogeneous across the life span as well as in different states. For instance, youth, *élan*, and health diminish distances for our anticipation. Old age, fatigue, and weakness expand them. Moreover, there is a continuous flow of time in our perception. We live and experience in a state of becoming. Under normal conditions, we let the past be past: we turn to new problems before the old ones have found a “perfect” solution. Our views of the past and of the future vary with the changes in our state of becoming. Looking backwards on a good day we see the past as a territory which we left behind us as a solid ground which supports us; on a bad day we experience the past as a burden which crushes us [8].

Lived time is lived though not necessarily consciously lived [7, 8, 11, 18, 19, 21, 22] (see Table 1). On a first level we find *conscious* time experience. We refer to this feature of temporality with the term “phenomenal” time. Here we find the abnormalities of time experience. The second level is pre-thematic, in the sense that we are not directed to it and it remains in the background of our phenomenal experience. We refer to it as “pre-phenomenal” time [17]. It “functions” implicitly and automatically [11]. It is prior to any active engagement and is involuntary since it does not involve a “higher” voluntary level. The pre-phenomenal level is not typically experienced but accessible to cognitive reflection.

Following Fuchs [11], the pre-phenomenal temporal mode requires 2 “moments” that can be designated *synthesis* and *conation*. These 2 moments of temporality are closely intertwined and may only be distinguished conceptually.

“Synthesis” produces associative connections bridging succeeding moments of consciousness (past, present, and future). The basic temporal unit is not a “knife-edge” present, but a “duration-block.” It is a “constitutive flux” that has a dynamic structure that comprises the primal presentation of the now-phase articulated with the retention of the just-elapsed and the protention or anticipation of the just-about-to-occur. The temporal flow of consciousness retains and protends itself and is in this way self-unifying [23, 24]. The “now” does not appear under ordinary circumstances as an isolated, punctual, and unconnected point of experience. Rather, the present moment is like an arrow that has a “whence-whither” dimension. Metaphorically, it has a “width” that stretches toward the just-elapsed and toward the just-about-to-occur. The concept of “synthesis” [17–24], describes the construction of exactly this width with its (virtual) stretches and extensions in our experience of time.

“Conation” (from Latin *conatus* = effort, drive) is the basic “energetic momentum” [11] of mental life which can be expressed by concepts such as striving, urge, or *élan*. It is given as an experience of “I can” [21] that contributes to self- and world-awareness with the sense of aliveness and spontaneity which may be regarded as the essence of subjective life. It also orientates one’s awareness in the direction of the future. It is connected to the experience of the person as being driven towards the world in terms of capability and potentiality. The conative momentum is not only an individual, solipsistic force; it is always embedded into the social relationships with others. We move forward into a promising future because we feel co-temporal with caring others who struc-

ture the world as an inviting place [11]. The importance of the conative momentum for the experience of temporality and the self [25, 26] is demonstrated when changes occur in basic motivational states. Examples of this are the acceleration that takes place in manic states or the retardation that occurs in MDD, or the standstill of becoming that lets the present and the future be invaded by the past that predominates in depressive states. Both affect the patients’ sense of lived time.

Depression as a Disorder of Lived Time

Lived time offers a conceptual framework to accurately describe and make sense of certain psychopathological experiences, and especially for answering the question “What is it like to be depressed?” Depressive symptoms have been conceptualized as connected to disorders of lived time, namely, what we called a crisis of conation [6, 8–10, 13, 14, 18, 19] (see Table 2). With a standstill of becoming, future is rendered inaccessible. The past cannot be dissipated, but lies heavily and over-determining. Discordance between subjective and objective time is experienced as the vanishing of time (existence does not grow in the stream of time) accompanied by a sense of unreality since the feeling of “reality” is based on the synchronization and coexistence of the world and one’s own self [27]. Persons affected by MDD do not feel equal to the speed of external changes or to necessary developments. They refrain from necessary role changes and shrink back from confrontation with the basic facts of existence like isolation, finiteness, decision, and guilt [10] and fail in achieving forgetting and elimination of the past [12]. Normally, the past withdraws from one’s field of experience as the future appears as a space open to movement and change. In MDD, absence of temporal movement [28] may generate a view on the future that appears static, deterministic, and hopeless. However, the details of the relationship between basic disturbances in the construction of time (e.g., synthesis and conation) and the various depressive symptoms remain to be elaborated. Notwithstanding the abundance of theoretical studies addressing the importance of ATE in MDD, to our knowledge this is the first study that analyses time narratives in a large population of patients affected by MDD. Our aims are to provide a detailed and nuanced characterization of ATE in depressive episodes through an analysis of the patients’ narratives, to clarify the nature and the role of ATE in MDD, and to ascertain whether there is an intrinsic temporal structure in symptoms which do not have time as their manifest theme.

Table 2. Core psychopathological concepts of temporality (depression)

Author [Ref.]	Core concept	Description
Straus [8]	“Inhibition of vital becoming”	“Ego-time” gets stuck whereas “world-time” goes on and passes by; the present is no longer the continuation of the past that cannot be left behind, and the future is made inaccessible
Tellenbach [9]	“Stagnation of the intimate time”	The person lives a situation of “remanence” in which the past is remembered as failure or ever-growing guilt; a stagnation of vital rhythm or drive occurs
Binswanger [6]	“Time continuity interrupted in a fixation on the past”	With the failure in the intentional construction of time, there is an interruption of the continuity of experience and a fixation on the past: what will happen in the future is no more an open possibility
Minkowski [14]	“Deteriorated vital contact: disintegration of the lived synchronization”	There is no longer the lived synchronization between world-time and ego-time; the latter slows down and almost stops; the past has not passed and so it does not allow the present to happen and the future to become
Kimura [13]	“Time as <i>post festum</i> ”	Time, lived under the domination of the past, is characterized by irrevocability and by the “already spent” so that the “no more” and the “too late” become prevalent; becoming is experienced as blocked

Materials and Methods

Materials

This is a retrospective study on clinical files of 550 consecutive patients affected by schizophrenia and affective disorders interviewed in the period between 1979 and 1993 by J.C. (an experienced senior psychiatrist). In this period of time, the patients were assessed through clinical interviews in a “second opinion” programme for South-East England. Details of the interview process are given in Methods. The subjects were not originally enrolled in this research study. The interviewer was not at that time considering publishing this particular research; he wanted to obtain clinical data to refine diagnoses. The subjects were under the interviewer’s care as a consultant or for second opinions under other consultants. Appropriate consent was obtained from all patients for the purpose of the interviews.

