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Conceptualization and measurement of temporal focus: The subjective experience of the past, present, and future

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ABSTRACT

Temporal focus is the attention individuals devote to thinking about the past, present, and future, and the concept is important because it affects how people incorporate perceptions about past experiences, current situations, and future expectations into their attitudes, cognitions, and behavior. However, temporal focus has not been clearly defined nor situated in a nomological network of constructs. In addition, existing measures of temporal focus suffer from various shortcomings. In this paper, we advance the concept of temporal focus by critically examining its conceptualization, developing a new measure of temporal focus (Temporal Focus Scale; TFS), and evaluating the validity (i.e., construct, convergent, discriminant, nomological, and predictive validity) of the TFS across four studies. We conclude that understanding how individuals focus their attention toward the past, present, and future clarifies their responses to explicit and implicit temporal information, which suggests that a variety of research streams would benefit from incorporating the concept of temporal focus.

> "...man [sic]... does not live in the present, but with reverted eye laments to the past, or, heedless of the riches that surround him, stands on tiptoe to foresee the future."
>
> Ralph Waldo Emerson

All people experience the ongoing passage of time, as marked by the progressive and inevitable "ticking of the clock." The pervasive and universal influence of time is gaining prominence in research on temporal issues pertaining to individuals, groups, and organizations. For instance, researchers have investigated temporal aspects of individual attitudes, motivation, and behavior (Fried & Slowik, 2004; Jansen & Kristof-Brown, 2005; Mannix, Tinsley, & Bazerman, 1995; Slocombe & Bluedorn, 1999), the effects of time on team process and performance (Gersick, 1988; Harrison, Price, Gavin, & Florey, 2002; Labianca, Moon, & Watt, 2005), the role of time in organizational and strategic decisions (Blount & Janicik, 2001; Mosakowski & Earley, 2000), and how issues such as temporal rate, duration, and intervals pertain to theory development and testing (George & Jones, 2000; Mitchell & James, 2001; Zaheer, Albert, & Zaheer, 1999).

A fundamental premise underlying temporal research is the notion that people differ in their perceptions of the past, present, and future (Bluedorn, 2002; Nuttin, 1985; Rappaport, 1990). That is, despite the unidirectional progression of time, individuals can mentally move back and forth between the "settled past" and "shadowy preconceptions of what lies ahead" (Murray, 1938, p. 49; Wheeler, Stuss, & Tulving, 1997). This premise reinforces the distinction between objective time and subjective time, in which the former refers to the actual passage of time and the latter refers to a perceived notion of relativistic time (Bluedorn & Denhardt, 1988; George & Jones, 2000). Subjective time implies that in the present moment individuals may recollect the past, perceive the present, and anticipate the future.

One individual difference construct, *temporal focus*, describes the extent to which people characteristically devote their attention to perceptions of the past, present, and future (Bluedorn, 2002). Temporal focus is important because thinking about the past, present, and future affects current attitudes, decisions, and behaviors, as evidenced by research on goal-setting, motivation, and performance (Bandura, 2001; Cottle, 1976; Fried & Slowik, 2004; Nuttin, 1985), learning and self-regulation (Carver & Scheier, 1982; Sanna, Stocker, & Clarke, 2003), sense-making (Weick, 1979), affect (Wilson & Ross, 2003), and strategic choice (Bird, 1988; Das, 1987; Hambrick & Mason, 1984). For example, a past focus can enhance learning when previous actions are analyzed for relevant lessons,

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but it can diminish well-being when thoughts of the past consist of rumination about mistakes or regrets (Holman & Silver, 1998; Sanna et al., 2003). A current focus can foster well-being when it prompts people to seize opportunities, but it can endanger well-being when current focus leads to impulsive behaviors, unwarranted risk-taking, and inattention to the consequences of current behaviors (Zimbardo & Boyd, 1999; Zimbardo, Keough, & Boyd, 1997). A future focus can promote goal-setting, motivation, and achievement strivings, but it can hinder well-being when the pursuit of these goals creates time–pressure and anxiety (Bandura, 2001; Fried & Slowik, 2004; Zimbardo & Boyd, 1999).

Despite the importance of temporal focus for a variety of organizational behavior concepts, several conceptual and methodological challenges remain. First, the temporal focus concept has been defined in different ways, and researchers have used different terms to refer to the same construct. This conceptual ambiguity impedes efforts to generate a solid theoretical foundation for what temporal focus is and what it is not. Second, without a solid definition for temporal focus, we lack a clear understanding of the process by which individuals focus their attention on one or more time periods. Third, existing measures of temporal focus such as the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo & Boyd, 1999) and the Temporal Orientation Scale (TOS; Holman & Silver, 1998) have several shortcomings, such as items that do not clearly describe temporal focus, and little evidence exists concerning the construct validity of these measures (Seijts, 1998). Organizational behavior and management researchers interested in temporal issues have suggested the concept of temporal focus may be important for a variety of research streams (e.g., Ancona, Goodman, Lawrence, & Tushman, 2001; Ancona, Okhuysen, & Perlow, 2001; Lord, Brown, & Freiberg, 1999; Mainemelis, 2001; Van de Ven & Poole, 2005; Waller, Conte, Gibson, & Carpenter, 2001), but before such progress can be made, stronger measures of temporal focus must be developed. Finally, the concept of temporal focus has not been fully situated within the context of relevant organizational behavior research. As a result, we know little about how temporal focus relates to other variables such as personality, attitudes, or other temporal constructs.

The purpose of this article is to advance the conceptualization and measurement of the temporal focus construct. We delve into the definition of temporal focus, drawing on theoretical reasoning for how individuals acquire and use their temporal focus profile of past, present, and future focus. In addition, we examine how temporal focus relates to other temporal concepts (e.g., temporal depth and time attitude) and other individual differences (e.g., personality and optimism) to situate the construct within the relevant literature. We also critically evaluate existing measures of temporal focus and introduce a new measure, the Temporal Focus Scale (TFS), which overcomes problems with current measures. We demonstrate support for the TFS through a series of construct validation studies (Edwards, 2003), with confirmatory factor analyses (Studies 1 and 2); assessment of nomological validity (Study 2), convergent, and discriminant validity (Studies 2 and 3); and assessment of temporal stability and predictive validity (Study 4). Finally, we conclude with implications for the use of the TFS in research on temporal focus and the role of this concept within the broader domain of organizational behavior and management research.

Conceptualization of temporal focus

The concept of temporal focus

As noted earlier, we define temporal focus as the allocation of attention to the past, present, and future. This tripartite definition captures the notion that people can shift their attention among different time periods and that focusing on one period does not necessarily prevent thinking about the other two. This perspective stands in contrast to the view that people predominantly focus on either the past, present, or future, as evidenced by studies that classify people as past-focused, current-focused, or future-focused (e.g., Harber, Zimbardo, & Boyd, 2003; Holman & Silver, 1998). Classifying people into a single category imposes artificial boundaries between each type of temporal focus and prohibits a balanced emphasis on all three. Instead, we treat all three types of temporal focus as matters of degree to better reflect the complexity of how people temporally allocate their attention. For instance, a person who is high in both current and future focus can be equally interested in current activities and planning for the future. This person would differ from someone who is high in future focus and low in current focus, interested only in future plans and outcomes but who overlooks the current actions that enable these plans. Thus, our definition of temporal focus reflects the idea that people can have multiple temporal foci, allocating attention to the past, present, and future to varying degrees in a temporal focus profile (McGrath & Rotchford, 1983; Zimbardo & Boyd, 1999).

