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RESEARCH ARTICLE

Relative time and life course research

Núria Sánchez-Mira, nuria.sanchezmira@unil.ch

Laura Bernardi, laura.bernardi@unil.ch

University of Lausanne, Switzerland

Mainstream life course studies often draw on a conventional understanding of time as a unidirectional clock-based entity, which proceeds in a uniform and linear manner. This paper argues that, in order to understand the social, relational and psychological processes of change and continuity that characterise life course processes, we need to adopt a more comprehensive and explicit conceptualisation of time – a conceptualisation that goes beyond an absolute (linear, chronological, uniform) definition – to incorporate the notion of relative time. Drawing on insights from narrative and biographical research, discussions of the temporal embeddedness of human agency and multidisciplinary research on time perceptions and time perspectives, we propose a definition of relative time based on three main characteristics: its multidirectional, elastic and telescopic nature. The paper promotes the integration of absolute and relative time in the study of life course processes, and the important role of prospective qualitative research in this respect, and outlines future avenues for research in this direction.

Key words Life course • temporalities • human agency • prospective qualitative research • interdisciplinary research

Key messages

- The paper highlights the need for a comprehensive conceptualisation of time in life course research.
- It shows the value of incorporating notions of relative time in interaction with absolute time.
- Drawing on interdisciplinary insights, it proposes a tripartite definition of relative time as multidirectional, elastic and telescopic.
- It discusses the implications of this conceptualisation for the analysis of events and transitions.

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Introduction

Life course research (LCR) is intrinsically temporal but this literature often draws on an unproblematised and under-theorised treatment of time (Holstein and Gubrium, 2000; Wiggins and Reiter, 2011). Time in mainstream LCR, particularly when taking a quantitative approach, is viewed as a marker – a container where changes can occur and through which they can be tracked – but not a matter of examination in itself. Time is generally understood as a linear and unidirectional construct, tied to the chronological clock and calendar, proceeding at a uniform pace and providing an analytical frame for the phenomena under study without being part of them. In this way, time becomes a reified, absolute structure to pigeonhole life course processes. Chronological time and age are indicators of underlying social, relational and psychological phenomena in various life domains and their dynamic association. A linear understanding of time is also generally linked to an understanding of causality where causes lead to consequences in an orderly sequence.

Yet, linearity, unidirectionality and uniform pace do not correspond to the way in which individuals experience time in their lives (Strauss, 1997 [1959]; Neale, 2019). Contemporary social science commonly acknowledges that time is multiple and diverse, including natural time, social times and lived times (Adam, 1990). As in physics, time is relative because it depends on the position and disposition of the observer (Rovelli, 2018). Under a relative perspective, time is not merely an external reference to events, an external structure within which lives unfold, but is subjectively defined and context-dependent. A number of disciplines in the social sciences include definitions of temporalities that are non-chronological, non-linear, discontinuous and asynchronous (Bidart et al, 2013).

The notion that time has a dual nature, one absolute and universal and one relative and subject or context-dependent, is a common theme in temporal theorising. This is so from the classic distinction drawn by Aristotle in the *Physics* (book IV, 10–14) between the abstract Chronos-time and a meaningful Kairos-time (Rämö, 1999), to more recent distinctions between *objective* and *inner* time (Schutz, 1962), *events in time and time in events* (Adam, 1990), *cosmological and phenomenological* time (Lallement, 2017), and *fixed* and *fluid* time (Neale, 2019). All such distinctions refer to the fact that there would be an absolute, *universal measurable time* and a *perceived, relative array of times* and they are both useful in understanding the unfolding of events and transitions for they all feed into empirical realities. Many disciplines ranging from philosophy to neuroscience, including sociology, economics, psychology or narrative studies, are confronted with the issue of how to account simultaneously for *absolute* and *relative time*. That is, how to account for the objectivised, chronological and linear passage of time in the physical world of events, and the experiential, subjective perceptions of time in human understanding. Such ideas have been developed in parallel across disparate literatures, each with their own inflections, and have now achieved a wide currency in social research. Yet, much LCR, particularly in the quantitative tradition, appears impermeable to these discussions and it has predominantly, although not exclusively, used an *absolute* conception of time.

This paper highlights the need for a more comprehensive and explicit theoretical conceptualisation of time in LCR and we argue for a broader vision that goes beyond an absolute understanding of time to encompass notions of relative time. We propose a novel tripartite conceptualisation of relative time that integrates interdisciplinary

insights to define the multidirectional, elastic and telescopic nature of time as its key characteristics. We argue that incorporating relative time alongside and in interaction with absolute time into LCR is necessary to understand the temporal processes that shape lives.

The next section of this paper includes a review of the literature dealing with notions of time perceptions and temporal orientations across a number of disciplines, which inform our definition of relative time. Then, we show how interdisciplinary insights can be useful for building a comprehensive conceptualisation of time in LCR. We propose a definition of relative time based on its multidirectional, elastic and telescopic characteristics. In the fourth section, we address the intersections between biographical and societal times, showing that time is heterogeneous across life domains and levels of analysis. We conclude with the implications of relative time for studying life course events, transitions and trajectories and discuss the suitability of prospective qualitative research to investigate these empirically.

Relative time in life course research and beyond

Most LCR tends to situate events and transitions ‘in time’ and chart changes ‘over time’, adopting an absolute time perspective. Concepts such as timing, sequencing, duration or spacing are used to describe life events, transitions and trajectories (Settersten and Mayer, 1997). Event history modelling focuses on the timing of occurrence of a given event (Feldhaus and Heintz-Martin, 2015; Morris, 2017). Studies based on sequence analysis draw on the measurement and ordering of states representing a trajectory within a single (Vanhoutte et al, 2017; Zimmermann, 2020) or multiple (Aisenbrey and Fasang, 2017; Gauthier et al, 2010) life domains. Recently, a combination of sequence and event history modelling has given rise to Sequence History Analysis (Rossignon et al, 2018). While these studies illustrate the mainstream understanding of time in quantitative LCR, alternative approaches within and outside this literature have addressed time in ways that are closer to a relative time perspective. In this section, we address the interdisciplinary insights that inform our understanding of relative time.

Past, present and future: the temporal orientation of human agency

Mead’s conceptualisation of time has been very influential for biographical studies and for discussions on the temporal nature of human agency. According to Mead (1932), time is constituted through emergent events. People live in the ever-passing present that shapes interpretations of the past and the future. The past is continuously reinterpreted as the present unfolds, while constituting a resource to make sense of the present and imagine the future. Anticipation of hypothetical future worlds of possibilities also influences present lines of action.

This notion of the complex interactions between past memories, present circumstances and future expectations have been very much central in biographical research. In this tradition, biographies are understood as ‘global constructions by which individuals constitute a defined present within the specific horizons of past (retentions) and the future (protentions)’ (Fischer, 1982, in Bertaux and Kohli, 1984: 222). Consequently, biographical interpretations will continuously change as individuals move through their lives.

Mead's theorisation of time is also at the core of Emirbayer and Mische's (1998) proposal for a reconceptualisation of agency in sociological research. The authors define agency as a temporally embedded process of social engagement involving three constitutive elements (iteration, projectivity and practical evaluation), which correspond to different temporal orientations (past, future, present). Actors are always simultaneously living in the past, future and present as they 'continuously engage patterns and repertoires from the past, project hypothetical pathways forward in time, and adjust their actions to the exigencies of emerging situations' (Emirbayer and Mische, 1998: 1012). Moreover, it is possible to distinguish between actions that are more or less engaged with the past, responsive to the present or directed toward the future (Emirbayer and Mische, 1998).

Similar ideas have been developed in discussions of human agency within LCR (Hitlin and Elder, 2007; Bernardi et al, 2019). The notion of 'shadows of the past' refers to biographical experiences shaping an individual's 'good reasons' to act and is linked to the idea of path dependency, whereby an existing biography feeds into decisions that delimit and shape future pathways. The 'shadows of the future' allude to how actors are influenced in their current choices by their anticipation of the future consequences of their decisions (Bernardi et al, 2019). The ability to project oneself into the future is in turn rooted in an individual's interpretation of their past experiences and present circumstances (Bidart, 2019). The past and the present influence individuals' perceived life chances and their perception of their capacity to influence their own lives (Hitlin and Kirkpatrick Johnson, 2015).