The study is in accordance with the ethical principles of the Declaration of Helsinki (as revised in 1989), with the ethical code of the Association of Italian Psychologists [29] and Legislative Decree No. 196 of 30 June 2003 (Italian personal data protection code) [30]. All data were gathered prior to Italian Law 675/96 and Legislative Decree 196/03 [30, 31]; as these norms are not retroactive, the approval of an ethics committee does not apply.

Diffusion of data within the European Community was in accordance with present legislation (“Diffusion of data abroad” – Section 42 “Diffusion of data within the European Community,” Subsection 1 “these norms cannot be applied retroactively in such a way that this may restrict or obstacle the free circulation of personal data between the nations members of the European Community”).

Diagnoses, which at the time of the first interview were assigned according to DSM-III-R criteria, were reassigned according to DSM-5 criteria. Disagreement among investigators about diagnosis was a case of exclusion. Patients with substance abuse, severe head injury, medical illness, neurological diseases, and mental re-

tardation were also excluded. Of the original 550 patients, 72.90% ($n = 401$) were retained for subsequent qualitative analysis: 100 patients affected by major depression and 301 schizophrenic patients. This second sample was analysed in our previous study [32] and is used in the present research to analyse the differences between disorders of temporality in MDD and schizophrenia.

Acute depressive patients ($n = 86$) included patients with clinical exacerbation occurring in the last month confirmed by major changes in pharmacotherapy; chronic major depression patients ($n = 14$) were those with at least 2 years of continuous duration of depressive illness. Sample extraction is detailed in Figure 1, whereas the demographic features of the final sample are shown in Table 3.

In the present study, we restricted our analysis of the clinical material to subjective anomalies in one’s feelings, sensations, and perceptions arising in the domain of lived time (termed “abnormal time experience,” ATE). Our a priori definition of ATE is the following: an anomalous flux of temporal experience affecting both the temporal character of one’s awareness of external objects and situations and of oneself as a unified and living subject of experience, originating either in a disorder of synthesis between primal impression, protention, and retention or of conation. Out of the total sample of 100 patients affected by MDD, 96 patients ($n = 86$ acute, $n = 10$ chronic) reported at least 1 ATE.

Methods

Data were collected by J.C. via a semistructured interview with open questions. The interviewer adopted an interactive conversational style exploring life-time symptoms and abnormal phenomena, the latter including subtle, strange, and disturbing fringe experiences usually neglected in routine clinical examination. The aim of the interview was specifically to extract experiential patterns through self-descriptions. Therefore, patients were asked open questions and subsequently requested to offer descriptive examples of their experiences, particularly with regard to time, space, body, and self. Interviews sought to uncover the qualitative

Table 3. Sociodemographic features of the study sample

	Major depression				Schizophrenia				
	total	acute	chronic		total	acute	chronic		
Patients, <i>n</i>	100	86	14		301	198	103		
Gender									
Male/female	39/61	34/52	6/8		210/91	137/61	73/30		
Male, %	39	39.53	42.85		69.19	69.76	70.87		
		<i>fi</i>	<i>f%</i>	<i>fi</i>	<i>f%</i>	<i>fi</i>	<i>f%</i>	<i>fi</i>	<i>f%</i>
Age									
≤19 years		5	6.9	1	7.1	6	3	3	2.9
20–30 years		27	33.3	7	50.7	142	73	83	80
31–41 years		13	15	–	–	31	15	11	10
42–52 years		19	22	1	7.1	11	5	5	4.1
53–63 years		15	17	2	14	6	3	1	3
64–74 years		4	4.7	1	7.1	2	1	–	–
75–85 years		1	1.1	2	14	–	–	–	–
Mean		39.45		41.78		24.89		22.58	
SD		15.69		22.17		7.78		8.14	

