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EDITED BY

Kimberly Rios,
University of Illinois at Urbana-Champaign,
United States

REVIEWED BY

Matt Crawford,
Victoria University of Wellington, New Zealand
Denise Beike,
University of Arkansas, United States

*CORRESPONDENCE

Keith D. Markman
✉ markman@ohio.edu

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The influence of recall direction on judgments of subjective temporal distance from the beginning of the COVID-19 pandemic lockdowns

Connor Dantzler and Keith D. Markman*

Department of Psychology, Ohio University, Athens, OH, United States

Introduction: In a series of 5 studies, Lam and Buehler found that first-year university students felt closer to a target event (the day they learned that they were accepted into university) when they recalled a stream of related events in a backward direction (a reverse-chronological order ending with the target event) than when they recalled those events in a forward direction (a forward-chronological order beginning with the target event).

Methods: In a conceptual replication of their Study 2, we asked participants how close they felt to the first day that lockdowns were imposed in response to the Covid-19 pandemic in the U.S. (federally mandated on March 13, 2020) following either backward or forward recall of a stream of related events.

Results: The results of the present study ran directly counter to those of Lam and Buehler: participants rated the first day of lockdowns as feeling closer following forward recall than following backward recall.

Discussion: Potential explanations for this reversal of Lam and Buehler's effect are discussed that focus on the temporal distortions that people have been found to experience when they think about autobiographical events that occurred at the beginning of the pandemic.

KEYWORDS

COVID-19, time perception, recall direction, temporal distance, autobiographical memory

Introduction

For many individuals, the timeframe of the COVID-19 pandemic represented a surreal period of their lives. Out of this global catastrophe arose an uncertain sense of time during which the weeks seemed to either drag on forever or end in a flash. And while time has objectively marched forward at a measured pace, these distorted perceptions remain and continue to impact our memories of those events. What is it about the COVID-19 pandemic (particularly during its first 2 years) that had such a profound impact on our subjective experience of time?

Recent work has investigated peoples' anomalous perceptions of time during the first 2 years of the pandemic. For instance, [Martinelli et al. \(2021\)](#) found that people generally experienced time as progressing more slowly during the pandemic. According to their findings, the phenomenon was largely predicted by boredom, feelings of unhappiness, and reports of sleep disturbances as opposed to specific living conditions or personality

variables. As people found themselves increasingly idle and anxious, time appeared to slow to a crawl. On the other hand, [Holman et al. \(2023\)](#) found that that over half of their participants reported experiencing either some slowing down or speeding up of time during the pandemic, referring to this disorientation phenomenon as “temporal disintegration.” Their work supported explanations that focused on overall mental health, feelings of stress, and media exposure. Finally, a recent qualitative analysis performed by [Wang et al. \(2023\)](#) on participants’ written descriptions of how time felt like it was passing during the 1st year of the pandemic revealed the following metaphors or descriptors: “hazy/surreal,” “stuck in time,” “repetition,” “rollercoaster,” “paradox,” and “disappearing.” Thus, empirical evidence clearly points toward the general conclusion that people felt temporally disoriented at the beginning stages of the pandemic.

In addition to mental health and emotion-related factors, there are other considerations regarding time perception during the pandemic. One way that individuals are thought to navigate their memories is with “temporal landmarks.” Temporal landmarks are notable points in time that allow one to separate one time interval from another. These can be recurring events, such as weekends and birthdays, or more monumental occasions such as historical events ([Shum, 1998](#); [Dai et al., 2014](#); [Peetz and Wilson, 2014](#); [Koo et al., 2020](#)). In the same way that physical landmarks provide one with a sense of direction, temporal landmarks help one make sense of the course of events by providing a frame of reference. They allow one to mentally map out the course of their lives across time. The COVID-19 pandemic, however, represented a large-scale disruption of these helpful guideposts. Yearly in-person gatherings and other familiar milestones were put on hold as individuals practiced social distancing or otherwise went into lockdown to prevent getting themselves or others sick. [Holman et al. \(2023\)](#) noted that many participants experienced a blurring of the line between weekdays and weekends. Moreover, in addition to the removal of such temporal landmarks, media outlets operating on a 24-h news cycle provided a nearly overwhelming amount of rapidly developing information pertaining to the COVID-19 virus. Thus, a combination of temporal landmark disruption and information overload may have contributed to distorted perceptions of time.