The process by which individuals can shift their temporal focus within this temporal focus profile is best described by research on focus of attention. This research suggests that individuals have a high degree of control over the allocation of their attention to various targets (Gardner, Dunham, Cummings, & Pierce, 1987; Gardner, Dunham, Cummings, & Pierce, 1989). Individuals typically focus on things they are required to think about due to role demands (e.g., goals at their jobs) and things that evoke a strong positive or negative affective reaction (Gardner et al., 1989; March & Olsen, 1979). This research also suggests that the targets of attention can vary throughout the day (e.g., work, family, and personal targets) and outside stimuli can influence the momentary allocation of attention to some targets over others (Gardner et al., 1989). For example, if a supervisor comes into an employee's office angry about last month's performance, the employee is likely to shift his or her attention to that period of time. However, research on focus of attention suggests that, beyond these momentary fluctuations, individuals develop an identifiable pattern of attention allocation in which they focus on certain targets over others (Gardner et al., 1987).

Applying these principles to temporal focus, targets of attention can be conceived as the past, present, and future periods of one's life. In any given moment, people might consider one time period to the exclusion of the others (Nuttin, 1985), but cumulatively, people develop general tendencies to focus on certain time periods to varying degrees (Zimbardo & Boyd, 1999), which is what we refer to as temporal focus. The development of a general, stable temporal focus is influenced in early years by one's childhood experiences, national culture, socioeconomic status, and parental beliefs about time (McGrath & Tschan, 2004; Trommsdorff, 1983). For example, an individual may be socialized by her national culture to focus on the past (e.g., Asian culture that values tradition and history; Ji, Guo, Zhang, & Messervey, 2009) and by her parents to focus on the future (e.g., family values of achievement and planning). At a given moment she may focus on any period of time due to various work or personal stimuli, but her early socialization experiences will produce a general tendency to focus attention on the past and future (Trommsdorff, 1983). Over time, her general profile of past and future focus should be stable, although it could be reinforced or modified through additional socialization experiences such as education, occupational choice, or personal experiences. For example, recent research demonstrated that the September 11th terrorist attacks on the World Trade Center influenced individuals' future temporal focus, such

that focus on future decreased slightly after the event (Holman & Silver, 2005).[1]

Temporal focus: relationships with other temporal constructs

As noted earlier, the temporal focus concept has been discussed using different terms, and as a result, existing research is potentially confusing about what is meant by temporal focus. Therefore, to clarify the concept of temporal focus, we identify and describe a variety of temporal concepts, as shown in Table 1. We note how each of these temporal concepts relates to the construct of temporal focus as conceptualized in this article.

Time perspective

Time perspective is the overarching view that an individual has towards various aspects of time. Lewin (1951, p. 75) defines time perspective as the "totality of the individual's views of his [sic] psychological future and his [sic] psychological past existing at a given time". This concept has also been referred to as time personality (e.g., Ancona, Okhuysen, et al., 2001; Francis-Smythe & Robertson, 2003), which subsumes a variety of other temporal variables such as time orientation, time attitude, and polychronicity, as we will later discuss. These definitions characterize time perspective as an overarching concept that encompasses a variety of concepts related to time (Mohammed & Harrison, 2007). We suggest that temporal focus may best be described as one component of an individual's time perspective.

Temporal orientation

Holman and Silver (1998) and Zimbardo and colleagues (Zimbardo & Boyd, 1999; Zimbardo et al., 1997) use the term *temporal orientation* to describe cognitive involvement in the past, present, or future. Similarly, Nuttin (1985) described *time orientation* as thoughts and behaviors primarily directed toward the past, present, or future. These concepts relate closely to temporal focus as conceptualized here. However, time and temporal orientation describe individuals as having a predominant focus, such that they characteristically think about the past, the present, or the future, without allowing for the allocation of attention to more than one time period. In contrast, we conceptualize temporal focus such that the amount of attention devoted to the past, present, and future are matters of degree, without the restriction that a person typically focuses on a single time period. Thus, temporal focus allows for greater variation than time or temporal orientation in terms of how people allocate their attention to the past, present, and future. Temporal focus allows for the possibility that some individuals might focus on a single time frame, but it also includes cases in which individuals focus equally on all three time frames, focus on two time frames to the exclusion of the third, and many other combinations of attention allocation across the past, present, and future.

Temporal depth

Temporal focus differs from *temporal depth*, which captures the temporal distance of the past and future from the present (Bluedorn, 2002). This concept also has been described as past and future time horizon, such as the distance into the future an executive or entrepreneur typically considers (e.g., Bluedorn & Denhardt, 1988; Das, 1987). Our conceptualization of temporal focus is not restricted to specific temporal distances, because focusing on the past or future does not itself determine its distance from the present. For example, an individual might have a high future focus yet have a short temporal depth, resulting in a strong focus on the near future. Thus, we expect temporal focus and temporal depth to be independent, describing unique aspects of time perspective.

Time attitude

Temporal focus is also distinct from concepts that describe specific types of thoughts embedded in various time frames (de Volder, 1979). For instance, regret entails negative feelings about past decisions (Gilovich & Medvec, 1995), and nostalgia involves positive feelings produced by reflection on the past (Holak & Havlena, 1998). Analogously, worry refers to fearful preoccupation with future outcomes (Floyd, Garfield, & LaSota, 2005), and hope describes positive expectations that goals might be met in the future (Snyder et al., 1991). Underlying these examples is the notion of *time attitude*, which describes how positively or negatively a person feels about the past, present, and future (Nuttin, 1985). Time attitude is important because a positive attitude toward a particular period, such as the future, may increase its subjective value and motivate actions directed toward this time period (Nuttin, 1985).

Unlike time attitude, our conceptualization of temporal focus entails thinking about the past or future without specifying the particular thoughts or attitudes involved. Although research on focus of attention suggests that individuals tend to focus on experiences that trigger strong feelings (Gardner et al., 1989; March & Olsen, 1979), these feelings can be either positive or negative, either of which would have the capacity to draw an individual's attention. Thus, on balance, we expect temporal focus to be largely unrelated to time attitude.

Polychronicity

Polychronicity refers to how much individuals prefer to perform tasks simultaneously versus sequentially (Slocombe & Bluedorn, 1999). It is an important predictor of outcomes such as performance, satisfaction, self-efficacy, and strain, depending upon the fit between one's preferred level of polychronicity and the job's demands for polychronicity (Hecht & Allen, 2005; Slocombe & Bluedorn, 1999). Polychronicity differs from temporal focus on two primary counts. First, polychronicity concerns a preferred division of time, whereas temporal focus refers to the allocation of attention across time frames. Second, polychronicity and monochronicity both refer to the structure of behaviors in the present, whereas temporal focus refers to thoughts toward the past, present, and future. Given these differences, we expect polychronicity and temporal focus will be unrelated.

