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How have we, do we, and will we measure time perspective? A review of methodological and measurement issues

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Summary

Despite the demonstrated importance of time perspective on key outcomes, its growing popularity, and its wide reach in terms of samples and disciplines, the construct has been plagued with definitional and measurement problems since its inception. Given the historical and current confusion regarding both conceptualization and operationalization, the purpose of this article is to provide an overview of methodological and measurement issues related to time perspective. Clearly, definitional and measurement clarity are critical for the success of future research. Through integrating the fragmented and eclectic time perspective literature fraught with ambiguity, we help to clarify measurement options and their psychometric evidence for future researchers. Specifically, we provide an in-depth comparison of four (and their offshoots) commonly used, scale-based measures of time perspective with respect to their dimensional content, psychometric properties, and validation evidence. We end with recommendations for time perspective research.

KEYWORDS

future time perspective, measurement, temporal focus, temporal individual differences, time perspective

> Concepts such as psychological past and psychological future, for example, are subject to many interpretations, and the results of any empirical investigation of time perspective derived from Lewin's formulation are ambiguous unless adequate definitions of these terms are presented … Another obstacle in the way of adequate research in this area is the difficulty in selecting an appropriate methodology. (Wallace & Rabin, 1960, p. 230)

> In summary, there remains considerable inconsistency in the way that FTP [future time perspective] is conceptualized, the dimensionality of the construct, and the way that the construct is assessed. (Kooij, Kanfer, Betts, & Rudolph, 2018, p. 869)

1 | INTRODUCTION

Time perspective is a temporal individual difference capturing the extent to which people subjectively remember the past, live the moment in the present, and/or anticipate the future (Husman & Shell, 2008; Shipp, Edwards, & Lambert, 2009). The importance of time perspective is evident from its far-reaching influence on many key cognitions, attitudes, decisions, and actions (Andre, van Vianen, Peetsma, & Oort, 2018). To illustrate, time perspective is a fundamental determinant of self-regulation (e.g., Bandura, 1986; de Bilde, Vansteenkiste, & Lens, 2011), goal setting (e.g., Adelabu, 2008; Seijts, 1998), attentional focus (e.g., Shipp et al., 2009), risk taking (e.g., Zimbardo, Keough, & Boyd, 1997), achievement (e.g., Bembenutty & Karabenick, 2004; Simons, Vanteenkiste, Lens, & Lacante, 2004), mental health (e.g., Wallace & Rabin, 1960; Webster, Bohlmeijer, & Westerhof, 2014), financial

knowledge and entrepreneurship (e.g., Gielnick, Zacher, & Wang, 2018; Jacobs-Lawson & Hershey, 2005), environmental engagement (Arnocky, Milfont, & Nicol, 2014; Milfont, Wilson, & Diniz, 2012), healthy behaviors (e.g., Adams & Nettle, 2009; Keough, Zimbardo, & Boyd, 1999), and well-being (e.g., Holman, Silver, Mogle, & Scott, 2016; Prenda & Lachman, 2001; Stolarski, Fieulaine, & Zimbardo, 2018).

Specifically, a recent meta-analysis of 212 studies across 65 years concluded that future time perspective was positively correlated with grade point average, life satisfaction, subjective health, physical exercise, and financial knowledge (Kooij et al., 2018). As expected, future time perspective was also negatively associated with anxiety, depression, substance abuse, and risk behavior (Kooij et al., 2018). The key conclusion of another meta-analysis of 77 independent samples was that cognition, affect, and intentions about the future exert a significant influence on health, work, and educational outcomes (Andre et al., 2018). Moreover, occupational future time perspective (reflecting how much time and opportunities individuals perceive having left in their working future) was found to positively predict task and contextual performance as well as work engagement, job satisfaction, organizational commitment, and work continuance intentions in a recent meta-analysis of 40 independent studies (Rudolph, Kooij, Rauvola, & Zacher, 2018).

Findings demonstrating the importance of time perspective have fueled the growing popularity of the construct, especially since 2000 (Kooij et al., 2018). The range of study samples examining time perspective is expansive, including children (e.g., Gjesme, 1975, 1979), adolescents (e.g., Lyu & Huang, 2016; McKay, Percy, Goudie, Sumnall, & Cole, 2012; Mello & Worrell, 2007), seniors (Hershey & Mowen, 2000), cancer survivors (Guarino, DePascalis, & DiChiacchio, 1999), homeless people (Epel, Bandura, & Zimbardo, 1999), traumatized individuals (Holman & Silver, 1998), military cadets (Zimbardo & Boyd, 1999), undergraduates (e.g., Strathman, Gleicher, Boninger, & Edwards, 1994), and samples from all over the world (e.g., Konowalczyk et al., 2018). In addition, the interdisciplinary reach of time perspective extends to educational psychology (e.g., Simons, Vansteenkiste, Lens, & Laçante, 2004), gerontology (e.g., Brothers, Chui, & Diehl, 2014; Prenda & Lachman, 2001), lifespan development (e.g., Carstensen, 2006), health psychology (e.g., Adams & Nettle, 2009), temporal psychology (e.g., Lyu & Huang, 2016), organizational science (e.g., Nadkarni & Chen, 2014), social psychology (e.g., Zimbardo & Boyd, 1999), and cross-cultural psychology (Sircova et al., 2014).

Despite the demonstrated importance of time perspective on key outcomes, its growing popularity, and its wide reach in terms of samples and disciplines, the construct has been plagued with definitional, conceptual, methodological, and measurement problems since its inception. In addition to the same term defined in diverse ways, different terms have been used to describe time perspective or specific components of it, including time/temporal orientation (Holman & Silver, 1998), time attitude (Nuttin, 1985), time personality (Francis-Smythe & Robertson, 2003), and temporal focus (Shipp et al., 2009). For example, in an early review, Wallace and Rabin (1960) commented that time perspective and time orientation were used interchangeably and that neither concept was adequately defined. Zimbardo and Boyd (1999) also equated "time perspective" and "time/temporal orientation." In contrast, Shipp and colleagues differentiate temporal focus as a component of the broader concept of time perspective (Shipp et al., 2009).

In the current paper, we use the more commonly applied term of time perspective to refer to a temporal and multidimensional individual difference capturing the extent to which people subjectively focus on past, present, or future time frames. However, we are quick to acknowledge the "messiness" of terms used and their accompanying definitions (or lack thereof) in this literature.

Conceptual, methodological, and measurement "messiness" have followed the lack of definitional specificity. To illustrate, a review of the time perspective literature in 1960 concluded, "Each of the studies of time perspective cited earlier contain a somewhat different interpretation of this concept … Another obstacle in the way of adequate research in this area is the difficulty in selecting an appropriate methodology … To a large extent, therefore, the results reported are not comparable, and attempts to draw broad generalizations might be seriously questioned" (Wallace & Rabin, 1960, pp. 230–231). Fifty-eight years later in 2018, the conclusion of a quantitative review of the time perspective literature was strikingly similar: "Different approaches have focused on distinctive dimensions of the FTP [future time perspective] construct (e.g., orientation or continuity), resulting in different conceptualizations and operationalizations of the construct. This diversity in approaches often leads to inconsistent and contradictory empirical findings" (Kooij et al., 2018, p. 868).

Given the historical and current confusion regarding both conceptualization and operationalization, the purpose of the present article is to provide an overview of methodological and measurement issues related to time perspective. Clearly, definitional and measurement clarity are critical for the success of future research. Through integrating the fragmented and eclectic time perspective literature fraught with ambiguity, we help to clarify measurement options and their psychometric evidence for future researchers. Specifically, we seek to answer the questions of "How have we, how do we, and how will we measure time perspective?"

Because methodology and measurement derive from how concepts are defined and conceptualized, we begin by providing an overview of the theoretical roots of time perspective. Specifically, we discuss the definition, dimensionality, and stability. We then review the measurement of the construct, starting with a brief historical summary. The following section provides an in-depth comparison of four (and their offshoots) commonly used, scale-based measures of time perspective with respect to their dimensional content, psychometric properties, and validation evidence. We end with recommendations for future time perspective research.

2 | THE CONCEPTUALIZATION OF TIME PERSPECTIVE

2.1 | Definitional issues

Kurt Lewin (1951) is credited as the first to define time perspective as "the totality of an individual's views of his psychological future and

psychological past existing at a given time" (p. 75). Continuing in the Lewinian tradition, Zimbardo and Boyd (1999, p. 1271) defined time perspective as "the often nonconscious process 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 those events." More recent definitions by the same authors have purposefully maintained a general, phenomenological, and dynamical view of time perspective as attitudes toward time and the process by which experiences are organized into time categories to make sense of life (Zimbardo & Boyd, 2008). With broad and vague definitional origins, it is not difficult to understand why the time perspective literature has been plagued by inconsistency in methodological and measurement approaches.