SD, standard deviation; *fi*, frequency; *f%*, % frequency

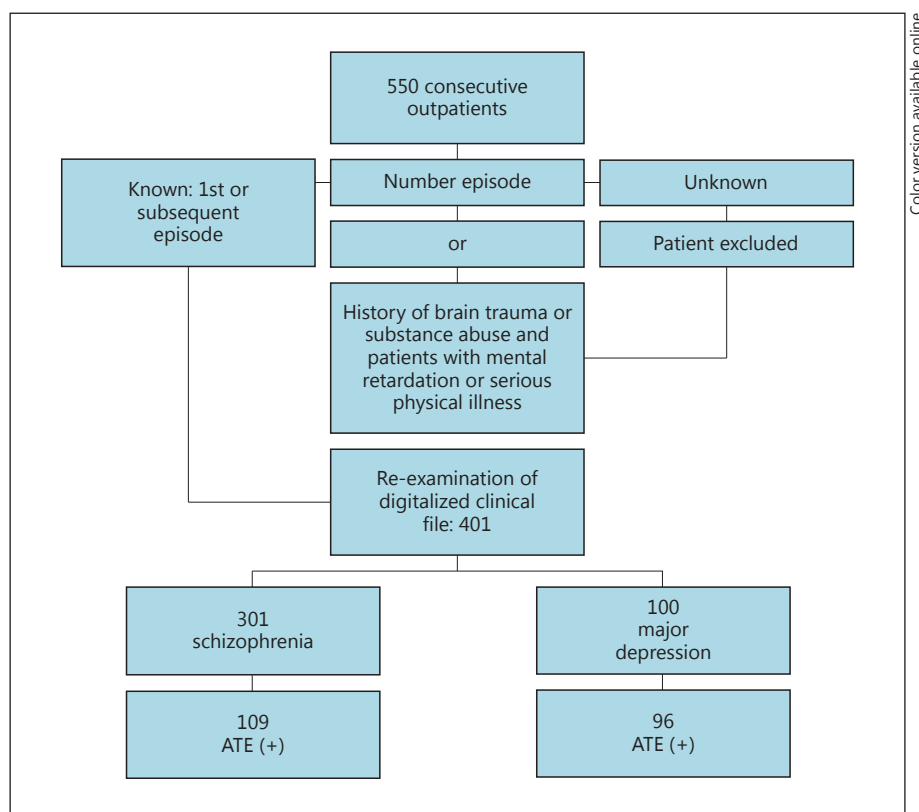


Fig. 1. Sample extraction.

features of experiences and to illuminate them through vivid self-descriptions rather than measure or causally explain them.

Interview questions related to abnormal fringe phenomena were not established a priori, but always generated within the interview context and attuned with the interviewee's personal experience and involvement. Examples of questions include the following: "Tell me please about your experience of time"; "Think about an experience, a period in your life when you were particularly aware of time and tell me about it"; "Did you experience some strangeness in the flowing of time, for instance, in time duration?"; "Are you more focused on the present, past, or future?"; "Do you experience the speed of time as accelerated or decelerated?"; "Do you feel that your temporal experience is somehow divergent from the temporal experience of the common sense?" The duration of the interview was approximately 90 min.

The study was retrospective on clinical records that were originally produced taking notes during the interview. From 2009, these were digitalized and subsequently re-examined for the purpose of the present research. All data contained in the original interview notes including age, sex, handedness, IQ, number of episodes, duration of illness, major medical information (e.g., brain trauma, serious physical and neurological illness, etc.), main symptoms (e.g., delusions, hallucinations, etc.), and abnormal experiences of time, body, self, and space were inserted into the digitalized database. The project, named "Life-World Project" (LWP) in 2009, was not carried out until 30 years after data collection. The principal reason for that is that no suitable qualitative methodology (consensual qualitative research, CQR, see below) was established and manualized until recently. Since 2009, in the context of the LWP, new data were collected, but these data are not included in the present study.

The LWP is a large-scale, detailed, phenomenological descriptive research on the largest possible realm in which the patient's existence occurs, including his world picture, i.e., the world as it is actually experienced and represented, the reality which seems self-evident to the subject of experience remaining within the natural attitude. The LWP has 2 main aims: clinical (to improve diagnostic validity and reliability and the phenomenological understanding of severe mental disorders) and ethical (as only within the realm of one's own life-world can one be understood by one's fellow men, and only in it can one work together with them and a common, communicative surrounding be constituted).

Digitalized clinical files were subsequently re-examined by 2 senior psychiatrists (G.S. and M.B.). All available psychopathological data (e.g., delusions, hallucinations, thought disorders, disorders of mood, etc.) were classified according to the AMDP system [33].

We used AMDP Section 4 to classify symptomatology. AMDP-4 is a comprehensive tool of psychopathological assessment derived from the body of knowledge of Continental descriptive psychopathology, based on the phenomenological method and including operational definitions of the principal mental symptoms (100 plus additional items).

ATE were re-classified following CQR, a consolidated method for qualitative research. Qualitative research is essential for improving the understanding of the patients' morbid subjectivity, not constrained by fixed schemata such as specific rating scales. The qualitative approach to anomalous phenomena is concerned with bringing forth the typical feature(s) of subjective experiences in a given phenomenon [34]. In particular, we have applied the procedure

suggested by Hill et al. [35] for CQR. This method is based on the assumption that the consensus among the judges improves the decision-making quality. It is essential for this method to obtain multiple perspectives from a team of researchers and to reach consensus through the meaning of the data. CQR is ideal to conduct in-depth studies of the inner experiences of individuals and for the study of phenomena whose evaluation measures have not previously been designed [35–37]. The CQR method seems very suitable for phenomenological approaches as it is devised for an in-depth description of subjective phenomena while reducing the bias of the researcher's subjectivity. To our knowledge, there are a few studies that use CQR in clinical research. The reasons why we adopted CQR for elaborating our data can be summed up as follows: (1) CQR is a manualized method; the existence of a handbook is essential for making a qualitative method understandable, applicable, transmissible, and replicable; (2) with CQR, the "consensus among judges" procedure and the involvement of external auditors allow for a better objectivity through intersubjectivity; CQR allows an "objective" assessment of "subjectivity" as it disciplines the researchers' subjectivity, especially in the phase of data analysis; and (3) CQR does not aim to select a single core category with a hierarchical structure since it does not want to propose a new theory but to describe a given phenomenon in great detail. The researchers for this study were 3 senior psychiatrists (G.S., M.B., and J.C.) and 1 psychologist (S.P.). The external auditors were a psychologist (M.M.) and a psychiatrist (G.N.). Before and after the research process we discussed our biases and expectations regarding the potential results of the study so that these would not affect the data analysis.

In the phase of research called "cross-analysis" we identified common themes in ATE reflected in the experiences of the patients in order to place the central experiences within the categories. According to the CQR method a typical category must include more than half of the participants. Each category may include more subcategories (e.g., "slowing down of the flow of time"). The coding was done as follows. We divided the group of researchers into rotating teams of 2 to examine the data within each domain. Rotating teams of 2 judges independently synthesize, for each single case, the raw data of every domain in core ideas, which have been renamed in a more proper way for our study as *core experiences*, in order to capture with greater clarity the essence of what has been said. Then, we asked for feedback from the auditor in order to make sure that the cross-analysis was clear and made sense. The auditor gave his feedback individually to the primary team, who discussed it and, when necessary, made the appropriate changes.