Hurriedness

Individuals also differ in their concern with the passage of time, which is referred to as the time urgency aspect of Type A behavior (Conte, Mathieu, & Landy, 1998; Edwards, Baglioni, & Cooper, 1990; Landy, Rastegary, Thayer, & Colvin, 1991). Because time urgency contains multiple facets that address a variety of behaviors (e.g., eating fast or speech patterns; Conte et al., 1998), we selected the general hurriedness facet as our focus. Hurriedness is the general tempo of an individual's activities being fast or slow, and is positively related to satisfaction and helping behaviors when

[1] It is important to note that recent research on socioemotional selectivity theory by Carstensen and colleagues (Carstensen, 2006; Carstensen, Isaacowitz, & Charles, 1999; Fung & Carstensen, 2004; Lang & Carstensen, 2002) suggests that the periods on which individuals focus their attention may be influenced by age. The premise is that elderly individuals perceive death as an "ending" and thus are motivated to focus their time more on the present (e.g., with whom do I want to spend my time?). Thus, we would expect to see a decline in the average level of future focus for older individuals who are approaching death, although we propose that this change may be more pronounced in one's later years (e.g., after retirement), and not the years in which individuals are in their prime working years (e.g., 18–65), which is the focus of this study. In addition, shift away from the future onto the present has also been replicated with younger individuals when an ending (e.g., graduation) is primed such that perceived endings of various types, not just death, may influence a shift in focus, even for younger individuals. However, we propose that these shifts are temporary in response to the ending event and that it is likely individuals shift back to their more general tendencies afterwards.

Table 1
Temporal constructs.

Construct	Definition	Measure	Cognition, affect, or behavior	Known covariates or consequences
Temporal perspective	An individual's temporal portfolio of his or her views of time	None – overarching framework	Mix of cognition, affect and behavior	Untested (conceptual framework that includes temporal concepts listed below).
Temporal focus	The extent to which people devote their attention to the past, present, and future	Temporal Focus Scale (TFS; this study)	Cognition	Untested (results in this study).
Time perspective	Stable individual differences in temporal orientation (thinking about the past, present, or future)	Zimbardo Time Perspective Inventory (ZTPI; Zimbardo & Boyd, 1999)	Mix of cognition, affect and behavior	Past-negative is positively correlated with depression and anxiety, and negatively correlated with emotional stability and self-esteem. Past-positive is positively correlated with friendliness and self-esteem. Present-hedonistic is positively correlated with novelty and sensation-seeking. Present-fatalistic is positively associated with anxiety and aggression. Future orientation is positively correlated with conscientiousness, consideration of future consequences, and preference for consistency.
Temporal orientation	Cognitive involvement predominantly in the past, present, or future	Temporal Orientation Scale (TOS; Holman & Silver, 1998)	Mix of cognition, affect and behavior	Psychological distress is positively correlated with past orientation and negatively correlated with future orientation.
Temporal depth	The temporal distance into the past and future that individuals or collectivities typically consider	Temporal depth index (TDI; Bluedorn, 2002)	Cognition	Past and future depth are positively correlated (i.e., longer overall temporal depth). Past depth negatively correlates with preference for working fast and flexibility of work (Bluedorn & Martin, 2008). Future depth positively correlates with planning horizon (Das, 1987), negatively correlates with life stress (Bluedorn & Martin, 2008).
Time attitude	How positively or negatively an individual feels about the past, present, and future	Time Attitude Scale (TAS; Nuttin, 1985)	Affect	Attitude toward future predicts motivation (indirectly through perceived instrumentality; Van Calster, Lens, & Nuttin, 1987).
Preferred polychronicity	Preference for doing more than one thing at a time	Inventory of polychronic values (IPV; Bluedorn, Kalliath, Strube, & Martin, 1999)	Cognition	Positively related to satisfaction, PA, self-efficacy; negatively related to NA, psychological strain, and importance of time allocation (Hecht & Allen, 2005).
Hurriedness	General speed or hurriedness factor of time urgency (Conte et al., 1998)	Jansen & Kristof-Brown, 2005	Behavior	Positively correlated with psychological strain and helping behavior; negatively correlated with satisfaction (Jansen & Kristof-Brown, 2005).
Pacing style	Typical pattern of time allocation toward a deadline (Gevers et al., 2006)	Pacing preference scale (Gevers et al., 2008)	Behavior	Negatively correlated with conscientiousness (Gevers et al., 2006).

individuals' hurriedness fits the hurriedness of their work groups (Jansen & Kristof-Brown, 2005).

Hurriedness refers to a behavioral tendency and thus differs from the temporal focus emphasis on cognition. In addition, hurriedness relates to the tempo of behaviors in the present, whereas temporal focus spans the past, present, and future. Although hurriedness concerns behavior in the present, we do not expect hurriedness to relate to present temporal focus, because a person who focuses on the present could be trying to perform as many tasks as possible or, alternately, could be savoring the present moment. However, it is possible that individuals who focus on the future may exhibit greater hurriedness because they perceive not only current work demands but also future work demands, thereby sensing the need to work more quickly in the present moment. As a result, we expect hurriedness to be unrelated to past and current temporal focus and positively related to future temporal focus.

Pacing style

Pacing style refers to an individual's allocation of time relative to a deadline (Gevers, Rutte, & van Eerde, 2006). Recent work suggests there might be multiple aspects of pacing, including working close to a deadline (i.e., procrastination), working at a steady pace, and working early in a project and then later as the deadline approaches (Gevers, Mohammed, Baytalskaya, & Beeftink, 2008). Although temporal focus and pacing style differ in their emphasis on cognition versus behavior, respectively, we expect that procrastination will relate to future focus. In particular, those who focus on getting work done before the deadline might have a stronger future focus, which drives their current behaviors to work ahead of the time limit. In contrast, procrastinators, who delay their work until just prior to a deadline, might focus less on the future and only perform when the deadline has moved into the present time period. Thus, we expect future temporal focus will negatively relate to the pacing style of procrastination.

Nomological network

To assess the nomological validity of temporal focus, we cast a broad net that includes various attitudes and individual differences for two reasons. First, research on temporal focus is just taking root, and to facilitate this research, we want to position temporal focus within the broader domain of organizational behavior and

psychology research. Second, by identifying concepts that should and should not relate to temporal focus, we can evaluate how well temporal focus is assessed by the TFS relative to other measures of the same construct.

Job and life satisfaction

Job satisfaction refers to positive feelings associated with one's job as a whole (Locke, 1969; Spector, 1997). Job satisfaction can be viewed as a component of life satisfaction, which represents a person's global assessment of his or her quality of life (Diener, Emmons, Larsen, & Griffin, 1985). As general constructs, job and life satisfaction can include assessments of the past, present, and future, spanning the time frames that define temporal focus. Because experiences at different time frames can be positive or negative, we do not expect temporal focus to correlate with job or life satisfaction. Rather, temporal focus should affect the degree to which past, present, and future experiences influence current satisfaction (Gardner et al., 1987). We elaborate these effects by considering how focusing on past, present, and future job experiences can affect current job satisfaction.

At a particular point in time, job satisfaction depends upon current job experiences. For example, current job satisfaction should increase when the job contains normatively desirable characteristics such as autonomy, adequate pay, recognition, and opportunities for growth. The extent to which past and future job characteristics influence current satisfaction beyond the effects of current job characteristics depends upon the degree to which individuals focus on these time periods (Gardner et al., 1987).