Acknowledging this issue, other authors added more precise definitional specification. Shipp et al. (2009) described time perspective in terms of the allocation of attention to the past, present, and future periods of one's life. Similarly, Mello (2017) defined the construct as a "multidimensional, individual-varying, and age-related construct that is defined as thoughts and feelings about the past, present, and future." Zimbardo and Boyd (1999) referred to time perspective as a temporal bias toward being past, present, or future oriented.

Despite their differences, we can derive several common definitional components from the examples summarized above. First, in contrast to objectively assessing the actual passage of time, time perspective captures how individuals subjectively view time. Second, the construct is cognitive in nature, representing attentional allocation (Shipp et al., 2009), temporal biases (Zimbardo & Boyd, 1999), and/or thoughts (Mello, 2017). Third, time perspective is a temporal individual difference in which there is between person variation regarding focus on the past, present, and future. Fourth, time perspective is multidimensional, extending to consideration of past, present, and future time frames. Integrating these common definitional components, we define time perspective as a temporal and multidimensional individual difference capturing the degree to which individuals subjectively focus on past, present, and/or future time frames.

As the most researched temporal frame, a subset of research concentrates only on future time perspective because it has been shown to exhibit profound effects on motivation, well-being, and work-related attitudes and outcomes such as performance (e.g., Andre et al., 2018; Kooij et al., 2018; Rudolph et al., 2018). Future time perspective reflects a general concern and deliberation about the future (e.g., Kooij et al., 2018). A more specific construct under the future time perspective umbrella, consideration of future consequences is defined as "the extent to which individuals consider the potential distant outcomes of their current behaviors and the extent to which they are influenced by these potential outcomes" (Strathman et al., 1994, p. 743). Adapting our definition of time perspective to this narrower construct, we refer to future time perspective in this paper as a temporal individual difference describing the extent to which people subjectively focus on the future time frame.

Despite definitional confusion, there is consensus that time perspective differs from related constructs such as temporal depth (the temporal distance into the past and future) and temporal horizon (temporal distance into the future; Bluedorn, 2002). In addition, with its cognitive orientation, time perspective is conceptually (e.g., Mohammed & Harrison, 2013) and empirically (e.g., Mohammed & Nadkarni, 2011; Shipp et al., 2009) distinct from other time-based behavioral tendencies, including time urgency (chronic hurriedness) and pacing style (pattern of effort distribution over time in working toward deadlines).

2.2 | Dimensionality

Earlier conceptualizations of time perspective classified individuals into a single, predominant time frame (e.g., Holman & Silver, 1998). However, the consensus in later research is that people can have multiple foci such that scoring higher on future does not necessarily mean scoring lower on present or past (Kooij et al., 2018; Shipp et al., 2009). Rather, each time frame is a distinct continuum whereby attention to past, present, and future can be allocated in varying degrees (Shipp et al., 2009).

Specific conceptualizations that define time perspective in terms of attentional focus on the past, present, and/or future view the construct as predominantly cognitive in nature (Shipp et al., 2009). In contrast, holistic approaches adopting a general, phenomenological, and dynamical view of time perspective (e.g., Stolarski et al., 2018; Zimbardo & Boyd, 1999) view the construct as a mix of cognition, affect, and behavior. Cognitively, time perspective represents a cognitive temporal bias toward being past, present, or future oriented, but individuals can also switch temporal frames (Zimbardo & Boyd, 1999). Affectively, people may reflect negatively or positively on the past or hedonistically or fatalistically about the present (Zimbardo & Boyd, 1999). Behaviorally, more present-oriented individuals engage in more frequent substance use (e.g., Keough et al., 1999), whereas more future-oriented individuals engage in more healthy behaviors (Kooij et al., 2018).

In the research focusing exclusively on future time perspective, multiple dimensions have also been proposed, although there is a lack of consensus on the number and type (e.g., De Volder & Lens, 1982; Husman & Shell, 2008; Kooij et al., 2018; Seijts, 1998). Commonly described dimensions include valence (value of future goals), extension (how far into the future individuals project their thoughts), continuity (the degree to which people anticipate short- and long-term effects of actions), density (the number of goals expected), affectivity (extent of optimism with anticipated events), and directionality (the degree to which individuals perceive themselves as moving forward from the present into the future; Husman & Shell, 2008; Kooij et al., 2018; Seijts, 1998).

2.3 | Stability

Time perspective has been conceptualized as a stable dispositional trait (e.g., Gjesme, 1983; Strathman et al., 1994; Zimbardo & Boyd, 1999), a habitual temporal bias (Zimbardo & Boyd, 1999), a momentary state in a given situation (e.g., Trommsdorff & Lamm, 1975; Wallace & Rabin,

1960), and a malleable cognitive structure (Seijts, 1998). Test–retest reliability evidence supports the stability of time perspective but for a limited duration and a limited number of studies (e.g., Shipp et al., 2009; Strathman et al., 1994; Zimbardo & Boyd, 1999).

Recent conceptualizations of time perspective recommend a hybrid model of both state and trait (Stolarski et al., 2018). This perspective recognizes that although the construct may manifest as a habitual tendency to emphasize past, present, or future time frames, situational demands play a powerful role. To illustrate, funerals tend to activate a past focus, parties activate a present focus, and planning sessions activate a future focus (Stolarski et al., 2018). Rather than a state or trait, other scholars advocate that the construct be considered a flexible cognitive structure (e.g., Kooij et al., 2018; Seijts, 1998) based on evidence that time perspective changes over the lifespan and in response to training or socialization (e.g., Carstensen, 2006; Henik & Domino, 1975; Stein, Sarbin, & Kulik, 1968). The idealized notion of a balanced time orientation as the ability to switch between past, present, and future time frames depending on situational requirements or personal preferences (Zimbardo & Boyd, 1999) highlights this hybrid perspective.

2.4 | Conceptual summary

The significance and promise of time perspective as a temporal individual difference is shown in its ability to predict key cognitive, affective, and behavioral outcomes (e.g., Adams & Nettle, 2009; Kooij et al., 2018; Seijts, 1998; Zimbardo & Boyd, 1999). However, time perspective has proven to be a difficult construct to define and characterize (Stolarski et al., 2018). Consequently, inconsistency regarding its definition, terminology, dimensionality, and stability has marked the conceptualization of time perspective from its inception until today. Indeed, the only consensus seems to be the lack of consensus. Moreover, theoretical clarity has remained largely unimproved over the decades.

Having reviewed its conceptual foundation, we now turn our attention to measurement and methodology in the subsequent sections. How concepts are defined and conceptualized drives how they are assessed and how studies are designed. As such, the definitional ambiguity plaguing time perspective research translates directly into a "messy" measurement and methodological landscape. Indeed, the repercussions of this conceptual morass have been a hodgepodge of different measures and methodologies, resulting in contradictory findings and difficulty in synthesizing findings across studies (Gjesme, 1983).

3 | AN INTRODUCTION TO TIME PERSPECTIVE MEASUREMENT

3.1 | Historical measurement techniques

Early time perspective measurement tools were primarily open and indirect in nature. Several qualitative methods involved storytelling (Barndt & Johnson, 1955), including the thematic apperception test (Murray, 1938) in which coders identified the temporal components of participants' stories about ambiguous drawings (Stolarski et al., 2018). Rather than coding a story, other methods coded time perspective from responses to open-ended items, sentence completion (Nuttin, 1985), or reflections of actual life experiences (Holman & Silver, 1998; Nuttin, 1985). Indirect measures involved participants indicating their perception of the probability that they would live to 75 or 85 years (e.g., Adams & Nettle, 2009; Nagin & Pogarsky, 2004; Picone, Sloan, & Taylor, 2004) or organizing circles representing the past, present, and future according to the perceived overlap among the temporal perspectives (Mello & Worrell, 2007; Stolarski et al., 2018). Most of these open, low-constraint techniques offered little evidence for consistency or validity (Heimberg, 1963).

In reaction to the lack of validity in previous methods, scales and questionnaires were created, including the Future Time Perspective Scale (FTPS; Heimberg, 1963), the Long-Term Personal Direction Scale (Wessman, 1973), another Future Orientation Scale (Gjesme, 1975, 1979), the Time Attitude Scale (Nuttin, 1985), the Temporal Orientation Scale (Holman & Silver, 1998), and the FTPS (Hershey & Mowen, 2000). Although these scales received initial attention, their citations have declined substantially in recent years. In contrast, several time perspective scales are administered in more current empirical research. Therefore, we now proceed with an evaluation of prominent time perspective and future time perspective scales.

3.2 | Criteria for focal time perspective measures

Given the plethora of time perspective assessments and the need to cover a manageable number of measures, we implemented several selection criteria. First, we include only scale-based measures and exclude qualitative approaches. Second, although a sizeable literature investigates time perspective with children and adolescents (e.g., Lyu & Huang, 2016; Mello & Worrell, 2007), we emphasize research investigating adult samples because of its greater relevance to organizational science. Third, we focus on measures that continue to have a high rate of usage in more recent years. As such, we excluded time perspective measures that were foundational in the evolution of measurement but are now used less frequently in current empirical studies (e.g., Holman & Silver, 1998; Nuttin, 1985). Fourth, we excluded measures for which the full scale was not publicly available, such as the FTPS (Carstensen & Lang, 1996), although we do include its offshoot, the Occupational Future Time Perspective Scale (OFTPS; Zacher & Frese, 2009).