Some parallels to these ideas can be identified among psychologists, although these have hardly been integrated in mainstream contemporary psychological research (Zimbardo and Boyd, 1999). Lewin's (1951: 75) definition of time perspective included 'the totality of the individual's views of his psychological future and psychological past existing at a given point in time'. Nuttin (1985: 54) expanded on Lewin's work to argue that 'future and past events have an impact on present behaviour to the extent that they are actually present on the cognitive level of behavioural functioning'. Recent research in the neurosciences supports Mead's theories, showing important similarities between brain activation involved in remembering the past and in imagining the future (Schacter et al, 2012).

The temporal horizons of agency

The idea that agency is inherently anchored in a temporal frame of orientations has been a central tenet of biographical research (Kohli, 2019), which has distinguished between everyday orientations and lifetime perspectives or horizons (Fischer, 1982, in Bertaux and Kohli, 1984; Alheit, 1994). According to Alheit (1994: 305), most of our activities are organised within a routinised and cyclical everyday temporal horizon, while a lifetime frame is a 'linearly experienced framework in which we seek biographical continuity and coherence'. By linking our past experiences to current situations and conceivable futures, we develop 'life time horizons' which involve a sequentialisation of separate actions and experiences, organised around the principle of linearity (Alheit, 1994).

Inspired by Flaherty's (1999; 2003) notion of the experience of time within situated activity, Hitlin and Elder (2007) distinguish four types of agency, corresponding to various temporal foci dictated by different types of situations. *Pragmatic agency* refers to actions requiring heightened attention in the 'knife's edge' of the present moment, when habitual responses to patterned social actions break down and *identity agency*, which follows established ways of acting and role enactment, cannot operate (Hitlin and Elder, 2007: 177). The conceptualisation of pragmatic agency draws on Mead's idea of the 'fundamental present-ness of social action, the need to attend to one's surroundings as time flows forward' (Hitlin and Elder, 2007: 177). *Life course agency* relates to extended time horizons and *existential agency* alludes to one's general ability to act.

Relatedly, for Kohli (2019), everyday orientations are characterised by uniformity and repeatability, while life time orientations are characterised by change, progression and inevitability. Irreversibility and the shrinking horizons associated with ageing may create pressures to take stock of one's life and make changes. Inversely, adopting a lifetime backwards gaze may lead to a reinterpretation of one's trajectory. In this sense, while Hitlin and Elder's (2007) life course agency refers to the capacity of individuals to orient themselves toward the future, biographical research has tended to incorporate extended temporal horizons into the past as well (Kohli, 2019). Applying a life course time frame to the assessment of past events can be related to perceptions of self-efficacy – *existential agency* in Hitlin and Elder's (2007) terms – and allows, in turn, a look into the future (Kohli, 2019).

Authors in other disciplines have also dealt with notions of how the individual's temporal foci differ across immediate or longer-term frames. Bluedorn has used the concept of 'temporal depth' in management studies to describe 'the distance into the past and future that individuals and collectivities typically consider when contemplating events that have happened, may have happened, or may happen' (Bluedorn, 2002: 114). Temporal depth is different from temporal focus in that it is not about whether an individual is more or less past-, present- or future-oriented, but about how far into the future or how far into the past people think as they go about their lives (Bluedorn and Standifer, 2006).

Jones et al (2019) have fleshed out notions of temporal depth or reach by analysing the temporal structure of projected futures. Individuals distinguish between distinct segments of the future with qualitatively divergent properties and people's attention is not evenly distributed across these temporal frames (Jones et al, 2019). Moreover, individuals are generally more optimistic and confident about the intermediate future, while they feel more constrained and apathetic with the immediate future (Jones et al, 2019). These findings have parallels with those of temporal construal theory in psychology (Liberman and Trope, 1998; Eyal et al, 2004), which posits that more abstract features are likely to be used in construing distant future events and more concrete features will govern near future events. Desirability considerations are emphasised when construing distant futures, while the feasibility of the action governs the near future (Liberman and Trope, 1998). Pros are also more salient in making decisions for the more distant future, whereas the opposite is true for cons (Eyal et al, 2004). In all, these studies point out that individuals zoom in and out over temporal horizons and that these different temporal foci mediate decision making in the present.

Temporal agency in life narratives

Biographical research has analysed how time is experienced, constructed and controlled within narratives (Brockmeier, 2000; Tsuji, 2005). Studies have addressed how temporal coherence – understood as linear, chronological order or sequencing – is constructed and maintained in life story narratives (Rosenthal, 2004; Köber and Habermas, 2016). Research in social psychology has analysed life stories as important components of the self (McAdams, 2008). In this way, ‘integrative life narratives’ (McAdams, 2005) or ‘narrative identities’ (Singer, 2004), whereby we selectively reconstruct the past with our imagined anticipation of the personal future, provide our lives with some degree of unity and purpose, which we reconstruct as they evolve (McAdams, 2005; 2008). Individuals work on different facets or qualities of their narratives at different times in life (McAdams, 1993; 2001; Pratt and Fiese, 2004). Memories of key events in life stories can substantially change even over short periods of time (McAdams et al, 2006). McAdams’ work coincides with biographical research in showing that as people accumulate new experiences or change their motivations, the meaning they attribute to past events may also change, with some gaining salience and others fading into the background (Schütze, 1980 in Bertaux and Kohli, 1984; Hareven and Masaoka, 1988). These ideas connect with Flaherty’s (1999; 2003) notion of ‘time work’ in social psychology, which refers to the efforts individuals make to promote or suppress particular forms of temporal experience by controlling or manipulating duration, frequency, sequence, timing and allocation.

Perceptions of time passage and time left in life

Psychology has a long tradition of studies showing that the linearity and regularity of time, duration, temporal order and simultaneity are distorted through subjective perceptions (James, 1890; Roewecklein, 2008). This literature has argued that pace and tempo of time varies across the life course, as it is perceived to pass by more rapidly with age (Fraisse, 1967). Recent studies have somewhat nuanced this observation, showing that people’s impression that time flows faster in the present than in the past is based on retrospective judgements in which participants compare recent with remote time passage (Janssen, 2017). However, when we compare impressions of recent time passage of older and younger people, they do not differ from each other (Droit-Volet and Wearden, 2015). There are two main explanations for such difference: memory distortions and distortions created by the perception that the end of life is approaching.

The memory distortion arguments were brought up by Janssen (2017), who has shown that people are able to recall recent instances in which they were busy or had to rush, but these are forgotten for more distant time periods. With the impression that they are currently experiencing more time pressure than in the past, people will have the feeling that time has recently passed more quickly (Janssen, 2017). Life appears to speed up as people become older because they underestimate the flow of remote time. Similarly, temporal distance diminishes sensitivity when looking forward to the remote future (Löckenhoff, 2011).

The second set of studies argues that the acceleration of time in old age can be attributed to perceptions of the time remaining in one’s life (John and Lang, 2015). Such arguments follow socio-emotional selectivity theory, which states that ageing is associated with changing perceptions of the amount of time left to be lived, which

in turn affect goal definition and motivational processes (Carstensen et al, 1999; Carstensen, 2006). When time is perceived as open-ended, people's goals are focused on gathering information, on experiencing novelty and on expanding knowledge. When time is perceived as limited, people's goals are short-term oriented and focused on emotional regulation and social connectedness. Shifts in motivational priorities are due to the perception of time left to live and not about age *per se*, so that social goals can also change for young people in contexts that limit subjective future time (that is, geographical relocations, illnesses or war) (Carstensen, 2006). However, more recently it has been argued that age-related changes in time horizons and age-related time acceleration may combine in ways that produce an exponential increase in emotionally meaningful goals across adulthood (Giasson et al, 2019).

Moreover, recent studies have linked stress processes with age identity (Schafer and Shippee, 2010). Research in neuroscience is also advancing our knowledge on how the brain integrates events over time (Wittmann, 2011). Cognitive sciences have underlined that time perceptions are heavily affected by contextual elements (Eagleman, 2008; Matthews and Warren, 2014), both internal (emotional states) and external (the rhythm of wider activities) to individuals (Droit-Volet et al, 2013).

Time perspectives inventory

Socio-emotional selectivity theory's understanding of future time perspectives is concerned mainly with the finitude of life. It has been argued that a broader and multifaceted conceptualisation should include not only the quantity of time left to live but also how such future time is qualitatively evaluated, among other dimensions (Gabrian et al, 2017; Liao and Carstensen, 2018).

