Psychological Trauma: Theory, Research, Practice, and Policy

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The Dual Role of Time Perception in Trauma-Exposed Individuals: A Conceptual Review

Chava Treitel[1] and Einat Levy-Gigi[1, 2]
[1] Faculty of Education, Bar-Ilan University
[2] The Gonda Multidisciplinary Brain Research Center, Bar-Ilan University

Objective: This comprehensive review seeks to integrate knowledge on the dual role of time as a reactive and a constructive measure with literature on the distinctive encoding of traumatic memories. First, we discuss the dual role of time. Later, we show how encoding traumatic events may lead to chronic alteration in time perception. Finally, we review the potential of temporal metacognitive awareness as a therapeutic avenue to rectify chronic time dilation following trauma, ultimately mitigating posttraumatic symptoms. ***Method:*** A systematic search of electronic databases was conducted using four main terms: time perception, temporal encoding of traumatic memories, temporal metacognitive awareness, and temporal learning tasks as clinical interventions. ***Results:*** The review proposes that the interplay between the dual roles of time—reactive and constructive—alongside the elemental encoding of traumatic events can give rise to a self-perpetuating cycle. Within this cycle, overgeneralized fear could lead to neutral stimuli triggering and fortifying time dilation, thus contributing to the maintenance of posttraumatic stress disorder (PTSD) symptoms. Furthermore, we propose that cultivating temporal metacognitive awareness could potentially yield a positive impact on time dilation by embracing a more adaptable learning approach—one that places less emphasis on external signals and does not necessitate direct engagement with traumatic content. Strengthened temporal awareness might serve to mitigate chronic time dilation, potentially leading to a reduction in PTSD symptoms. ***Conclusion:*** The review emphasizes the need for further research to examine whether enhancing temporal metacognitive awareness for time duration may offer an innovative and effective avenue for alleviating PTSD symptoms in trauma-exposed individuals.

Clinical Impact Statement
The interplay between the dual reactive-constructive role of time, alongside the elemental encoding of traumatic events, can give rise to a self-perpetuating cycle. Within this cycle, overgeneralized fear could lead to neutral stimuli triggering and fortifying time dilation, thus contributing to the maintenance of posttraumatic stress disorder (PTSD) symptoms. We propose that cultivating temporal metacognitive awareness may positively impact time dilation by embracing an adaptable learning approach that places less emphasis on external signals and does not necessitate direct engagement with traumatic content. Strengthened temporal awareness might serve to mitigate chronic time dilation, potentially leading to a reduction in PTSD symptoms.

Keywords: time perception, trauma, elemental encoding, temporal metacognition awareness

Time Perception as a Reactive Measure

Perception of time is an integral part of the human experience; though we are constantly experiencing time, it is nowhere to be found in our physical world. Timing helps synchronize us with our social surroundings, for example, when evaluating time duration while waiting for food at a restaurant before we decide to complain to the waiter. Time perception is also crucial for survival, as when assessing how long it will take for an approaching car to reach a crosswalk before walking. Despite the objective and shared properties of time, individuals can estimate the same duration differently (Wittmann & van Wassenhove, 2009) and may experience time as either "slowing down," "standing still," or "flying by" (Droit-Volet & Meck, 2007; Schirmer, 2011; Thönes & Stocker, 2019; Wittmann, 2009).

One explanation for these individual differences is the valence and intensity of experiences (Droit-Volet, 2013; Droit-Volet & Gil, 2009). It has been demonstrated that negative high-arousing stimuli are systematically experienced as longer than high-arousing positive or neutral stimuli, whereas positively low-arousing stimuli are experienced as longer than negative low-arousing stimuli

Einat Levy-Gigi https://orcid.org/0000-0001-5759-6480
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Correspondence concerning this article should be addressed to Einat Levy-Gigi, Faculty of Education, Bar-Ilan University, Ramat-Gan 52900, Israel. Email: einat.levy-gigi@biu.ac.il