Implementing these criteria resulted in the selection of four time perspective scales (with related outshoots). Two scales represent general time perspective, including past, present, and future time frames: the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo & Boyd, 1999) and the Temporal Focus Scale (TFS; Shipp et al., 2009). Two scales represent only future time frame: the Consideration of Future Consequences Scale (CFCS; Strathman et al., 1994) and the OFTPS (Zacher & Frese, 2009). In the following section, we summarize each

of the four scales (and their offshoots) with regard to psychometric rigor, reliability, and validation efforts. Table 1 lists these measures regarding their definition of time perspective, dimensionality, number of items, reliability, and number of Google Scholar citations as of September 2019. The items for each scale are listed in the Appendix.

4 | GENERAL TIME PERSPECTIVE SCALES (PAST, PRESENT, AND FUTURE TIME FRAMES)

4.1 | The Zimbardo Time Perspective Inventory

The ZTPI is the most popular time perspective scale and is featured prominently in recent quantitative (Kooij et al., 2018) and qualitative (Stolarski et al., 2018) reviews. Specifically, Kooij et al. (2018) included 94 studies using the ZTPI in their meta-analysis.

Part of Philip Zimbardo's impetus for creating a time perspective scale derived from his observations during the Stanford Prison Experiment when future-oriented students became immersed in the present (Zimbardo, Haney, Banks, & Jaffe, 1973). The initial development of the ZTPI involved focus group discussions and exploratory testing primarily based on the differences between present and future orientations (Zimbardo, 1990; Zimbardo et al., 1997). No theoretical prediction concerning the number of factors occurred before empirical testing spanning over a decade. After several iterations of item refinement based on participant feedback and repeated factor analyses, 56 items and five moderately correlated factors resulted (Zimbardo & Boyd, 1999). The past-negative dimension describes an aversive point of view about the past. Present-hedonistic indicates risk-taking behaviors and minimal concern with future consequences. Future represents a general orientation to consider future events and plan ahead. Past-positive describes a sentimental and warm outlook of the past. Finally, present-fatalistic indicates a hopeless and helpless attitude about the future and life in general (Zimbardo & Boyd, 1999).

The exploratory factor analysis of data from 606 undergraduates supported a five-factor model, explaining 36% of the total variance with all loadings above.30 and an average item factor loading of.45 (Zimbardo & Boyd, 1999). Zimbardo and Boyd (1999) further replicated this factor structure in a confirmatory factor analysis on data from 361 undergraduates. With the emergence of five factors, Zimbardo and Boyd (1999) challenged prior studies on time perspective assuming that present and future were opposite ends of a single continuum. Test–retest reliabilities across 4 weeks on 58 undergraduates were between.70 and.80 across each of the five factors, with the highest coefficients for future time perspective (Zimbardo & Boyd, 1999).

Regarding convergent validity, past-positive was negatively related to aggression, depression, and anxiety, whereas present-fatalistic was positively related to each of these correlates (Zimbardo & Boyd, 1999). Past-negative was strongly and positively associated with depression (r = .69, p < .01) and anxiety (r = .73, p < .02) and present-hedonistic with ego under control (r = .75, p < .01) and

TABLE 1 Summary of selected time perspective scales

Measure	Conceptualization	Subdimensions	Number of Items	α	Google Scholar citations
General time perspective measures					
Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999)	Often nonconscious personal attitude that each of us holds toward time and the process whereby the continual flow of existence is bundled into time categories that help to give order, coherence, and meaning to our lives	Past-negative, present-hedonistic, future, past-positive, and present-fatalistic	56	Past-negative = .82, present-hedonistic = .79, future = .77, past-positive = .80, and present-fatalistic = .74	2,995
Balanced Time Perspective Scale (Webster, 2011)	Relatively stable individual difference dimension in which people express attitudinal and behavioral preferences for a past, present, or future time perspective	Past and future	28	Past = .88 and future = .92	95
Temporal Focus Scale (Shipp et al., 2009)	Attention individuals devote to thinking about the past, present, and future	Past, present, and future focus	12	Past = .89, current = .74, and future = .86	360
Future time perspective scales					
Consideration of Future Consequences Scale (Strathman et al., 1994)	Stable individual difference in the extent to which people consider distant versus immediate consequences of potential behaviors	Future	12	.80–.86 across four samples	1,469
Occupational Future Time Perspective Scale (Zacher & Frese, 2009)	Perception of remaining time and remaining opportunities at work	Remaining time and remaining opportunities	6	Remaining time = .81 and remaining opportunities = .94	260

sensation seeking (r = .72, p < .01) in a sample of 205 undergraduate students. Future was positively related to conscientiousness (r = .73, p < .01). Addressing the concern that these high correlations may indicate construct redundancy, Zimbardo and Boyd (1999) factor analyzed depression items and conscientiousness items together with all the ZTPI items and concluded that past-negative is an overlapping but distinct construct from depression. Although items from the future subscale formed a distinct factor, conscientiousness items did not, casting doubt on whether future contributes uniquely beyond conscientiousness.

In a large-scale study, present time perspective was positively correlated, and future time perspective was negatively correlated, with drug use, alcohol consumption, and smoking across 2,627 participants from 15 samples, even after controlling for other personality traits (Keogh et al., 1999). Present-oriented participants were also more likely to engage in risky driving (Zimbardo et al., 1997), high-risk sexual behaviors, have longer durations of homelessness, and be tardy or "no shows" for research experiments (Zimbardo & Boyd, 1999). Additional predictive validity support for the ZTPI indicated that participants scoring higher on the future scale were more likely to seek out regular breast cancer screening, enroll in school, engage in active problem-solving coping, participate sooner in research experiments, and become officers in the military (Zimbardo & Boyd, 1999).

Following the creation and validation of the full scale published in 1999, the ZTPI has been subject to continuing validation studies, many of which indicate poor reliability and model fit (e.g., Davis & Ortiz, 2017; Shipp et al., 2009; Worrell, Temple, McKay, Živkovič, Perry, Mello, Musil, B., et al., 2018). Serious concerns regarding face validity, construct validity, and dimensionality have been levied against the ZTPI. Concerning face validity, many of the 56 items describe beliefs, values, and preferences that do not directly relate to time perspective and therefore may better represent alternative constructs (Seijits, 1998; Shipp et al., 2009; Worrell et al., 2018). For example, "I believe that getting together with one's friends to party is one of life's important pleasures" seems more representative of extraversion than a past, present, or future cognitive focus. Similarly, "I make lists of things to do" may tap conscientiousness instead of future contemplation and "Fate determines much of my life" may indicate external locus of control rather than present-fatalistic. Shipp et al. (2009) note that many past-negative items appear confounded with regret and that past-positive items are confounded with nostalgia. Furthermore, present-hedonistic and present-fatalistic items seem more reflective of impulsiveness and risk taking than time perspective (Shipp et al., 2009).

Addressing this concern, Worrell et al. (2018) excluded nontemporal items, reducing the ZTPI scale to 25 items that explicitly referenced temporality. In samples from Australia, Slovenia, the United Kingdom, and the United States, the shorter scale received stronger structural and convergent validity than the full ZTPI, which had poor reliability and model fit (Worrell et al., 2018). However, the shorter scale evidenced confirmatory factor analysis problems with model fit (Worrell et al., 2018).

Regarding construct validity, Zimbardo and Boyd (1999) reported low loadings in their exploratory factor analysis and incorporated little discussion of whether the ZTPI taps the most important components of time perspective (Shipp et al., 2009). Later studies found high intercorrelations among factors (Wayment & Aronson, 2002), low internal consistency reliability (Aronowitz, Rennells, & Todd, 2005), and poor confirmatory factor analysis fit (e.g., = .65, RMSEA = .064, Shipp et al., 2009). Correlations between time perspective dimensions and related constructs have also been so high as to raise concerns about the independence of the ZTPI (e.g., r = .89 between conscientiousness and future; r = .82 between chance locus of control and current fatalistic; Shipp et al., 2009).

Regarding dimensionality, replication of the five-factor model has been problematic. For example, Davis and Ortiz (2017) reported less than desirable fit indices for the five-factor model (comparative fit index [CFI] = .88, root-mean-square error of approximation [RMSEA] = .07) on a sample of college students. In addition, the number of factors and relationships among the factors with outcomes varies depending on the population (Ryack, 2012). As acknowledged by Zimbardo and Boyd (1999), ZTPI scale development and validation efforts were primarily based on college student samples and therefore may not generalize to other samples (Ryack, 2012). Testing generalizability, Ryack (2012) reported that the anticipated two-factor model of present and future dimensions did not fit a financial advisor sample as well as it did with a comparative student sample (Ryack, 2012). Though the future factor was retained as one factor, the present factor divided into two factors: one reflecting spontaneity and impulsivity and the other maintaining the quality of everyday life (Ryack, 2012).