Zimbardo's time perspectives framework has offered important contributions in this respect (Zimbardo and Boyd, 1999; 2008). Temporal perspectives are the cognitive processes 'whereby the continual flows of personal and social experiences are assigned to temporal categories, or time frames, that help to give order, coherence and meaning to these events' (Zimbardo and Boyd, 1999: 1271). They are mobilised in the encoding, storing and recalling of experiences just as in the formation of expectations, goals and future scenarios (Zimbardo and Boyd, 1999). Individuals tend to emphasise or underuse particular temporal frames, which influence their judgements, decisions and actions. An empirically informed scale, successively extended and refined, measures individuals' multiple time perspectives, that is, their respective orientation to the past, present or future, as well as the values they attach to such temporal frames (Zimbardo and Boyd, 1999; 2008; Stolarski et al, 2015).

Zimbardo's work brought past orientations into the picture, while much previous psychological research had focused on the effects of present versus future orientations for behavioural outcomes, such as risk taking or health behaviours (Zimbardo and Boyd, 1999).

Temporal discounting

In economics, ideas about the subjective relativity of time go back to the work of Commons (1934), who argued that the causality inscribed in human activity does not follow the chronology (past-present-future) of events, but reflects an experiential past-futurity-present loop. The past generates a *futurity* (a reasonably imaginable future),

which in turn conditions present activity oriented towards the future (Commons, 1934 in Gislain, 2017). Some economists have criticised the premise of linear time because it assumes that there is no distortion in perception of future time intervals and that all future choices are linearly connected to present choices (Lapied and Renault, 2017). Taking subjective perceptions of time into account offers new insights into theories of choice and decision making (Gislain, 2017; Lapied and Renault, 2017).

The growing literature on inter-temporal choices addresses decisions involving trade-offs among costs and benefits occurring at different times. These studies have identified several ways in which observed behaviour differs from the predictions of the classical discounted utility model (Frederick et al, 2002). Individuals show high time-discount rates, that is they ‘pay more attention to the opportunity costs of choosing larger, later rewards than to the opportunity costs of choosing smaller, sooner ones’ (Read et al, 2017: 4277). Temporal self-regulation theory has also underlined time perspectives when explaining unhealthy or risky behaviours, which are associated with high long-term costs but relatively more benefits in the short run (Hall and Fong, 2007). ‘Impatience’ in decision making declines as the time horizon gets longer (declining discount rates) (Malkoc and Zauberman, 2019: 98). Moreover, inter-temporal choices reflect diverse psychological motives, as was commonly acknowledged in early twentieth century economics (Frederick et al, 2002), just as cultural factors explain significant variation in time discounting across countries (Wang et al, 2016).

Insights from economics and psychology have been recently brought together in cognitive and behavioural sciences to bridge theories on time perceptions and inter-temporal choices and to highlight the non-linearity of time perceptions in human and animal decision making (Namboodiri et al, 2014).

The duration of the present and its division from the future

The literature previously reviewed assumes that action presupposes a fundamental division between present and the future: at some point in time, the former must yield to the latter. Yet, research has rarely addressed individuals’ perceptions of the division of present and future. This is still an emerging field, with few contributions and varied approaches, with so far non-conclusive empirical results. On the one hand, Chen (2013) posits that the way a language encodes time will influence how its speakers perceive a divide between the present and the future. The author compared languages that require future events to be grammatically marked when making predictions from those that do not. Speakers of the latter were more future-oriented across several monetary and non-monetary indicators (Chen 2013). Pérez and Tavits (2017) yielded similar findings in their study of bilingual speakers of Russian and Estonian. On the other hand, from a psychological perspective and in an experimental setting, Hershfield and Maglio (2019) analysed not only how the division between present and future is perceived as more or less sharp across individuals, but also where in time this division exists. A perception of the division between present and future as sharp leads to more future-oriented choices particularly when it is coupled with a sense of a relatively short present (Hershfield and Maglio, 2019). In all, findings from these studies seem apparently discrepant, but they point to relevant avenues for research in this developing field.

This non-exhaustive review of the literature shows that relative time is partially recognised and promoted within, but ultimately not effectively integrated into mainstream LCR. The lack of dialogue with the advances on time conceptualisation in the broader social sciences may explain why relative time is not yet part of the fundamental theoretical concepts of LCR. We outlined different contributions across the fields of biographical research, sociology, psychology, social psychology, economics and management that are inspirational on how to build such integration. We have discussed the simultaneous embeddedness of agency across present, past and future temporal perspectives and how some orientations may be mobilised over others in different circumstances. The situatedness of agency within temporal horizons encompasses individuals' foci across shorter or longer-term time frames. This relates to perceived boundaries across the past, present and future. It also involves temporal distance or depth into these time frames. Human motivation and action depend on perceptions of duration and time passage. These perceptions relate in turn to memory distortions, limited or expansive understandings of time, and temporal discounting. In sum, the review of existing research shows that we need to think of agency as a fundamentally temporally embedded process and obliges us to propose a broader conceptualisation of time in LCR.

Defining relative time for life course research: multidirectional, telescopic and elastic

In the previous section we showed that notions of relative time can be found in biographical research and scattered throughout a variety of other fields, but a systematic integration into a unified framework is still missing. We propose to build such integration around a definition of relative time based on three main characteristics: *multidirectional*, *elastic* and *telescopic*. In this section, we define such characteristics and outline how these are informed by the literature.

Multidirectional time

The first characteristic captures the omnipresence and interrelatedness in the temporally oriented actor of past, present and future temporal gazes in any given situation. This characteristic draws on [Mead's \(1932\)](#) notion that time is constituted through emergent events in an ever-passing present, requiring a continuous refocusing of the past and the future. It also relies on [Emirbayer and Mische's \(1998\)](#) ideas on the temporal embeddedness of agency. Notably, that different temporal orientations (past, future, present) correspond to the constitutive aspects of agency (iteration, projectivity and practical evaluation) and may predominate in any given case. In short, the multidirectionality of time captures the idea that the remembered past and anticipated future are integrated into present decision making and that some actions will be more or less oriented towards the past, the present or the future. The definition is thus twofold, and involves a dimension of orientation and one of focus. The latter notion connects with [Zimbardo and Boyd's \(1999\)](#) idea that some individuals will be more past-, present- or future-oriented and will attach different values to such temporal frames ([Zimbardo and Boyd, 1999; 2008](#)).

The multidirectionality of time also encompasses the notion of biographical research that the past is shaped out of the present and the anticipated future, just as the present

is constituted out of the past and the future (Rosenthal, 2004). It is informed by recent discussions on agency in the life course (Bernardi et al, 2019; Bidart, 2019) and criticisms to the linearity principle in the economic literature (Commons, 1934; Laped and Renault, 2017). Finally, it is supported by research in neuroscience documenting similarities between brain processes involved in remembering the past and anticipating the future (Schacter et al, 2012).

Telescopic time

The second characteristic of relative time describes the idea that individuals' different temporal foci over closer or more distant objects influence decision making in the present. People draw on different reference points when they reflect on their experiences or consider which actions to undertake, as if they were zooming in on or zooming out of their lives. Telescopic time encompasses immediate time frames, alongside short, medium and longer-term horizons that stretch into both the past and the future. This definition draws on Mead's notion of temporal horizons as a form of 'distance experience' (Mead, 1932, in Mische, 2009). Following Bluedorn and Standifer's (2006) distinction between *temporal depth* and *temporal focus*, telescopic time differs from multidirectional time in that it is not about the temporal direction or orientation, but about how far into the past or into the future people think when making judgements and choices. Similar parallelisms can be drawn with Mische's (2009) notion of *reach*. This second time characteristic also relies on LCR highlighting the importance of temporal foci for human agency (Hitlin and Elder, 2007; Kohli, 2019).

We can also highlight parallelisms with the conceptualisation of everyday and life time horizons in biographical research (Bertaux and Kohli, 1984; Alheit, 1994) or the focus of socio-emotional selectivity theory on perceptions of limited versus expansive time horizons (Carstensen et al, 1999; Carstensen, 2006). It can be linked to the literature on inter-temporal choices or temporal self-regulation showing that people's attention to opportunity costs is contingent on the time frame for the action (Hall and Fong, 2007; Read et al, 2017). Last, this category takes into consideration work on perceptions of the division between present and future (Hershfield and Maglio, 2019).

