

## The experience of time spent in hospital and its relation to psychological distress

Marc Wittmann, PhD

*Institute for Frontier Areas of Psychology and Mental Health, Freiburg, Germany*

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### 1. Subjective time as error signal

Time is an experience: we sense the passage of time and feel duration. Moreover, the perception of time is inextricably related to our emotional states. A few minutes in an un-stimulating environment may feel unbearably long: we then feel “trapped” in time. Although only spanning a few seconds, the sudden silence in a conversation can feel awkwardly long. In contrast, we may feel that the time spent with a loved person passes much too quickly.

Typically, our focus on the passage of time is only transient. When we become aware of time, however, this experience often functions as an error signal indicating that an event did not occur at an expected moment in time or that something happened too fast. We sense a discrepancy between expected and objective time: “why isn’t the waiter coming?”, “why isn’t it my turn to see the doctor?”, “there’s so little time left; I’ll just have to hurry up“. Ordinarily, we don’t feel the passage of time. If we do so, it is because we feel either helpless in the face of an abundance of time or pressured by not having enough time. In either case time is experienced as rather unpleasant and functions as a stress factor.

### 2. Waiting and boredom in hospitals

The experience of time can be painful. When we feel bored we have the strong impression that time passes too slowly. Impulsive individuals are even more likely to feel boredom in waiting situations and at the same time overestimate time intervals considerably (Wittmann &

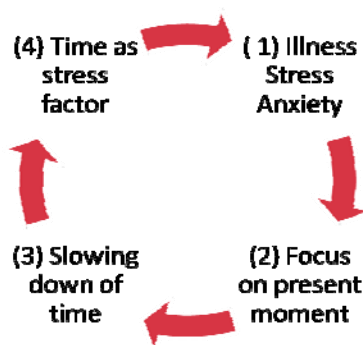
Paulus 2008). The perception of time is inherently tied to our emotional wellbeing. In periods of mental distress such as depressed mood or anxiety, the passage of time slows down and subjective duration expands (Bschor et al. 2004, Wittmann et al. 2006). The absence of a stimulating environment and the feeling of meaninglessness can lead to states of distress which are associated with the feeling that time passes too slowly. Then, individuals are strongly focused on the present moment and in turn feel that time is slowly “ticking away”; and it’s this experience of time which reinforces the feeling of emotional stress. Experimental research has indeed shown that attention regulation is one key factor for modulating the experience of time: the more one’s attention is focused on the passage of time, the longer subjective duration (Zakay & Block 1996).

Waiting and paying attention to time are intrinsic experiences in hospitals. In hospitals patients wait for a treatment or for treatment outcomes for days or even weeks; on a time scale of hours, patients wait for nurses and doctors to appear; they wait for their meals, for family and friends to show up. Patients are in a constant waiting situation. Moreover, what makes this waiting experience more burdensome is that due to the patients’ health situation their focus is even more strongly on the passage of time. Patients with several somatic symptoms such as an increase in body temperature (Wearden & Penton-Voak 1995) or pain (Somov 2000) experience time passing more slowly. Moreover, patients with cancer and who are in psychological distress pay more attention to time,

which results in longer estimates of duration and an overall feeling that time passes slowly (Wittmann et al. 2006, van Laarhoven et al. 2011).

The incorporation of a further notion, that of the *time perspectives*, is essential for a comprehensive understanding of the dynamics related to the experience of time. Typically, we switch flexibly between the time perspectives of past, present and future. That is, we either focus on past experiences to evaluate present options or imagine the future in order to create alternative outcomes. However, certain events in life can cause a dominant shift to the present time perspective. Sudden critical life events, i.e. unexpected unemployment, the death of a relative, or a life-threatening illness can dramatically shorten the future time perspective of a person and lead to the dominance of the present perspective as only short-term plans become relevant (Carstensen 2006). This dominance of the present perspective in turn leads to a stronger focus on the momentary passage of time, which results in longer duration estimates (van Laarhoven et al. 2011).

And this is the situation of many patients in hospitals: for these individuals the sudden interruption of their everyday routine due to the medical diagnosis and the referral to the hospital, shortens their future time perspective dramatically. Moreover, the somatic and mental distress associated with the illness leads to a stronger focus on the present situation. Future plans concerning a long journey, building a house, or plans relating to a job promotion suddenly disappear into the background. As a consequence of this emphasis on the present moment at the expense of the future perspective, individuals focus more strongly on the passage of momentary time, thus creating the feeling that time passes very slowly. The feeling of being exposed to endless waiting time without meaningful distraction reinforces the mental distress individuals are in (see Figure).



Studies with patients in hospital wards suffering from cancer have shown how mental distress such as anxiety and depression correlate significantly with the subjective experience of time: the greater the mental distress due to their illness, the longer the subjective duration and the slower the passage of time (Wittmann et al. 2006, van Laarhoven et al. 2011). Eventually, mental distress in patients with life-threatening illnesses stems from the awareness and pre-occupation with death and a particular subjective closeness to death (Vollmer et al. 2010). In this

way, mental stress comes full circle: first it generates a slower passage of time; then the feeling of having too much time on one's hands generates more feelings of distress.