In addition to a heavy reliance on undergraduate samples, Zimbardo and Boyd (1999) admitted that their focus on individualistic cultures also limited their validation efforts. In response, the ZTPI has been administered across the globe (Cretu & Negovan-Zbaganu, 2013; Laureiro-Martinez, Trujillo, & Unda, 2017).

Additional efforts to improve psychometrics have sought to lengthen the scale. For example, Carelli, Wiberg, and Wiberg (2011) extended the ZTPI to address the lack of a future-negative factor to mirror the past-negative and past-positive. Eight additional items were developed to reflect a future-negative dimension, resulting in a 64-item Swedish ZTPI (Carelli et al., 2011). Confirmatory factor analyses resulted in similar fit indices for the five-factor ZTPI and six-factor Swedish ZTPI, with narrowly better fit than alternative models (one, three, five, and six factors). However, CFI results of.63 and.62 for the ZTPI and Swedish ZTPI, respectively, were notably low (Carelli et al., 2011).

In addition to the full ZTPI, alternative measures have been created, which are discussed below.

4.2 | The ZTPI Short Form

The length of the complete 56-item ZTPI may be irritating to participants at best and infeasible in some situations at worst. Therefore, there have been several attempts to develop shorter versions of the ZTPI, especially in cross-cultural research. For example, Sircova and colleagues concluded that a shorter 36-item scale supporting the

five-factor model is valid for cross-cultural research, although Stolarski et al. (2018) recommend the full 56 items for within-culture research.

Shorter versions of the ZTPI are often accompanied by psychometric difficulties (Worrell et al., 2018). To illustrate, D'Alessio, Guarino, DePascalis, and Zimbardo (2003) tested a shorter 22-item ZTPI in a sample of Italian adults, focusing only on the future, present-hedonistic, and present-fatalistic dimensions. Though the authors stated that their results suggest fair internal consistency, Cronbach's alpha indicated questionable reliability: future α = .67, present-hedonistic α = .54, and present-fatalistic α = .49. However, a later study utilizing the 22-item measure detected four dimensions as opposed to the three found by D'Alessio and colleagues (Crockett, Weinman, Hankins, & Marteau, 2009). Resurfacing validity concerns, future and present time perspectives emerged as dimensions, but unexpectedly, the two other factors (hedonism and conscientiousness) did not relate directly to time (Crockett et al., 2009).

Another short Italian version of the ZTPI of 25 items was developed and reported to capture the original five factors (Laghi, Baiocco, Liga, Guarino, & Baumgartner, 2013) and had satisfactory concurrent validity with the full ZTPI (Perry, McKay, Worrell, Zivkovic, Mello, & Musil, 2015). However, there was a lack of transparency regarding how the 25 items were selected, and a number of items failed to load on their anticipated factor in confirmatory factor analyses. A possible explanation was that these items "appear to measure constructs other than time perspective," with the content of such items in this study "arguably measuring conscientiousness" (Perry et al., 2015, p. 57).

Testing the addition of the future-negative dimension, Košťál, Klicperová-Baker, Lukavská, and Lukavský (2016) expanded the short version of the ZTPI (three items per factor). In both Czech and Slovakian samples, the short ZTPI demonstrated better fit with and without the future-negative dimension than previous comparative fit reports of the original English, Czech, and Swedish long versions. This short ZTPI exhibited adequate internal reliability and explained about 70% of the variance of the long-scale scores (Košťál et al., 2016).

Other short ZTPI scales of varying numbers of items have been utilized throughout the world (Stolarski et al., 2018). However, a lack of internal consistency reliability is a consistent problem. For example, Zhang, Howell, and Bowerman (2013) suggested that a 15-item short ZTPI tested in the United States was less reliable than the standard ZTPI. In Australia, a 25-item short ZTPI did not meet satisfactory psychometric validation criteria, and further investigation was deemed necessary (Wakefield, Homewood, Taylor, Mahmut, & Meiser, 2010). Poor internal consistency reliability of shortened scales in subsequent samples may be a consequence of selecting the highest loading items to create the short scale, resulting in sample-dependent measures with low replicability.

4.3 | The Balanced Time Perspective Scale

Because past, present, and future time frames each have advantages, Zimbardo and Boyd (1999) ended their ZTPI scale-based article by suggesting the notion of a balanced time perspective as the ability to flexibly alternate between all three time frames depending on the situation. Following up on measuring this ideal, Webster (2011) generated items assessing positive feelings about the past and the other half assessing positive feelings about the future. As both recollecting the past and envisioning the future were assumed to take place in the present consciousness, no specific items regarding feelings of the present were considered (Webster, 2011). Earlier versions of this scale were referred to as the Janus Index, referencing the Roman god commonly depicted with two faces looking both toward the past and future at once. A principal component analysis yielded the expected two dimensions (past and future). Only items with high loadings on the corresponding factor were retained in the final Balanced Time Perspective Scale (BTPS), which includes 28 total items, with 14 for each past and future dimension (Webster, 2011).

Along with satisfactory internal consistency reliability (past dimension α = .88; future dimension α = .92), convergent validity tests found that the past BTPS dimension was positively related to the ZTPI's past-positive subscale and the future BTPS dimension was positively related to the ZTPI's future subscale (Webster, 2011). These associations were of moderate strength, making the BTPS distinct from the corresponding dimensions in the ZTPI.

Following a median split, four categories resulted from combinations of high and low past and future dimensions. Time restrictive describes those low on both positive past and future perspectives. Reminiscers were high on the past but low on the future subscales. Futurists were high on the future but below the median on the past subscale. Finally, time expansive described those who scored above the median on both the past and future scales. Demonstrating concurrent validity, the time expansive and futurist categories were more positively related to self-esteem than the time restrictive category (Webster, 2011). In later work, time expansive individuals experienced significantly better mental health than time restrictive or reminiscer individuals (Webster et al., 2014).

In addition to the traditional median split, four-category representation described above, follow-up research in the Netherlands calculated a continuous measure representing the extent to which an individual has an optimal, completely BTP, on both future and past dimensions (6 as the highest scale point; Webster et al., 2014). The score for each subscale was subtracted from 6 and summed. The closer to 0 (no deviation from total balance) indicated a more BTP. Older individuals had less of a balance, and a more balanced perspective positively related to mental health and wisdom (Webster et al., 2014).

Vowinckel, Westerhof, Bohlmeijer, and Webster (2017) reported that the addition of a present-eudaimonic scale to supplement past and future BTPS dimensions demonstrated satisfactory reliability, a one-dimensional factor structure, and convergent validity with mental health, mindfulness, and flow. Further, this scale explained additional variance in mental health beyond the past and present BTP scales. The modified BTPS was also significantly more related with mental health than the ZTPI. However, further factor analyses and validation testing utilizing other samples and contexts is necessary (Vowinckel et al., 2017).

4.4 | ZTPI summary

The 56-item original ZTPI is the most frequently used time perspective scale, consisting of five moderately correlated factors (past-negative, present-hedonistic, future, past-positive, and present-fatalistic). Nearly 20 years after the introduction of the ZTPI, Davis and Ortiz (2017, p. 98) recently stated that "support for the five-factor structure remains tentative" and "conclusions about its structural validity are premature." Continuing validation studies across the globe reveal numerous psychometric weaknesses, including lack of face validity, low factor loadings, high intercorrelations among the five factors, failure to replicate the five-factor structure, low internal consistency reliability, poor model fit, and high correlations with existing constructs (e.g., conscientiousness and locus of control). Shorter versions of the ZTPI (e.g., 15–36 items) have not generally shown significant psychometric improvement, and low internal consistency reliability has been a persistent problem.

Despite psychometric concerns, the full and shorter versions of the ZTPI are still widely utilized (Kooij et al., 2018; Stolarski et al., 2018). We applaud the continuing efforts to enhance the ZTPI over the past 20 years. In moving forward, we believe that substantive improvement will be hastened when the broad, phenomenological, and vague definition underlying the scale is clarified.

Recognizing the advantages of being able to shift between time frames depending on the situation, the BTPS consists of 28 items, with 14 items measuring positive perceptions about the past and 14 measuring positive perceptions about the future. In comparison with the ZTPI, the BTPS acts in a complimentary fashion because it taps different dimensions and aspects of time perspective. Whereas the BTPS measures how a balance of past, future, and recently present, perspectives influence outcomes, the ZTPI considers five dimensions with differing valence between them. Thus, each scale has a different use and contribution to time perspective research (Vowinckel et al., 2017). Given its novelty, the BTPS needs further validation evidence.

4.5 | The Temporal Focus Scale

The TFS was developed to overcome the weaknesses of previous measures, including failure to clearly represent time perspective, rigorous evaluations of factor structure, and mixed construct validity evidence (Shipp et al., 2009). As one of the more recent scales we review, few studies have been conducted to examine its psychometric qualities. Kooij et al. (2018) excluded the TFS, but Andre et al. (2018) included the TFS in their respective meta-analyses on time perspective.