Elastic time

The third characteristic of relative time – elastic time – embraces the notion that individuals do not perceive time as continuous, uniform or linear, but that time can be experienced at more or less intensive tempos and paces. Perceptions of time progression remain largely unexplored in LCR (for an exception, see Neale, 2015), despite being a central issue of psychological research for more than a century. Indeed, our definition of elastic time is informed by studies in psychology and cognitive sciences showing that linearity, regularity and duration are distorted through subjective perceptions (Löckenhoff, 2011; John and Lang, 2015; Janssen, 2017). Individuals may perceive time passing more quickly or more slowly, and these perceptions are contingent on the processes of recall of the past (Janssen, 2017) and projection into the future (Löckenhoff, 2011; John and Lang, 2015). Distortions in time perceptions reflect the remarkable adaptability of our internal clock to the events occurring around

us (Droit-Volet et al, 2013). These discussions are mirrored by recent empirical research in psychology and neurosciences on how the brain integrates events over time (Wittmann, 2011).

Relative time at the intersection of biographical and social times

The three characteristics of relative time previously outlined represent analytical distinctions to understand the subjective perception of time at the individual level of experience. However, time perceptions and orientations are not merely a product of individual forces, but are constructed in interaction with one another. They should be thus analysed as a result of relational processes, and, more generally, they are also cultural and historical.

We draw on a conceptualisation of the life course as a ‘*multifaceted process of individual behavior*’, evolving from the steady flow of individuals’ actions and experiences and characterised by interdependencies across time, life domains and levels of analysis (Bernardi et al, 2019: 2, original emphasis). From this perspective, individual time perceptions and orientations are crucial in shaping the life course. However, the wide set of interdependencies requires addressing the heterogeneity of time across domains and levels. By considering multiple, heterogenous, asynchronous temporalities, time can be understood as multidirectional, multidimensional and multilevel, just as life course processes are (Bernardi et al, 2019).

This resonates with Mead’s notion that actors are simultaneously embedded in multiple, nested and overlapping temporal-relational contexts (Mead, 1932, in Emirbayer and Mische, 1998). The human experience of temporality is marked by the capacity to take another’s viewpoint. Temporal perspectives are thus constructed fundamentally through an intersubjective process (Emirbayer and Mische, 1998). We may think of a number of ways of looking at relative time as co-constructed. The degree of present-ness of a situation is, *per se*, relationally defined. The individual disposition to be more or less future-, past- or present-oriented is developed in interaction with others throughout the life course. Impressions of time passage may be influenced by the perceptions of others, just as these may expand or restrict our temporal horizons. At the same time, although relational contexts both constrain and enable agency, the source of agency remains fundamentally the individual (Emirbayer and Mische, 1998), motivating our focus on individual time perceptions and orientations.

LCR has dealt with some of these issues, notably those concerned with the intersections between biographical and social times. The concept of an institutionalised life course emphasises the effects of legislation and policies (Mayer and Schöpflin, 1989) on shaping the life course, and notably the timing of transitions. Life phases are delineated by means of legally defined chronological markers linking the citizen’s rights and responsibilities to chronological age (Mayer, 2004; Hagestad and Dykstra, 2016). Cultural ‘age’ norms can also have a structuring effect on individual lives (Neugarten et al, 1965; Settersten and Hagestad, 1996). People share notions of the proper timing for the acquisition of certain social roles (Settersten, 2003; Eliason et al, 2015) and are aware of their own timing in relation to these social clocks (Eliason et al, 2015). Age expectations operate as relatively flexible markers that individuals use to guide and evaluate their own behaviour and that of others (Settersten, 2003).

Perceptions of (dis)adjustment of one's own timing to age norms may constitute a motivational factor for adult role transitions and may have implications for mental health (Eliason et al, 2015). This literature can be connected with Flaherty's (2013) observation that most efforts to modify our temporal experience represent a way to adjust to exterior constraints and thus contribute to the maintenance of temporal structures. In all, integrating these two streams of literature would be a way of merging absolute and relative time perspectives on this multilevel topic of enquiry. On one hand, a focus on the regulations of social calendars and observed patterns of the timing of transitions; on the other hand, an analysis of perceptions of (a)synchrony with social clocks, within and across different life domains.

These studies illustrate that time can be heterogeneous across levels of analysis such that individual and social tempos may be different and reflect different degrees of (a) synchrony, relating to elastic time. If we look at the heterogeneity of time through our tripartite characterisation, we can systematically analyse other ways in which tempos, paces, temporal orientations and horizons differ across life domains and levels, and the perceived synchronicities or disjunctures between these different temporalities.

Different life domains have parallel, asynchronous timings, reflecting varying degrees of coherence or conflict, some of them being more rigid than others. The domains of education and employment have been characterised by a strong degree of temporal structuring, given that these are more regulated by social policies, which define the passage through these institutions over time and by age (Settersten, 2003). These domains often operate at faster paces and impose stricter deadlines compared to the family domain, where trajectories are less predictable. At the same time, the family domain would be more structured informally, through subjective age deadlines (Settersten and Hagestad, 1996; Settersten, 2003). Age norms would more clearly govern life domains (that is, family and residential) that are less externally structured than education or employment (Eliason et al, 2015). Besides heterogeneity in tempos and paces operating across life domains, there may also be differences in temporal orientations or horizons. For instance, a focus on the employment domain may carry a stronger future-oriented focus and longer-term horizons.

There is also literature addressing the heterogeneities of time across levels of analysis, particularly focusing on how temporal asynchronicities between biographical, family or historical times can lead to potential ruptures in life trajectories (Bidart, 2019; Nilsen, 2019). Discontinuities between personal times and mainstream times, or the subjective experience of 'living out of time', can occur through major changes or life events (that is, migration, divorce, bereavement, illness, retirement or unemployment) (Shirani and Henwood, 2011; Neale, 2019) or changing social tempos producing an individual sense of dislocation (May and Thrift, 2001). One could think of the current period of massive disruption caused by the Covid-19 pandemic as a context particularly prone to perceptions of temporal disorientation or asynchrony.

Finally, we have significant evidence from outside the life course tradition pointing to the relevance of analysing differences in temporal orientations, horizons and perceptions of time passage across social groups and cultural and historical contexts.

Concerning the multidirectionality characteristic, marginalised groups with a history of prejudice and discrimination integrate personal and collective pasts into the present and future differently (Jones and Leitner, 2015). Individuals in more secure situations are more likely to plan for the future, but the relationship at the societal level is the opposite: those living in less secure societal conditions are more

likely to do so (Hellevik and Settersten, 2013). Future aspirations may be shaped by state-led ideological campaigns, producing a lack of correspondence between optimistic expectations and objective deficiencies in resources and opportunities (Frye, 2012). Researchers have identified different time perspective profiles across cultures (Sircova et al, 2015).

With respect to telescopic time, Bluedorn and Jaussi (2007) show that correlations between past and future temporal depths are found across both individual and organisational levels. Poverty and economic insecurity tend to restrict our temporal horizons, with the future shrinking in favour of present or past time perspectives (Fieulaine and Apostolidis, 2015).

Concerning the elasticity of time, different cultures live lives at different paces and tempos, and have very different conceptions of the past, present and future (Levine, 1998, 2015). Age norms may operate across very different levels, such as work-related norms across occupational and organisational contexts or childbearing norms across religious or ethnic communities (Settersten, 2003). Ethnic minorities and working class groups refer more to temporal, earlier deadlines. This pattern has been interpreted as linked to their more limited opportunities and the fact that advantages and disadvantages accumulate over time, with 'clocks thus ticking faster' for these groups (Settersten, 2003). In all, there is much to be learnt about the specific temporal orientations, horizons and perceptions of time passage of specific populations (across gender, cohort, race, class or culture) and for specific kinds of experiences.

Discussion and implications for life course research

LCR is in need of a more comprehensive and explicit theoretical conceptualisation of time. Time perceptions and orientations have only rarely been stressed in LCR despite being studied widely in other disciplines. These insights have not been adequately integrated, whether it be at the theoretical level of conceptual development or interpretation of research findings, or at the empirical level of research design and data analysis.

We have argued why the theoretical integration is warranted and in this section we extend further on how this could be done. We propose that LCR – with its biographical approach and a focus on the timing of lives – is best suited to integrate the knowledge produced by tracking facts in time under an absolute framework together with relative time approaches. An actor-based model of life course processes (Bernardi et al, 2019) considers the salience of time perceptions and orientations for biographical agency, while integrating a multilevel and multidomain perspective that other disciplines have largely omitted. We have argued that much LCR conventionally draws on an absolute understanding of time (linear, chronological, with uniform intervals). We built on multidisciplinary contributions to propose a broader definition that incorporates relative (multidirectional, elastic, telescopic) understandings of time. The agentic actor is simultaneously temporally oriented towards the past, present and future in any given situation, reflecting the multidirectionality of time. Individuals continuously shift across closer or more distant temporal horizons that emerge through the telescopic nature of time. Time is 'dense' because it is experienced at varying tempos and paces reflecting the elasticity of time.