Recall direction and subjective temporal distance

The present study was intended to be a conceptual replication of [Lam and Buehler’s \(2009, Study 2\)](#) work that examined the influence of recall direction on perceptions of temporal distance from a target event. As operationalized by Lam and Buehler, recall direction refers to the order of direction in which a series of events are recalled. Most often, as in narratives and general social discourse, events are remembered in *forward* chronological order (e.g., [Skowronski and Walker, 2004](#); [McAdams, 2006](#); [Brunec et al., 2015](#)). However, people may also engage in *backward* recall if the purpose is to draw causal conclusions about why certain events occurred. Furthermore, as Lam and Buehler noted, the activation of a recent memory might also spontaneously cue the recall of an

earlier and related event (e.g., remembering one’s 21st birthday may remind one of their 18th birthday; see also [Brunec et al., 2015](#)).

[Lam and Buehler \(2009\)](#) asked whether recall direction might influence *perceptions* of temporal distance even while holding objective temporal distance constant. *Subjective temporal distance*, as opposed to objective temporal distance, refers to how distant in time a recalled event *feels* or *seems* to an individual (e.g., [Ross and Wilson, 2002](#)). Lam and Buehler reasoned that an event should feel closer in time after engaging in backward recall (i.e., recall that proceeds in a reverse-chronological order ending with a target event) than after engaging in forward recall (i.e., recall that proceeds in a chronological order that begins with a target event) because the former should lead people to form a momentary impression that relatively little has changed in either themselves or their circumstances since the event occurred, thereby leading them to feel that the event was relatively close to them in time. On the other hand, they argued that because forward recall should be relatively more likely to elicit a narrative form of thinking about how one’s “past selves” became one’s “present selves” (i.e., calling on themes of developmental growth and change; [McAdams, 2004](#); [Bauer et al., 2005](#); [Pals, 2006](#)), perceptions of change should elicit the feeling that the event occurred relatively more distantly from them in time. In line with their predictions, Lam and Buehler found across five studies that backward recall made participants feel closer in time to a target event (i.e., the day participants learned that they had been admitted to Wilfrid Laurier University) than did forward recall, and in Study 5 they provided evidence for the mediating role of self-change perceptions in accounting for the effect of recall direction on subjective temporal distance.

In the present study we sought to conceptually replicate Lam and Buehler’s (Study 2) findings regarding the effect of recall direction on subjective temporal distance. Instead of asking 1st-year college students to recall the day they were admitted to university, however, we directed them instead to recall how distant the initial COVID-19 lockdowns in the U.S. felt to them after engaging in either backward recall (i.e., remembering a series of events in reverse-chronological order ending with the lockdowns) or forward recall (i.e., remembering a series of events in chronological order beginning with the lockdowns).

Method

Participants recalled a series of seven autobiographical events in either a backward or forward direction with the target event occurring in the middle (i.e., position #4). After recalling all seven events, we asked participants to judge how distant (or close) each of the events felt to them (i.e., subjective temporal distance).

Participants

Seventy-nine 1st-year student participants (56 female) were collected from introductory psychology courses at Ohio University

(OU) via SONA, the university's online research platform.¹ The mean age of the participants was 18.54 years, and the sample was predominantly White (88.6% White/Caucasian, 6.3% Black/African American, 2.5% Hispanic/Latino, 1.3% Asian/Asian American, and 1.3% Multiracial). Participants received 0.5 research credits toward their fulfillment of a course requirement.

Procedure

The study was run on a Qualtrics-based online survey between November 29, 2020, and December 6, 2020. Closely following the procedure employed by Lam and Buehler (2009) in their Study 2, participants were asked to recall a series of seven events that they all would have experienced. The event in position #4 (i.e., the centermost event) was always the target event: "The initial lockdown that took place in the state in which you were living when the COVID-19 lockdowns hit (late February-mid-March)."² Three of the specified events took place before the target event ("1st day of classes as a high school senior," "Christmas Day 2019," "New Year's Eve"), and three events took place after the target event ("Fourth of July," "1st day of classes at Ohio University," "An event that happened yesterday"). To ensure that participants adequately reflected upon each event, participants were asked to briefly write down the details of what they could remember from each event. In the *forward recall* condition, participants considered these events in chronological order, beginning with their "first day of classes as a high school senior" and continuing through to "an event that happened yesterday," whereas in the *backward recall* condition, these events were considered in reverse-chronological order, beginning with "an event that happened yesterday," and continuing through to their "1st day of classes as a high school senior." In both conditions, the target event was the fourth event to be recalled.

