Time in Individual-Level Organizational Studies: What Is It, How Is It Used, and Why Isn't It Exploited More Often?

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Abstract

Time is an important concern in organizational science, yet we lack a systematic review of research on time within individual-level studies. Following a brief introduction, we consider conceptual ideas about time and elaborate on why temporal factors are important for micro-organizational studies. Then, in two sections—one devoted to time-related constructs and the other to the experience of time as a within-person phenomenon—we selectively review both theoretical and empirical studies. On the basis of this review, we note which topics have received more or less attention to inform our evaluation of the current state of research on time. Finally, we develop an agenda for future research to help move micro-organizational research to a completely temporal view.

INTRODUCTION

Time is an integral part of the human experience, particularly at work. For example, the passage of time is essential when assessing one's progress; timing issues dictate the way in which individuals schedule and coordinate task-related activities; and time provides the ever-present context in which individuals interpret retrospected, current, and anticipated work experiences. As a result, it is not surprising that scholars have repeatedly suggested that the adoption of a temporal lens is essential for the advancement of organizational science (e.g., Ancona et al. 2001a,b; Bluedorn 2002; George & Jones 2000; McGrath & Rotchford 1983; Roe 2008; Sonnentag 2012). It appears, however, that the organizational sciences have failed to heed such calls to adopt a temporal lens. Shipp & Fried (2014) have observed that this is likely because there is no single theory of time. They go on to suggest that those who have studied time often do so independently of a specific research stream, and as a result, time has been applied haphazardly rather than systematically to organizational topics. Hence, a broad review of temporal research is needed to determine which research questions have been addressed and which ones remain unanswered. These two topics are precisely the goal of this review.

As our review shows, the micro-organizational literature is at an important juncture. Although a strong foundation for temporal research currently exists, the scientific progress of the field seems somewhat dubious insofar as scholars remain reluctant to embrace a temporal lens. With this in mind, we take stock of the current state of the field to surmise whether issues related to temporal theorizing and research remain "esoteric" or are "becoming common knowledge" (Fried & Slowik 2004, p. 405). We must be selective in our review by necessity, focusing on the individual as the unit of analysis[1] and on theoretical and empirical studies as opposed to methodological advancements.[2] In sum, our goal is to synthesize contemporary thinking and research on time in organizational life, to highlight exemplar micro-organizational science articles representative of those ideas, and to illuminate a potential future research agenda.

In what follows, we first provide a short primer on time to identify important aspects of time that shape our review and critique. We address such topics as "what is time" and "why is it important," observing that time (whether viewed objectively or subjectively) provides the context of our daily work lives. This observation seems particularly noteworthy as it has implications for how researchers design and conduct their studies; for example, few existing studies fully appreciate the relevance of timing issues (e.g., duration, rate, pattern). We also differentiate time as a focal construct of substantive scholarly interest (e.g., time management, temporal focus) versus time as a medium for exploring a dynamic process (e.g., job satisfaction change). After reviewing exemplar studies that touch on these points, we move to our future research agenda in an attempt to illustrate how researchers can and should incorporate time into their own research streams.

A PRIMER ON TIME IN ORGANIZATIONAL RESEARCH

Time Is Objective and Subjective

We begin with a question posed by a number of previous scholars, What is time and why is it important? Many scholars have suggested that individuals experience time in both objective and

[1]We limited our review to individual-level research on time. We note, of course, that some of the temporal concepts, considerations, and issues we discuss also may be relevant to entities at higher levels of analysis (e.g., teams, business units, organizations; Bluedorn & Denhardt 1988, Mathieu et al. 2014, Pettigrew 1990).

[2]Several excellent works on methodological issues related to time have been published, and we refer readers to these papers for additional information (e.g., Bliese & Ployhart 2002; Chan 1998, 2014; Pitariu & Ployhart 2010; Ployhart & Vandenberg 2010; Ployhart & Ward 2011; Singer & Willett 2003).

subjective ways (e.g., Ancona et al. 2001b, Bluedorn & Denhardt 1988, Fried & Slowik 2004, McGrath & Rotchford 1983). Objective (or clock) time is defined as a view of time that is (*a*) unidirectional—progressing from past to present to future, (*b*) homogenous—each second is the same as any other second, and (*c*) absolute—time is the same across all situations and individuals. In contrast, subjective (or psychological) time is defined as a view of time that is (*a*) cognitively cyclical—thoughts may move between past, present, and future in any direction; (*b*) heterogeneous—some moments pass more quickly than others; and (*c*) interpretive—experiences can only be understood in context (see Shipp & Fried 2014 for a detailed overview).

Time Is Both a Focal Construct and a Medium for Change

Time is an important concern for studies of organizational science because it surrounds us in everything that we do (Ancona et al. 2001a, Bluedorn 2002, Bluedorn & Denhardt 1988). For example, time is a metric by which individuals discern whether events are happening on time, ahead of schedule, or later than planned (e.g., Blount & Janicik 2001). The passage of time is necessary to experience and discern when a phenomenon evolves or changes (Roe 2008, Zaheer et al. 1999). Further, time provides the means by which individuals fundamentally understand current work experiences given that the present is inherently bounded within the context of the past and the future (Johns 2006, Rousseau & Fried 2001, Shipp & Jansen 2011).

As a result, when time is included in organizational studies, it is typically addressed as either the focal construct or the medium through which change occurs. When time is a focal construct, either time itself (i.e., objective or subjective) or a time-related construct (e.g., time urgency, temporal focus) is used as the independent, dependent, moderator, or mediator variable (Chan 2014, Goodman et al. 2001, McGrath & Tschan 2004). When incorporated as the medium for change in one or more constructs, time is not the primary focus of the study but rather provides context. Examples include those studies that use repeated measures to capture the dynamism in a construct, process, or causal relationship over time (Chan 2014).

Timing Issues

According to Mitchell & James (2001), understanding when things happen is essential for understanding organizational phenomena. Thus, another reason that time is important for organizational science relates to conceptual issues of timing. The most pertinent timing issues include timescales, duration and rate, patterns of events and processes, and scheduling (George & Jones 2000, Mitchell & James 2001, Zaheer et al. 1999). Timescales are the "size of the temporal intervals, whether subjective or objective, used to build or test theory about a process, pattern, phenomenon, or event" (Zaheer et al. 1999, p. 725). Temporal constructs and processes look different depending on how narrow of a timescale a researcher uses for conceptualization, measurement, and analysis (Roe 2014, Zaheer et al. 1999). These windows of observation should be based on how individuals aggregate or bracket experiences to identify when phenomena begin and end (Chan 2014, George & Jones 2000).