### 3. Routine and a feeling of emptiness while in hospital

However, effects of time experience may occur. It is well known that institutionalized individuals in general, such as individuals in homes for the elderly, whose days are highly regulated and monotonous, experience time as passing slowly (Baum et al. 1984, Loocsin 1993). This relates to the immediate experience of the momentary passage of time. But the same individuals may also experience time as speeding up. When one looks back over longer periods of time such as days or weeks, thus obtaining a retrospective account of elapsed temporal intervals, time is experienced as passing very quickly. Retrospective judgments of duration over longer time intervals require the activation of memory contents. Since a monotonous schedule in institutions typically does not lead to many memorable events, time flies in retrospect. This paradoxical effect is also likely to happen during a stay at a hospital. Although patients in mental distress might experience time in typical waiting situations as passing painfully slowly – thus adding to their feeling of distress – the waiting situations as well as the exposure to monotonous environments of never-ending corridors and uninspiring waiting rooms will not create many memorable events which will later be recalled. In retrospect the days and weeks in a hospital will be experienced as disappearing very quickly into the past.

### 4. The asynchrony of staff and patient times

Subjective time – as momentarily experienced – passes slowly for patients in hospitals. In contrast, time typically flies for member of the staff in hospitals. Thus an asynchrony of subjective time between patients and the staff can be an additional burden for the doctor-patient-relationship. The patient is present oriented and experiences a lot of “empty” time. The busy hospital staff feels just the opposite: due to the professional commitments and appointments of their daily schedule, doctors and nurses and other practitioners are strongly future time oriented. Members of staff in a hospital typically focus less on the present moment and accordingly experience time passing very quickly. They feel time pressure. Thus the mental distress of patients that is associated with the slowing down of subjective time is aggravated through the felt asynchrony of available time between staff and patients: members of the staff feel that they hardly have the time to engage in extended face-to-face encounters with the patient; in an interaction with a patient, a health professional may already focus on the next appointment; whereas the patient is stuck in the moment, the doctor only drops by and then hurries out of the room. This experienced time pressure is a stress factor for doctors and nurses which negatively influences the interaction with the patient. This asynchrony naturally calls for specific interventions related to the awareness of subjective time – both for patients and for health care

professionals in well-designed hospitals that facilitate meaningful interactions. Only with the right amount of time can health-related decisions be carried out. Decisions under time pressure and choices made in the context of the temporal asynchrony between patient and health care professional are prone to misunderstandings and errors.

### 5. Stressful time experience and architecture of hospitals

Architectural space can have a strong effect on the experience of time. Only at first glance does this relationship seem counterintuitive, especially when one thinks of a categorical division between space and time. However, at closer inspection it becomes clear that we think of time in spatial dimensions. We use linguistic metaphors that refer to motion (“time flows like a river” or “time flies”) and to locations and measures of space (Evans 2004): the arrow of time is drawn from left to right; time seems to last “long” or “short”. In a recent conceptualization summarizing empirical findings on the relationships between the perception of space and time, it has actually been proposed that the categories of time, space and number could be governed by common processes (Bonato et al. 2012).

The experiences of time and space are intertwined phenomena. In restricted space with narrow walls surrounding an individual, attention is strongly directed to oneself in the present moment. In open space or in rooms with large spatial perspectives, an individual directs her or his attention away from the self in the present moment and one can more easily and flexibly switch between time perspectives (Vollmer & Koppen 2010a). A larger spatial perspective corresponds to a larger temporal perspective. Since patients in hospitals are more likely to feel

distressed, a stronger focus on the self as imposed by spatially closed environments will facilitate the occurrence and awareness of states of negative feelings. For these patients, restricted space without spatial perspectives will aggravate the symptoms of mental distress. More anxiety and depressed mood in restricted space are related to a slower passage of subjective time. Open space, a greater horizon of visibility, in contrast, relieves a patient from his or her dominant orientation on self-related thoughts and feelings related to the illness (Vollmer & Koppen 2010b).

Thus, the design of architectural space is of the essence in order to create an atmosphere that counteracts the emotional states many patients find themselves in. Subjective time is an indicator of emotional wellbeing. The slowing down of the passage of time in patients exposed to a critical life event is related to the stronger focus on the present moment and associated with increased unease. On a larger scale, the opening of space can be undertaken through the architectural design of the building with the construction of openings and large windows; on a smaller scale, spatial perspectives can at least be introduced by the creation of artificial vanishing lines in large-sized art and photographs.

However, healing environments need both types of space: large open space permitting perspectives, but also individual and confined space to allow the retreat of a patient. Patients should be able to change spatial (and thus temporal and personal) perspectives: the wide spatial opening for a larger perspective; a confined space for the feeling of safety and retreat. Having both options available results in a feeling of control that may well lead to stress reduction. Architectural space as planned according to the changing needs of patients has a healing potential.

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