Subsequently, participants once again proceeded through each event in chronological or reverse-chronological order. This time, participants were asked to indicate the subjective temporal distance of each event using a digital slider that ranged from 0 to 100 (Wang et al., 2023), with endpoints that were respectively labeled "Feels like yesterday," and "Feels very far away."³ Following completion of these measures, participants were debriefed and thanked for their participation.

1 Minor variations in sample size per event occur where one or more participants chose not to answer the question (i.e., 74 out of 79 participants provided a measure of temporal distance for the target event).

2 85.8% percent of the 1st-year students who enrolled at Ohio University in the fall of 2020 were residents of the state of Ohio, which instituted initial lockdowns on March 13, 2020 (i.e., the date when the initial federal lockdown was instituted).

3 Lam and Buehler (2009, Study 2) had participants make a mark on a 171 mm line to indicate their judgments of temporal distance, employing the same endpoints.

TABLE 1 Mean subjective temporal distance for each autobiographical event as a function of recall direction.

Event	Forward recall	Backward recall	Sig.
An event that happened yesterday	9.56	14.78	$p = 0.220$
First day of classes at Ohio University	34.59	49.33	$p = 0.010^*$
Fourth of July	57.93	55.64	$p = 0.680$
COVID-19 lockdown (target event)	50.54	75.55	$p < 0.001^*$
New Year's Eve	67.53	75.59	$p = 0.170$
Christmas Day, 2019	71.83	77.82	$p = 0.240$
First day of classes as a high school senior	64.83	80.56	$p = 0.012^*$

Temporal distance was measured on a 0–100 scale, where higher scores indicated greater subjective distance. * denotes a statistically significant difference at the $p < 0.05$ level.

Results

An independent samples *t*-test revealed that the mean subjective temporal distance from the target event (i.e., the beginning of the COVID-19 lockdowns) reported by *forward recall* participants ($M = 50.54$, $SD = 32.87$) felt closer than did the distance reported by *backward recall* participants ($M = 75.55$, $SD = 29.54$), $t_{(75)} = -3.51$, $p < 0.001$, $d = 0.80$, a result that runs directly counter to that reported by Lam and Buehler (2009, Study 2). At $\alpha = 0.05$ and a sample size of $n = 74$, an effect-size sensitivity analysis identified that 80% power would be achieved for an effect size equal to or $> d = 0.584$, which is lower than the observed effect size of $d = 0.80$. Thus, the present study appears to have been appropriately powered to detect this effect (observed power = 0.93).

Table 1 depicts the mean subjective temporal distance reports for each of the seven autobiographical events as a function of recall direction. In addition to the recall direction difference that we found for the target event, two other comparisons were statistically significant. First, *forward recall* participants felt that their 1st day of classes as a high school senior (i.e., the earliest of the recalled autobiographical events) was closer to them in time ($M = 64.83$, $SD = 28.12$) than did *backward recall* participants ($M = 80.56$, $SD = 27.06$), $t_{(77)} = -2.58$, $p = 0.012$, $d = 0.58$ and, second, *forward recall* participants felt that their 1st day of classes at Ohio University (i.e., the latest of the recalled autobiographical events) was closer to them in time ($M = 34.59$, $SD = 25.07$) than did *backward recall* participants ($M = 49.33$, $SD = 25.18$), $t_{(76)} = 2.59$, $p = 0.010$, $d = 0.59$. No other comparisons were significant, all $ps > 0.17$.

Discussion

The central (and unexpected) finding of the present study is the reversal of the effect of recall direction on judgments of temporal distance from a target event as compared to the findings of Lam and Buehler (2009, Study 2). In Lam and Buehler's work, the target

event (the day participants learned that they had been accepted to Wilfrid Laurier University) was perceived to be closer when recalled through backward recall, and more distant when recalled through forward recall. The present study replaced their target event with the onset of the initial COVID-19 lockdowns and found the opposite effect: the target event was perceived to be closer when recalled through forward recall, and more distant when recalled through backward recall.