We see two competing rationales for how past and future job characteristics influence current job satisfaction. On the one hand, focusing on past and future job characteristics could affect current job satisfaction in ways that mimic the effects of current job characteristics, such that feelings associated with past and future job characteristics are assimilated into current job satisfaction (Elster & Loewenstein, 1992; Markman & McMullen, 2003; Tversky & Griffin, 1991). If assimilation occurs, then focusing on the past or future would increase the relationship between current job satisfaction and characteristics of the job in the past or future. On the other hand, past and future job characteristics can operate as standards against which current job characteristics are compared, producing contrast effects (Albert, 1977; Markman & McMullen, 2003; Tversky & Griffin, 1991). For instance, if a person previously held a job with a higher salary, then by comparison, the salary provided by the current job would seem less favorable. Therefore, holding current salary constant, higher previous salary would result in lower current job satisfaction. This contrast effect would be amplified to the extent the person focuses on the past, thereby activating past salary as a standard of comparison. Thus, if contrast occurs, then focusing on the past or future would augment the negative relationships between past and future job characteristics and current job satisfaction. Both contrast and assimilation are viable explanations for the effects of past and future experiences on current job satisfaction, and temporal focus could logically strengthen either explanation. Given that contrast and assimilation can occur simultaneously (Tversky & Griffin, 1991), it is unclear which process will predominate due to temporal focus. Thus, we explore both possibilities.

Locus of control

Locus of control refers to individuals' beliefs about how personal actions, chance, and powerful others determine life events and circumstances (Levenson, 1973; Presson, Clark, & Benassi, 1997; Rotter, 1966). Internally focused individuals believe that their life circumstances result from their own behavior (Rotter, 1966), which implies that internals take stock of their current circumstances and set goals to reach desired outcomes. Thus, we expect internal locus of control to be positively related to current and future temporal focus. In contrast, individuals who attribute their life circumstances to external sources, such as fate or powerful others, are unlikely to plan for the future, given that such planning might be deemed futile. Instead, such individuals are likely to review past events that might explain their life state. Thus, we predict that chance and powerful others locus of control will be unrelated to current and future temporal focus and positively related to past temporal focus.

Risk-taking

Risk-taking is a general predisposition that concerns the willingness to commit to decisions with uncertain outcomes (Stewart & Roth, 2001). For example, individuals may be willing to take monetary risks in the present for financial gains in the future. Because risk-taking involves consideration of possible future outcomes along with current behaviors that could elicit these outcomes, we predict that risk-taking will be positively related to both current temporal focus and future temporal focus. However, because risk-taking also involves thrill-seeking (Jackson, Hourany, & Vidmar, 1972), in which individuals seek to maximize current sensations, we anticipate that risk-taking will be more strongly related to current focus than future focus.

Optimism

Optimism is a predisposition to expect that the future will be positive (Scheier, Carver, & Bridges, 1994). Individuals high and low in optimism characterize the valence of the future differently, but they may think about the future equally, suggesting a null relationship between optimism and future temporal focus. However, research has shown that individuals high in optimism tend to use problem-focused coping strategies, such as developing future plans, whereas individuals low in optimism use coping strategies such as denial and disengagement, which may signify a retreat to the past (Scheier et al., 1994). On balance, we expect optimism will exhibit a modest positive relationship with future temporal focus and a modest negative relationship with past temporal focus.

Personality

Although personality is complex and multifaceted, the overarching structure of personality can be described by the five-factor model (Costa & McCrae, 1992). The dimensions of the five-factor model include: (a) *neuroticism,* which refers to being anxious, depressed, angry, worried, and insecure; (b) *extraversion*, which involves sociability, expressiveness, impulsiveness, and ambition; (c) *openness to experience*, which includes being imaginative, curious, broad-minded, and intelligent; (d) *agreeableness*, or the tendency to be courteous, trusting, cooperative, helpful, and tolerant of others; and (e) *conscientiousness*, which means being thorough, responsible, self-disciplined, planful, and goal-oriented (Barrick & Mount, 1991; Costa & McCrae, 1992).

Careful examination of the dimensions of the five-factor model suggests several subtle connections with thoughts about the past, present, and future. In particular, the planful and goal-oriented aspects of conscientiousness indicate a focus on the future, given that plans and goals involve what has yet to come. Similarly, the ambitious aspects of extraversion imply thinking about the future in terms of desired goals or rewards. Extraversion also carries an element of thinking about the present, in that impulsiveness involves thoughts of engaging in behavior without concern for its subsequent consequences. For neuroticism, being anxious and worried connotes preoccupation with future concerns, and depression suggests the tendency to dwell on past failures and disappointments. Based on these conceptual parallels, we posit that past temporal focus will relate to neuroticism, current temporal focus will relate to extraversion, and future temporal focus will relate to conscientiousness, extraversion, and neuroticism. Of these relationships, we

expect the strongest will involve conscientiousness and future temporal focus, for which the conceptual linkages are the most apparent. The remaining relationships should be modest, due to the subtle conceptual connections to temporal focus. We expect no relationship between temporal focus and either agreeableness or openness to experience.

Measurement of temporal focus

Existing measures of temporal focus

Although various measures assess aspects of temporal focus (e.g., Gjesme, 1979; Ko & Gentry, 1991; Stewart, 1976; Strathman, Gleicher, Boninger, & Edwards, 1994; Zaleski, 1996; Zuckerman, 1994)[2], two measures that have gained widespread use are the ZTPI (Zimbardo & Boyd, 1999) and the TOS (Holman & Silver, 1998). The 56-item ZTPI (Zimbardo & Boyd, 1999) includes five factors labeled past positive, past negative, current hedonistic, current fatalistic, and future. The 28-item TOS (Holman & Silver, 1998) includes three factors labeled past, present, and future temporal orientation.

The ZTPI and the TOS have stimulated a growing body of empirical research on temporal focus. However, these measures suffer from two major shortcomings. First, many of the items that constitute the ZTPI and TOS do not directly describe thinking about the past, present, or future, but instead combine such thoughts with concepts such as time attitude (e.g., regret, nostalgia, hope, worry), behaviors (e.g., impulsiveness, risk-taking), or individual differences other than temporal focus itself (e.g., locus of control, conscientiousness). Second, little evidence exists regarding the construct validity of the ZTPI and TOS, and the available evidence suggests that both measures have psychometric weaknesses such as low loadings in exploratory factor analysis (e.g., Zimbardo & Boyd, 1999), low reliability estimates (e.g., Aronowitz & Morrison-Beedy, 2004; Aronowitz, Rennells, & Todd, 2005), and high correlations among factors (e.g., Wayment & Aronson, 2002).

Temporal Focus Scale

The Temporal Focus Scale (TFS) was created in response to the shortcomings of existing measures. To overcome the conceptual gap between existing measures and the temporal focus construct, we used a domain sampling procedure (Nunnally, 1978) to generate items that were consistent with the *a priori* definition of temporal focus as thinking about the past, present, and future. These items were carefully designed to avoid confounding thoughts about the past, present, and future with positive or negative evaluations, such as nostalgia, regret, hope, or worry, or with constructs such as impulsiveness, risk-taking, conscientiousness, and locus of control. This item-generation process resulted in an initial pool of 22 items, with nine, six, and seven items, respectively, describing attention toward the past, present, and future. We then evaluated the content of the items using seven trained coders who rated the degree to which each item represented each of the three theoretical dimensions of temporal focus. From this pool, we selected 12 items, four each for the past, present, and future, which yielded high ratings on the intended dimension and low ratings on the other two dimensions. Illustrative items include "I replay memories of the past in my mind" for past temporal focus, "My mind is on the here and now" for current temporal focus, and "I focus on my future" for future temporal focus. With 12 items, the TFS is less than a quarter of the length of the ZTPI and less than half the length of the TOS, thereby avoiding practical obstacles that can result from the length of these measures.