Results

Our main findings can be summed up as follows: (1) ATE are a relevant feature in MDD and (2) ATE in MDD are characterized by decreased conation or inhibition of becoming, namely, the experience of standstill of bodily functions (2.1: "Body not working, drained of energy"), the experience of the present and the future as dominated by the past (2.2: "Future gloomy, invaded by the past"), and the experience of slowing and blocking of the flow of time (2.3: "I lost flow of time").

Table 4. ATE in major depression: categories and core phenomena

ATE in major depression: 96/100	
1. Category: Vital retardation (<i>n</i> = 37)	
Patients' experiences of the stagnation of bodily functions	
<i>Core phenomenon:</i>	Bodily functions are experienced as slowed down or blocked, exhausted as the source of vitality and becoming
<i>Typical sentences:</i>	"I can't eat or drink because the bowel is blocked"; "My head is empty so I keep marching about to know I'm alive"; "Body not working, drained of energy"; "Stomach fallen down, seed or wheat germ are stuck in gullet"; "The spine is collapsing"; "I have no eyes, I have no face, they are gone, no back passage, no body, no hands"
2. Category: Present and future dominated by the past (<i>n</i> = 29)	
Patients' experiences of time overwhelmed by the impact of the past	
<i>Core phenomenon:</i>	The past is experienced as irrevocably established, the present and the future as a repetition of the past
<i>Typical sentences:</i>	"Future gloomy, invaded by the past"; "Guilty about past life suffocates me"; "I'm guilty of many things of the past"; "I have to be punished for past misdeeds"; "I'm terrified because I have done something in the past"
3. Category: Slackening of the flow of time (<i>n</i> = 25)	
Patients' experiences of the inhibition of becoming	
3.1. Subcategory: Slowing down of the flow of time (<i>n</i> = 14)	
<i>Core phenomenon:</i>	Patients feel that the present moment is dilated
<i>Typical sentences</i>	"Very long day and long night"; "I'm dying slowly"; "Time seemed an eternity"; "Time seems to drag"; "Time slowed down"; "I speak slowly"
3.2. Subcategory: Blocking of the flow of time (<i>n</i> = 11)	
<i>Core phenomenon:</i>	Patients feel that the present moment is frozen
<i>Typical sentences:</i>	"Time is void"; "I can't remember days because time is stopped"; "I lost flow of time"; "I dread organizing things because time came to a stop"; "Time is hopeless"; "I can't never repeat the circumstance of the present time"
Other (<i>n</i> = 5)	

We identified 3 main categories of ATE, namely, vital retardation, present and future dominated by the past, and slackening of the flow of time (see Table 4). ATE were reported by 96 out of 100 patients affected by MDD; 20 patients experienced more than 1 category of ATE. The most frequent coexistence was between vital retardation and present and future dominated by the past.

Vital Retardation (Total = 37)

This category responds to the question: "How do patients experience their body as related to temporal becoming?" Patients experience a stagnation of bodily functions and the exhaustion of their body as the source of vitality and becoming. Their bodily functions are slowed down or blocked; their organs are emptied, imploded, or petrified. Typical sentences are: "I can't eat or drink because the bowel is blocked"; "Body not working, drained of energy"; "Stomach fallen down, seed or wheat germ are

stuck in gullet"; "I have no eyes, I have no face, they are gone, no back passage, no body, no hands." Thirty-seven out of 96 responding patients report at least 1 ATE in this category. This is a *variable category*, since it includes less than half and more than 2 patients [36].

Present and Future Dominated by the Past (Total = 29)

This category responds to the question: "Are patients more focused on the present, past, or future?" Patients are preoccupied with past events and less focused on future or present ones. Patients' temporal experience is overwhelmed by the impact of the past: the "already spent" prevails. The past is experienced as irrevocably established, the present and the future as a repetition of the past. Typical sentences are: "Future gloomy, invaded by the past"; "Guilty about past life suffocates me"; "I'm guilty of many things of the past"; "I have to be punished for past misdeeds"; "I'm terrified because I have done

something in the past.” Twenty-nine participants out of 96 responding patients report at least 1 ATE in this category. This is a *variable category*, since it includes less than half and more than 2 patients [36].

Slackening of the Flow of Time (Total = 25)

This category responds to the question: “How do patients experience of the flow of time?” Twenty-five participants out of 96 responding patients report at least 1 experience of slackening of the flow of time. Patients experience an inhibition of becoming. The present moment does not flow in the direction of the future. According to the criteria of Hill et al. [36], this is a *variable category*, since it includes less than half and more than 2 patients. This category includes 2 subcategories:

Slowing Down of the Flow of Time (Total = 14)

Patients live the flow of time as slowed down. It is a time that drags. Patients feel that the present moment is dilated. Typical sentences are: “Very long day and long night”; “I’m dying slowly”; “Time seemed an eternity”; “Time seems to drag”; “Time slowed down”; “I speak slowly.”

Blocking of the Flow of Time (Total = 11)

Patients live time as a stagnating standstill. It is a time that does not develop anymore. Patients feel that the present moment is frozen. Whereas in the slowing down of the flow of time subcategory the main characteristic is that the present is expanded, here the world may be experienced as if no new meaningful events can occur, or if one’s identity cannot be further modified. Typical sentences are: “Time is void”; “I can’t remember days because time is stopped”; “I lost flow of time”; “I dread organizing things because time came to a stop”; “Time is hopeless”; “I can’t never repeat circumstance of the present time.”

Residual Category (Total = 5)

Five patients reported ATE that could not be inserted in any of the previous categories. Examples of these are: “The time would alter”; “Time and date are different”; “According to the TV it’s May, but it’s not May.”

Discussion

Our discussion is divided into 2 sections: first, we will contrast our findings with existing phenomenological literature and with empirical (mainly neurocognitive) research on temporality in MDD, and finally we will con-

trast the specific features of temporality in MDD with those in schizophrenia.