In contrast to prior scales that conceptualized time perspective as a mix of cognitive, affective, and behavioral influences (e.g., Zimbardo & Boyd, 2008), Shipp et al. (2009) focused exclusively on the cognitive component. As such, they define temporal focus as "the extent to which people devote their attention to the past, present, and future" (Shipp et al., 2009, p. 4). Rather than classify individuals as predominantly one type, this tripartite definition represents three continua in which people can simultaneously be high or low on multiple time frames.

The TFS consists of 12 items, four each for past, present, and future frame (Shipp et al., 2009). To combat the lack of face validity in prior measures, every item explicitly refers to time. In addition, to avoid confounding the scale with other constructs such as worry, nostalgia, hope, impulsiveness, and conscientiousness, items exclude valence and strictly assess the degree to which attention is allocated to past, present, and future time frames (Shipp et al., 2009). Through four studies with samples of varying ages (18–77) and occupations (students and working adults), the psychometric properties of the TFS were demonstrated.

Specifically, results suggest satisfactory internal consistency reliability for the past, present, and future dimensions across studies (αs of.74–.92) as well as small-to-moderate positive intercorrelations (r = .09–.48). Demonstrating that individuals have multiple temporal foci, 26% of the sample was high on all three time frames, with most high on at least two time frames (Shipp et al., 2009). Confirmatory factor analyses across three studies provided support for the three-factor structure, with high item loadings and low cross-loadings for each dimension. The three-factor model was compared with three combinations of two-factor models, each of which fit the data worse than the original three-factor model. A comparison confirmatory factor analysis of the ZTPI did not fit the data well, with substantially lower item factor loadings and higher cross-loadings than the TFS (Shipp et al., 2009).

Regarding convergent validity, TFS dimensions had moderate-to-large positive correlations with the parallel dimensions from the ZTPI and the Temporal Orientation Scale (Holman & Silver, 1998). In addition, individuals high on present and future time perspectives tended to be more positive, as revealed by positive correlations with optimism, positive affectivity, life satisfaction, conscientiousness, and extraversion. In contrast, past-focused individuals tended to be more negative, as revealed by positive relationships with negative affectivity and neuroticism and negative correlations with optimism, life satisfaction, and perceptions of current job attitudes. The magnitude of correlations did not suggest construct duplication.

Discriminant validity evidence yielded small correlations (only six were greater than .30) between the TFS and dispositional affectivity as well as other temporal variables. Specifically, time perspective dimensions were shown to be distinct from time attitude (positive or negative views about the past, present, or future), temporal depth (how far into the future or past one typically considers), polychronicity (preference for multitasking), hurriedness, and pacing style (how effort is allocated across the task cycle; Shipp et al., 2009). Indicative of temporal stability, Shipp et al. (2009) reported test–retest reliabilities across 6 weeks on 362 employees between.66 and.73, with the lowest coefficients for present time perspective.

Supportive of predictive validity, temporal focus moderated the effects of past and future job characteristics on current job attitudes. Individuals focused on the future were more committed and satisfied with their current job when contemplating characteristics about their future job independent of current job characteristics. The opposite effect was true for those low on a future temporal focus (Shipp et al., 2009). Past-focused individuals had higher turnover intentions at their current jobs when they contemplated characteristics of their

prior jobs. Furthermore, no significant interactions emerged among past, present, and future dimensions (Shipp et al., 2009).

Supplementing the strong TFS psychometric evidence provided by Shipp et al. (2009), Peetz and Wohl (2018) reported high reliability coefficients for past (α = .89), present (α = .88), and future (α = .93) dimensions in an American adult sample. Later cross-cultural validation efforts also found adequate reliability coefficients (α = .72–.89) in an adolescent sample in Japan (Chishima, McKay, & Cole, 2017). However, Cronbach's alpha for the present dimension in a U.K. adolescent sample was under acceptability (α = .67; Chishima et al., 2017).

Also indicating difficulties with the present dimension, the item "I think about where I am today" had lower correlations with other similar items in the dimension and loaded on all three past, present, and future factors in a sample of older adolescents in Ireland (McKay et al., 2012). A confirmatory factor analysis of McKay and colleagues' three-dimensional model narrowly missed acceptable cutoffs for good fit (CFI = .87, RMSEA = .11). When the problematic present item was excluded, the 11-item scale demonstrated better fit, though the reliability for the present dimension was low. McKay et al. (2012) suggested that the wording of this item may lead the participant to consider where one *was* today or where one *will be* today rather than where one *is*. They concluded that although there is support for a three-dimensional structure, additional reliability work is necessary, at least in adolescent samples.

Expanding the conceptualization of personal time orientation, Peetz and Wohl (2018) developed a scale reflecting a collective time orientation of American culture. An adapted collective version of the TFS in which the referent was "America" was found to be distinct from the original TFS via a six-factor confirmatory factor analysis solution (personal past, present, and future vs. collective past, present, and future dimensions; Peetz & Wohl, 2018).

In summary, the 12-item TFS was designed to improve upon past time perspective measures, as the definitional focus is on cognition and every item in the scale strictly assesses the extent to which attention is allocated to past, present, and future time frames. Psychometric evidence has largely been favorable, including reliability coefficients, confirmatory factor analyses, and convergent, discriminant, and predictive validity evidence. Recent research highlighted lower than acceptable internal consistency reliability for the present dimension in adolescent samples. As a relative newcomer to time perspective measurement, the scale could benefit from further research examining its psychometric qualities.

5 | FUTURE TIME PERSPECTIVE SCALES

We now shift from the broader conceptualization of time perspective as past, present, and future time periods to concentrate on scales focusing exclusively on the future perspective.

5.1 | The Consideration of Future Consequences Scale

According to a recent meta-analysis, the CFCS was the second most popular future time perspective scale behind the ZTPI. Specifically, Kooij et al. (2018) included 55 studies using the CFCS in their quantitative review.

Strathman et al. (1994) introduced consideration of future consequences as "the extent to which people consider distant versus immediate consequences of potential behaviors" (p. 742). Although related to Zimbardo and Shipp's general preoccupation with and attention to the future, CFC more precisely reflects the intrapersonal struggle between immediate versus future outcomes (Strathman et al., 1994). On one end of the continuum, individuals gratify immediate needs at the expense of benefits that may not actualize until the long term. On the other end of the continuum, people consider the future consequences of their behavior, sacrificing short-term pleasure to gain distant but desirable outcomes (Strathman et al., 1994).

In the original scale development study, confirmatory factor analyses on 12 items across three undergraduate samples yielded root-mean-square residuals ranging from .057 to .069, over the recommended.05 cutoff (Strathman et al., 1994). Internal consistency reliability coefficients ranged from.80 to.86 over four student samples. Test–retest reliability supported stability after 2-week (r = .76) and 5-week (r = .72) periods (Strathman et al., 1994).

Only a subset of the items from the future dimension of the ZTPI overlap with the narrower conceptualization of CFCS, including "Spending what I earn on pleasures today is better than saving for tomorrow's security" and "I keep working at difficult, uninteresting tasks if they will help me get ahead." Therefore, the CFCS was expected to and did correlate positively but distinctively from the more general future preoccupation assessed by the ZTPI (r = .43, p < .001; Strathman et al., 1994). Interestingly, Zimbardo and Boyd (1999) reported a much higher correlation between the ZTPI's future dimension and the CFCS in a sample of 205 undergraduates (r = .67, p < .01).

Also supporting convergent validity, the 12-item CFCS correlated positively with deferment of gratification (r = .47, p < .001) and locus of control (r = .25, p < .01), although the relationships were not so strong to indicate construct overlap (Strathman et al., 1994). Furthermore, a "known" group of high CFC social activist students, championing causes with distant future outcomes (e.g., racial change and reforming marijuana laws), scored significantly higher on the CFCS than other samples of undergraduates.

Predictive validity evidence comes from experimental findings with 208 undergraduates demonstrating that high CFC students were more persuaded about the benefits of offshore oil drilling when arguments emphasized future advantages, whereas low CFC students were more persuaded by immediate disadvantages (Strathman et al., 1994). In addition, CFC predicted a variety of environmental (e.g., recycling) and health (e.g., smoking) behaviors beyond the ZTPI, conscientiousness, optimism, and hope (Strathman et al., 1994).

Although most subsequent research with the CFCS has treated it as a single dimension, a few studies suggest that two factors provide better fit (e.g., Adams, 2012; Joireman, Shaffer, Balliet, & Strathman, 2012; Petrocelli, 2003). The CFC-Immediate or CFC-Present (seven items) and CFC-Future (five items) account for the ability to consider immediate consequences and future implications, respectively

(Joireman et al., 2012). A confirmatory factor analysis with a sample of financial advisors found that a two-factor model fits the data better than one dimension, but the two-factor model still narrowly missed traditionally accepted fit statistics (Ryack, 2012).