We believe it is reasonable to speculate that the nature of the target event in the present study played a significant role in producing the unexpected reversal of the previously reported effect of recall direction on subjective temporal distance. We will first approach this question by examining Lam and Buehler's (2009) explanation for the recall direction-based differences they found.

According to Lam and Buehler (2009), the mechanism that underlies the differential perceptions of temporal distance produced by forward and backward recall is perceived change, both in oneself and one's circumstances. When people remember events in a backwards direction, they do so in an incremental, step-by-step fashion that gives rise to a perception that relatively little has changed. When people recall events in a forward direction, however, they must first directly mentally time travel back to the oldest event in the sequence, then travel forward sequentially from that point (see also Brunec et al., 2015). This abrupt jump back in time, as opposed to the gradual shift that characterizes backward recall, highlights differences between past and current selves, as well as past and present circumstances. In turn, the salience of these differences should, according to Lam and Buehler (2009), lead people to judge events as being more distant after forward recall than after backward recall. In kind, the narrative thinking evoked by forward recall (e.g., McAdams and McLean, 2013) encourages people to pay attention to changes across time, as though analyzing the development of a character in a play (Mar, 2004). Thus, perceptions of change evoked by forward recall make past events seem more distant in time.

Diminished self-change perceptions and boredom

Why should recollections of the initial COVID-19 pandemic lockdowns cause a reversal of this finding? One possibility is that the temporal distortions known to characterize the experience of living through the pandemic (e.g., Wang et al., 2023) limited the amount of change that people perceived during this period. Note that this would be particularly likely to affect the processes that are otherwise typically engaged by forward recall: the formation of narratives of growth and development that evoke perceptions of greater temporal distance. One way this could occur is if the narrative content of pandemic-related memories were novel or immersive enough to distract people from whatever comparative processes they would normally engage in about the present and the past. Indeed, the hazy and surreal temporal qualities of the pandemic (Wang et al., 2023) may have led some to experience a level of unreality and dissociation from the self, thereby rendering mental representations of the present and past self-less

coherent (see Holman and Silver, 1998) and, thus, comparisons more difficult.

Also limiting the amount of change that people perceived during this period was likely the simple fact that the pandemic was experienced as boring by many. Indeed, several early reports (e.g., Cellini et al., 2020; Droit-Volet et al., 2020; Ogden, 2021) indicated that people were experiencing time slowing down. Given the relationship that exists between boredom and perceptions of the slowing passage of time (e.g., Sackett et al., 2010; Westgate, 2020; Wang et al., 2023), it is likely that feelings of boredom diminished perceptions of change and thereby undermined the typical effects of forward recall on enhancing perceptions of temporal distance from autobiographical events.

Emotional involvement and temporal disintegration

A second possibility is that the emotional aspects associated with the early pandemic stages interfered with the typical effects of recall direction (Lam and Buehler, 2009). The onset of the pandemic was a period charged with anxiety and uncertainty for many, and perhaps the use of the lockdowns as the target event in the present study elicited greater emotional involvement during recall than did the target event employed by Lam and Buehler.

Cutting across recall direction, research finds that emotional involvement can influence the subjective temporal distance of events. For example, participants asked to recall various historical periods subsequently judged those periods to feel closer in time to the extent that they reported experiencing greater emotional involvement with them (Bratfisch et al., 1971). Relevant here as well is the experience of flashbulb memories: those who witnessed emotionally charged events such as the 9/11 terrorist attacks on the U.S. or the assassination of JFK report that such events feel closer in time even years after the fact (Brown and Kulik, 1977; Hirst and Phelps, 2016). Thus, if a memory evokes emotions, we should expect such memories to feel more recent.

Regarding recall direction, we would expect emotions to be heightened by a more forward-looking chronological narrative rather than one considered in reverse. Arguably, backward recall should diminish some of the emotional qualities of memories because it disrupts the more natural and narrative-eliciting forward-directed recall sequence by using a more inferential and deliberative approach. Perhaps, then, the emotional qualities associated with the initiation of the COVID-19 lockdowns [in comparison to the more pallid qualities associated with Lam and Buehler's (2009) target event] worked to diminish temporal distance perceptions in forward (but not backward) recall.