These three characteristics of time constitute analytical distinctions, but they may be partially overlapping and interacting with each other. Different time horizons

(telescopic time) may be associated with different perceptions of tempos and paces (elastic time), as studies on the interaction between perceptions of time remaining in life and aged-related time acceleration suggest (John and Lang, 2015; Giasson et al, 2019). A more future-oriented person (multidirectional) may also have more extended time horizons (telescopic). Or a more present-oriented person (multidirectional) may perceive time as passing more quickly (elastic).

Our focus on biographical agency has drawn us to develop concepts for addressing relative time at the individual level of experience. However, we do not ignore that time perceptions and orientations are the product of relational processes and that actors are simultaneously embedded in multiple, nested temporal contexts. From this perspective, it becomes relevant to address how tempos and paces, temporal orientations and horizons may differ across life domains and levels of analysis, and the perceived synchronicities or disjunctures between these different temporalities.

In short, this paper has argued that incorporating relative time perspectives alongside and in interaction with absolute time is necessary to produce a comprehensive understanding of the temporal processes that shape lives. The implications for LCR are multiple and important.

First, the multidirectionality of time indicates the need to consider expectations about the future and interpretations of the past as core components of current life course events and transitions. Whether and how much we are oriented towards the past, present or future will influence our choices or moderate the consequences of those on our well-being. Time perspectives mediate psychological outcomes (Jones and Leitner, 2015). At the same time, life course events or experiences can change our temporal orientations with implications for resilience (Gray and Dagg, 2019). Developing a degenerative disease may lead one to develop a future, negative time perspective, and stop taking care of oneself. In contrast, a disposition towards a present orientation may make us focus on everyday opportunities, mitigating the effects of the disease on well-being.

Second, an understanding of time as telescopic highlights the need to model assumptions about which time horizons individuals are evoking when making decisions, from immediate actions to longer-term orientations that extend over the lifetime and beyond. Thoughts about the afterlife may influence current judgements and choices (Zimbardo and Boyd, 2008; Van Beek and Kairys, 2015), just as temporal horizons transcending the lifetime may include imagined intergenerational lifetimes that extend into the past and into the future. The extent of the temporal depth, perceptions of horizons as limited or expansive, and the sharpness of the division between present and future horizons can make individuals more or less focused on the pros of desired choices versus the feasibility of the action; they can shift motivational priorities or make choices more or less oriented towards the future. Life experiences may in turn change the boundaries of temporal horizons with dramatic events making the future appear more uncertain and malleable (Mische, 2009).

Third, the elasticity of time encompasses the idea that experiences of time passage are distorted through subjective perceptions. These distortions are linked to memory biases and other cognitive processes influenced by internal and external factors. Differences in time perception could affect behaviour, with individuals perceiving quicker temporal paces rushing more in their decision making. On this point, the elasticity of time connects with the perceptions of asynchrony across individual and social times, as in the literature about age norms. More research is needed on how

feeling early, on time or late with respect to life course roles affects whether individuals engage with and disengage from certain goals, and which strategies they implement to achieve them (Settersten, 2003). Moreover, when using past experiences as part of explanations for current actions, these should not only be weighted according to the objective time distance since occurrence, but also to perceived duration.

While we have insisted on the need to incorporate relative time into LCR, both absolute and relative understandings of time need to be integrated to produce comprehensive explanations of lives which are based on biographical agency. For instance, a characteristic of relative time (elasticity) may be bound up with an attribute typically associated with absolute time (cyclicality). As certain biographical elements peak cyclically in conjunction with some recurrent temporal patterns, time may be perceived to 'expand' in these moments. In a lone-parent household, the other parent's absence is perceived as much more critical at particular times of the year, such as the beginning of the school year or at times of family celebration, where injunctions towards a normative two-parent family are displayed and reinforced, creating a sense of disjunction from mainstream social practices.

Integrating relative understandings of time into LCR also has strong implications for the definition and measurement of its basic units of analysis: events and transitions. Conventionally, the building blocks of LCR rest on the principles of linear time. Turning points are commonly defined as events or decisions occurring at time t , producing change from one state to the other, and provoking disruptions in the trajectory (Holland and Thomson, 2009). Yet, change in life is often incremental. It can come about as a result of an accumulation of multiple events or experiences – it can be gradual and continuous and it can reflect a non-linear evolution, drifts, zig-zags pathways, or random and sometimes even contradictory developments (Saldaña, 2003; Carlsson, 2012). Ruptures in biographical narratives often constitute moments of redefinition of oneself and the social relations in which we are embedded (Bessin, 2009). In this sense, the multidirectionality of time, or the simultaneous assessment of past, present and future life circumstances, operates in the definition of *trigger points* as moments instilling changes in an inner biographical disposition (Strauss, 1997 [1959]; Neale, 2019). *Tipping points* (Gladwell, 2000) are the result of an accumulation of experiences that eventually reach a point of no return, beyond which a new state is finally reached. This relates to the telescopic nature of time. For instance, the irreversibility and the shrinking horizons associated with lifetime horizons may create pressures to take stock of one's life and make changes eventually turning gradual transformations into a (self-defined) change of state. In short, both multidirectional and telescopic time help us understand how varied contexts and circumstances are interpreted retrospectively as producing change, and how their meaning may change over time.

Similarly, relative time requires new ways to think about transitions, notably through the lens of elastic time. Research has shown that boundaries between life stages may be more blurred than generally assumed (Bynner, 2007; Woodman and Wyn, 2013). Transitional stages often unfold gradually, making it difficult to identify a starting date or a relevant marker, as parallel, asynchronous timings can govern different aspects of a transition (Bernardi and Larenza, 2018). It is thus necessary to question the principle of duration on which conventional definitions of transitions rest. Understandings of causality in quantitative analyses are based not only on the idea of linearity, but also of measurable duration (from event X to Y). However, the

temporal markers, boundaries and paces for transitions can be revisited at different times in life – reflecting the elasticity of time. Transitions can be perceived as more or less dense depending on the tempos and accumulation of events occurring within a given period. Applying a life course time frame (telescopic time) may lead us to assess previous life periods differently, which reflects how the three relative time characteristics interact in shaping the processual nature of both turning points and transitions. These arguments are in line with Adam's (1990) insight that events do not occur in time, but that they constitute time.

These theoretical considerations should not only speak to qualitatively oriented scholars. An empirical integration certainly poses operational and technical challenges. However, interpretation of life course patterns could include considerations of the ways in which relative time intersects with absolute time to shape processes of change over the life course. In the meantime, prospective qualitative research is still the best suited through successive waves of data production to compare the various pasts, presents and futures narrated at given points in time. Such research can show how individuals recursively revisit the past and the future as different time horizons are applied and perceptions of tempos and paces change, enhancing our understanding of the complex mix of objective and subjective dimensions of temporal processes that shape the life course.

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Conflict of interest

The authors declare that there is no conflict of interest.

References

- Adam, B. (1990) *Time and Social Theory*, Cambridge: Polity.
- Aisenbrey, S. and Fasang, A. (2017) The interplay of work and family trajectories over the life course: Germany and the United States in comparison, *American Journal of Sociology*, 122(5): 1448–84. doi: [10.1086/691128](https://doi.org/10.1086/691128)
- Alheit, P. (1994) Everyday time and life time: on the problems of healing contradictory experiences of time, *Time & Society*, 3(3): 305–19. doi: [10.1177/0961463X94003003004](https://doi.org/10.1177/0961463X94003003004)
- Bernardi, L. and Larenza, O. (2018) Variety of transitions into lone parenthood, in L. Bernardi and D. Mortelmans (eds) *Lone Parenthood in the Life Course*, Cham: Springer, pp 93–108.