(Angrilli et al., 1997; Bar-Haim et al., 2010; Tipples, 2008). Another factor that may alter time perception is the mood or the emotional state while experiencing a stimulus or event. For instance, research has demonstrated that a negative mood combined with elevated stress levels and fear is linked to overestimations of time regardless of the emotional valence of the stimuli (Cocenas-Silva et al., 2019; Droit-Volet et al., 2010; S. L. Fayolle & Droit-Volet, 2014; Yao et al., 2015). A contrasting pattern emerges with a positive mood. Studies indicate that being in a positive mood can result in underestimating time intervals (Hornik, 1992). For instance, experiments involving the induction of positive moods within a controlled laboratory environment revealed that scenarios simulating waiting in line were perceived as briefer and more tolerable (Chebat et al., 1995).

Time Perception as a Constructive Measure

Evidence from various studies has shown that the role of time perception extends beyond merely reacting to external events or internal conditions. It also functions as a metacognitive signal, aiding in the assessment of the desirability and enjoyment derived from different experiences. When individuals perceive time as moving quickly, they evaluate tasks as more engrossing, less bothersome, and more enjoyable overall. Conversely, when time is perceived to pass slowly, individuals express notably diminished feelings of pleasure while undertaking comparable tasks (Pageau & Surgan, 2015; Sackett et al., 2010). Moreover, in a lab-induced setting, activity was rated more enjoyable when creating a sense of accelerated time than when the same activity was experienced without creating such expectancy (Sucala & David, 2012). Furthermore, the experience of accelerated time has been shown to lead to self-reports of gratifying deep involvement in task performance.

Interestingly, accelerated time perception has also been shown to improve objective performance in a subsequent task and enhance interest and motivation to perform the same tasks again (Christandl et al., 2018; Pageau & Surgan, 2015; Sackett et al., 2010). Finally, tasks characterized by consistent and regular timing patterns have been found to foster heightened feelings of self-assurance. Conversely, instances of disrupted or irregular time perception, like experiencing a perceived elongation of time, have been associated with self-reported lower levels of self-confidence (Stevenson & Carlson, 2020).

The attention dedicated to the passing of time (also known as explicit temporality; Fuchs, 2005) may explain the constructive role of time in the evaluation of experiences. It was found that when individuals are unaware of the passing of time, their overall experience is positive (Conti, 2001; Hancock et al., 2019). Such positive experiences are thought to result from a state of flow, which reflects an achieved balance between the difficulty of the task and the skill level of the individual who performs it (Nakamura & Csikszentmihalyi, 2014). In contrast, when such balance is interrupted, an awareness of the passage of time emerges, and the experience is less desirable (Conti, 2001).

Temporal Alterations and Psychopathology

The dual reactive-constructive role of time may affect the lingering temporal disturbances experienced in various psychopathological conditions. Indeed, various mental disorders are associated with specific chronic disrupted time perception, including mood (Bschor et al., 2004; Droit-Volet, 2013; Gil & Droit-Volet, 2009; Mioni et al., 2016; Northoff et al., 2018; Thönes & Oberfeld, 2015); anxiety (Ahmadi et al., 2019; Bar-Haim et al., 2010; Kowalski et al., 2012; Lake & Labar, 2011; Mioni et al., 2016; Sarigiannidis et al., 2020; Vicario & Felmingham, 2018; Vicario et al., 2022); and psychotic disorders (Ciullo et al., 2018). Moreover, in some psychopathological conditions, deficiency in time perception is linked to specific symptoms. For instance, it was suggested that time dilation is responsible for impulsivity and high-risk behavior in individuals with attention deficit hyperactivity disorder (Krings, 2021; Meaux & Chelonis, 2003; for meta-analysis, see Zheng et al., 2022) and that underestimation of time intervals is linked with psychomotor retardation in depression (de Montalembert et al., 2016; Gil & Droit-Volet, 2009; Mioni et al., 2016).