Research on the relationship between trauma and memory is also theoretically aligned with the notion that strong emotions disrupt memory recall. Citing Janet (1925), Holman and Silver (1998) note that, "...the initial emotional reaction to a traumatic event can be so intense as to have a disintegrating effect on the entire psychological system" (p. 1,147). They argue that "...by disrupting cognitive processing of the event, these initial reactions may interrupt personal development and leave individuals 'stuck' in their prior traumatic experience" (p. 1,147). Moreover, in the

struggle to assimilate the past event, an individual may “...get ‘stuck’ in the past, both voluntarily and through involuntary intrusions of ongoing thought processes” (Silver et al., 1983, p. 89, as cited by Holman and Silver, 1998). Consistent with this conceptualization, Holman and Silver (1998) in three studies reported an association between disjointed temporal reactions to traumatic experiences—a phenomenon they termed “temporal disintegration”—and maladaptive responses to trauma. Regarding the present work, if the initial COVID-19 lockdowns were experienced traumatically, at least by some, then it may very well be that any ensuing temporal disintegration and disorientation made people feel that they were “stuck in” the past (see also Wang et al., 2023) and thus felt relatively closer to it. In all, however, although differential levels of emotional involvement probably contributed to the observed effect, it seems unlikely that involvement was a primary cause because we completely reversed Lam and Buehler’s (2009) effect (and did not merely eliminate it).

Event valence

Perhaps a stronger explanation for the reversal of the original finding might be that the target events used by Lam and Buehler (2009) and the present study differed in *valence*. Whereas, Lam and Buehler’s target event—the day participants learned that they had been accepted into Wilfrid Laurier University—was most likely experienced as positive, the initiation of the COVID-19 lockdowns was more likely experienced as less positive and more negative. Assuming that participants were in a neutral mood-state at the time they completed our study, forward recall instructions would have initially led participants to recall more negative memories (i.e., the beginning of the lockdowns)—evoking, perhaps, more negative mood-states—before shifting them forwards in time to recall more positive memories that presumably evoked less negative mood-states. Backward recall instructions, by contrast, would have initially led participants to recall more positive (or at least neutral) memories before shifting them backwards in time to recall more negative memories (i.e., surrounding the lockdowns) that presumably evoked more negative mood-states. Thus, in the present study, forward recall instructions induced movement *away* from negative memories (and negative mood-states), whereas backward recall instructions induced movement *toward* negative memories (and negative mood-states). In Lam and Buehler’s studies, on the other hand, forward recall instructions induced movement away from a positive memory (acceptance into university), whereas backward recall instructions induced movement toward a positive memory.

In our view, directional movement toward or away from a positive or negative event memory could be perceived as a net loss or a net gain relative to one’s current state of self. Prospect theory (Kahneman and Tversky, 1979) describes an asymmetry between how humans process losses and gains of equivalent magnitudes. People tend to be loss averse, dwelling more on looming losses than equivalent gains. From this perspective, backward recall toward a negative event and forward recall away from a positive event would both be construed as “losses” that weigh more heavily against the current self-state than would equivalent “gains” (i.e.,

backward recall away from a negative event and forward recall toward a positive event). Indeed, the findings across both our study and Lam and Buehler’s (2009) support this conceptualization: backward recall instructions elicited judgments of greater temporal distance when the target event was negatively valenced (inducing movement toward negative memories of the lockdowns), whereas forward recall instructions elicited judgments of greater temporal distance when the target event was positively valenced (inducing movement away from the positive memory of being accepted into university).

Event closure

Finally, another difference between Lam and Buehler’s (2009) work and ours’ is that whereas the former focused participants on a more “closed” event—acceptance into university—the latter focused participants on a more “open” event—the initial COVID-19 lockdowns. Because receiving an acceptance letter into university is a distinct, concrete event (cf. Trope and Liberman, 2010) that is complete and can thus be parceled away into memory, phenomenologically it should feel more closed (Beike and Wirth-Beaumont, 2005; Beike, 2007). Conversely, although the initial lockdown in the state of Ohio was, by itself, a single event, it is nevertheless associated in memory with the broader pandemic—an ongoing, less distinct *sequence of events* that has yet to attain memory closure, and thus phenomenologically should feel more open (e.g., Crawley, 2010). If this is the case, then memories of the initial lockdowns are more strongly connected to the present and might thus have anchored study participants in the here and now as they attempted to engage in either forward or backward recall. More generally, then, perhaps the open nature of the pandemic made backward recall feel more effortful, resulting in judgments of greater temporal distance. In all, differential experiences of memory closure may have contributed to the reversal of Lam and Buehler’s effect that we observed.