Phenomenological and Neurocognitive Literature

In our study, 96 out of 100 patients reported ATE. No statistical inference can be drawn from this kind of study, whose aim is not assessing the frequency of a given phenomenon but rather describing a phenomenon in great detail when present and creating operational definitions for the categories obtained. Also, the interview style was not meant to make a quantitative assessment since the interviews registered what patients reported when asked about how time feels to them. Persons not reporting ATE were not asked to further explain their time experience. We cannot exclude that among them there are “false negatives” as distortions of time are difficult to articulate and may not be the patient’s chief complaint. With all that in place, our results mainly confirm on a large scale the pre-existing anecdotal findings and theoretical hypotheses on the relevance of ATE in persons affected by MDD. In general, our findings confirm on an empirical ground previous conceptualizations of MDD as a disorder of lived time [8, 12, 14, 27, 38–41].

Vital Retardation

In this category, patients do not make explicit statements about ATE, that is, strictly speaking, about phenomenal time. Rather, anomalies of temporalization can be deduced from what they say about their abnormal bodily experiences. The term “vital retardation” (in German *Hemmung*) has been used by others (Kraepelin, Bleuler, etc.) for describing the incapacity of depressive patients to concentrate, pay attention, and make decisions, and even the inability to experience pleasure, etc., and also for describing the slowing or slackening of the movements (psychomotor retardation, PMR). We use this term with a quite different meaning since “vital retardation” here designates the *experience of a standstill of bodily functions*.

The presence of a “vital basic disturbance” in MDD belongs to those enduring discoveries for which psychopathology is indebted to von Gebsattel [7] and Straus [8], but it is also present in the conceptualizations of other psychopathologists like Kraepelin, Bleuler, and Leonhard. For instance, the latter described a form of depression, which he called “hypochondriacal depression,” which includes fears about bodily well-being and (more typically) physical misperceptions. Vital retardation is experienced by depressive patients as an overall slowing down or stopping of their bodily functions, including

near psychomotor hindrance or block [42]. This category more specifically refers to the phenomenon described by Fuchs [43] as “corporealization” and by Doerr [44–47] as “chrematization”, that is, the loss of experiential transparency of the body. The body is no more a transparent medium between oneself and the world but appears as a burden or an obstacle. The patients feel fatigue, decay, anxiety, pains, etc. in their body which somehow interrupt their relation to the world and to others. The extreme form of this sort of imprisonment in the own body is Cotard syndrome. In fact, some of our patients’ sentences can be diagnosed as nihilistic delusions. However, in our sample, as well as in clinical practice, most patients with MDD complain about their body without reaching this level. Our findings confirm the relevance of “vital retardation” in MDD: a disturbance of the flow of existence, a retardation of the basal vital movement, an inhibition of “becoming and of the temporal process inherent in becoming” [7], or a stagnation of the “kinesis of endogenous vital processes” [9]. Schneider [48, 49] believed that the fundamental perturbation in depression was alterations of a particular type of feelings, the “vital” ones, characterized by their proximity to the body and their diffuse character, and within them he described as particularly specific the “vital symptoms” that today carry his name, including precordial oppression, *globus melancholicus*, and nuchalgia [50]. Our analyses show in great phenomenal detail that vital retardation involves a hindrance of the feeling of being alive in a physiological/biological sense. In it, human existence incurs in a premature approach to death that is experienced in the form of an end of forward movement, cessation of activity, and immobility.

Such a change in the experience of corporeality characterized by feelings of decay, loss of energy, and bodily heaviness may help distinguish “true” depressive states from a “ragbag of heterogeneous cases of normal sadness and varieties of discomfort” [51]. Our findings, if confirmed by further qualitative and quantitative research, may substantiate this classic hypothesis: “true” or “pathological depression” is characterized by a specific disorder of corporeality or of the body-time relationship, namely, of the “driving body” (*tragenden Leib*) as the source of vitality and becoming [52]. The “driving body” is where lived body and lived temporality (in the sense of *élan*) converge. Under normal conditions, we feel supported and driven forward by a kind of “vital stream” [40] springing from our body. This is the pre-reflexive, involuntary source of our vegetative (sleep/wake rhythms, hunger/sex drives, etc.) as well as affective (depressedness, elation, boredom) life. In “pathological depression” we experi-

ence an “exhaustion” of this stream and the “sinking” of our body [52]. As reported by our patients, the fluid body coagulates into a single part of itself (usually the heart or the stomach) which is felt as heavy, oppressing, and suffocating, or collapses into itself, sinking into its geometrical confines.

Disorders of the body-time relationship are obviously present in another set of objective depressive signs, namely, change of biorhythms (disturbed sleep patterns, diurnal variations of symptoms, etc., of which there are 3 forms: simple alteration, inversion, or suspension of the rhythms). Biorhythmic disturbances, together with changes in affectivity, emotional resonance, and drive, are deemed the principal background features in affective disorders [44, 46, 53–56].

Also, “vital retardation” may be considered a major component of the psychomotor symptomatology occurring in MDD, also referred to as PMR. In the DSM-5, PMR is a frequent marker of the melancholic subtype of MDD. It involves a set of disturbances in cognitive, motor, and psychosocial domains [57]. It is deemed a relevant aspect of bipolar depressive episodes and finally a supposed phenotypic marker of bipolar liability [58, 59]. PMR (*paralysis plumbea*) is also a feature of atypical depression [60]. It is associated with neurocognitive impairment (e.g., reaction time, visual attention tasks, and drawing tests) [61–63] and linked to decreased dopaminergic function, especially in basal ganglia [64]. Neuroimaging studies displayed impairments in the brain structures involved in the planning and control of motor responses [65], as well as alterations in the connectivity between the anterior cingulate cortex, the dorso-lateral prefrontal cortex, and the pre-supplementary motor areas [66].