One potential rationale for the correlation between clinical symptoms and time perception lies in the concept of disrupted intersubjective time (Fuchs, 2013). Disrupted intersubjective time denotes a perceived temporal mismatch within social interactions arising from the incongruity between an individual's internal sense of time and the unfolding of external social events. For example, asynchrony, which is caused by an acceleration of the inner time compared to the external events, may explain symptoms like hyperarousal, impulsivity, and impatience or agitation (Bschor et al., 2004; Fuchs, 2005; Wittmann & Paulus, 2008). On the other hand, retardation of inner time can result in feeling chronically overwhelmed by the speed of external social events. Such temporal social asynchrony can lead to feelings of loneliness and despair (Fuchs, 2013; Ratcliffe, 2012).

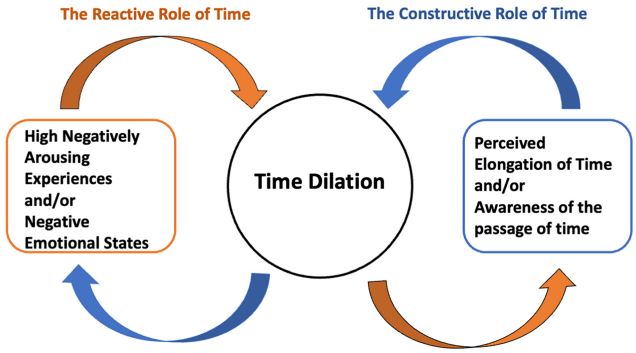
Temporal Alterations After Exposure to Trauma

Similar disruptions in the reactive and constructive functions of time may emerge during and in the aftermath of exposure to traumatic events (Adenauer et al., 2011). For example, a person who experienced a devastating car accident may feel negative emotions and high arousal while driving in the days and weeks following the accident, resulting in an overestimation of driving duration. These time-dilated experiences cause negative reactions to neutral driving experiences, such as low derived pleasure and feelings of low self-confidence, further affecting, and sustaining the dilation of driving experiences and the hold of trauma on the quality of these daily experiences (Figure 1). Indeed, a growing number of studies revealed associations between distorted time perception and posttraumatic stress disorder (PTSD), a psychological condition that arises as a response to experiencing or witnessing a traumatic event, characterized by a range of distressing symptoms, including intrusions, avoidance, negative alterations in cognition and mood, and arousal and reactivity symptoms. For a detailed description of the existing studies in the field, see Table 1. Overestimation of time was linked to higher perceived isolation, low reports of experienced group belonging, and difficulty in feeling close to others or finding emotional support (Fernandez Velasco et al., 2022).

One possible explanation for these temporal alterations relates to the tension between internal and external time. During nontraumatic events, individuals normally experience a balance between internal and external time. This balance is based on an expectation of a normal delay between the speed of events in the external world

Figure 1

The Dual Role of Time Can Sustain Time Dilation



Note. According to the reactive role of time (orange cycle), negatively high-arousing events and/or negative emotional states may lead to time dilation. According to the constructive role of time (blue cycle), perceived elongation of time and/or awareness of the passage of time may lead to time dilation. Following exposure to trauma, the interplay between these two possible cycles may lead to a chronic time dilation. See the online article for the color version of this figure.

and the speed of the individual processing and responding to those events (Arstila, 2012; Stetson et al., 2007). When individuals encounter a direct threat, it activates accelerated internal processing to ensure rapid reaction. This can be demonstrated by quicker shifts of attention and increased speed and accuracy in responses to environmental changes (Arstila, 2012; Berridge & Waterhouse, 2003). Such internal acceleration produces the sense that the inner processes are faster than the actual changes in the external world (Arstila, 2012). This, in return, can produce the perceived experience that a threatening stimulus has lasted longer than preceding or following ones (Dirnberger et al., 2012). This temporal gap is adaptive as it helps individuals respond quickly when threatened. However, when such an imbalance between internal and external time persists beyond the presence of actual danger, it may lead to a chronic time dilation and possible subsequent impaired functioning in trauma-exposed individuals.