Coda

In addition to reporting (and attempting to account for) an unexpected finding, we believe our results are significant on a broader theoretical level because the reversal of an earlier set of findings (i.e., Lam and Buehler, 2009) suggests that the relationship between recall direction and the subjective experience of time may be more complex and nuanced than was previously assumed. Future research might focus on aspects of the target event itself, manipulating target event valence and target event closure as we described. Moreover, events that are experienced more emotionally and, perhaps, negatively may be represented differently in memory than events that are experienced less emotionally and, perhaps, positively. In turn, these differential mental representations might interact with recall direction (as well as a variety of contextual factors) to influence the perceived temporal distance of an event. We hope that the present work stimulates additional inquiries into the nature of subjectively experienced time.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by Ohio University Institutional Review Board. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

CD: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. KM: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

References

- Bauer, J. J., McAdams, D. P., and Sakaeda, A. R. (2005). Crystallization of desire and crystallization of discontent in narratives of life-changing decisions. *J. Personal. Soc. Psychol.* 73, 1181–1214. doi: 10.1111/j.1467-6494.2005.00346.x
- Beike, D. (2007). The unnoticed absence of emotion in autobiographical memory. *Soc. Personal. Psychol. Comp.* 1, 392–408. doi: 10.1111/j.1751-9004.2007.00027.x
- Beike, D., and Wirth-Beaumont, E. (2005). Psychological closure as a memory phenomenon. *Memory* 13, 574–593. doi: 10.1080/09658210444000241
- Bratfisch, O., Ekman, G., Lundberg, U., and Kruger, K. (1971). Subjective temporal distance and emotional involvement. *Scand. J. Psychol.* 12, 147–160. doi: 10.1111/j.1467-9450.1971.tb00618.x
- Brown, R., and Kulik, J. (1977). Flashbulb memories. *Cognition* 5, 73–99. doi: 10.1016/0010-0277(77)90018-X
- Brunec, I. K., Chadwick, M. J., Javadi, A. H., Guo, L., Malcolm, C. P., and Spiers, H. J. (2015). Chronologically organized structure in autobiographical memory search. *Front. M* 2015:338. doi: 10.3389/fpsyg.2015.00338
- Cellini, N., Canale, N., Mioni, G., and Costa, S. (2020). Changes in sleep pattern, sense of time and digital media use during COVID-19 lockdown in Italy. *J. Sleep Res.* 29:13074. doi: 10.1111/jsr.13074
- Crawley, R. A. (2010). Closure of autobiographical memories: the effects of written recounting from first- or third-person visual perspective. *Memory* 18, 900–917. doi: 10.1080/09658211.2010.524650
- Dai, H., Milkman, K. L., and Riis, J. (2014). The fresh start effect: temporal landmarks motivate aspirational behavior. *Manag. Sci.* 60, 2563–2582. doi: 10.1287/mnsc.2014.1901
- Droit-Volet, S., Gil, S., Martinelli, N., Andant, N., Clinchamps, M., Parreira, L., et al. (2020). Time and COVID-19 stress in the lockdown situation: time free, “dying” of boredom and sadness. *PLoS ONE* 15:236465. doi: 10.1371/journal.pone.0236465
- Hirst, W., and Phelps, E. A. (2016). Flashbulb memories. *Curr. Direct. Psychol. Sci.* 25, 36–41. doi: 10.1177/0963721415622487
- Holman, E. A., Jones, N. M., Garfin, D. R., and Silver, R. C. (2023). Distortions in time perception during collective trauma: insights from a national longitudinal study during the COVID-19 pandemic. *Psychol. Trauma* 15, 800–807. doi: 10.1037/tra0001326
- Holman, E. A., and Silver, R. C. (1998). Getting “stuck” in the past: temporal orientation and coping with trauma. *J. Personal. Soc. Psychol.* 74, 1146–1163. doi: 10.1037/0022-3514.74.5.1146
- Janet, P. (1925). *Psychological Healing (vols 1-2)*. New York, Macmillan [Original Publication: *Les médications psychologiques (vols 1-3)*]. Paris: Félix Alcan.
- Kahneman, D., and Tversky, A. (1979). Prospect theory: an analysis of decision under risk. *Econometrica* 47, 263–292. doi: 10.2307/1914185
- Koo, M., Dai, H., Mai, K. M., and Song, C. E. (2020). Anticipated temporal landmarks undermine motivation for continued goal pursuit. *Org. Behav. Hum. Decision Process.* 161, 142–157. doi: 10.1016/j.obhdp.2020.06.002
- Lam, K. C. H., and Buehler, R. (2009). Trips down memory lane: recall direction affects the subjective distance of past events. *Personal. Soc. Psychol. Bull.* 35, 230–242. doi: 10.1177/0146167208327190
- Mar, R. A. (2004). The neuropsychology of narrative: story comprehension, story production and their interrelation. *Neuropsychologia* 42, 1414–1434. doi: 10.1016/j.neuropsychologia.2003.12.016
- Martinelli, N., Gil, S., Belletier, C., Chevallère, J., Dezechache, G., Huguet, P., et al. (2021). Time and emotion during lockdown and the COVID-19 epidemic: determinants of our experience of time? *Front. Psychol.* 11:616169. doi: 10.3389/fpsyg.2020.616169
- McAdams, D. P. (2004). “The redemptive self: narrative identity in America today,” in *The Self and Memory*, eds. D. R. Beike, J. M. Lampinen, and D. A. Behrend (New York, NY: Psychology Press), 95–116.
- McAdams, D. P. (2006). The problem of narrative coherence. *J. Construct. Psychol.* 19, 109–125. doi: 10.1080/10720530500508720
- McAdams, D. P., and McLean, K. C. (2013). Narrative identity. *Curr. Direct. Psychol. Sci.* 22, 233–238. doi: 10.1177/0963721413475622
- Ogden, R. (2021). Why COVID-19 might be making us lose our sense of time. *Cogn. Psychol. Bull.* 1, 19–24. doi: 10.53841/bpsocg.2021.1.6.19
- Pals, J. L. (2006). Narrative identity processing of difficult life experiences: pathways of personality development and positive self-transformation in adulthood. *J. Personal. Soc. Psychol.* 74, 1079–1110. doi: 10.1111/j.1467-6494.2006.00403.x
- Peetz, J., and Wilson, A. E. (2014). Marking time: selective use of temporal landmarks as barriers between current and future selves. *Personal. Soc. Psychol. Bull.* 40, 44–56. doi: 10.1177/0146167213501559