Overview of the present studies

We used four samples to assess the construct validity of the TFS. In Study 1, we evaluated the factor structure of the TFS measure using confirmatory factor analysis. In Study 2, we confirmed the TFS factor structure, compared the TFS to existing temporal focus measures, and examined their nomological validity based on the predictions set forth above. In Study 3, we tested our predictions about the relationships between temporal focus and other temporal constructs. Finally, in Study 4, we examined both the temporal stability of temporal focus and the predictive validity of the TFS relative to job attitudes.

Study 1

Method

Sample

Participants were recruited from an executive MBA (EMBA) program at a major southeastern university. A total of 476 EMBA students from three cohorts (2005, 2006, and 2007 graduating classes) were contacted and given a $2 incentive to participate in the study. Completed surveys were returned by 181 individuals, yielding a 38% response rate. Similar to the demographics of the EMBA program, most respondents (85%) were male, and the racial distribution was 70% Caucasian, 14% Asian, 8% African American, 6% Hispanic, and 2% in other racial categories. Participants ranged from 25 to 52 years of age, with an average age of 34 years. Average work experience was 12 years (range 4–31 years), and average tenure at their current jobs was 2.6 years.

Measures

As noted previously, the TFS contains 12 items that describe thinking about the past (4 items), current (4 items), and future (4 items) time periods. The TFS items were rated on a 7-point scale describing the frequency with which the respondent thought about the time frame indicated by the item (1 = never; 3 = sometimes; 5 = frequently; 7 = constantly). Anchors for the TFS response scale were derived using guidelines from Bass, Cascio, and O'Connor (1974).

Analysis

Confirmatory factor analyses of a three-factor model for TFS were conducted using LISREL 8.54 (Jöreskog & Sörbom, 2003). Model fit was evaluated using several criteria. As is customary, we report the chi-square test statistic, which reflects the overall discrepancy between the original and reproduced covariance matrices (Jöreskog & Sörbom, 2003). A drawback of the chi-square test is that, when sample sizes are reasonably large, models are rejected even though they fit the data well from a practical standpoint (Bentler & Bonett, 1980). Therefore, we also examined the root mean squared error of approximation (RMSEA; Steiger, 1990), comparative fit index (CFI; Bentler, 1990), Tucker–Lewis index (TLI; Tucker & Lewis, 1973), and the standardized root mean

[2] Many existing scales purport to measure at least one aspect of temporal focus. However, we used several criteria to judge which measures to include in this paper. First, to facilitate comparisons with the Temporal Focus Scale we develop, we chose to focus on scales that measured all three time periods of temporal focus rather than one or two time periods (e.g., past and future time orientation; Ko & Gentry, 1991; future time orientation, Gjesme, 1979 and Stewart, 1976; consideration of future consequences, Strathman et al., 1994). Second, we focused on scales that attempted to measure the cognitive aspects of temporal focus rather than the affective or behavioral aspects (e.g., future anxiety, Zaleski, 1996; sensation-seeking; Zuckerman, 1994), which we felt were potential outcomes of temporal focus rather than measures of temporal focus itself. Finally, we examined the extent to which measures were being used in subsequent research to select only those measures that had sufficient information about their performance in additional studies.

square residual (SRMR, Bentler, 1995). Although standards for fit indices are difficult to establish (Marsh, Hau, & Wen, 2004), Hu and Bentler (1999) suggest that adequate fit is indicated by an RMSEA value of .060 or lower, CFI and TLI values of .95 or higher, and SRMR value of .08 or lower. In addition to overall model fit, we examined item loadings, standardized residuals, and modification indices that gauged the potential improvement in model fit if an item was allowed to load on more than one factor.

Results

The χ^2 for the TFS model was significant ($\chi^2_{51} = 93.71$; $p < .01$), but other indices suggested reasonable fit to the data. The RMSEA value was .070, and its 90% confidence interval included the .060 criterion. The CFI was .96 and the TLI was .95, which met the .95 threshold. Finally, the SRMR was .06, which was less than the .08 criterion.

As shown in Table 2, item loadings supported the proposed three-factor structure. All loadings were significant, with standardized values ranging from .50 to .85, with a median of .78, which corresponds to an item reliability of about .61. Looking at additional evidence of model fit, 17% of the items produced significant but small modification indices for cross-loadings, and 17% of the standardized residuals were significant, half of which were positive.

Although we had hypothesized that the three-factor structure of past, present, and future focus best represented the concept of temporal focus, we reasoned that alternative models might fit equally as well. For example, the current time period is adjacent to the past and to the future and may be incorporated into perceptions of the past or future such that two rather than three dimensions of temporal focus are obtained (i.e., past/current focus and future focus; or past focus and current/future focus). In addition, individuals may simply draw their attention to the current time period versus temporal thoughts that refer to any time period other than the present. Such a focus would produce two dimensions of current focus and past/future focus. These three two-factor models are nested within the three-factor model that we hypothesized and therefore we used chi-square difference tests to examine the change in model fit. All three of the alternative two-factor models fit the data worse than the three-factor model based on chi-square difference tests ($p < .01$). In addition, all of the other fit indices (RMSEA, CFI, and NNFI) of the two-factor models fell below the thresholds for good fit. Thus, the three-factor model provides the best fit to the data.

Table 3 presents the reliability estimates and factor correlations. Reliability estimates for the TFS subscales ranged from .74 to .89. In addition, the only factor correlation to reach significance was the positive correlation between current and future focus ($r = .40$; $p < .01$).

Finally, we examined the distribution of temporal focus profiles, using median splits to categorize individuals as "high" or "low" on past, present, and future focus. Approximately 26% of the sample was highly focused on one time period only (8.6% past; 10.7% current; and 7% future), and more than 38% of the sample was highly focused on two periods (13.9% past/current; 7% past/future; 17.1% current/future). Approximately 26% focused highly on all three time periods, and 10% had a low focus on all three periods.

Discussion

The results of Study 1 supported the intended three-factor structure of the TFS and produced interesting descriptive results of the variety of temporal focus profiles we uncovered. First, the standardized loadings of the TFS items were reasonably high, evidence for cross-loadings was minimal, and the three subscales demonstrated adequate reliability. These results provide initial support of the validity of the TFS.

Second, we found a wide array of temporal focus profiles with most individuals strongly focusing on two or three time periods. A full 26% of the sample focused on all three time periods, suggesting that it is possible to be "hypertemporal" by generally directing one's attention to all three time periods. Unexpectedly, we also found that 10% of the sample reported a low focus on all three time periods, suggesting that they are "atemporal." These individuals think less about any time period, which suggests that have a weaker temporal focus overall.

To further examine differences among the different periods of temporal focus, we used Study 2 to examine how temporal focus relates to a variety of personality and attitudinal variables in a nomological network analysis. In addition, we compare the TFS to the ZTPI and TOS in terms of convergent, discriminant, and nomological validity.

Study 2

Method

Sample

Participants were recruited from a major southeastern university using email, flyers, and posters. A total of 389 participants were given the survey, each of whom was paid $5. Of the 389

Table 2
Study 1 TFS factor loadings.