Another explanation may relate to a maladaptive time perspective. Whereas time perception focuses mainly on the perceived period that an event lasts, time perspective refers to the awareness and integration of past, present, and future time frames (Zimbardo & Boyd, 1999). Adaptive time perspective is the ability to relate to events, thoughts, and beliefs in the past, present, and future while avoiding a preoccupation with one specific time frame (Stolarski & Witowska, 2017). Trauma exposure is linked with an unbalanced or maladaptive time perspective, demonstrated in past negative domination and limited future orientation (Holman, 2015; Stolarski & Cyniak-Cieciura, 2016; Walg et al., 2020), which may lead to distorted time perception and elevated PTSD symptoms. Indeed, clinical interventions targeting these time-sense distortions are effective in reducing PTSD symptoms (Adenauer et al., 2011; Boniwell et al., 2014; Elbert et al., 2015; Tomich et al., 2022; Zimbardo et al., 2012). This explanation implies a connection between time perspective and time perception. However, there is compelling evidence indicating that they lead to separate time-related deficits (Lennings & Burns, 1998; Siu et al., 2014), and hence may involve distinct theoretical mechanism.

A Context-Based Mechanism of Time Alterations Following Trauma

Context refers to all the elements on the periphery of our attention (Godden & Baddley, 1975). This includes time (i.e., temporal context), inner states, and environmental characteristics. Here we suggest that context-related impairments are at the core mechanism of time disruption in the aftermath of trauma. According to the item-in-context model, the hippocampus plays a significant role in binding information in the focus of our attention with its contextual surrounding (Chaaya et al., 2018; Lambert & McLaughlin, 2019). When adaptively processing, the hippocampus encodes perceived hostile stimuli in their proper contexts. This allows, for example, the discrimination between loud sounds on a battlefield, which may signal shooting and danger, and similar loud sounds in safe street celebrations (i.e., fireworks). Such discriminations enable one to adaptively navigate familiar and novel situations (Smith & Bulkin, 2014).

Studies have found that both individuals with PTSD and individuals who experienced repeated traumatic exposure have significantly smaller hippocampal volumes than nonexposed individuals (Acheson et al., 2012; Al Abed et al., 2020; Maren et al., 2013; see Karl et al., 2006 for meta-analysis). This may result in an elemental, instead of a holistic, encoding of the traumatic event. In holistic encoding, the context and content elements are encoded as a unified novel stimulus. Hence, the entire representation must be present to create previously learned outcome expectations. On the other hand, in conditions of elemental processing, contextual elements are associated separately and independently with the traumatic experience (Rudy et al., 2004). For instance, during a traumatic car accident, the smell of burning rubber may be encoded together with the feeling of danger and threat and may elicit fear whenever encountered again. Similarly, each encoded element serves as an independent trauma reminder. Hence, each one may independently evoke traumatic responses, even when encountered separately, in a safe environment (Haim-Nachum & Levy-Gigi, 2021; Levy-Gigi et al., 2012, 2016; Sopp et al., 2022). Thus, it may result in generalized fear (Acheson et al., 2012; Maren et al., 2013).

Generalized Fear and Chronic Time Dilation

Generalized fear has the potential to establish a self-perpetuating cycle wherein routine experiences magnify the phenomenon of time dilation. In this cycle, seemingly neutral stimuli can be interpreted as potential threats, thus triggering a negative emotional response accompanied by heightened arousal. Through the reactive role of time, these internal reactions may lead to everyday temporally dilated experiences. Since duration serves as a cue for nondesirable experiences, these once-neutral experiences are now experienced as hard and unpleasant. This recurrent time-governed cycle may lead to more frequent time-dilation episodes. Furthermore, this cycle could potentially contribute to an escalation of PTSD symptoms, particularly those linked to the distortion of time perception (Figure 2).

Indeed, in a study demonstrating the link between generalized fear and time dilation, individuals with PTSD overestimated time even when processing neutral nonthreatening stimuli (Vicario & Felmingham, 2018). Another study that examined time perception tasks in PTSD adolescents compared to depressed and control groups showed worse overall temporal accuracy in the PTSD