- Bernardi, L., Huinink, J. and Settersten, R.A. Jr (2019) The life course cube: a tool for studying lives, *Advances in Life Course Research*, 41: art 100258, <https://doi.org/10.1016/j.alcr.2018.11.004>.
- Bertaux, D. and Kohli, M. (1984) The life story approach: a continental view, *Annual Review of Sociology*, 10: 215–37. doi: [10.1146/annurev.so.10.080184.001243](https://doi.org/10.1146/annurev.so.10.080184.001243)
- Bessin, M. (2009) Parcours de vie et temporalités biographiques: quelques éléments de problématique, *Caisse Nationale d'Allocations Familiales*, 156: 12–21.
- Bidart, C. (2013) What does time imply? The contribution of longitudinal methods to the analysis of the life course, *Time & Society*, 22(2): 254–73. doi: [10.1177/0961463X12447493](https://doi.org/10.1177/0961463X12447493)
- Bidart, C. (2019) How plans change: anticipation, interferences and unpredictabilities, *Advances in Life Course Research*, 41: art 100254, <https://doi.org/10.1016/j.alcr.2018.10.007>. doi: [10.1016/j.alcr.2018.10.007](https://doi.org/10.1016/j.alcr.2018.10.007)
- Bidart, C., Longo, M.E. and Mendez, A. (2013) Time and process: an operational framework for processual analysis, *European Sociological Review*, 29(4): 743–51. doi: [10.1093/esr/jcs053](https://doi.org/10.1093/esr/jcs053)
- Bluedorn, A.C. (2002) *The Human Organization of Time: Temporal Realities and Experience*, Stanford, CA: Stanford University Press.
- Bluedorn, A.C. and Jaussi, K.S. (2007) Organizationally relevant dimensions of time across levels of analysis, *Research in Multi-Level Issues: Multi-Level Issues in Organizations and Time*, 6: 187–223.
- Bluedorn, A.C. and Standifer, R.L. (2006) Time and the temporal imagination, *Academy of Management Learning and Education*, 5(2): 196–206. doi: [10.5465/amle.2006.21253784](https://doi.org/10.5465/amle.2006.21253784)
- Brockmeier, J. (2000) Autobiographical time, *Narrative Inquiry*, 10(1): 51–73. doi: [10.1075/ni.10.1.03bro](https://doi.org/10.1075/ni.10.1.03bro)
- Bynner, J. (2007) Rethinking the youth phase of the life course: the case for emerging adulthood, *Journal of Youth Studies*, 8(4): 367–84. doi: [10.1080/13676260500431628](https://doi.org/10.1080/13676260500431628)
- Carlsson, C. (2012) Using ‘turning points’ to understand processes of change in offending, *British Journal of Criminology*, 52(1): 1–16. doi: [10.1093/bjc/azr062](https://doi.org/10.1093/bjc/azr062)
- Carstensen, L.L. (2006) The influence of a sense of time on human development, *Science*, 312(5782): 1913–15. doi: [10.1126/science.1127488](https://doi.org/10.1126/science.1127488)
- Carstensen, L.L., Isaacowitz, D.M. and Charles, S.T. (1999) Taking time seriously. A theory of socioemotional selectivity, *American Psychologist*, 54(3): 165–81. doi: [10.1037/0003-066X.54.3.165](https://doi.org/10.1037/0003-066X.54.3.165)
- Chen, M.K. (2013) The effect of language on economic behavior: evidence from savings rates, health behaviors, and retirement assets, *The American Economic Review*, 103(2): 690–731. doi: [10.1257/aer.103.2.690](https://doi.org/10.1257/aer.103.2.690)
- Commons, J.R. (1934) *Institutional Economics*, New York: Macmillan.
- Droit-Volet, S. and Wearden, J.H. (2015) Experience sampling methodology reveals similarities in the experience of passage of time in young and elderly adults, *Acta Psychologica*, 156: 77–82. doi: [10.1016/j.actpsy.2015.01.006](https://doi.org/10.1016/j.actpsy.2015.01.006)
- Droit-Volet, S., Fayolle, S., Lamotte, M. and Gil, S. (2013) Time, emotion and the embodiment of timing, *Timing & Time Perception*, 1(1): 99–126. doi: [10.1163/22134468-00002004](https://doi.org/10.1163/22134468-00002004)
- Eagleman, D.M. (2008) Human time perception and its illusions, *Current Opinion in Neurobiology*, 18(2): 131–6. doi: [10.1016/j.conb.2008.06.002](https://doi.org/10.1016/j.conb.2008.06.002)

- Eliason, S.R., Mortimer, J.T. and Vuolo, M. (2015) The transition to adulthood: life course structures and subjective perceptions, *Social Psychology Quarterly*, 78(3): 205–27. doi: [10.1177/0190272515582002](https://doi.org/10.1177/0190272515582002)
- Emirbayer, M. and Mische, A. (1998) What is agency?, *American Journal of Sociology*, 103(4): 962–1023. doi: [10.1086/231294](https://doi.org/10.1086/231294)
- Eyal, T., Liberman, N., Trope, Y. and Walther, E. (2004) The pros and cons of temporally near and distant action, *Journal of Personality and Social Psychology*, 86(6): 781–95. doi: [10.1037/0022-3514.86.6.781](https://doi.org/10.1037/0022-3514.86.6.781)
- Feldhaus, M. and Heintz-Martin, V. (2015) Long-term effects of parental separation: impacts of parental separation during childhood on the timing and the risk of cohabitation, marriage, and divorce in adulthood, *Advances in Life Course Research*, 26(1): 22–31. doi: [10.1016/j.alcr.2015.07.003](https://doi.org/10.1016/j.alcr.2015.07.003)
- Fieulaine, N. and Apostolidis, T. (2015) Precariousness as a time horizon: how poverty and social insecurity shape individuals' time perspectives, in M. Stolarski, N. Fieulaine, and W. van Beek (eds) *Time Perspective Theory; Review, Research and Application: Essays in Honor of Philip G. Zimbardo*, Cham: Springer, pp 213–28.
- Fischer, W. (1982) Alltagszeit und lebenszeit in lebensgeschichten chronisch Kranker, *Zeitschrift für Sozialisationsforschung und Erziehungssoziologie*, 2: 5–19.
- Flaherty, M.G. (1999) *A Watched Pot: How We Experience Time*, New York: New York University Press.
- Flaherty, M.G. (2003) Time work: customizing temporal experience, *Social Psychology Quarterly*, 66(1): 17–33. doi: [10.2307/3090138](https://doi.org/10.2307/3090138)
- Flaherty, M.G. (2013) Age and agency: time work across the life course, *Time & Society*, 22(2): 237–53. doi: [10.1177/0961463X12455598](https://doi.org/10.1177/0961463X12455598)
- Fraisse, P. (1967) *Psychologie du Temps*, Paris: Presses Universitaires de France.
- Frederick, S., Loewenstein, G. and O'Donoghue, T. (2002) Time discounting and time preference: a critical review, *Journal of Economic Literature*, 40(2): 351–401. doi: [10.1257/jel.40.2.351](https://doi.org/10.1257/jel.40.2.351)
- Frye, M. (2012) Bright futures in Malawi's new dawn: educational aspirations as assertions of identity, *American Journal of Sociology*, 117(6): 1565–624. doi: [10.1086/664542](https://doi.org/10.1086/664542)
- Gabrian, M., Dutt, A.J. and Wahl, H.-W. (2017) Subjective time perceptions and aging well: a review of concepts and empirical research—a mini-review, *Gerontology*, 63(4): 350–8. doi: [10.1159/000470906](https://doi.org/10.1159/000470906)
- Gauthier, J.A., Widmer, E.D., Bucher, P. and Notredame, C. (2010) Multichannel sequence analysis applied to social science data, *Sociological Methodology*, 40(1): 1–38. doi: [10.1111/j.1467-9531.2010.01227.x](https://doi.org/10.1111/j.1467-9531.2010.01227.x)
- Giasson, H.L., Liao, H.-W. and Carstensen, L.L. (2019) Counting down while time flies: implications of age-related time acceleration for goal pursuit across adulthood, *Current Opinion in Psychology*, 26: 85–9. doi: [10.1016/j.copsyc.2018.07.001](https://doi.org/10.1016/j.copsyc.2018.07.001)
- Gislain, J.-J. (2017) Futurité, la temporalité économique chez J.R. Commons, *Economia*, 7(2): 239–70.
- Gladwell, M. (2000) *The Tipping Point: How Little Things Can Make a Big Difference*, New York: Little, Brown.
- Gray, J. and Dagg, J. (2019) Crisis, recession and social resilience: a biographical life course analysis, *Advances in Life Course Research*, 42: art 100293, <https://doi.org/10.1016/j.alcr.2019.100293>. doi: [10.1016/j.alcr.2019.100293](https://doi.org/10.1016/j.alcr.2019.100293)