	Factor		
	Past focus	Current focus	Future focus
Past focus			
6. I replay memories of the past in my mind.	**.85****	–	–
9. I reflect on what has happened in my life.	**.82****	–	–
1. I think about things from my past.	**.83****	–	–
11. I think back to my earlier days.	**.79****	–	–
Current focus			
4. I focus on what is currently happening in my life.	–	**.77****	–
8. My mind is on the here and now.	(−.15**)	**.67****	–
10. I think about where I am today.	–	**.63****	–
2. I live my life in the present.	–	**.50****	–
Future focus			
3. I think about what my future has in store.	–	–	**.84****
12. I think about times to come.	–	–	**.80****
5. I focus on my future.	–	–	**.74****
7. I imagine what tomorrow will bring for me.	(.15**)	–	**.73****

Note: $N = 181$. Bold factor loadings were obtained from our CFA, whereas the cross-loadings and their significance levels were obtained from the modification indices of expected change if allowed to cross-load.
** $p < .01$.

Table 3
Study 1 scale means and standard deviations, factor correlations, and reliabilities.

	Factor				
	Mean	s.d.	Past focus	Current focus	Future focus
Past focus	4.03	1.00	(.89)		
Current focus	5.10	0.72	.09	(.74)	
Future focus	5.48	0.82	.09	.40**	(.86)

Note: $N = 181$. Means and standard deviations calculated from average of items per scale. Factor correlations are taken from the confirmatory factor analysis. Coefficient alphas are shown along the diagonal in parentheses as measures of reliability.
** $p < .01$.

surveys returned, 29 were eliminated because one of the temporal focus scales was blank, which precluded comparison across the three measures. Thus, we had 360 usable surveys. Slightly over half (53.4%) of the participants were male, and the racial distribution was 63.3% Caucasian, 18.8% African American, 9.9% Asian, and 8.0% distributed among Hispanic, Native American, and other racial categories. Respondents ranged from 18 to 47 years of age with an average of 21 years. Over 70% of the respondents had work experience, with an average of 1.4 years of part-time experience and 7 months of full-time experience.

Measures

Temporal focus was measured using the TFS, the ZTPI (Zimbardo & Boyd, 1999), and the TOS (Holman & Silver, 1998). We presented and labeled each scale as a set, grouping items from each measure into their own section of the survey and asking respondents to think about each set with a fresh mind (Harrison & McLaughlin, 1996). We also counterbalanced the scales as sets to avoid order effects. The items and response scale for the TFS were the same as those used in Study 1. As described earlier, the ZTPI contains 56 items assigned to five scales labeled past positive (9 items), past negative (10 items), current hedonistic (15 items), current fatalistic (9 items), and future (13 items). The TOS contains 28 items assigned to three scales labeled past (9 items), current (10 items), and future (9 items). Both the ZTPI and the TOS items were rated on a 5-point scale that reflected how well each item described the respondent.

After completion of the three temporal focus scales, participants completed the 5-item Satisfaction with Life Scale (SWLS; Diener et al., 1985), a 20-item Locus of Control scale (LOC; Levenson, 1973; Presson et al., 1997), the 20-item Risk-Taking scale of the Jackson Personality Inventory (JPI-R; Jackson, 1994), the 6-item Life Orientation Test (LOT-R; Scheier et al., 1994), and the 60-item NEO Personality Inventory (Costa & McCrae, 1985). The LOC scale contains three dimensions representing internality (6 items), powerful others (7 items), and chance (7 items). The NEO contains five dimensions that represent conscientiousness, extraversion, neuroticism, agreeableness, and openness to experience, each measured with 12 items. The LOC, SWLS, and JPI-R items were assessed with a 7-point response scale that ranged from "strongly disagree" to "strongly agree," whereas the NEO and LOT-R items were scored using a 5-point scale ranging from "strongly disagree" to "strongly agree."

Analysis

The overall percentage of missing data in Study 2 was low (<1%), but given the number of variables in the dataset, listwise deletion proved too severe as it reduced the sample size from 360 to 183. Thus, to retain all respondents and provide the sample size needed to test our sizeable factor models, missing data were handled using the Full Information Maximum Likelihood (FIML) approach (Enders, 2001; Enders & Bandalos, 2001; Newman, 2003). For this procedure, missing data were assumed to be missing at random (Rubin, 1976). Because of the reduced fit statistics available when using the FIML procedure, we assessed model fit with the chi-square, RMSEA, and CFI using the same criteria as Study 1.

The primary analyses of the three temporal focus measures were conducted separately for each measure. Factor correlations for the three measures were estimated using an integrative factor model that combined the three measures. Finally, relationships between the temporal focus factors and the constructs used to assess nomological validity were estimated with a series of models in which each nomological validity construct was added to the model containing the 11 temporal focus factors, including five for the ZTPI, three for the TOS, and three for the TFS. This approach was used because a factor model with all of the measures would have exceeded sample size requirements (Jöreskog & Sörbom, 2003).

Our evaluation of the convergent, discriminant, and nomological validity of the temporal focus measures required us to make judgments about the magnitudes of factor correlations. To facilitate this task, we interpreted correlations that were statistically significant but less than .30 as small, correlations between .30 and .50 as moderate, and correlations greater than .50 as large. These benchmarks are somewhat higher than the general guidelines suggested by Cohen (1992), but we considered them appropriate for self-report measures of conceptually related constructs collected at the same time. When relevant, differences between correlations were assessed by extracting the variances and covariances of the parameter estimates to obtain a standard error of the difference. To judge statistical significance, *t*-tests were calculated by dividing the differences between correlations by the standard error of the difference.

Results

Confirmatory factor analysis of the TFS

For the TFS, the RMSEA was .073, and its 90% confidence included the .060 criterion. The CFI was .95, matching the .95 threshold. As shown in Table 4, standardized item loadings were significant and consistently high, ranging from .65 to .84 with a median of .76, indicating an item reliability of about .58. Approximately 33% of the items had significant but small modification indices for cross-loadings, and 12% of the standardized residuals were significant, half of which were positive.

Factor correlations and reliability estimates for the TFS are given in Table 5. The reliability estimates of the TFS were adequate, ranging from .78 to .88. Similar to Study 1, we found a modest positive correlation between current and future temporal focus in the TFS ($r = .32$; $p < .01$). However, we also found a modest correlation between past and future temporal focus ($r = .34$; $p < .01$) and a small correlation between past and current temporal focus ($r = .19$; $p < .01$).

Confirmatory factor analysis of the ZTPI

The ZTPI model[3] did not fit the data well. The RMSEA was .064, but its 90% confidence interval excluded the suggested criterion of .060. In addition, the CFI was .65, well below the threshold of .95. The standardized item loadings were significant but variable in magnitude, ranging from .23 to .79. The median loading was .52, corresponding to an item reliability of approximately .27. Modification indices for item cross-loadings were significant for 80% of the items, and of the 26% of the standardized residuals that were significant, approximately three-fourths were positive, indicating that the model did not adequately account for idiosyncratic similarities among the items.

[3] Tables with CFA's for the ZTPI and TOS are available upon request.

Table 4
Study 2 TFS factor loadings.