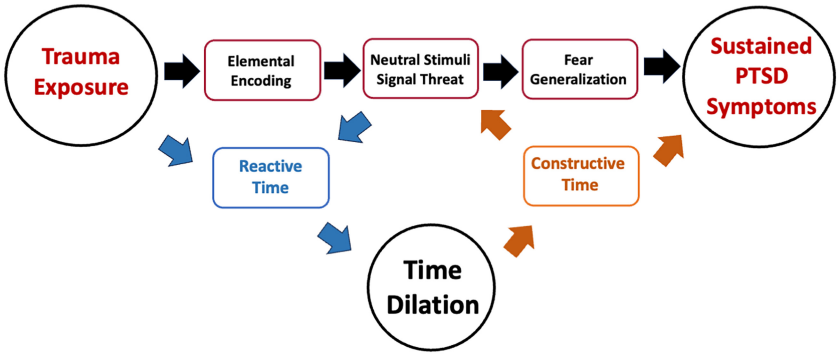
Table 1
Existing Studies on Distorted Time Perception and PTSD

	Population					Exposures				Design			Outcomes		
Authors (year)	Sample *N*	Age *M* (*SD*)	Gender	Exclusion criteria	Control group	Diagnosis/ characteristics	Traumatic events	Measure	Comorbidities	Nontemporal processes measured	Time perception measure (duration)	Time range measured	Main results	Reported limitations	Key conclusions
Kowalski et al. (2012)	77	35.6 (13.25)	32 males 45 females	Test participants seeking treatment and/or existing psychiatric or neurological disorders affecting working memory, such as ADHD.	38 individuals with no past traumatizing events	Met with A1 and A2 criteria for recent trauma exposure	Traffic accidents, robbery, witnessing violence, and being taken hostage.	The German version of the SCID	None	None	Estimation task (5 s) with measurements made at different time points after the traumatic event. First round was a non-feedback round (participants did not receive feedback on estimation correctness)	Seconds	Deviations of the trauma group's estimate were significantly higher than the control group.	Inconsideration of the influence of intensity and nature of trauma symptoms on time estimation behavior. Further clinical progression was not recorded for this study.	The trauma group has poorer time estimation compared to the control group by consistently underestimating the time interval. A possible explanation might be a reduced working memory functionality during the acute trauma phase.
Vicario and Felmingham (2018)	129	42.04 (12.06)	66 males 63 females	Personal or family history of mental illness, brain injury, neurological disorder, serious medical condition, drug/alcohol addiction, first-degree relative with bipolar disorder, schizophrenia, or genetic disorder.	62 healthy controls	PTSD	NR	The CAPS	None	Recall test, psychomotor speed, and cognitive flexibility speed	Estimation task (1–12 s in steps of 1 s)	Seconds	Overestimation of time in PTSD compared to the control participants.	Absence of measures for the sub-second durations, patient's arousal (e.g., skin conductance), and absence of data on dissociative symptoms and other clinical measures.	Individuals with PTSD have time overestimation and more variability in time estimation compared to healthy controls, and that may be a potential cognitive marker in assessing the neuropsychological profile of this clinical population.
Ahmadi et al. (2019)	45	15.29 (1.06)	22 males 23 females	History of childhood trauma or any other trauma experience besides participants single index trauma.	15 nontrauma-exposed individuals	PTSD or MDD	Car accident, natural disaster, or serious accident	Iranian version of the SCID	None	None	Verbal time estimation, production task, and reproduction task (six trials of 5, 17, 10, 30, 45, or 60 s)	Seconds	The PTSD group had significantly poorer overall mean time perception accuracy than did the control group.	The study did not include a measure of state or trait dissociation.	PTSD group had a worse overall time perception than did the healthy controls. PTSD may be associated with an underestimation of time.
Velasco et al. (2022)	3306	25.24	990 males 2273 females 43 that chose neither "male or female"	NR	None	None	NR	NR	None	None	Quantitative questionnaire assessing passage of time and temporal distance judgements during the COVID-19 pandemic	NR	Passage of time and temporal distance components showed bimodal responses. Those experiencing fast or short time also reported increases social orientation and easier recall of events since the pandemic started.	NR	Experiencing a slow passage of time and long temporal distances during the COVID-19 pandemic is associated with larger disturbances across various domains, while a fast passage of time and shorter temporal distances are associated with beneficial effects.