In other studies, the two-factor CFC model yielded less than desirable reliability for the five-item future dimension (e.g., Arnocky et al., 2014; Joireman, Balliet, Sprott, Spangenberg, & Schultz, 2008; Petrocelli, 2003). Thus, a 14-item CFCS with two additional future items was tested (Joireman et al., 2012). Exploratory and confirmatory factor analyses confirmed a reliable two-factor model consisting of future and immediate dimensions (Joireman et al., 2012). Another study examining two-dimensional models utilizing the 12-item scale provided supplementary support for the acceptable reliability of both subdimensions (Toepoel, 2010).

The psychometric properties of the CFC have mainly been examined within the United States, though a validation study was recently conducted in Portugal (Echeverría, Esteves, Gomes, & Ortuño, 2015). These findings suggest support for the two-factor model, although the item, "My convenience is a big factor in the decisions I make or the actions I take," was eliminated to improve model fit and reliability.

In summary, the CFCS has uniquely predicted environmental and health behaviors beyond other constructs and the ZTPI as well as moderated the impact of persuasive messages (Strathman et al., 1994). Nevertheless, despite the widespread use of the CFCS (Kooij et al., 2018), mixed factor structure and reliability evidence exists. Studies have reported a single (e.g., Strathman et al., 1994), two (e.g., Adams, 2012; Joireman et al., 2012; Petrocelli, 2003), and four factors (e.g., Ryack, 2012) as the best fitting model. Although the reliability of the 12-item unidimensional scale tends to be consistently acceptable, the reliability of the two-factor model is less dependable (e.g., Joireman et al., 2012). Additional tests of the factor structure would be beneficial, particularly with working adults and international comparisons.

5.2 | The Occupational Future Time Perspective Scale

The OFTPS assesses the perception of remaining time and remaining opportunities at work (Zacher & Frese, 2009). This scale derived from the Future Time Perspective Scale (FTPS, which describes how individuals affectively interpret their remaining time to live and the opportunities within that time (Carstensen & Lang, 1996). Whereas the FTPS has primarily been used regarding aging, Zacher and Frese (2009) developed the OFTPS to apply to a workplace context. The six items for the OFTPS were developed by adding "occupational" as a referent to selected FTPS items in order to measure occupational future time perspective.

The OFTPS was presumed to have two parallel dimensions to those detected by Cate and John (2007) in the FTPS: remaining opportunities (three items) and remaining time (three items) in the workforce (Zacher & Frese, 2009). Zacher and Frese (2009) did not offer rationale as to why the six items were chosen. Items have face validity in relation to their intended dimension. For example, "Many opportunities await me in my occupational future" reflects remaining opportunities.

A confirmatory factor analysis with a sample of German adults supported a two-factor OFTPS (Zacher & Frese, 2009). Items had strong factor loadings of above .88 for remaining opportunities and above.63 for remaining time. Model fit indices revealed strong support for a two-factor model, including the CFI = .97 and RMSEA = .06. Further, a one-factor model resulted in poor fit, and a comparison confirmed that the two-factor model was a better fit (Zacher & Frese, 2009). Each of the two dimensions had satisfactory reliability. Regarding convergent validity, remaining opportunities and remaining time were both negatively related to age, though remaining opportunities not as strongly (Zacher & Frese, 2009). In addition to age, workplace complexity and control were more strongly related to remaining opportunities (Zacher & Frese, 2009).

Additional confirmatory factor analyses demonstrated good fit of the two-factor model as well as high internal consistency reliability of the two dimensions (e.g., Kochoian, Raemdonck, Frenay, & Zacher, 2017; Weikamp & Goritz, 2016). However, one study added two items to form an eight-item measure (Kochoian et al., 2017), and the other removed one item from the remaining time subdimension to form a five-item measure (Weikamp & Goritz, 2016). Expanding on its original form, Zacher (2013) included all items mirroring the FTPS (Carstensen & Lang, 1996) resulting in a 10-item OFTP measure. Unlike previous iterations, an exploratory factor analysis resulted in a three-factor solution: focus on opportunities, perceived remaining time, and focus on limitations. After removing two items with factor loadings under 0.5 from the focus on opportunities factor, the factors each demonstrated acceptable reliability. Future research would benefit from a confirmatory factory analysis of the eight utilized items.

Several additional studies have altered the number of items in the OFTPS. Gielnik, Zacher, and Wang (2018) utilized three items to capture the remaining time individuals perceive they have left in the workplace, although the example item referenced does not correspond to any items in the original OFTPS. Similarly, another study used a three-item OFTPS, but none of the three items corresponded to the original scale (Bal et al., 2015). Despite inconsistencies in the number of items, results consistently show high reliability (Bal et al., 2015; Gielnick et al., 2018). Similar to the regular FTPS, many samples are European (e.g., Bal et al., 2015; Kochoian et al., 2017; Weikamp & Goritz, 2016; Zacher & Frese, 2009).

Reflective of the growing interest in occupational future time perspective, a meta-analysis of 40 studies examined the scale's relationship with a variety of antecedents, outcomes, and related variables (Rudolph et al., 2018). The OFTPS positively predicted several anticipated outcomes, including job satisfaction, organizational commitment, work engagement, and intentions to continue work, as well as negatively predicted retirement intentions (Rudolph et al., 2018). Because both emerged from the developmental and lifespan literature and are projected to be involved in goal setting and regulation behaviors, the OFTPS was examined in relation to SOC (selection, optimization, and compensation) strategies. Contributing to convergent validity, the OFTPS was positively related with SOC strategies, though not so highly as to suggest construct repetition.

In summary, the OFTPS has received considerable empirical attention and consistently high reliability across studies, as well as steady support for the two-dimensional remaining opportunities and time model. The construct is related to several meaningful organizational outcomes ranging from satisfaction to retirement intentions and demonstrates high reliability across samples (Rudolph et al., 2018). However, there is considerable variation in the number and items included in the OFTPS (e.g., Bal et al., 2015; Gielnik et al., 2018).

6 | DISCUSSION

6.1 | Evaluative summary of the reviewed time perspective measures

The differences in scale content, item length, and psychometric properties between the four measures reviewed above are striking, even between the two general and two future scales, which purport to measure the same construct. Regarding scale content, the purpose of the research should be a central factor in deciding what measure to use. Do you desire to measure a broad predisposition toward past, present, and future time frames (ZTPI) or cognitive attentional focus on the three time frames (TFS)? Do you wish to emphasize the degree to which individuals wrestle between immediate and future outcomes (CFC) or perceptions of the time remaining to work (OFTPS)? In terms of scale length, both the full (56 items) and short (15–36 items) versions of the ZTPI are the longest of the four featured measures. In comparison, the TFS (12 items) and CFC (12 items) are less than a fourth of the length of the full ZTPI, and the OFTPS is even shorter (six items).

Validation evidence should also be heavily weighted in scale selection decisions. Ironically, the ZTPI, the most popular time perspective measure, has had the most persistent psychometric difficulties over the years, including lack of face validity, low reliability estimates, poor model fit, inconsistent replication of the five-factor structure, and construct redundancy (e.g., Shipp et al., 2009; Worrell et al., 2018). Of the four featured scales, the ZTPI has the broadest (cognitive, affective, and behavioral scope) and vaguest (predisposition toward past, present, and future time frames) definition. Because consistency in measurement is predicated on precise definitional specification, it is not difficult to deduce why this measure has been plagued by reliability and validity problems.

In comparison, the TFS was constructed on the foundation of a much narrower (cognitive emphasis) and specific (attentional focus on past, present, and/or future time frame) conceptual scope. Subsequently, the psychometric evidence in support of the TFS is the strongest of the four featured measures, as evidenced by a stable three-factor structure across samples. However, less than desirable reliability estimates have resulted for the present dimension in some studies. An important caveat to add is that much less validation research has been collected for the TFS as the relative newcomer to time perspective measurement.

By focusing only on the future time frame, the CFC and OFTPS automatically have a narrower definitional domain than the ZTPI and TFS but evidence various psychometric weaknesses. Validation support for the CFC is perhaps the second strongest of the four scales, but inconsistent factor structures across studies and poor reliability for the two-factor model provide a mixed assessment. The OFTPS has received steady support for the two-dimensional model and consistently high reliability across studies. However, there is considerable variation in the number and items included in the OFTPS (e.g., Bal et al., 2015; Gielnik et al., 2018).

Whereas the ZTPI fared the worst on psychometric properties, the measure has been associated with the broadest range of outcomes, including risky driving, sexual activities, homelessness, drug use, alcohol consumption, and smoking (e.g., Keogh et al., 1999; Zimbardo et al., 1997; Zimbardo & Boyd, 1999). Andre et al. (2018) found that the future time perspective measures incorporating a mixture of cognitive, behavioral, and affective elements (e.g., ZTPI) evidenced the strongest meta-analytic relationships with educational, health, and work outcomes, even after controlling for confounds.