	Factor		
	Past focus	Current focus	Future focus
Past focus			
6. I replay memories of the past in my mind	**.84****	–	–
9. I reflect on what has happened in my life	**.80****	(.14**)	–
1. I think about things from my past	**.80****	–	–
11. I think back to my earlier days	**.78****	–	–
Current focus			
4. I focus on what is currently happening in my life	–	**.74****	–
8. My mind is on the here and now	(−.14**)	**.67****	(−.11*)
10. I think about where I am today	(.23**)	**.66****	(.22**)
2. I live my life in the present	–	**.65****	(−.16**)
Future focus			
3. I think about what my future has in store	–	–	**.84****
12. I think about times to come	–	–	**.74****
5. I focus on my future	–	–	**.80****
7. I imagine what tomorrow will bring for me	–	–	**.72****

Note: $N = 360$. Bold factor loadings were obtained from our CFA, whereas the cross-loadings and their significance levels (in parentheses) were obtained from the modification indices of expected change if allowed to cross-load.
* $p < .05$.
** $p < .01$.

Table 5
Study 2 scale means and standard deviations, factor correlations, and reliabilities.

	Mean	s.d.	TFS			ZTPI					TOS		
			P[a]	C	F	PP[b]	PN	CH	CF	F	P	C	F
TFS-P	4.35	1.18	(.88)										
TFS-C	4.89	0.89	**.19****	(.78)									
TFS-F	5.31	1.00	**.34****	**.32****	(.86)								
ZTPI-PP	3.34	0.45	*.27***	.29**	.23**	(.78)							
ZTPI-PN	2.98	0.70	*.63***	−.13*	.04	−**.14***	(.82)						
ZTPI-CH	3.48	0.51	.11	*.41***	.03	**.33****	**.01**	(.80)					
ZTPI-CF	2.46	0.65	.25**	*.10*	−.22**	−**.19****	**.36****	**.34****	(.79)				
ZTPI-F	3.41	0.40	−.05	.08	*.39***	**.19****	−**.05**	−**.39****	−**.45****	(.82)			
TOS-P	2.97	0.63	*.71***	−.04	.03	.21**	.81**	.11	.48**	−.04	(.78)		
TOS-C	2.94	0.58	.14*	*.45***	−.15*	.04	.04	.85**	.60**	−.51**	**.23****	(.78)	
TOS-F	3.57	0.54	−.01	.12	*.45***	.19**	.00	−.27**	−.39**	.95**	**.05**	−**.29****	(.75)

Note: Means and standard deviations calculated from average of items per scale. N's for means and s.d.'s vary from 340 to 356 according to small numbers of missing data at the item level. $N = 360$ for factor correlations using FIML. Correlations between factors in the same scale are in bold type. Correlations that provide evidence for convergent validity are in italics. Coefficient alphas are shown along the diagonal in parentheses as measures of reliability.
[a] P, C, F are past, current, and future factors for the TFS and TOS scales. Response scale ranges from 1 to 7 for TFS and 1–5 for TOS.
[b] PP, PN, CH, CF, F are past positive, past negative, current hedonistic, current fatalistic, and future factors for the ZTPI scale. Response scale ranges from 1to 5.
* $p < .05$.
** $p < .01$.

Confirmatory factor analysis of the TOS

Evidence of model fit for the TOS[3] was somewhat mixed. The RMSEA was .064, and its 90% confidence interval included the .060 criterion. However, the CFI of .76 was considerably lower than the .95 threshold. Standardized item loadings were significant but modest in magnitude, ranging from .31 to .68 with a median of .52, representing an item reliability of approximately .27. Modification indices for item cross-loadings were significant for 50% of the items, and 15% of the standardized residuals were significant, half of which were positive.

Convergent validity

We examined the factor correlations among the temporal focus measures to indicate convergent validity. We found that the correlations between the TFS and the respective factors of the other scales were positive and moderate to large in magnitude. For the past time frame, the TFS past factor was positively correlated with the TOS past factor, and both the ZTPI past positive and past negative factors. However, the correlation was higher for the past negative factor than the past positive factor, suggesting that past thoughts as measured by the TFS were more negatively than positively toned. For the present time frame, the TFS current factor was positively correlated with the TOS current factor and the ZTPI current hedonistic factor, which suggests that current thoughts as measured by the TFS were more positively than negatively toned. Finally, for the future time frame, the correlations between the TFS future factor and the ZTPI and TOS future factors were positive.

Nomological validity

Results pertaining to nomological validity are reported in Table 6. We predicted that life satisfaction would not relate to measures of temporal focus that solely addressed thoughts of the past, present, and future. This prediction was largely supported for the TFS, although the current factor exhibited a moderate correlation of .36 with life satisfaction. The positive relationship we expected was found for internal locus of control with future focus and, to a lesser extent, with current focus. We confirmed our predictions that ascribing control to chance and powerful others would be positively related to past focus. Risk-taking was indeed positively related to current and future focus, and the relationship was

stronger for current focus than for future focus. However, both of these correlations were relatively small. We predicted and found that optimism would relate negatively to past focus and positively to future focus.

Consistent with our reasoning, we found positive relationships between past temporal focus and neuroticism, current temporal focus and extraversion, and future temporal focus and both conscientiousness and extraversion, although the correlation for extraversion was small. However, we did not find the predicted relationships between future temporal focus and neuroticism. As predicted, agreeableness and openness to experience were unrelated to the TFS.

On the whole, the majority of the relationships between the TFS and the nomological variables were large enough to demonstrate the relationships we predicted, but not excessively large to suggest redundancy. In contrast, the ZTPI and TOS supported some of relationships we predicted between temporal focus and the nomological variables, but a number of these were large in magnitude. For example, the correlation of .82 between the ZTPI chance locus of control and the current fatalistic factor was sufficiently high to question the independence of these factors. Similarly, the correlation between neuroticism and the ZTPI past negative factor was large at .65, as was the correlation of .52 with the TOS past factor, which reflects the negative undertones of these factors. Lastly, we found substantial overlap between conscientiousness and the future factors of the ZTPI and TOS. The correlations reached .89 and .78, respectively, raising concerns about the independence of these measures.

Discussion

Results from Study 2 further support the construct validity of the TFS. As with Study 1, the factor structure of the TFS was empirically supported. In addition, the results of Study 2 reveal important differences between the TFS and existing measures of temporal focus. In particular, model fit was notably stronger for the TFS than for the ZTPI and TOS, both of which also showed very large correlations with several variables in the nomological network. Yet despite differences among the measures, we did find moderate to large factor correlations between the TFS and existing measures that suggested a degree of convergent validity.

Nomological validity results supported most of our predictions about the relationships between the TFS factors and personality and attitudinal measures, and the magnitudes of these correlations were not excessive, with most correlations in the small to moderate range. Although these correlations were relatively small, the directions of several of the TFS nomological correlations (e.g., life satisfaction, locus of control, optimism, and neuroticism) suggest that a past focus may be slightly more negative than a current or future focus. For example, we found that individuals were more satisfied with life when they held a stronger current and future focus, but less satisfied when they held a stronger past focus. Similarly, we found that neurotics were higher in past focus and lower in current focus, whereas extraverts were higher in current and future focus and lower in past focus. However, we noted that extraversion and neuroticism are multifaceted, including both emotional experiences and behavioral traits like sociability or anxiety (Tellegen, 1985; Watson & Clark, 1984). Therefore, we do not know if the nomological correlations we uncovered are strictly due to dispositional affect or another facet of these personality dimensions.