Note. ADHD = attention deficit hyperactivity disorder; A1 = experiencing, witnessing, or being confronted with an event that involves actual or threatened death or serious injury, or a threat to the physical integrity of self or others; A2 = experiencing intense fear, helplessness, or horror; MDD = major depressive disorder; PTSD = posttraumatic stress disorder; NR = not reported; SCID = Structured Clinical Interview for *DSM-IV*; CAPS = clinician-administered PTSD scale.

Figure 2

The Role of Time Dilation in Sustaining PTSD Symptoms



Note. Trauma exposure may lead to elemental encoding, in which neutral stimuli are independently associated with feelings of threat. This may cause fear overgeneralization and maintain PTSD symptoms. The role of time in this model is dual. First, traumatic exposure may directly affect time perception leading to time dilation and negative mood/clinical PTSD symptoms. Second, neutral stimuli that signal threat may result in further time dilation and increased fear generalization that may further sustain PTSD symptoms. PTSD = posttraumatic stress disorder. See the online article for the color version of this figure.

group (Ahmadi et al., 2019). Additional support for the distinctive impact of fear generalization on time dilation following trauma can be derived from investigations that delve into the contrasting effects of fear and anxiety. Specifically, it was found that fear stands out as a robust and distinctive predictor of overestimation of time, whereas anxiety tends to induce underestimations of time (S. Fayolle et al., 2015; Grommet et al., 2011; Sarigiannidis et al., 2020; Tipples, 2011).

In summary, the proposed concept of trauma-related chronic time dilation carries potential adverse effects on the posttraumatic experience and symptom severity. First, time dilation could extend the psychological experience of fear by prolonging the perception of threat-associated cues. Second, generalized fear and chronic time dilation may increase distress even in the absence of an immediate threat. Third, the experience of time dilation itself might trigger fear responses. The complex interplay between time and the posttraumatic experience emphasizes the necessity for therapeutic interventions aimed at addressing maladaptive time perception. These interventions may offer novel clinical potential, as they do not directly address traumatic content. Here, we suggest extending existing research on metacognitive awareness to optimize time perception and reduce PTSD symptoms in trauma-exposed individuals.

Temporal Metacognition: A Path to Corrective Time Learning

Temporal metacognitive awareness is the ability to consciously self-regulated focus on the past, the present, and the future by utilizing metacognitive skills, emotions, knowledge, and experience (Witowska et al., 2022). It was found that metacognitive awareness following trauma in adulthood mediates the association between childhood trauma and PTSD symptom severity (Ramaghani et al., 2019). Moreover, enhancing temporal metacognitive awareness was effective in cultivating a more balanced time perspective (R. Brown et al., 2022; Hett et al., 2022; Ramaghani et al., 2019) thus reducing PTSD symptoms following exposure to trauma. Though current research has been devoted to establishing a time perspective metacognitive awareness therapy model for the treatment of PTSD (for systematic review, see R. Brown et al., 2022), less attention has been devoted to enhancing metacognitive awareness for impairments in time perception.

Whereas the time perspective metacognitive awareness approach focuses on the tendency to orient toward the past and future, time perception metacognitive awareness relates to evaluating the degree of self-accuracy in duration estimation. Estimating duration accurately relies on the ability to produce behaviorally adaptive decisions based upon two distinct input sources, external feedback on temporal responses and the degree of confidence in temporal judgments or decisions. A better-perceived ability, accuracy, or skills were found to reduce negative mood, cognitive difficulty, and avoidant behavior (Efklides, 2008). Metacognitive awareness is essential not only for regulating behavior but also for learning from past experiences to better attain self-directed goals (Efklides, 2008). Taken together, it is possible that enhancing metacognitive awareness through promoting self-knowledge of one's timing abilities or tendencies will affect the evaluation of experiences and their perceived desirability or difficulty, thus regulating avoidant behavior.