In contrast, more circumscribed, moderated relationships comprised the predictive validity evidence in support of the TFS and the CFCS. Specifically, temporal focus moderated the effects of past and future job characteristics on current job attitudes (Shipp et al., 2009), and the CFCS moderated the impact of persuasive messages (Strathman et al., 1994). In addition, the CFCS predicted environmental and health behaviors beyond other constructs (Strathman et al., 1994). The OFTPS was positively associated with several organizationally related outcomes including satisfaction and retirement intentions (Rudolph et al., 2018). These findings can be interpreted according to bandwidth fidelity principles in which measures should correspond to the level of generality/specificity of outcomes. That is, broader traits tend to predict broader outcomes, whereas narrow traits predict narrower outcomes (e.g., Smith & Schneider, 2004).

Supporting these observations, two meta-analyses both concluded that variability in future time perspective–outcome relationships can be explained by the scale that is used (e.g., Andre et al., 2018 ; Kooij et al., 2018). In their meta-analysis, Kooij et al. (2018) reported the moderating effect of time perspective measurement in five out of 18 possible relationships. As these meta-analytic results clearly demonstrate, time perspective measurement matters. Therefore, researchers should carefully attend to the choice of a time perspective scale.

Given the striking differences between time perspective definitions, scales, and their resulting strengths and weaknesses, there is no one "best" measure. However, dependent on the purpose of the research, there are circumstances under which one or a subset of measures would be preferred. If strong validation evidence is the primary criterion, the TFS scores the highest. In this set of four featured measures, there does seem to be a trade-off between breadth of predictive validity evidence and psychometric rigor, with the ZTPI scoring the highest and lowest, respectively. A clear association exists between definitional clarity and psychometric rigor, with the TFS, CFC, and OFTPS rated higher on both than the ZTPI. If constrained by survey length, the TFS, CFC, and OFTPS are preferable.

6.2 | Time perspective study methodology

Time perspective research generally suffers from several methodological weaknesses. Across educational, work, and health areas, most studies use cross-sectional designs (Andre et al., 2018; Kooij et al., 2018). Indeed, study design could not be adequately tested as a moderator in a recent future time perspective meta-analysis because 72 of 77 studies were cross-sectional (Andre et al., 2018). The majority of time perspective studies are also correlational in nature and heavily dependent on self-report measures (e.g., Andre et al., 2018; Kooij et al., 2018; Seijts, 1998). Therefore, little evidence of causality exists, and common method variance may inflate effect sizes (Andre et al., 2018; Seijts, 1998).

By and large, measurement is treated casually and loosely in the time perspective literature. Many validation attempts do not follow published guidelines (Hinkin, 1998) for item development and scale construction (e.g., Zhang et al., 2013). For example, the prescription that factor loadings should be .40 or greater on the appropriate factor with low cross-loadings (e.g., Hinkin, 1998) tends not to be carefully followed (e.g., Zimbardo & Boyd, 1999). Violating recommended practice (e.g., Hinkin, 1998), exploratory and confirmatory factor analyses are frequently conducted on the same sample, and modifications to confirmatory factor analyses are often not retested with additional participants (e.g., Cate & John, 2007; Ryack, 2012). Confirmatory factor analytic cutoffs for acceptable fit are often not reached (e.g., McKay et al., 2012; Perry et al., 2015; Worrell et al., 2018), such as confirmatory fit index values approaching.95, the nonnormed fit index close to or above.90, and values no higher than.08 for the RMSEA and the standardized root-mean-square residual (Bentler & Bonett, 1980; Hu & Bentler, 1999).

Time perspective is mostly measured using a single instrument, and low reliabilities and inconsistent factor structures plague this literature (D'Alessio, Guarino, De Pascalis, & Zimbardo, 2003). Authors at times add, subtract, or modify items from published scales without considering the reliability or validity of the revised measure (e.g., Bal et al., 2015; D'Alessio et al., 2003; Gielnik et al., 2018).

6.3 | Future research directions

In 1999, Zimbardo and Boyd lamented "the disjointed, noncumulative nature of past research; the lack of adequate theory; and the absence of a standard, reliable, and valid measure for assessing time perspective" (p. 20). Twenty years later, the volume of research on time perspective has substantially increased, and four recent meta-analyses have quantitatively reviewed various threads of this research (e.g., Andre et al., 2018; Kooij et al., 2018; Milfont et al., 2012; Rudolph et al., 2018). However, the literature can still be characterized as "disjointed" and without a "standard, reliable, and valid measure for assessing time perspective" (Zimbardo & Boyd, 1999, p. 20). Although the ZTPI is the most popular instrument, serious reliability and validity concerns have persisted for two decades. Despite having better psychometric properties, the TFS has not emerged as the "standard" scale and was even omitted from consideration by a recent meta-analysis (e.g., Kooij et al., 2018).

Moreover, two 2018 meta-analyses on future time perspective had little overlap in the instruments they included (Andre et al., 2018; Kooij et al., 2018). The Kooij et al. (2018) meta-analysis was broader in years covered (1963–2015) than that of Andre et al. (2018) meta-analysis (1984–2014), but the former included a more limited subset of measures than the latter (e.g., excluding the TFS). According to Kooij et al. (2018), the FTPS was the third most popular future time perspective scale behind the ZTPI and CFC with 39 studies featured in their review. However, Andre et al. (2018) excluded this measure because it referenced too narrow a definition of time perspective (e.g., how individuals affectively interpret their remaining time to live and the opportunities within that time; Carstensen & Lang, 1996).

This instrument discrepancy is indeed a striking indicator of the plethora of scales available and measurement fragmentation in this literature. We believe that the lack of scale overlap between these two meta-analyses is due to a multifaceted set of factors, including conceptual ambiguity and time perspective research being scattered across numerous disciplines and publication outlets. Nevertheless, both quantitative reviews reached similar overall conclusions regarding the widespread positive impact of future time perspective on health, retirement, educational, and work outcomes.

Researchers have issued numerous calls for the development of a comprehensive, uniform measure that would holistically capture the various cognitive and affective threads of time perspective (e.g., de Bilde et al., 2011; Husman & Shell, 2008; Kooij et al., 2018). However, given the conceptual complexity of time perspective and the marked differences in the four measures reviewed, creating an all-inclusive, psychometrically sound measure is probably unlikely. Whereas we wholeheartedly agree that greater attention should be given to measurement issues in time perspective research, we see more promise in bolstering the validation evidence for individual scales focused on specific foci of time perspective. Studies that include multiple time perspective measures and assess what outcomes each differentially predicts seem long overdue.

Clearly, more remains to be known about the stability of time perspective. Although test–retest results indicate that the ZTPI (Zimbardo & Boyd, 1999), the TFS (Shipp et al., 2009), and the CFCS (Strathman et al., 1994) are stable over several weeks, longer time intervals should be investigated. In addition, time perspective scholars have acknowledged the power of situational influences to modify time perspective (e.g., Shipp et al., 2009; Stolarski et al., 2018; Zimbardo & Boyd, 1999), but empirical research is needed. Because some people may have higher future time perspective for retirement planning, but higher present time perspective for health outcomes, intraindividual variability across situations should be explored (Kooij et al., 2018).

Thought should also be given to specifying the time frame of scale items, as one study found that differences emerged when individuals were asked how often they think about the future in general versus in the present moment (Foo, Uy, & Baron, 2009). In addition, what

does future and past mean to participants? How far in the future (e.g., shorter term or distant) is the future dimension and how far in the past is the past dimension (Kooij et al., 2018)? Specifying a time frame like 5 or 10 years may increase measurement precision and help to distinguish future time perspective from conscientiousness (Andre et al., 2018). Pairing time perspective with the notion of temporal depth (temporal distances into the past and future; Bluedorn, 2002) to examine interactions may yield interesting insights. Investigating the relationship between time perspective the notion of temporal distance from construal-level theory of psychological distance (Trope & Liberman, 2010) may also be a promising research avenue (Stolarski et al., 2018).

Although the need for more longitudinal studies is commonly called for in discussion sections across organizational science and psychology, it is especially important for time perspective. First, given that only five out of 77 studies were longitudinal in the meta-analysis performed by Kooij et al. (2018), the need to test causal relationships and processes over time is especially critical for time perspective. Second, time perspective changes across the life span (Kooij et al., 2018). For example, adolescence is a critical period for the development of present and future time frame (Husman & Shell, 2008), whereas milestones such as having children and retirement may alter perceptions of time perspective (Andre et al., 2018). Third, age-related changes are also linked to time perspective, including older individuals being more negative about future opportunities (Kooij et al., 2018) and less motivated about work-related outcomes (Andre et al., 2018).