When phenomena begin and end (or change) lead to other timing issues: duration and rate. Duration refers to the length of time that a construct, event, or process lasts in a steady state, and rate refers to the speed at which these phenomena change (Ancona et al. 2001b, Chan 2014, George & Jones 2000). Thus, duration focuses on the amount of time between the beginning and the end of a period for which a phenomenon may last (e.g., the benefits of vacation; Kühnel & Sonnentag 2011), whereas rate focuses more on a construct's development or change over time (George & Jones 2000).

Another timing issue is pattern, which refers to the trajectory or shape of a construct, event, or process over time. The trajectory may be characterized as stable or unstable, growth versus decline, or ongoing versus recurrent (Pitariu & Ployhart 2010, Ployhart & Vandenberg 2010, Roe 2008). An interesting aspect of patterns is that they may exhibit predictable cycles, which typically emerge either as a feedback loop or as a steady rhythm that repeats over time (e.g., circadian rhythms: Barnes & Wagner 2009, McGrath & Rotchford 1983; mood variability: Beal & Ghandour 2011, Weiss et al. 1999). Such cyclic rhythms can also be entrained to the physical or social environment (McGrath & Kelly 1986, McGrath & Rotchford 1983).

The last conceptual issue is scheduling. Scheduling is the location (time and day) of an event on a calendar, which helps create temporal boundaries for events and make action predictable (McGrath & Rotchford 1983, Schriber & Gutek 1987). Scheduling is particularly salient during the synchronization of tasks or individuals (McGrath & Tschan 2004). That is, synchronization can be either the process by which individuals manage multiple tasks in a predictable pattern (e.g., monochronic versus polychronic behaviors; Quintens & Matthyssens 2010) or the process by which individuals coordinate their efforts with each other (e.g., entrainment; McGrath & Rotchford 1983, Schriber & Gutek 1987).

Scholarly Attention to Time

Early theorizing by Kurt Lewin (1943) and Henry Murray (1938) suggested that we cannot separate the individual from the surrounding temporal context. This notion would imply that temporal topics should be included in every article published in organizational science. To gain a better idea of the frequency with which time has been considered by researchers, we conducted a basic keyword search of several of the top journals (*Academy of Management Journal*, *Academy of Management Review*, *Administrative Science Quarterly*, *Journal of Applied Psychology*, *Journal of Organizational Behavior*, *Organizational Behavior and Human Decision Processes*, and *Personnel Psychology*). We counted any article that included one or more of the following terms in its title or abstract: time, temporal, dynamic, trajectory, change, and longitudinal. As can be seen in **Figure 1**, we are excited by the positive trend in the past two decades, particularly for the topics of time, longitudinal, and dynamic.

We believe this upswing is due in part to a few key articles, books, and edited volumes on time. Works by McGrath and colleagues (McGrath & Kelly 1986, McGrath & Rotchford 1983), Gersick (1988), and Bluedorn & Denhardt (1988) were among the first publications within management to introduce the concept of time, which likely explains the inflection in **Figure 1** after 1989. Subsequently, an article by George & Jones (2000) catalogued essential theoretical issues for understanding time at work. Then, a special issue of *Academy of Management Review* was published (Goodman et al. 2001) in which articles addressed the conceptualization of time (Ancona et al. 2001b), timing changes (Blount & Janicik 2001), deadlines (Waller et al. 2001), and temporal issues in methodology (Mitchell & James 2001), among others. Further, Bluedorn (2002) published a seminal book with a unique focus that combined contemporary thinking about time from the differing viewpoints of history, sociology, psychology, anthropology, and management. Consequently, the frequency of these terms continues to grow, with early indications suggesting that the numbers for 2010–2019 will continue to increase.

Scholars have also remarked, however, that the most recent theorizing on time and its implications for organizational studies have a long way to go until temporal issues are fully addressed (e.g., Roe 2008, Sonnentag 2012). In an attempt to explain what is lacking in the literature, Roe (2008) has suggested that researchers have been reluctant to change their emphasis from "what is" to "what happens" (p. 40). Roe (2014) recently expanded on his idea, suggesting the need for

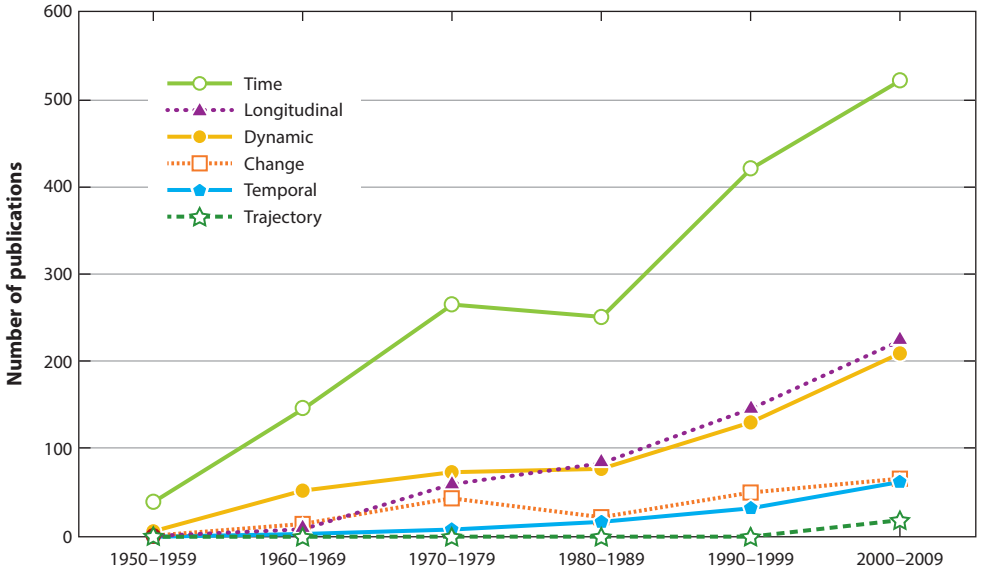

Figure 1

Frequency of temporal terms by decade.

a discipline-wide paradigm shift. More specifically, he calls into question the assumption that organizational phenomena are stable; thus, change is a special case. In contrast, Roe maintains that change is a fundamental and natural quality of most (if not all) organizational phenomena and that the special case is actually stability.

In line with Roe's (2008, 2014) somewhat provocative point of view, Shipp & Fried (2014) have edited a two-volume book to address temporal issues from the perspective of major streams of management research. Shipp & Fried's belief was that scholarly progress is more likely to be made by encouraging chapter authors to act as temporal ambassadors, wherein they bring specific ideas about time back into their respective research domains. Toward this end, each book chapter addresses why a temporal lens is important from the perspective of the content experts themselves. Although the two volumes assist with encouraging well-established research streams to adopt a temporal lens, they are limited to a select number of topics. In contrast, the current review is designed to provide a wider and deeper examination of individual-level topics across as many research streams as possible.