Recent studies have shown that time-perception metacognitive awareness affects the ability to retain temporal accuracy and variance despite uncertainty (Bader & Wiener, 2021). Moreover, it was found that metacognitive awareness improves the ability to self-assess the value of timing competence without relying solely on external feedback (Bader & Wiener, 2021; Riemer et al., 2019). Furthermore, greater metacognitive awareness was associated with better learning as well as an enhanced ability to generalize learning to novel conditions (Lamotte et al., 2012). Finally, even a single positive confidence judgment expressed during a multiple-day trial improved learning abilities in coming cue-stimulus predictive learning (Hainguerlot et al., 2018).

These results signify the beneficial effect of temporal metacognitive awareness even when temporal duration estimates are compromised. Moreover, it may suggest that following trauma exposure,

when time dilation can impede relearning and exacerbate posttraumatic symptoms (Haim-Nachum & Levy-Gigi, 2019, 2021, Levy-Gigi et al., 2016), clinical protocols that provide opportunities for temporal error correction without relying solely on processed external feedback, such as temporal metacognitive awareness, may hold significant clinical value. Specifically, self-corrective tools which aim to enhance temporal metacognitive awareness may provide a less affected venue for adjusting the timing in trauma-exposed individuals. One may hope that temporal accuracy and efficient learning will not only affect timing but, by doing so, also alleviate traumatic symptoms.

Healing Time: Rehabilitation of Temporal Relearning

Several studies have attempted to utilize experiential paradigms to explore the use of temporal metacognitive awareness to enhance more accurate timing abilities. Most of these studies were conducted in healthy individuals with no indication of temporal alteration behavior (Akdoğan & Balcı, 2017; Riemer et al., 2019). The results suggest a significant positive link between enhancing temporal awareness and accurate time perception (Akdoğan & Balcı, 2017; Bader & Wiener, 2021; Lamotte et al., 2012). For example, in a study that examined the role of self-correction on temporal accuracy, participants were provided with both general feedback for correct or error responses and specific feedback on the systematic magnitude and direction of their time estimation errors. When participants were made aware of the direction of their temporal error tendency, they adjusted their judgments in the current and future tasks, even though no additional feedback was provided (Riemer et al., 2019). In another study, specific feedback that indicated the temporal alteration tendencies (underestimation vs. overestimation) was significantly more efficient in enhancing temporal relearning compared to general feedback on the absolute level of accuracy (Bader & Wiener, 2021).

Two pioneering studies (Honma et al., 2021) have used temporal metacognitive awareness to alleviate clinical symptoms. A study with Parkinson's diagnosed individuals, a disease repeatedly associated with time underestimation, revealed that temporal feedback training not only modulated and maintained accurate time perception up to a month after training but more importantly, positively affected response inhibition, reduced impulsivity, and reduced measures of depression and anxiety These results suggest that temporal rehabilitation may directly affect condition-related symptoms, even when there is no clear, direct link between symptoms and impairment in time perception.

Given the potential implications of temporal metacognitive awareness in recalibrating traumatic time dilation, it becomes pertinent to explore other awareness-based interventions that may induce shifts in time perception. Accumulative research indicates mindfulness meditation, described as focusing deliberate conscious attention on the introspective inner analysis of sensory, emotional, and bodily states, is an effective therapeutic option for trauma-exposed individuals (see Harper et al., 2022 for meta-analysis). Importantly, recent research revealed a link between mindfulness practice and adaptive temporal underestimation (Droit-Volet & Dambrun, 2019). Specifically, while temporal duration evaluation of nonmeditators is dependent largely on external activities and interactions, practicing mindfulness weakens this interdependence. Thus, allowing time perception to be more self-obtained and enabling the correction of alteration tendencies (Droit-Volet et al., 2015; Droit-Volet & Dambrun, 2019). Importantly, the specific allocating of attention associated with mindfulness has been shown to balance the past-future tendencies following trauma exposure (Rönnlund et al., 2019). Hence, it may also inadvertently alter the way duration is perceived in the aftermath of trauma. In summary, the role of mindfulness could emerge as a significant element in comprehending the intricate interplay between temporal changes following trauma exposure and the distinctive and impactful role of metacognitive awareness in mitigating posttraumatic symptoms. Hence, in the aftermath of trauma, it may be possible that what time has broken, it might also heal.

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