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- Ross, M., and Wilson, A. E. (2002). It feels like yesterday: self-esteem, valence of personal past experiences, and judgments of subjective distance. *J. Personal. Soc. Psychol.* 82, 792–803. doi: 10.1037/0022-3514.82.5.792
- Sackett, A. M., Meyvis, T., Nelson, L. D., Converse, B. A., and Sackett, A. L. (2010). You're having fun when time flies: the hedonic consequences of subjective time progression. *Psychol. Sci.* 21, 111–117. doi: 10.1177/0956797609354832
- Shum, M. S. (1998). The role of temporal landmarks in autobiographical memory processes. *Psychol. Bullet.* 124, 423–442. doi: 10.1037/0033-2909.124.3.423
- Silver, R. L., Boon, C., and Stones, M. H. (1983). Searching for meaning in misfortune: making sense of incest. *J. Soc. Iss.* 39, 81–101. doi: 10.1111/j.1540-4560.1983.tb00142.x
- Skowronski, J. J., and Walker, W. R. (2004). How describing autobiographical events can affect autobiographical memories. *Soc. Cogn.* 22, 555–590. doi: 10.1521/soco.22.5.555.50764
- Trope, Y., and Liberman, N. (2010). Construal-level theory of psychological distance. *Psychol. Rev.* 117, 440–463. doi: 10.1037/a0018963
- Wang, W., Taylor, M., Gibson, S., Ingram, B., Dawson, A., and Wilson, A. E. (2023). Stuck in time and freed by time: a mixed-methods investigation of subjective time, mental time travel, and well-being on the first and second anniversaries of the COVID-19 pandemic. *PsyArXiv*. doi: 10.31234/osf.io/exu2n
- Westgate, E. C. (2020). Why boredom is interesting. *Curr. Direct. Psychol. Sci.* 29, 33–40. doi: 10.1177/0963721419884309