In conclusion, we believe temporal research is at a critical point of inflection, where research momentum has been building and interest in temporal issues is increasing exponentially. However, we still lack a systematic review of past research to take stock of what has been found and what remains to be accomplished. Thus, our simple goal is to highlight where prior research has incorporated a temporal lens, which will enable us to identify future research avenues that would likely contribute to the literature.

A REVIEW AND CRITIQUE OF PAST TIME RESEARCH

To organize our review, we arranged articles into those that focus on time-related constructs (e.g., polychronicity) versus those that focus on within-person change (e.g., the trajectory of job satisfaction over time). Within these two sections, we discuss three characteristics associated with

temporal research: (*a*) objective versus subjective time, (*b*) time as the focal construct versus the medium for change, and (*c*) timing issues. We review the literature, focusing particularly on the past two decades, selectively presenting studies to provide examples of each type of research.

Time-Related Constructs

A substantial amount of research has considered how individuals differ in terms of temporal constructs, which are typically portrayed as between-person characteristics.[3] In these studies, time is incorporated into a measured construct that is a part of the researcher's conceptual model (i.e., as opposed to simply a medium for change) and it is quite often the focal variable of interest (Sonnentag 2012). In general, research on time-related constructs has focused on how individuals use and manage time versus how individuals think about time.

How individuals use and manage time. One of the initial streams to explicitly acknowledge the importance of time is research on time use (McGrath & Tschan 2004, Schor 1991). Time use studies have predominantly utilized an objective (i.e., actual clock hours) approach to time. Scholars have, however, recently begun to consider the role of subjective time use, particularly for hourly and contract workers (e.g., DeVoe & Pfeffer 2007, 2011; Evans et al. 2004). Time use studies also account for the timing issue of scheduling, insofar as they have focused on how many hours individuals spend at work, on household duties, on leisure, or sleeping (e.g., Wallace 1997). Much of the existing research falls within the domains of work-life balance (e.g., Major et al. 2002) as well as the relationship between individuals' time allocation and their productivity or career outcomes (e.g., Northcraft et al. 2011, Perlow 1999). For example, Bergeron et al. (2013) used a sample of consultants to examine how time allocation between task performance and organizational citizenship behaviors affected career outcomes. They found that in output-based systems (i.e., employees are evaluated by the objective output produced), individuals' allocation of time to organizational citizenship behaviors instead of task performance adversely affected them in terms of salary increases and advancement speed.

Research on time management assumes that individuals differ in their preference for organization, the mechanics of managing time (e.g., making lists, scheduling, prioritizing tasks), and how often they use goal-setting techniques and prioritize tasks (Macan 1994). Thus, research questions connected to time management tend to relate to the timing issues of scheduling, synchronization, and sequencing. When conducting this research, scholars have focused on objective time. Findings from time management studies have demonstrated that greater use of time management, particularly tactics for goal setting and greater organization, led to higher levels of perceived control of time and increased job performance (Barling et al. 1996, Claessens et al. 2004, Macan 1994). Time management continues to be incorporated into a variety of micro-organizational science topics including work-family conflict (e.g., Lapierre & Allen 2012), organizational citizenship behaviors (e.g., Rapp et al. 2013), and task performance (e.g., Claessens et al. 2010).

Another time-related construct is polychronicity. Polychronicity reflects the idea that some individuals prefer to work simultaneously on multiple tasks, switching back and forth among different activities, whereas other individuals prefer to work on one task at a time (Bluedorn et al. 1999, Slocombe & Bluedorn 1999). Thus, polychronicity focuses primarily on objective time, and these studies implicitly consider the timing issue of sequencing (i.e., working on tasks in a specific

[3] As we discuss later, although prior research has typically portrayed these constructs as between-individual differences, which implies relative stability, we believe they can change, develop, and evolve over time.

order). Findings from this stream of research suggest that how an individual chooses to allocate clock time among various tasks or projects is related to a variety of well-being and performance indicators (e.g., Conte & Gintoft 2005, Conte & Jacobs 2003). A few studies have used polynomial regression techniques, finding even more nuanced relationships between polychronicity preferences and job-related outcomes. It seems that the beneficial effects of polychronicity depend on the extent that one's desires for polychronicity are congruent, or fit, with one's actual work (Hecht & Allen 2005, Slocombe & Bluedorn 1999). For example, Hecht & Allen (2005) found that levels of satisfaction and self-efficacy are higher and strain is lower to the extent that an individual has the opportunity to do the degree of polychronic work that they prefer. These researchers also found that individuals reacted more negatively when they experienced a misfit in terms of fewer polychronic work opportunities than desired as opposed to a misfit in terms of more opportunities than desired.

Finally, research on pacing styles focuses on how individuals prefer to allocate their efforts relative to a deadline (Gevers et al. 2006). This construct is based on the passage of objective time, with some studies implicitly addressing the timing issues of rate (how long one works) and scheduling (when this work is scheduled). Typically, an individual prefers either (*a*) a deadline-oriented style, in which individuals procrastinate until the deadline is on the verge of passing; (*b*) a steady style, in which individuals maintain consistent effort from beginning to end of a project; or (*c*) an early, or U-shaped, style, in which much effort is devoted early in a project and may resume as the deadline approaches (Gevers et al. 2006, 2013). Although empirical evidence is just emerging, studies have shown that challenge-related strain is more common for those with a deadline style or a U-shaped style (i.e., pressure is greater from the impending deadline), but that task absorption is greater for those with a steady style or a U-shaped style (i.e., earlier action allows one to lose oneself in a task; Gevers et al. 2013).

How individuals think about time. In contrast to the research reviewed thus far, which focuses on how individuals use time, other time-related constructs address how people think about and perceive time. First, time urgency (a dimension of Type A behavior) refers to a consistent concern with the passage of time, with those higher in time urgency feeling generally hurried across situations (Conte et al. 1998). Studies of time urgency address objective time based on the clock or calendar. These studies tend to address the timing issues of rate (i.e., pace) and scheduling, as time-urgent individuals have a higher awareness of time that relates to list making and deadline control (Conte et al. 1995, Edwards et al. 1990). Moreover, individuals exhibiting a greater degree of time urgency may have more health problems (Conte et al. 1998) but they may also be higher achievers, whether in terms of academic achievement (Conte et al. 1998) or helping coworkers stay on schedule (Waller et al. 1999). A subsequent study by Jansen & Kristof-Brown (2005) showed that the hurriedness dimension of time urgency is an important element of person-environment fit, with satisfaction and helping behaviors maximized when individuals' hurriedness matches that of their work environment.