Slackening of the Flow of Time

Whereas in “vital retardation” the standstill of becoming is only implicitly manifest in abnormal bodily experiences, in this category we gathered narratives explicitly addressing ATE. Our analyses enucleate the salient experiential profile of a series of previous conceptualizations of the basic disorder of temporality in MDD, including decline of *élan personnel* [14], inhibition of becoming [8], disorder of time intentionality [6], stagnation of *temps intime* [18, 19], desynchronization [10], post-festum temporality [13]. All these concepts reflect the crisis of conation. This involves a hindrance, next to the physiological/biological feeling of aliveness, of the psychological feeling of becoming, self-development, and self-realization. The standstill of becoming can be interpreted as a significant alteration of the basic goal-pursuit characteristic of hu-

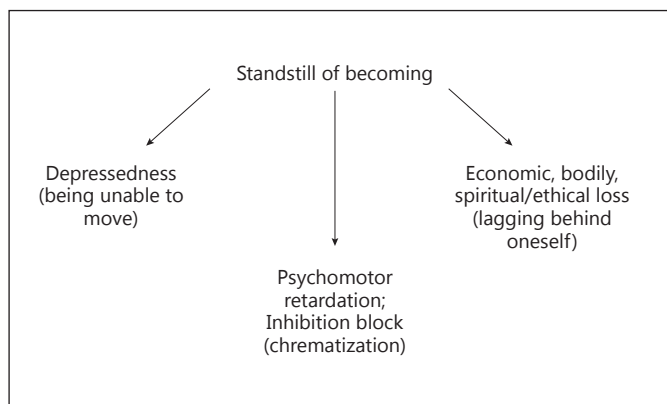


Fig. 2. Standstill of becoming as the phenomenological organizer of melancholic symptoms.

man life [67] that may give rise to a profound and horrifying sense of incapacity. Particularly in depressive delusions of guilt, the depressive patient is overwhelmed by the impact of the past, and history is experienced in its absolute irrevocability, the past as an unpardonable guilt, the future as inevitable catastrophe, and the present as irreparable ruin [6, 9, 68].

The various affective, cognitive, sensorimotor, and social symptoms in MDD are traced back to a more basic underlying disturbance in lived time. Although in this paper we cannot provide any statistical correlation between depressive symptoms and inhibition of becoming, our data support the hypothesis that the majority of depressive symptoms, despite not having time as their manifest theme, have an *intrinsic disordered temporal structure*. All the fundamental depressive symptoms – including PMR, depressed mood, and depressive delusional ideas – display a standstill of becoming as a common and prominent characteristic. The weakening of conation, and thus the slackening of time flow, and the dominance of the past are the hallmarks of depressive temporality and the common denominator of the manifold of abnormal feelings and cognitions that characterize major depressive episodes. Slowness and blocking of time are manifest in slowness in action and cognitive functions, including inhibition of the course of thought and inhibition of “centrifugal functions” (decision, act, movements) [69].

Depressed mood is a lack of emotional resonance whereby one is unable to be emotionally moved by life events and to move away from one’s own mood. Patients complain of being affected in their very capacity of feeling emotions and undergo an exacerbated and painful experience of loss of emotional grasp and resonance [6, 9, 14,

70, 71]. This feeling of the loss of feelings or “Nicht-traurig-sein-können” (not-to-be-able-to-be-sad) [71] is a “degradation of the power for having moods at all” [72]. Emotions are lived motivations for action. Emotions (from Latin *ex movere*, literally, “to be moved away”) are the *lived motivation for movement*. Emotions are kinetic, dynamic forces that drive us in our ongoing interactions with the environment [73–75], or goal-oriented appetitive orientations [67]. They are *functional* states which motivate and may produce movements [76, 77] and *pro-tentional* states which project the person into the future providing a felt readiness for action [78]. An emotion situates a person, allowing him to see the things that surround him as disclosing certain (and not other) possibilities, i.e., a given set of affordable actions. In this respect, depressed mood is an inverted image of normal emotionality – namely, lived motivations for movement that project the person towards the future and the external world, and the capacity to move in the surrounding world and to be moved by the events that take place in it – and express a highly unnatural passivity.

Depressive delusions express one’s feeling of lagging behind one’s economic, bodily and spiritual/ethical values and expectations (see Fig. 2) [6, 8, 9, 79, 80]. Hypochondriac delusions can be understood as secondary ideas rooted in abnormal bodily phenomena, the latter expressing the stagnation of bodily functions. Delusions of guilt express the torture of not being able to forget, of being constantly forced to remember one’s past mistakes, and the surrender in the face of painful processes of detachment and grief [12]. The patient accuses himself of some wrong he has done in the past and cannot be redeemed in the present or future.

The reduction of the speed of subjective time has been investigated in cognitive neuroscience paradigms as a disorder of time perception – the personal ability to process time intervals. The integrity of time perception is essential to build up higher-order time experiences as the fluidity and continuity of a subjective sense of temporality, the temporal coding of events, and synchronization with the environment [81, 82]. Yet, time perception is not the same as time experience. This makes it difficult to compare results obtained via the time perception paradigm with those (like our own) obtained with methods exploring time experience. Time perception is the ability to judge defined intervals of time. It includes *time estimation* (the evaluation of time sequences of variables length), *time production* and *reproduction* (the generation or the reproduction of time sequences of definite length), and *time discrimination* (where the probands have to com-

pare sensory stimuli of different length) [83]. In general, time perception performance may be considered the individual ability to evaluate *objective time*. It is usually investigated in laboratory paradigms. Time perception is linked to a neural cognitive device, regarded as the “inner clock” [84], whose activity is sensitive to physiological variables (i.e., age or dopaminergic tone) or pathological ones (e.g., schizophrenia) [85]. On the contrary, time experience is considered the “direct phenomenal impression of time perception,” that is the *subjective experience of time flowing* [86]. Time experience has been investigated via the Visual Analogue Scale (a graduated line spanning from *extremely slow* to *extremely quick* polarities) [87, 88] and via the verbal statements produced by the patients [89]. In the course of depression, patients frequently report slowness of time sense [86–92], as well an inclination to overvalue toward past events rather than the future [92].