- Hagestad, G.O. and Dykstra, P. (2016) Structuration of the life course: some neglected aspects, in M.J. Shanahan, J.T. Mortimer, and M. Kirkpatrick Johnson (eds) *Handbook of the Life Course, Volume II*, Cham: Springer, pp 131–57.
- Hall, P.A. and Fong, G.T. (2007) Temporal self-regulation theory: a model for individual health behavior, *Health Psychology Review*, 1(1): 6–52. doi: [10.1080/17437190701492437](https://doi.org/10.1080/17437190701492437)
- Hareven, T.K. and Masaoka, K. (1988) Turning points and transitions: perceptions of the life course, *Journal of Family History*, 13(1): 271–89. doi: [10.1177/036319908801300117](https://doi.org/10.1177/036319908801300117)
- Hellevik, T. and Settersten, R.A. (2013) Life planning among young adults in 23 European countries: the effects of individual and country security, *European Sociological Review*, 29(5): 923–38. doi: [10.1093/esr/jcs069](https://doi.org/10.1093/esr/jcs069)
- Hershfield, H.E. and Maglio, S.J. (2019) When does the present end and the future begin?, *Journal of Experimental Psychology: General*, 149(4): 701–18. doi: [10.1037/xge0000681](https://doi.org/10.1037/xge0000681)
- Hitlin, S. and Elder, G.H. Jr (2007) Time, self, and the curiously abstract concept of agency, *Sociological Theory*, 25(2): 170–91. doi: [10.1111/j.1467-9558.2007.00303.x](https://doi.org/10.1111/j.1467-9558.2007.00303.x)
- Hitlin, S. and Kirkpatrick Johnson, M. (2015) Reconceptualizing agency within the life course: the power of looking ahead, *American Journal of Sociology*, 120(5): 1429–72. doi: [10.1086/681216](https://doi.org/10.1086/681216)
- Holland, J. and Thomson, R. (2009) Gaining perspective on choice and fate, *European Societies*, 11(3): 451–69. doi: [10.1080/14616690902764799](https://doi.org/10.1080/14616690902764799)
- Holstein, J. and Gubrium, J. (2000) *Constructing the Life Course*, 2nd edn, Dix Hills, NY: General Hall.
- James, W. (1890) The perception of time, in *The Principles of Psychology*, Vol. 1, New York: Holt, Chapter 15.
- Janssen, S.M.J. (2017) Autobiographical memory and the subjective experience of time, *Timing and Time Perception*, 5(1): 99–122. doi: [10.1163/22134468-00002083](https://doi.org/10.1163/22134468-00002083)
- John, D. and Lang, F.R. (2015) Subjective acceleration of time experience in everyday life across adulthood, *Developmental Psychology*, 51(12): 1824–39. doi: [10.1037/dev0000059](https://doi.org/10.1037/dev0000059)
- Jones, J.M. and Leitner, J.B. (2015) The Sankofa effect: divergent effects of thinking about the past for blacks and whites, in M. Stolarski, N. Fieulaine, and W. van Beek (eds) *Time Perspective Theory; Review, Research and Application: Essays in Honor of Philip G. Zimbardo*, Cham: Springer, pp 197–211.
- Jones, T.L., Flaherty, M.G. and Rubin, B.A. (2019) Crystal balls and calendars: a structural analysis of projected futures, *Time & Society*, 28(1): 153–74. doi: [10.1177/0961463X17716551](https://doi.org/10.1177/0961463X17716551)
- Köber, C. and Habermas, T. (2016) Development of temporal macrostructure in life narratives across the lifespan, *Discourse Process*, 54(2): 143–62.
- Kohli, M. (2019) The promises and pitfalls of life-course agency, *Advances in Life Course Research*, 41: art 100273, <https://doi.org/10.1016/j.alcr.2019.04.003>.
- Lallement, M. (2017) Du temps aux régimes de temporalités sociales, *Temporalités et Sports*, 25, <https://doi.org/10.4000/temporalites.3607>.
- Lapied, A. and Renault, O. (2017) Modèles de décision intertemporels et temps subjectivement perçu, *Æconomia*, 7(2): 201–17.
- Levine, R. (1998) *A Geography of Time: The Temporal Misadventures of a Social Psychologist or How Each Culture Keeps Time Just a Little Bit Differently*, New York: Basic Books.
- Levine, R.V. (2015) Keeping time, in M. Stolarski, N. Fieulaine and W. van Beek (eds) *Time Perspective Theory; Review, Research and Application: Essays in Honor of Philip G. Zimbardo*, Cham: Springer, pp 189–96.

- Lewin, K. (1951) *Field Theory in the Social Sciences: Selected Theoretical Papers*, New York: Harper.
- Liao, H.-W. and Carstensen, L.L. (2018) Future time perspective: time horizons and beyond, *Journal of Gerontopsychology and Geriatric Psychiatry*, 31(3): 163–67.
- Liberman, N. and Trope, Y. (1998) The role of feasibility and desirability considerations in near and distant future decisions: a test of temporal construal theory, *Journal of Personality and Social Psychology*, 75(1): 5–18. doi: [10.1037/0022-3514.75.1.5](https://doi.org/10.1037/0022-3514.75.1.5)
- Löckenhoff, C.E. (2011) Age, time, and decision making: from processing speed to global time horizons, *Annals of the New York Academy of Sciences*, 1235(1): 44–56.
- Malkoc, S.A. and Zauberaman, G. (2019) Psychological analysis of consumer intertemporal decisions, *Consumer Psychology Review*, 2(1): 97–113.
- Matthews, W.J. and Warren, H.M. (2014) Time perception: the bad news and the good, *Cognitive Science*, 5(4): 429–46.
- May, J. and Thrift, N. (eds) (2001) *TimeSpace: geographies of temporality*, New York: Routledge.
- Mayer, K.U. (2004) Whose lives? How history, societies, and institutions define and shape life courses, *Research in Human Development*, 1(3): 161–87. doi: [10.1207/s15427617rhd0103_3](https://doi.org/10.1207/s15427617rhd0103_3)
- Mayer, K.U. and Schöpflin, U. (1989) The state and the life course, *Annual Review of Sociology*, 15: 187–209. doi: [10.1146/annurev.so.15.080189.001155](https://doi.org/10.1146/annurev.so.15.080189.001155)
- McAdams, D.P. (1993) *The Stories We Live By: Personal Myths and the Making of the Self*, New York: Morrow.
- McAdams, D.P. (2001) The psychology of life stories, *Review of General Psychology*, 5(2): 100–22. doi: [10.1037/1089-2680.5.2.100](https://doi.org/10.1037/1089-2680.5.2.100)
- McAdams, D.P. (2005) Studying lives in time: a narrative approach, *Advances in Life Course Research*, 10: 237–58. doi: [10.1016/S1040-2608\(05\)10009-4](https://doi.org/10.1016/S1040-2608(05)10009-4)
- McAdams, D.P. (2008) Personal narratives and the life story, in O.P. John, R. W. Robins, and L.A. Pervin (eds) *Handbook of Personality: Theory and Research*, 3rd edn, New York: Guilford Press, pp 242–62.
- McAdams, D.P., Bauer, J.J., Sakaeda, A.R., Anyidoho, N.A., Machado, M.A., Magrino-Failla, K., White, K.W. and Pals, J.L. (2006) Continuity and change in the life story: a longitudinal study of autobiographical memories in emerging adulthood, *Journal of Personality*, 74(5): 1371–400. doi: [10.1111/j.1467-6494.2006.00412.x](https://doi.org/10.1111/j.1467-6494.2006.00412.x)
- Mead, G.H. (1932) *The Philosophy of the Present*, Chicago: Open Court Publishing.
- Mische, A. (2009) Projects and possibilities: researching futures in action, *Sociological Forum*, 24(3): 694–704. doi: [10.1111/j.1573-7861.2009.01127.x](https://doi.org/10.1111/j.1573-7861.2009.01127.x)
- Morris, T. (2017) Examining the influence of major life events as drivers of residential mobility and neighbourhood transitions, *Demographic Research*, 36(1): 1015–38. doi: [10.4054/DemRes.2017.36.35](https://doi.org/10.4054/DemRes.2017.36.35)
- Namboodiri, V.M.K., Mihalas, S., Marton, T.M. and Hussain Shuler, M.G. (2014) A general theory of intertemporal decision-making and the perception of time, *Frontiers in Behavioral Neuroscience*, 8: art 61. doi: [10.3389/fnbeh.2014.00061](https://doi.org/10.3389/fnbeh.2014.00061)
- Neale, B. (2015) Time and the life course: perspectives from qualitative longitudinal research, in N. Worth and I. Hardill (eds) *Researching the Life Course: Critical Perspectives from the Social Sciences*, Bristol: Policy Press, pp 25–41.
- Neale, B. (2019) *What is Qualitative Longitudinal Research?*, London: Bloomsbury Academic.