A second construct that considers how people think about time is temporal depth. Temporal depth refers to an individual tendency to concentrate on a particular temporal distance (i.e., length of time into the past or future) as people think about events and decisions (Bluedorn 2002), which implicitly refers to the timing issue of timescales. Although Bluedorn & Jaussi (2008) have suggested that temporal depth could be viewed in either objective or subjective time, empirical work on the topic tends to rely on objective time only. Temporal depth is most commonly treated as the focal construct of these studies; it is generally characterized as an individual difference. Individuals with a high degree of past temporal depth prefer to work at a slower pace and are less flexible with their work (Bluedorn & Martin 2008). In contrast, individuals with a future temporal

depth entertain a longer-term planning horizon (Das 1987), exhibit higher levels of organizational citizenship behaviors (Joireman et al. 2006), are more efficient negotiators (Sondak et al. 1995), and experience less strain in life (Bluedorn & Martin 2008). Some additional studies have manipulated temporal depth (e.g., Joireman et al. 2006, Okhuysen et al. 2003), thereby shifting individuals' attention to longer or shorter temporal depths as required by the situation.

The last temporal construct that encompasses how people think about time is temporal focus,[4] defined as the extent to which individuals characteristically direct their attention to the past, present, or future (Bluedorn 2002, Shipp et al. 2009, Zimbardo & Boyd 1999). Because thinking about the past or future suggests that individuals can repeatedly relive or pre-live experiences, temporal focus relates specifically to subjective time. Although early research assumed that individuals were capable of focusing only on one time period (e.g., Waller et al. 2001, Zimbardo & Boyd 1999), it has recently been shown that the three temporal dimensions of past, present, and future are mutually interdependent (Shipp et al. 2009). It also appears that one's temporal focus is influenced by national culture (e.g., Bluedorn 2002, Guo et al. 2012, McGrath & Tschan 2004), yet it can be manipulated with an experimental design (Cojuharenco et al. 2011, Foo et al. 2009, Guo et al. 2012).

In regard to empirical relationships, studies have demonstrated that individuals with a relatively high past temporal focus report higher levels of neuroticism, have an external locus of control, are more likely to be pessimistic (Shipp et al. 2009), and are more concerned about interactional justice compared with individuals with a low past temporal focus (Cojuharenco et al. 2011). Individuals with a high present temporal focus also are concerned about interactional justice (Cojuharenco et al. 2011), but they tend to take more risks, are more likely to be optimistic, and have higher levels of life satisfaction and extraversion compared with individuals with a low present temporal focus (Shipp et al. 2009). In comparison to research on past and present temporal focus, a greater number of studies have examined future temporal focus. Individuals with a high future temporal focus tend to have a stronger internal locus of control and higher levels of extraversion and conscientiousness (Shipp et al. 2009, Zimbardo & Boyd 1999). They also perform more organizational citizenship behaviors (Balliet & Ferris 2013), are more adaptable in their careers (Zacher 2014), and are more concerned with distributive justice (Cojuharenco et al. 2011). Finally, Shipp et al.'s (2009) findings suggest that temporal focus preferences impact how individuals use past, present, and future information to inform their interpretations of and responses to current work events. This implies that the construct of temporal focus may play an important role when individuals participate in research (e.g., interpreting survey items), and by extension, it has implications for many topics within organizational science (Shipp & Fried 2014).

Conclusions about time-related constructs. Our review of time-related constructs has uncovered several interesting points. First, we noted that all the studies we reviewed tend to use time as a focal construct in their conceptual models, giving time the spotlight in each article. As such, much of the work in these areas has focused on the development of psychometrically valid measures, with fewer empirical studies incorporating these constructs into more mainstream research topics (e.g., leadership, motivation, decision making) within organizational science. Shipp & Fried (2014) similarly observed that temporal research and mainstream management research have tended to

[4]The concept of temporal focus is sometimes referred to as temporal (or time) orientation, time perspective, or time personality (e.g., Holman & Silver 1998). We follow the lead of Bluedorn (2002) and Shipp et al. (2009), who argue that the term temporal focus distinguishes a tendency to focus one's attention on different periods of time from other temporal constructs (see Shipp et al. 2009 for a more detailed discussion).

coexist in isolated silos of knowledge specialization. This is unfortunate because individuals' experiences at work are inherently temporal (Lewin 1943). Okhuysen & Bonardi (2011) have likewise noted that "[a]s a practical field, management deserves attention from a multiple-lens perspective because the phenomena within it can often be explained using different theoretical approaches" (p. 6). Echoing Shipp & Fried (2014) and Okhuysen & Bonardi (2011), among others, we concur that a bridging of perspectives will yield not only new theoretical developments but also new explanations for previously unexplained management phenomena.

Second, the vast majority of empirical work on time-related constructs focuses on objective time, overlooking the potential role of subjective time (with the exception of temporal focus). Interesting conclusions have emerged from research on the perceived value of time (e.g., DeVoe & Pfeffer 2011), in which a lens of subjective time is applied to research that was previously considered only through the lens of objective time. This is a notable extension to the literature, and we suspect many more interesting findings could follow to the extent that subjective time is explicitly considered, a point we address in our future agenda.

Finally, we noted that some but not all timing issues were addressed by the time-related constructs. For example, the timing issue of scheduling was invoked by many of the time-related constructs we reviewed. Nevertheless, other timing issues such as duration, rate, pattern, timescales, and time lags either were not adequately discussed or were neglected altogether. Perhaps one reason why is that many of the studies reviewed above either are cross-sectional or simply separate temporally the measurement of independent and dependent variables. Such an approach overlooks the need to understand duration, pattern, and time lags and assumes that time-related constructs are fixed or time invariant with trait-like stability. To our knowledge, no existing research has considered that the direction and magnitude of these constructs may fluctuate over the span of months, years, or even the length of a career. Studies have, however, manipulated temporal focus (Foo et al. 2009) and temporal depth (Okhuysen et al. 2003). Though more research is needed, these findings suggest that there could be meaningful variation in the experience of and responses to a situation's contextual cues. Beyond this, we also find it plausible that time-related constructs may change over time owing to major events or the accumulation of experiences in one's life, much like elements of an individual's personality can change over time (cf. Roberts et al. 2006). Thus, we believe longitudinal, within-person studies of these time-related constructs are needed to better understand these phenomena and their relationships to important job-related outcomes.

Within-Person Change over Time

The second type of research that addresses temporal issues is the study of processes (i.e., how one or more constructs change over time), which has seen rapid growth in the past decade (Beal 2012). Whereas within-person research in micro-organizational science was almost nonexistent just 20 years ago, researchers now realize there is meaningful within-person variation on any number of constructs of interest to micro-organizational scholars. Also known as longitudinal research (Ployhart & Vandenberg 2010), this approach uses repeated measurements from the same individuals as they experience their daily work lives, with an emphasis on substantive constructs that fluctuate, evolve, and develop over time. In doing so, a researcher is interested in investigating how a particular process or construct can change within the context of time but not because of time (Pitariu & Ployhart 2010). For example, time does not cause recently hired employees to adopt their new organization's values. Nevertheless, the passage of time enables a researcher to observe socialization processes that may explain why or how employees adopt their employer's values.