Empirical research provided inconsistent or contradictory findings, displaying both overestimation [93, 94] and underestimation [95] of time intervals as well as normal performance [86] in patients with depression. Also, employing time production/reproduction tasks, contradictory findings have been provided [88, 91–95]. Thönes and Oberfeld [83], in a recent meta-analysis, reported no significant differences between normal controls and people with depression in all-time perception tasks (estimation, production/reproduction, discrimination); they also confirmed the significance of subjective time slowness occurring in people with depression.

Some of these discrepancies have been attributed to (a) the experimental design of time perception tasks, where the time intervals used as stimuli range from milliseconds to minutes (differences between normal controls and depressed patients may be evident only in longer intervals of time) [83]; (b) different mechanisms that may underpin time perception (e.g., neurocognitive abilities) compared to time experience (mood disturbance and PMR) [87, 88]; (c) the ineffectiveness of laboratory paradigms to capture real-world time experience, where the slowness of subjective time manifests itself [86].

Also, diagnostic bias may be at the origin of inconsistent findings. In the above-mentioned meta-analysis, “depression” was considered as a whole, irrespective of diagnostic subtyping (e.g., unipolar or bipolar). Disorders of time perception, as modelled in experimental paradigms, seem to lack disease specificity. Relevant exceptions are the following. Owen et al. [96] found a distinctive combination of temporal agility and temporal inability characteristic of the experience of severely de-

pressed patients affecting their capacity for decision making. They show that a critical cluster of decision-specific temporal inabilities is a risk factor distinguishing severely depressed patients from mildly/moderate depressed patients. A similar result was obtained by Münzel et al. [88], who found that endogenous depressives (but not neurotic/reactive depressives) selectively overestimated time intervals when required to concentrate under time pressure. These results are in principal confirmed by our study. These findings may improve the validity of the construct of MDD and its diagnostic specificity, especially shedding light on the uncertain borders between “minor” and “major” forms of depression. A more detailed phenomenal characterization of ATE may lead to the identification of diagnostically specific ATE [97], in contrast to the transnosological value of neurocognitive disorders of time perception, thus allowing a focus on the question of how to link brain and experience.

Some perceptual aberrations of time in MDD have been noted in neuropsychological studies as correlates of behavioural performance and neural activation or putatively associated with anomalies in brain function [88, 98–102]. Typically they perceive a time dilation, i.e., estimate-given time intervals to be longer than the actual, objectively measured time. This is a correlation found between impairment of time perception and overall symptomatology [102]. The disturbance of so-called neural oscillations (the slow widespread bio-electric activity characterizing the resting state) [103] is a candidate neural mechanism underlying the slowness of subjective time in people with depression. Interestingly, a recent meta-analysis of fNMR studies confirmed anomalies of the default mode network in MDD patients, demonstrating hyperactivity/hyperconnectivity between (posterior) cortical midline structures and lateral frontal parietal areas [104].

Time Dominated by the Past

Another relevant phenomenological construct of time experience in MDD that finds a detailed phenomenal characterization through our analyses is that in this condition time experience is dominated by the past. This constitutes another fundamental phenomenon of depression and has been elaborated in an insuperable way by Binswanger [6]. This phenomenon, namely *painful retrospection*, expresses a consequence of time stagnation and of the slackening of the flow of time. Depressed patients not only experience the slowing down of the flow of time, they also tend to become preoccupied with past events and less focused on future or present ones [100].

Table 5. ATE in MDD and schizophrenia: differential features

ATE in schizophrenia	ATE in major depression
Disorder of synthesis: Disarticulation of the associative connections bridging past, present, and future; time is fragmented and it prevails an anticipation of what is about to happen	Disorder of conation: Inhibition of experience of becoming that orientates one's awareness in the direction of the future; the flow of time and the correlated bodily functions come to a standstill; it prevails a repetition of the past
Typical sentences: "World like a series of photographs" "The time passes at jerky" "Something is going on, as if some drama unfolding"	Typical sentences: "Time is hopeless" "I keep marching about to know I'm alive" "Future gloomy, invaded by the past"

This parallels Kimura's concept of *post festum*, which is a kind of temporality dominated by the experience of the irrevocability and by the "already spent" [13]. Persons with MDD typically report experience of time as a repetition of the past dominated by retention. The depressive patient is overwhelmed by the impact of the past. What prevails is an experience of timelessness where past, present, and future are merged together as present and future are merely a repetition of the past ("There is in me a kind of routine which does not permit me to envisage the future") [80]. History is experienced in its absolute irrevocability, the past as an unpardonable guilt, the future as inevitable catastrophe, and the present as irreparable ruin [105]. This characteristic retrospective feature of depressive temporality was already known by Kraepelin [106]. Tellenbach [9] described a patient who not only felt guilty about her recent transgression but was tortured by the "constant subliminal presence of the 'sins' of the youth." Another patient is convinced she is "a sinner who has lived all her life wrongly."

We suggest that the here reported ATE, as manifest in the experience of the slowing/blocking of time flow and in the invasion of present and future by the past, are also manifest and resurface in the different functional domains, e.g., cognitive, affective, sensorimotor, and social. This means that, for instance, the slowing and blocking of the time flow, as based on decreased conation, is manifest in the patients' perceptions and actions that then also become slowed and blocked in their temporal flow as it is manifest in PMR and perceptual abnormalities. The same occurs in the cognitive domain where it is manifest in slow cognition and impaired goal orientation and executive functioning. This amounts to what recently has been described as "temporal" (or spatiotemporal) psychopathology [15–17]. This bears direct clinical implications. Instead of focusing on separate domains (cognitive, affec-

tive, or sensorimotor symptoms), as is the case with traditional approaches, such a "temporal" approach envisions abnormalities in all these domains as expressions of an underlying dysfunction – which in the case of MDD is hypothetically a basic disorder of temporality. If this hypothesis is confirmed, in the future one may base nosographic distinctions on basic temporal disturbances (see next paragraph). That, in turn, may also open the door for an investigation of those neuronal mechanisms that underlie the basic temporal disturbances for which the brain's spontaneous activity and its internal dynamics may be central [15, 107].