Time perspective is an individual difference, but national culture plays a top-down role, with future time perspective and outcomes being more strongly related in individualistic and long-term orientation countries (Andre et al., 2018). However, more cross-cultural time perspective research should be conducted on non-Western samples. Because organizations and nations also have a temporal focus, the fit or misfit between individual and organizational time perspective may have important implications for performance and turnover (Shipp et al., 2009). In addition, multilevel time perspective studies should be conducted assessing how much variance in outcomes is due to the individual and the organizational and national culture. Team-level research examining the effect of teams composed of past, present, and future-focused members on conflict, creativity, and innovation should also be explored (e.g., Mohammed & Nadkarni, 2011). Although conceptual research has postulated that future time perspective may comprise followers' implicit prototypes of the ideal leader (Alipour, Mohammed, & Martinez, 2017), empirical testing is needed. More research should also be conducted on past time perspective, which has received substantially less research attention than present or future time frames (Mohammed & Harrison, 2013).

6.4 | Conclusion

Contemplation of the past, present, and future matters; it matters for cognition, affect, motivation, and behavior (Andre et al., 2018; Kooij et al., 2018; Rudolph et al., 2018). Because time perspective is such a significant construct with far-reaching implications, remedying its conceptual and measurement problems is essential for future research. Considering our opening quotes that revealed striking similarity in the state of confusion across 58 years of research, we wonder what the next half a century will bring to the time perspective literature. Having reviewed how the construct has been and currently is assessed, we hope that clarity and psychometric rigor will characterize the measurement and methodology of time perspective in the future.

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APPENDIX A

TIME PERSPECTIVE SCALE ITEMS

Zimbardo Time Perspective Inventory (Zimbardo et al., 1997)

Respondents are asked to read each item and, as honestly as they can, answer the following question: "How characteristic or true is this of you?" (1 = very uncharacteristic, 2 = uncharacteristic, 3 = neutral, 4 = characteristic, 5 = very characteristic).

1. I believe that getting together with one's friends to party is one of life's important pleasures.
2. Familiar childhood sights, sounds, and smells often bring back a flood of wonderful memories.
3. Fate determines much in my life.

4. I often think of what I should have done differently in my life.
5. My decisions are mostly influenced by people and things around me.
6. I believe that a person's day should be planned ahead each morning.
7. It gives me pleasure to think about my past.
8. I do things impulsively.
9. If things don't get done on time, I don't worry about it.
10. When I want to achieve something, I set goals and consider specific means for reaching those goals.
11. On balance, there is much more good to recall than bad in my past.
12. When listening to my favorite music, I often lose all track of time.
13. Meeting tomorrow's deadlines and doing other necessary work comes before tonight's play.
14. Since whatever will be will be, it doesn't really matter what I do.
15. I enjoy stories about how things used to be in the "good old times."
16. Painful past experiences keep being replayed in my mind.
17. I try to live my life as fully as possible, one day at a time.
18. It upsets me to be late for appointments.
19. Ideally, I would live each day as if it were my last.
20. Happy memories of good times spring readily to mind.
21. I meet my obligations to friends and authorities on time.
22. I've taken my share of abuse and rejection in the past.
23. I make decisions on the spur of the moment.
24. I take each day as it is rather than try to plan it out.
25. The past has too many unpleasant memories that I prefer not to think about.
26. It is important to put excitement in my life.
27. I've made mistakes in the past that I wish I could undo.
28. I feel that it's more important to enjoy what you're doing than to get work done on time.
29. I get nostalgic about my childhood.
30. Before making a decision, I weigh the costs against the benefits.
31. Taking risks keeps my life from becoming boring.
32. It is more important for me to enjoy life's journey than to focus only on the destination.
33. Things rarely work out as I expected.
34. It's hard for me to forget unpleasant images of my youth.
35. It takes joy out of the process and flow of my activities, if I have to think about goals, outcomes, and products.
36. Even when I am enjoying the present, I am drawn back to comparisons with similar past experiences.
37. You can't really plan for the future because things change so much.
38. My life path is controlled by forces I cannot influence.
39. It doesn't make sense to worry about the future, since there is nothing that I can do about it anyway.
40. I complete projects on time by making steady progress.
41. I find myself tuning out when family members talk about the way things used to be.
42. I take risks to put excitement in my life.
43. I make lists of things to do.
44. I often follow my heart more than my head.
45. I am able to resist temptations when I know that there is work to be done.
46. I find myself getting swept up in the excitement of the moment.
47. Life today is too complicated; I would prefer the simpler life of the past.
48. I prefer friends who are spontaneous rather than predictable.
49. I like family rituals and traditions that are regularly repeated.
50. I think about the bad things that have happened to me in the past.
51. I keep working at difficult, uninteresting tasks if they will help me get ahead.
52. Spending what I earn on pleasures today is better than saving for tomorrow's security.
53. Often luck pays off better than hard work.
54. I think about the good things that I have missed out on in my life.
55. I like my close relationships to be passionate.
56. There will always be time to catch up on my work.

Balanced Time Perspective Scale (Webster, 2011)

Instructions: Please rate the following statements using the scale below. Clearly print the appropriate number in the space provided before each question.

1_Strongly Disagree, 2_Disagree, 3_Slightly Disagree, 4_Slightly Agree, 5_Agree, 6_Strongly Agree.

1. Reviewing events from my past helps give my life meaning.
2. I look forward to my future.
3. I get a renewed sense of optimism when I remember earlier life experiences.
4. Looking ahead really gets me energized.
5. Reminiscing about my past gives me a sense of purpose in life.
6. I enjoy thinking about where I'll be a few years from now.
7. Seeing how the pieces of my past come together gives me a sense of identity.
8. I have many future aspirations.
9. The joy of life is strengthened for me when I recall the past.
10. Achieving future dreams is something that motivates me now.
11. Reliving earlier times in my life helps give me a sense of direction.
12. I get excited when I think about the future.

13. The pattern of my life makes more sense to me when I reflect on my past.
14. Anticipating my later life fills me with hope.
15. Tapping into my past is a source of comfort to me.
16. Imagining my future makes me feel optimistic.
17. Remembering happier times from my past helps energize me in the present.
18. I like to fantasize about what is down the road for me.
19. I feel my past is a resource upon which I can draw.
20. Creating a positive future is something I often think about.
21. Thinking about when I was younger helps me understand my lifestory.
22. My future development is something I frequently think about.
23. Reflecting on earlier triumphs helps me identify personal strengths.
24. I enjoy thinking about goals that are yet to come.
25. Recalling previous successes helps motivate me now.
26. I have some very specific future goals.
27. Important memories fill my past.
28. The kind of person I want to be is brought into focus when I think about the future.

*Odd items are from the Past subscale; even items are from the Future subscale.

Temporal Focus Scale (Shipp et al., 2009)

The response anchors for the 12 items are (1) never, 3 (sometimes), 5 (frequently), and 7 (constantly) on a 7-point Likert scale. Respondents are asked to think about their past, present, and future in general. They are then asked to answer each item by circling the corresponding number on the Likert scale.

1. I think about things from my past.
2. I live my life in the present.
3. I think about what the future has in store.
4. I focus on what is currently happening in my life.
5. I focus on my future.
6. I replay memories of the past in my mind.
7. I imagine what tomorrow will bring for me.
8. My mind is on the here and now.
9. I reflect on what has happened in my life.
10. I think about where I am today.
11. I think back to my earlier days.
12. I think about times to come.

*TFS past (1, 6, 9, 11); TFS present = (2, 4, 8, 10); TFS future = (3, 5, 7, 12)

Consideration of Future Consequences Scale (Strathman et al., 1994) Respondents indicate whether or not each statement is characteristic of them on a scale ranging from 1 (extremely uncharacteristic) to 5 (extremely characteristic).

1. I consider how things might be in the future, and try to influence those things with my day to day behavior.
2. Often I engage in a particular behavior in order to achieve outcomes that may not result for many years.
3. I only act to satisfy immediate concerns, figuring the future will take care of itself. **Reverse Scored**
4. My behavior is only influenced by the immediate (i.e., a matter of days or weeks) outcomes of my actions. **Reverse Scored**
5. My convenience is a big factor in the decisions I make or the actions I take. **Reverse Scored**
6. I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.
7. I think it is important to take warnings about negative outcomes seriously even if the negative outcome will not occur for many years.
8. I think it is more important to perform a behavior with important distant consequences than a behavior with less-important immediate consequences.
9. I generally ignore warnings about possible future problems because I think the problems will be resolved before they reach crisis level. **Reverse Scored**
10. I think that sacrificing now is usually unnecessary since future outcomes can be dealt with at a later time. **Reverse Scored**
11. I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date. **Reverse Scored**
12. Since my day to day work has specific outcomes, it is more important to me than behavior that has distant outcomes. **Reverse Scored**

Occupational Future Time Perspective Scale (Zacher & Frese, 2009). Items assessed on a 7-point scale ranging from 1 (does not apply at all) to 7 (applies completely).

1. Many opportunities await me in my occupational future.
2. I expect that I will set many new goals in my occupational future.
3. My occupational future is filled with possibilities.
4. Most of my occupational life lies ahead of me.
5. My occupational future seems infinite to me.
6. As I get older, I begin to experience time in my occupational future as limited. **Reverse Scored**

*Remaining Opportunities Items (1–3); Remaining Time Items (4–6).