Because of the emphasis on construct change, objective time typically represents a convenient metric for portraying a theoretically important change process (Ployhart & Vandenberg 2010).

Dynamic within-person processes receiving scholarly attention span a number of research streams. For example, within-person variation has been examined in studies of individuals' thoughts and feelings, including affective experiences (e.g., Beal & Ghandour 2011, Ilies & Judge 2002); job attitudes (e.g., Boswell et al. 2009, Chen et al. 2011); justice reactions (e.g., Ferris et al. 2012, Loi et al. 2009); stress, burnout, and reactions to change (e.g., Dunford et al. 2012, Fuller et al. 2003, Lang & Bliese 2009); and turnover intentions (e.g., Bentein et al. 2005). Similarly, within-person research has appeared in the study of behavior, including newcomer adaptation (Chan & Schmitt 2000, Chen 2005, Lance et al. 2000), expatriate adaptation (Bhaskar-Shrinivas et al. 2005, Firth et al. 2014), goal setting (e.g., Ilies & Judge 2005, Schmidt & DeShon 2007, Schmidt et al. 2009), leadership development (Day & Sin 2011, Nahrgang et al. 2009), and task and contextual performance (e.g., Spence et al. 2011, Sturman & Trevor 2001). In many (but not all) of these studies, the focus is on understanding the process and how individuals adjust and adapt over time (cf. Helson 1964, Kahneman 1999). Most of these studies are quantitative in nature; however, qualitative studies also examine individuals over time, particularly as it relates to spirals, cycles, and event-based models (e.g., Amabile et al. 2005, Gersick 1988, Pratt et al. 2006, Wanberg et al. 2012).

Unlike time-related constructs, which cluster into groups of studies that examine a particular construct related to time (e.g., time use, temporal focus), the commonalities among within-person temporal phenomena occur in how researchers conceptualize and measure time as context. Thus, in our review of the within-person research, we noted several ways to examine within-person processes involving variability or growth trajectories.

Descriptive time-based research. The first of these approaches focuses on variation within a single variable over time to discern patterns of change (e.g., linear or nonlinear trajectories) and the rate of change (e.g., when and how quickly does the trajectory change?). Ployhart & Vandenberg (2010) term this research descriptive because the aim is to describe how the trajectory of a focal variable fluctuates across the passage of time. This approach is a good first step for examining the role of time in a particular phenomenon. For example, Boswell et al. (2005) examined the trajectory of individuals' job satisfaction as it relates to time at a new job. Using a sample of individuals who had changed jobs, they found that satisfaction was lower prior to securing a new position, increased after starting a new job (i.e., a honeymoon effect), but then leveled out over time (i.e., a hangover effect). Interestingly, we located only a few studies that fall within this descriptive category (e.g., Bhaskar-Shrinivas et al. 2005, Zyphur et al. 2008). Yet, descriptive research is likely more important than it appears at first glance given the number of topics for which the direction and magnitude of variable change are still unknown.

Explanatory time-based research. Ployhart & Vandenberg (2010) have described explanatory longitudinal research as building upon descriptive research, wherein predictor variables are added to explain the change being studied. We see additional distinctions within explanatory research, leading us to identify three subcategories. The first is research that uses repeated measures, within-person data to identify trends (e.g., ruling out a decrease in the variable over the course of the study) and to better test the underlying nature of the relationships between variables through lagged and cross-lagged analyses. In these studies, the conceptual focus is not on the trajectory of change per se but upon using within-person variation rather than between-person variation to test the proposed associations among constructs. For example, Fuller et al. (2003) examined the synchronous and lagged effects of stressful events and mood on job satisfaction, finding that both predictors had an effect on satisfaction levels over time. In examining these effects, however, these researchers controlled for job satisfaction's overall trajectory (e.g., job satisfaction levels declined over the time

span of the data collection). Other examples include the relationships between intraindividual fluctuations in justice perceptions and regulatory resources (Johnson et al. 2014), the interplay of emotions and fatigue (Beal et al. 2013), and how daily events at work lead to variation in personality states (Judge et al. 2014). Thus, unlike descriptive research, which is most interested in a variable's trajectory over time, research in this first explanatory subcategory is focused more on the relationship between two (or more) variables using within-person variation as evidence of change. This approach is rapidly advancing our understanding of workplace phenomena as they are truly experienced by individuals over time, but it has little to say about the pattern of these variables over time (i.e., meaningful trajectories and cycles).

The second subcategory of explanatory research focuses more explicitly on a focal variable's trajectory. For example, to investigate the pattern of job burnout over time, Dunford et al. (2012) studied a broad sample of health care employees (with five measurement points spaced at approximately six-month intervals over a two-year time span). Using a moderating variable of employee type, they found that newcomers reported lower levels of emotional exhaustion when they started the new job but also showed a stronger increase in emotional exhaustion over time compared with internal job changers or job incumbents. Another example of this type of research comes from Hausknecht et al. (2011), who showed how individuals' justice trajectories offer unique predictions (over and above mean levels of justice perceptions) on their levels of satisfaction, commitment, and turnover intentions.

The third subcategory of explanatory research adds within-person dynamism in all variables, such that a change in the predictor leads to a change in the outcome over time. Such research has responded to recent entreaties to utilize state-of-the-art data analytic procedures and thus take full advantage of repeated-measures data for understanding within-person change (McArdle 2009, Ployhart & Vandenberg 2010). Some studies of this type focus on how a trajectory of a variable influences the time to an event, such as using survival analyses to model individuals' trajectories of satisfaction and organizational commitment as predictors of the time to turnover (Kammeyer-Mueller et al. 2005). Other research in this subcategory conceptualizes within-person change as a distinct latent construct that reflects the extent to which an individual's perceived level of a dynamic process has shifted between time periods (e.g., day-to-day, week-to-week). For example, using a three-wave longitudinal design with a sample of medical center employees, Toker & Biron (2012) sought to unravel the temporal relationship between depression and job burnout. Results suggested a reciprocal relationship wherein an upward change in depression from Time 1 to Time 2 predicted an upward change in job burnout from Time 2 to Time 3, and vice versa (i.e., a feedback loop over time). More recently, Taylor et al. (2014) have extended this modeling approach to a trivariate framework. Using a six-wave longitudinal design, they found that an upward change in workplace incivility led to a subsequent upward change in job burnout, and in turn, job burnout change led to a subsequent upward change in turnover intentions.

Conclusions about within-person temporal phenomena. Our review of within-person temporal phenomena left us with several conclusions. First, we noted that most within-person studies view time as solely the medium for construct change, without incorporating time-related constructs as the primary theoretical interest. By this, we mean that longitudinal studies frequently frame time more as a methodological choice than as temporal factors playing a role central to theory development. This approach is quite different from the reviewed research on time-related constructs, in which the temporal phenomena are focal variables in researchers' conceptual models. Thus, we wonder why these two domains of research have advanced independently of one another as opposed to being fully integrated. Scholars need to consider that time may not just advance our methods (i.e., longitudinal data is a better choice than cross-sectional data), but that the study of

time itself may advance our theories by offering new directions for studying existing constructs and processes.