ATE in Major Depression and Schizophrenia

The experienced pace of time can be anomalous in both MDD and schizophrenia, but there are several differences between them (see Table 5). The following are the main differential features.

Absence of Duration versus Fragmentation

Schizophrenia patients experience time as disarticulated [32]. Time is fragmented and there is a breakdown in time Gestalt and an itemization of now-moments. The mere succession of conscious moments as such cannot establish the experience of continuity. The main feature of ATE in schizophrenia is disarticulation – a breakdown of the *synthesis* of past, present, and future. This includes 4 subcategories: disruption of time flowing, déjà vu/vécu, premonitions about oneself, and premonitions about the external world. ATE may be related to the manifold of other schizophrenic subjective abnormal experiences and symptoms, including anomalies of phenomenal consciousness (e.g., disintegration of the appearance of external objects and itemization of external world experience), selfhood (e.g., disruption of the implicit sense of being a unified, bounded and incarnated entity), and sociality

(e.g., breakdown of one's sense of being naturally immersed in a meaningful flow of social interactions with others) [17, 32].

As we have shown in this paper, in MDD there is not, as in schizophrenia, a disarticulation of the unified, operative synthesis of past, present, and future. This can be summed up in the following hypothesis, based on the present and in our previous study [32]: from the perspective of temporality, MDD involves a disorder of conation, whereas schizophrenia involves a disorder of synthesis. The characterizing feature in MDD is timelessness, that is, time comes to a standstill. Time lacks duration, not articulation. One defining feature of temporality in MDD is the slowing or blocking of the dynamic of temporal flux. This reflects loss of conation or *time élan* rather than loss of synthesis or *time articulation*. The consequence of this is a diminished contact between oneself and the world [10, 28, 38, 41, 108, 109].

Repetition versus Revelation

Another typical phenomenon reported by schizophrenic patients is that they are on the verge of a revelation. The world is on the verge of ending, a new world is coming, one's own life is on the point of undergoing a radical change. Time in schizophrenia (especially in acute states) is "a state of suspense," "pregnant now," "being is hanging," "something imminent," "something ... I didn't know what ... was going to happen ... between inspiration and expiration" [32, 77, 110]. Time is dominated by the "about-to-happen."

Unlike schizophrenia, in MDD time is dominated by the "already-happened" and by painful retrospection. Future is experienced as the static and deterministic repetition of the past. Cognitions in major depressives is structured as the validation of a belief that the person already has about herself and of a judgment about herself that is already implicit in her value system [111]. This is a typical feature of delusions of guilt in psychotic depressives that display the corroboration of a pre-existing identity rather than the disclosure of a new one [80]. Tellenbach [9] speaks of the original coherence of guilt in existence.

Accompanying Feelings

In general terms, in MDD the slowing down of the flow of time is accompanied by feelings of despair related to an atmosphere of decay and death [7, 8, 55]. In patients with schizophrenia time can be perceived indifferently as accelerated, slowed down, or in both these ways at the same time. The accompanying feeling is characterized by astonishment and perplexity [77].

Conclusions

Our research is based on a large collection of patients' narratives about anomalous time experiences. Its main limitation is that the question about the presence of ATE in the general population remains unanswered. This question points to the limitations of this approach: the problem is not only that false negatives could be present but also that the "positives" may not be distinct from the untested.

With all of this in place, our results confirmed previous hypotheses based on theoretical speculations and idiographic studies about the relevance and the distinctive features of ATE in MDD. ATE in MDD are characterized by 3 main features. The first, "vital retardation," includes feelings of stagnation of bodily functions and of decay/implosion of bodily parts or organs. This is expressive of the deterioration of the body-time relationship. The second, "slackening of the flow of time," includes feelings of slowing down and of blocking of the flow of time. The third, "time dominated by the past," includes the experience of the present and the future as "crucified" by one's past deeds.

All are supposedly the phenomenal manifestations of the pre-phenomenal disturbance of temporality called *conation*, that is, the basic energetic momentum of mental life that gives the sense of aliveness and spontaneity and orientates one's life in the direction of the future.

We suggested that this "temporal" approach may have direct clinical implications. It may supplement traditional approaches (focused on cognitive, affective, or sensorimotor symptoms and dysfunction) and base nosographic distinctions between affective disorders and schizophrenia on basic temporal disturbances. In this vein, contrasting ATE in MDD with ATE in schizophrenia, we argued that they may reflect different disorders of temporality. For instance, the "temporal" approach may help distinguish between psychotic symptoms in MDD and those in schizophrenia, respectively characterized by loss of conation or *time élan* (MDD) and of synthesis or *time articulation* (schizophrenia). Our "temporal" approach may also help focus on qualitative differences between different forms of depression [112], for instance, between milder forms of negative mood like "normal" sadness and "true" depression. Future studies should use ATE as a potentially clinically significant index for distinguishing different forms of depression and testing the existence of qualitative rather than quantitative differences between them. Furthermore, although our data do not allow us to draw inferences based on correlations between

ATE and depressive symptoms, the combined analyses of characteristic ATE in MDD and of the most prominent depressive symptoms (including PMR, depressed mood, and depressive delusions) led us to argue that the same disorders of temporal structure that we found in ATE are

also present in symptoms which do not have time as their manifest theme. Last but not least, this approach may pave the way to the investigation of those neuronal mechanisms that underlie the basic temporal disturbances across a variety of mental distress and disorders.

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