- Neugarten, B.L., Moore, J.W. and Lowe, J.C. (1965) Age norms, age constraints, and adult socialization, *American Journal of Sociology*, 70(6): 710–17. doi: [10.1086/223965](https://doi.org/10.1086/223965)
- Nilsen, A. (2019) Levels of intersecting temporalities in young men's orientation to the future: a cross-national case comparison, *Time & Society*, ahead of print: <https://doi.org/10.1177/0961463X19867569>.
- Nuttin, J. (1985) *Future Time Perspective and Motivation: Theory and Research Method*, Hillsdale, NJ: Erlbaum.
- Pérez, E.O. and Tavits, M. (2017) Language shapes people's time perspective and support for future-oriented policies, *American Journal of Political Science*, 61(3): 715–27.
- Pratt, M.W. and Fiese, B.H. (2004) *Family Stories and the Life Course: Across Time and Generations*, Mahwah, NJ: Erlbaum.
- Rämö, H. (1999) An Aristotelian human time-space manifold: from chronochora to kairotopos, *Time & Society*, 8(2/3): 309–28.
- Read, D., Olivola, C.Y. and Hardisty, D.J. (2017) The value of nothing: asymmetric attention to opportunity costs drives intertemporal decision making, *Management Science*, 63(12): 4277–97. doi: [10.1287/mnsc.2016.2547](https://doi.org/10.1287/mnsc.2016.2547)
- Roeckelein, J.E. (2008) History of conceptions and accounts of time and early time perception research, in S. Grondin (ed) *Psychology of Time*, Bingley: Emerald Press, pp 1–50.
- Rosenthal, G. (2004) Biographical research, in C. Seale, G. Gobo, J.F. Gubrium and D. Silverman (eds) *Qualitative Research Practice*, London: Sage, pp 48–64.
- Rossignon, F., Studer, M., Gauthier, J.A. and Le Goff, J.M. (2018) Sequence history analysis (SHA): estimating the effect of past trajectories on an upcoming event, in G. Ritschard and M. Studer (eds) *Sequence Analysis and Related Approaches: Innovative Methods and Applications*, Cham: Springer, pp 83–100.
- Rovelli, C. (2018) *The Order of Time*, New York: Riverhead.
- Saldaña, J. (2003) *Longitudinal Qualitative Research: Analyzing Change Through Time*, Walnut Creek, CA: AltaMira Press.
- Schacter, D.L., Addis, D.R., Hassabis, D., Martin, V.C., Spreng, R.N. and Szpunar, K.K. (2012) The future of memory: remembering, imagining, and the brain, *Neuron*, 76(4): 677–94. doi: [10.1016/j.neuron.2012.11.001](https://doi.org/10.1016/j.neuron.2012.11.001)
- Schafer, M.H. and Shippee, T.P. (2010) Age identity in context: stress and the subjective side of aging, *Social Psychology Quarterly*, 73(3): 245–64. doi: [10.1177/0190272510379751](https://doi.org/10.1177/0190272510379751)
- Schutz, A. (1962) *Collected Papers I: The Problem of Social Reality*, The Hague: Nijhoff.
- Schütze, F. (1980) Prozesstrukturen des lebensablaufs, in J. Matthes, A. Pfeifenberger and M. Stosberg (eds) *Biographie in Handlungswissenschaftlicher Perspektive*, Nürnberg: Verlag der Nürnberger Forschungsvereinigung e.V, pp 67–156.
- Settersten, R.A. (2003) Age structuring and the rhythm of the life course, in J.T. Mortimer and M.J. Shanahan (eds) *Handbook of the Life Course*, Boston, MA: Springer, pp 81–98.
- Settersten, R.A. and Hagestad, G.O. (1996) What's the latest? II. Cultural age deadlines for educational and work transitions, *Gerontologist*, 36(5): 602–13. doi: [10.1093/geront/36.5.602](https://doi.org/10.1093/geront/36.5.602)
- Settersten, R.A. and Mayer, K.U. (1997) The measurement of age, age structuring, and the life course, *Annual Review of Sociology*, 23(1): 233–61. doi: [10.1146/annurev.soc.23.1.233](https://doi.org/10.1146/annurev.soc.23.1.233).

- Shirani, F. and Henwood, K. (2011) Taking one day at a time: temporal experiences in the context of unexpected life course transitions, *Time & Society*, 20(1): 49–68. doi: [10.1177/0961463X10374906](https://doi.org/10.1177/0961463X10374906)
- Singer, J.A. (2004) Narrative identity and meaning making across the adult lifespan: an introduction, *Journal of Personality*, 72(3): 437–60. doi: [10.1111/j.0022-3506.2004.00268.x](https://doi.org/10.1111/j.0022-3506.2004.00268.x)
- Sircova, A., van de Vijver, F.J.R., Osin, E., Milfont, T.L., Fieulaine, N., Kislali-Erginbilgic, A., Zimbardo, P.G. and 54 members of the International Time Perspective Research Project (2015) Time perspective profiles of cultures, in M. Stolarski, N. Fieulaine and W. van Beek (eds) *Time Perspective Theory; Review, Research and Application: Essays in Honor of Philip G. Zimbardo*, Cham: Springer, pp 169–87.
- Stolarski, M., Fieulaine, N. and van Beek, W. (2015) Time perspective theory: the introduction, in M. Stolarski, N. Fieulaine and W. van Beek (eds) *Time Perspective Theory; Review, Research and Application: Essays in Honor of Philip G. Zimbardo*, Cham: Springer, pp 1–13.
- Strauss, A.L. (1997 [1959]) *Mirrors and Masks: The Search for Identity*, New Brunswick, NJ: Transaction Publishers.
- Tsuji, Y. (2005) Time is not up: temporal complexity of older Americans' lives, *Journal of Cross-Cultural Gerontology*, 20(1): 3–26. doi: [10.1007/s10823-005-3794-7](https://doi.org/10.1007/s10823-005-3794-7)
- Van Beek, W. and Kairys, A. (2015) Time perspective and transcendental future thinking, in M. Stolarski, N. Fieulaine and W. van Beek (eds) *Time Perspective Theory; Review, Research and Application: Essays in Honor of Philip G. Zimbardo*, Cham: Springer, pp 73–86.
- Vanhoutte, B., Währendorf, M. and Nazroo, J. (2017) Duration, timing and order: how housing histories relate to later life wellbeing, *Longitudinal and Life Course Studies*, 8(3): 227–44. doi: [10.14301/llcs.v8i3.445](https://doi.org/10.14301/llcs.v8i3.445)
- Wang, M., Rieger, M.O. and Hens, T. (2016) How time preferences differ: evidence from 53 countries, *Journal of Economic Psychology*, 52: 115–35. doi: [10.1016/j.joep.2015.12.001](https://doi.org/10.1016/j.joep.2015.12.001)
- Wingens, M. and Reiter, H. (2011) The life course approach – it's about time! *BIOS*, 24(2): 187–203.
- Wittmann, M. (2011) Moments in time, *Frontiers in Integrative Neuroscience*, 5: art 66. doi: [10.3389/fnint.2011.00066](https://doi.org/10.3389/fnint.2011.00066)
- Woodman, D. and Wyn, J. (2013) Youth policy and generations: why youth policy needs to 'rethink youth', *Social Policy and Society*, 12(2): 265–75. doi: [10.1017/S1474746412000589](https://doi.org/10.1017/S1474746412000589)
- Zimbardo, P.G. and Boyd, J.N. (1999) Putting time in perspective: a valid, reliable individual-differences metric, *Journal of Personality and Social Psychology*, 77(6): 1271–88. doi: [10.1037/0022-3514.77.6.1271](https://doi.org/10.1037/0022-3514.77.6.1271)
- Zimbardo, P.G. and Boyd, J.N. (2008) *The time paradox*, New York: Free Press.
- Zimmermann, O. (2020) Destandardization in later age spans in Western Germany: evidence from sequence analysis of family life courses, *Advances in Life Course Research*, 43: art 100287, <https://doi.org/10.1016/j.alcr.2019.04.017>.