Second, within-person studies based on repeated measures offer great advancements over cross-sectional, static research, such as the ability to develop and test stronger hypotheses of truly dynamic phenomena (Pitariu & Ployhart 2010). Despite these advantages, it is not clear when we as researchers have entered the dynamic process being studied. Many studies (including our own) code their first observation as Time 0 as if it is the true beginning of a process. But in many cases, Time 0 simply represents the beginning of the repeated measurement (the observation window; Zaheer et al. 1999), whereas participants are already embedded in their work context. As Pettigrew (1990, p. 268) keenly observed, scholars have the challenge of "catching reality in flight." How do we know that we have actually captured the entire process and not simply a portion of the process? Even studies of newcomers fail to note that one's first day of employment does not represent the true "beginning." Newcomers usually have work histories that provide a context for their new job (e.g., Boswell et al. 2005, 2009). As organizational scientists, we need to do a better job acknowledging that our studies are entering into preexisting situations and we have little evidence for how individuals' previous experiences have shaped their current perceptions (Johns 2006, Rousseau & Fried 2001).

Third, we concluded from our review that objective time is emphasized heavily in within-person studies, whereas the role of subjective time is typically overlooked. That is, almost every study considered only the actual passage of time based on the clock or the calendar. What this means is that subjective thoughts about time are underexplored in longitudinal research, although individuals naturally engage in "mental time travel" through retrospections and anticipations (Wheeler et al. 1997, p. 331). Although a few studies have focused on retrospections and anticipations at one point in time (e.g., Cojuharenco et al. 2011, Grant & Wrzesniewski 2010, Rodell & Colquitt 2009), very little work has examined retrospections and anticipations longitudinally (for one exception, see Mitchell et al. 1997). This dearth suggests that there is limited empirical evidence to support or reject organizational theories that consider how retrospected and anticipated experiences provide the context, or narrative, for understanding and making sense of one's present experiences (e.g., Ashforth et al. 2014, Ibarra & Barbalescu 2010, Shipp & Jansen 2011).

Finally, timing issues are discussed to a greater extent in studies of within-person temporal phenomena than in studies of time-related constructs. We observed that the discussion of patterns, particularly the functional form of trajectories over time, was at the heart of some within-person research, particularly descriptive time-based research. Further, ideas about duration and rate are central to all survival analysis studies. Although feedback loops were mentioned in some of these studies, we noted that few studies empirically examined the potential for reciprocal or cross-lagged associations. Our view is that considering the role of feedback loops, cycles, and spirals is a natural next step for within-person explanatory research. Other timing issues were infrequently addressed. For example, the timing concepts of scheduling, synchronization, and sequencing seem to be less of an interest. Further, timescales and time lags were only occasionally addressed and, even then, seemed to be more of an afterthought or issue of convenience, such as when discussing data aggregation periods (e.g., how wide of a window of time to sample).

TIME RESEARCH: OUR CURRENT STATE AND A FUTURE AGENDA

The nature of time and how individuals relate to the passage of time are not new concepts. Indeed, ideas about time can be traced back thousands of years to philosophers such as Aristotle and Plato. But relative to the history of philosophers' interest in time, the topic has only recently become the focus of study in social science disciplines, including organizational science (Bluedorn 2002). That

being said, our review demonstrates that research on time has advanced quite well in some areas but not as well in other areas. We see a number of knowledge silos that we suspect promote a schism between potentially useful time-related insights and mainstream management research (Shipp & Fried 2014). It appears that time as it pertains to individuals within organizations may remain in what has been characterized as the first stage of scientific research development, in which no dominant paradigm exists (Kuhn 1970).

Without question, then, we maintain that additional theoretical and empirical developments are needed to fully understand the role of temporal issues in organizational science. After considerable reflection on our review, we have identified four important topics for future researchers to consider to help advance the study of time. Unless a multiple-lens perspective (Okhuysen & Bonardi 2011) is adopted, in which temporal and mainstream topics are considered simultaneously, organizational scholars will be unable to deepen their understanding of organizational phenomena. Thus, for each identified concern, we suggest ways in which scholars may address these challenges as future research opportunities.

Consider Both Objective Time and Subjective Time

As noted above, studies that have incorporated some form of temporal component (whether a time-related construct or a within-person phenomenon) tend to think of time as being objective. For whatever reason, subjective time is not receiving much research attention. As a result, very little is known about the perceived passage of time as a psychological construct, its role in organizational science, and whether (or how) individuals retrospect and anticipate future work experiences to make sense of the current moment. We thus encourage future studies to acknowledge the potential roles of both objective and subjective time. In fact, as **Figure 2** shows, by crossing objective and subjective time in a two-by-two format, four different combinations are associated with these two views of time. Although we discuss these categories separately, we use dashed lines between them to acknowledge that they are not purely categorical but could vary in degree (e.g., research streams that are progressing from previously contemporaneous views to greater acknowledgment of dynamism).

Beginning with the lower-left quadrant of the figure, much of the existing work in our field has incurred a temporal blind spot, in which time is overlooked and neither objective nor subjective time is viewed as important. In this way, theory and method may reflect assumptions that (*a*) independent and dependent variables occur at the same time, (*b*) temporally separating independent and dependent variables in time is a longitudinal design, or (*c*) time is simply not a relevant issue. In contrast, much of the work on within-person temporal phenomena that we reviewed falls squarely into the category of clock-time dynamism. In this category, the passage of clock time is a prerequisite to examine the temporal relationships between independent and dependent variables, yet individuals' subjective perceptions of time are not important relative to the actual passage of clock time. This view of clock-time dynamism is also shared by many of the time-related constructs such as time urgency, polychronicity, and time use. These latter research streams contend that the ways in which individuals think about and use time based on the clock or calendar are theoretically and practically meaningful. The third category, interpretive, reflects work that focuses squarely on subjective time, such as how individuals' cognitions about the past and future (i.e., retrospections and anticipations) can affect current outcomes. On the basis of our review, we noted that very few research streams populate this category, with only temporal focus representing this group. The fourth and final category reflects completely temporal research, in which a stream of research views both objective and subjective time as important. This type of research integrates the passage of clock time with individuals' perceptions of time to more fully

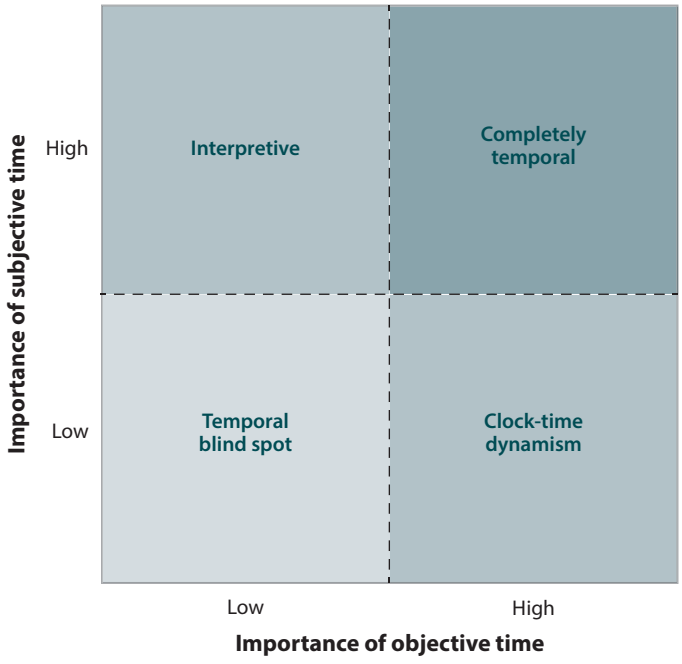

Figure 2

The importance of objective and subjective time in organizational science.

examine past/retrospected, present, and future/anticipated causes and effects. Although some theoretical work can be placed in this category, it is rare to find empirical research that explicitly examines both objective and subjective time in theory and method (Mitchell et al. 1997 is one exception).

Considering how these four categories are more or less populated is quite exciting to us. It appears that more and more studies are moving from a temporal blind spot to clock-time dynamism, with longitudinal, repeated-measures studies becoming more common in micro-organizational science. This trend alone is a critical step in the right direction (cf. Ployhart & Vandenberg 2010). However, the interpretive and completely temporal categories remain underexplored. In fact, going forward one might argue that future research should avoid research designs that commonly fall within the temporal blind spot category (with the possible exception of a nascent research topic). This type of research is most often conducted using a cross-sectional research design that is static in nature and thus cannot speak to the rich reality that most (if not all) of the theory within the organizational sciences is fundamentally temporal.

To illustrate the possibilities associated with our suggestion to consider both objective and subjective time, we refer to an article on conflict (Tjosvold et al. 2014) from the first volume of the *Annual Review of Organizational Psychology and Organizational Behavior*. Tjosvold et al. (2014) invoke a process-based view of conflict that plays out over time, meaning that the theory of conflict is inherently dynamic. Thus, we would expect that studies of conflict should test hypothesized relationships with repeated-measures-research designs. In spite of this, the empirical literature reviewed by Tjosvold et al. (2014) demonstrates more of a temporal blind spot perspective, leading them to make yet another call for longitudinal research to test the proposed relationships in a manner consistent with conflict theory.

We agree but we take this recommendation a step further. Why stop at considering time as simply objective time? If scholars should adopt a completely temporal view, then subjective time also must be incorporated. For example, the conflict literature has seemingly overlooked the roles of recollected conflict and anticipated conflict. These aspects of subjective time are important for understanding an individual's response to a current conflict. For example, two individuals may experience the same present-day conflict, but their reactions may differ if for one individual this was the first instance of conflict, whereas the other individual recalls a previously experienced conflict (e.g., "That's what you said last time. . ."). Alternatively, an individual's response to a present-day conflict could differ when additional conflict is anticipated (e.g., "I don't want to make a big deal now because my boss might hold it against me in the future"). Thus, examining individuals' retrospections and anticipations of conflict may better explain how individuals react to current conflict. As our examples demonstrate, incorporating a completely temporal view with both objective and subjective time can help researchers (in many streams of research) elaborate on organizational phenomena in greater depth.

Consider Time as a Focal Construct, Not Just as Background

Another conclusion from our review is that, when time is considered by researchers, more studies view time as providing the context needed to explore dynamic relationships as opposed to time being a focal construct in their conceptual models. As a result, temporal issues often are framed as methodological rather than theoretical choices. Whereas studies of time-related constructs have ample theory about how, when, and why time plays a substantive role, we found that most within-person studies relegate time to a supporting role—that is, simply the medium through which change occurs.

Although we concur that temporal context matters, what a purely contextual perspective overlooks is that time may be an issue not just in the background but in the foreground as well. Consider the example of how studies of affect over time often control for the predictable daily or weekly cycles of affect (e.g., Trougakos et al. 2014). By controlling for this cyclic variation, these types of studies seem to view cycles as methodological issues that may confound the hypothesized within-person effect. Cycles can, however, provide important insight into the human experience within a workweek; Mondays fundamentally feel different from Fridays (Zerubavel 1981). Controlling for these cycles so that one can focus on the hypothesized relationships among variables over time is like conducting a study in multiple countries and controlling for national culture. Does such an approach allow us to focus on certain variables? Of course; but it also could disregard a substantial, meaningful influence that better reflects the reality of individual behavior.

Returning again to Volume 1 of this journal, we found the review on job burnout (Bakker et al. 2014) useful for demonstrating our points. Articles covered within this review often utilized a time lag of multiple years to give ample time for burnout to unfold. We are encouraged by the acknowledgment that burnout levels may fluctuate with the passage of time. Nonetheless, we also see opportunities for additional ideas about the concept of time itself. Although existing research on burnout has separated the independent and dependent variables, very few studies focused explicitly on the meaning of time in these dynamic processes. If burnout is indeed process based, then theoretical and empirical work should focus explicitly on the functional form of individuals' burnout trajectories and possibly integrate time-related constructs as well. For example, the process of burnout may unfold differently for individuals with different levels of time urgency, with highly time-urgent individuals experiencing steeper trajectories of emotional exhaustion as they forego recovery opportunities. Further, adding in an explicit focus on what individuals recollect and anticipate about burnout at other points in time could offer additional insights for explaining

how dynamism in these variables takes effect. It is possible that the reason emotional exhaustion builds over time is because individuals may not anticipate an ending to resource loss and therefore conclude that they cannot cope. As this example clearly illustrates, incorporating an explicit focus on time itself can open up many avenues for new theory beyond a simple view of time as context.

Consider Many More Timing Issues

A third conclusion from our review is that timing issues such as duration, patterns, cycles, and time lags need more attention in repeated-measures research. Over a decade has passed since Mitchell & James (2001) called for greater understanding of when things happen. On the basis of our review, however, we concluded that several timing-related problems exist in the micro-organizational literature. Many studies do not theorize the specific pattern of the underlying process, such as specifying when a process will begin and end or precisely when in time a change is expected. Some of the explanatory (i.e., within-person) studies we reviewed are moving in this direction, but we would be hard pressed to describe which areas of study have identified the underlying trajectories and cycles associated with focal constructs. Even the most basic and predictable cycles of circadian rhythms do not figure prominently in most micro-organizational science research (e.g., Barnes & Wagner 2009). If we cannot articulate the descriptive trajectory for a phenomenon, how can we expect scholars to examine the more complex nature of explanatory trajectories that are moderated, mediated, or both? We contend that, although it may seem like a step backward, in many areas descriptive within-person research may need more attention before explanatory research can proceed.

We also found it frustrating to see how many studies discussed Time 0 as if it were the beginning of the underlying process rather than just the beginning of the observation window (Zaheer et al. 1999). Similarly, when variables were measured at Time 1, Time 2, or beyond, rarely did studies provide a grounded rationale for the lag between each time period. We also observed that studies of the same topic often use different time lags, which means these researchers could draw different conclusions because of the chosen time points in which the data were captured (cf. Ployhart & Vandenberg 2010). Time lags are incredibly important for ensuring that the measurement periods to capture a phenomenon coincide with theoretically meaningful periods. Yet because scholars do not thoroughly understand the duration and patterns of phenomena (i.e., precisely when a trajectory would increase, decrease, change direction, or loop back to the beginning), there is little guidance about which time lags to select. As a result, similar to Mitchell & James's (2001) conclusion, we suspect that scholars are still guessing at the appropriate times to measure. We suggest that scholars should address these timing issues first theoretically and then methodologically. In this connection, journal editors and reviewers should expect a manuscript to address pertinent timing issues and, if it does not, such information may be requested in a revision.

To see how an area of research may address timing issues more explicitly, consider an additional review on work-family issues (Allen et al. 2014) from Volume 1 of this journal. These scholars describe explicitly the theoretical importance of temporal borders, time management, and temporal flexibility in scheduling. They also observed that the empirical work examining these concepts is mostly cross-sectional. This means that the empirical evidence to date cannot speak to the inherent trajectories, cycles, and time lags that exist in their conceptual models. For instance, it is possible that individuals have a cyclic pattern of interacting with work colleagues and family members, but this may occur daily or hourly or even by minute. Further, the trajectories of outcomes associated with these work-family cycles, such as how and when intraindividual strain changes as a result of the work-family process, would be interesting to examine. Does it do so in a linear fashion, increasing over time, or in a discontinuous fashion whereby a tipping point is

reached and a person moves from a low level to a high level of strain? Additionally, timing issues such as timescales and time lags will be critical to understanding this process by ensuring that the timing of the data collection efforts matches the timing of the actual change. Qualitative research may be needed to ask individuals precisely when things happen. Timing issues, such as when these issues arise, how long they last, when they change, and when they end, are in need of more attention in many streams.

Acknowledge Reality: Time Research Takes Time

Finally, given our suggestions above, we find it necessary to acknowledge the reality of time research. With what is a changing tide of both theory and data to a dynamic or even completely temporal view, scholars will need to adopt longitudinal research with repeated measures, including retrospected and anticipated variables where relevant. Though some interpretive topics (e.g., retrospective and anticipatory sense making) may be studied in a cross-sectional design, we continue to maintain that greater insights can be gained by incorporating both subjective and objective time lenses. Make no mistake: This is a time-consuming endeavor and one that is not necessarily rewarded by most tenure and promotion systems. In most longitudinal studies, data collection takes months, possibly even years, to complete. Moreover, data analytic methods for analyzing repeated-measures data are advancing at an exponential rate. How will graduate students and assistant professors embark on a temporal journey when time to complete their work is limited? Some may suggest that these long-term studies are better left to those beyond the tenure hurdle. Yet addressing only short-term work for the duration of the tenure clock may instill poor habits that are later hard to break. As a field, we must consider how evaluation and reward systems may inadvertently discourage the adoption of a temporal lens.

In addition, because attrition of respondents over time is a given in longitudinal studies, scholars need access to large samples, perhaps across multiple units or locations. This means that research teams must partner with practitioners to gain not only access but cosponsorship of long-term, large-scale longitudinal studies. If we are to fully understand how individuals operate within the temporal context of work, practitioners and scholars must work together to enable these more intensive data collection efforts. This notion suggests that doctoral programs or workshops at conferences may need to provide targeted training for how to cultivate such academic-practitioner partnerships. Doctoral students spend many years learning theory and method in their PhD programs, but those skills are all for naught if they cannot sell a longitudinal research proposal to a practicing manager.

Practical Implications

To this point in the review, we have spoken directly to researchers to suggest why and how temporal topics should be considered in their conceptual frameworks and research designs. But our review also sheds some light on two interesting practical implications. First, we believe micro-organizational science has a long way to go to fully understand the temporal aspects of individuals at work. To make matters worse, as scholars begin using rich longitudinal data to test more comprehensive theories, we may find that previous practical inferences based on cross-sectional research are erroneous. For example, prior conclusions from cross-sectional studies may change direction or significance when examined through a more appropriate longitudinal lens (Ployhart & Vandenberg 2010). One can only speculate on how many workshops, seminars, and organizational training programs are currently being conducted on the basis of ambiguous and possibly inaccurate research results.

In addition, with the abundance of data on employees and customers (i.e., big data) now being collected, managers and human resource professionals may favor more simplistic measures and relationships as a means to manage the magnitude of available data (cf. George et al. 2014). As such, they may forget that individuals always operate within the context of their past and their future, something big data may not be designed to address. Thus, similar to researchers, practitioners and organizational decision makers may benefit from examining individuals' attitudes, intentions, and behaviors within objective and subjective time. Whereas big data are capable of generating rich longitudinal studies with repeated measures (if data points can be matched over time), humans recollect the past, forecast the future, and can experience the passage of time differently. Thus, without a completely temporal view, organizations may risk incorrect selection decisions, misguided training and development initiatives, or irrelevant career management and succession plans.

CONCLUSION

In conclusion, attention to time by organizational science scholars has been increasing but in an unsystematic way. Existing insights into how individuals think about time, use their time, and change over time are likewise dispersed across a variety of research domains. Scholars for whom time is not a primary interest may be unfazed by such haphazard progress. In contrast, scholars newly interested in temporal topics may see the scattered progression of temporal ideas as confusing or missing an opportunity for systematic progress on a topic important to so many research streams. However, the upside of the challenges we have noted is that today's unanswered questions provide ample future research opportunities. Indeed, we believe that incorporating a temporal perspective is a critical evolution to move our field to the next stage of theoretical and empirical sophistication. We are excited to see the future of time research!

FUTURE ISSUES

1. Scholars need to pay attention to both objective time and subjective time to create a completely temporal view. Future researchers should avoid temporal blind spot research based on cross-sectional designs.
2. Within-person, longitudinal studies need to consider time as theoretically important (e.g., focus on time itself or add time-related constructs), not solely as the medium through which things change.
3. Timing issues such as patterns, duration, cycles, and time lags need to be studied more frequently in almost every area of research.
4. Adopting a temporal lens into one's focal research topic takes time. Scholars should be prepared to balance their pragmatic needs for research productivity and the time-consuming reality of research on temporal phenomena.

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