In Study 3, we set out to test the relationships between temporal focus and positive and negative affectivity, which are strongly related to extraversion and neuroticism but specifically target the dispositional tendency toward positive and negative moods (Tellegen, 1985; Watson & Clark, 1984; Watson, Clark, & Tellegen, 1988). In addition, to further analyze the potential valence of the dimensions of temporal focus, we tested the relationship between temporal focus and time attitude, which we previously reasoned should be distinct from temporal focus.

Study 3

Study 3 moved beyond the factor structure and nomological validity of the TFS to test the distinctness of the TFS from other temporal and affective concepts. To situate the temporal focus construct within the domain of individual differences concerning time, we compared the TFS to five temporal concepts: time attitude, temporal depth, polychronicity, hurriedness, and pacing style. In addition, we examined the relationships between temporal focus and positive and negative affectivity to further probe whether or not temporal focus is affectively toned.

Method

Sample

Participants in Study 3 were students of a large, urban university in the Southeast who completed the survey in exchange for course credit. Of the 195 individuals who completed the survey, approximately 50% were female. Participants were 24 years old on average (range 19–55 years), and quite diverse with approximately 36% Caucasian, 26% Hispanic, 25% African–American, with the remainder Native American, Asian, or multi-racial. The

Table 6
Study 2 nomological validity factor correlations.

	TFS			ZTPI					TOS		
	P	C	F	PP	PN	CH	CF	F	P	C	F
Life satisfaction	−.17**	.36**	.13*	.46**	−.58**	.31**	−.25**	.18**	−.41**	.17**	.24**
Locus of control – internality	–	.24**	.32**	.28**	−.14*	–	−.45**	.47**	−.14*	–	.48**
Locus of control – chance	.25**	–	–	−.14*	.38**	.16*	.82**	−.29**	.53**	.32**	−.22**
Locus of control – powerful others	.29**	–	–	–	.46**	–	.59**	–	.59**	.14*	–
Risk-taking	–	.25**	.15*	–	−.15*	.62**	–	−.22**	−.18**	.50**	–
Optimism/pessimism	−.24**	.22**	.18**	.43**	−.53**	.32**	−.38**	–	−.40**	–	–
Conscientiousness	−.14*	.18**	.39**	.25**	−.31**	−.21**	−.47**	.89**	−.24**	−.36**	.78**
Neuroticism	.35**	−.24**	–	−.22**	.65**	−.21**	.35**	–	.52**	–	−.15*
Extraversion	–	.32**	.23**	.48**	−.32**	.57**	−.19**	–	−.24**	.31**	–
Agreeableness	–	–	–	.34**	−.24**	–	−.28**	–	.24**	–	–
Openness	–	–	–	–	.13*	.28**	−.13*	–	–	–	–

Note: $N = 360$. Table entries are significant factor correlations from a series of confirmatory factor analyses, each of which used all 11 temporal focus factors and the nomological factor of interest. P = past focus, C = current focus, F = future focus; PN = past negative; PP = past positive; CH = current hedonistic; CF = current fatalistic.

* $p < .05$.

** $p < .01$.

majority of the respondents (63.6%) were currently working, with 30% working full-time. Current job tenure averaged 2.1 years and on average, respondents had 3.3 years of full-time work experience.

Measures

As with Studies 1 and 2, the 12-item TFS measure was used. We measured temporal depth with the Temporal Depth Index (Bluedorn, 2002), a six item scale with three items each for past temporal depth and future temporal depth. The response scale includes 15 options of time spans ranging from one day to more than 25 years. We measured time attitude with the Time Attitude Scale (Nuttin, 1985). Participants indicated their agreement (−3 = strongly disagree; 3 = strongly agree) with 9 items each for attitudes toward the past, present, and future. Preferred polychronicity and hurriedness were measured with 5-item scales developed by Slocombe and Bluedorn (1999) and Jansen and Kristof-Brown (2005), respectively. For both scales, respondents indicated how much they agreed with each item (−3 = strongly disagree; 3 = strongly agree). In addition, we used Gevers et al.'s (2008) pacing style scale, which includes 12 items to measure how individuals allocate their time toward a deadline (i.e., steady, u-shaped, or deadline-oriented/procrastination). Respondents indicated how much they agreed with each item (1 = strongly disagree; 5 = strongly agree). Finally, we measured positive and negative affectivity with the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). The PANAS asks the extent to which respondents feel each of 20 different emotions "in general, that is, on average" (1 = very slightly or not at all, 5 = very much).

Results

As shown in Table 7, future temporal focus was positively correlated with past temporal focus ($r = .23$; $p < .01$) and current temporal focus ($r = .29$; $p < .01$). In addition, we confirmed our predictions that all three dimensions of temporal focus would be unrelated to past temporal depth, future temporal depth, and preferred polychronicity. We did not confirm our prediction that hurriedness would be positively related to future focus but we unexpectedly found that it was positively related to current ($r = .18$; $p < .05$) focus.

Regarding the correlations between temporal focus and affective variables, we found that past focus was positively correlated with NA ($r = .38$; $p < .01$), and current and future focus were both positively correlated with PA ($r = .37$ and $r = .33$, respectively; both $p < .01$). Although we reasoned earlier that time attitude would be unrelated to all three types of temporal focus, this was only confirmed for time attitude toward the past. Time attitude toward the present was positively related to current temporal focus ($r = .35$; $p < .01$), and negatively related to past temporal focus ($r = -.32$; $p < .01$). Time attitude toward the future was unrelated to past and current temporal focus as predicted, but was positively related to future temporal focus ($r = .46$; $p < .01$). To probe these results, we calculated partial correlations controlling for PA and NA. Although reduced slightly, these correlations remained significant. We also calculated second-order partial correlations controlling for the two other dimensions of temporal focus. Controlling for current and future focus, past focus remained negatively related to current time attitude ($r = -.38$; $p < .01$) but also became negatively related to future time attitude ($r = -.28$; $p < .01$). Controlling for past and future focus, current focus remained positively related to current time attitude ($r = .37$; $p < .01$) and became unrelated to future time attitude ($r = .03$; $p > .05$). Finally, controlling for past and current focus, future focus remained positively related to future time attitude ($r = .50$; $p < .01$).

Finally, we predicted and found that although a procrastinating pacing style (i.e., working close to deadlines) was negatively related to future temporal focus, this correlation was statistically significant only when past and current focus were partialled out ($r = -.14$; $p < .05$).

Discussion

In Study 3, we tested the discriminant validity of temporal focus by examining its relationships with other measures of temporal individual differences and measures of dispositional affectivity. The three dimensions of temporal focus were distinct from other temporal measures such as temporal depth, polychronicity, hurriedness, and pacing, as evidenced by correlations that were no different from zero or very small in magnitude. Only six of the correlations exceeded .30 (our criterion for a moderate correlation), and each of these involved affective concepts (i.e., PA, NA, and time attitude). When considered concurrently with the results of Study 2, we can conclude that past-focused individuals are more negative, whereas current and future-focused individuals are more positive.

Interestingly, the correlations among temporal focus and present and future time attitude remained significant even after controlling for dispositional affect. These results suggest that individuals may be hedonically focused, in that they prefer to think about time periods for which they have positive attitudes (Gardner et al., 1989), above and beyond a dispositional tendency to be positive or negative. This hedonistic preference would explain the positive correlation between current temporal focus and current time attitude and the positive correlation between future temporal focus and future time attitude. However, this reasoning does not explain past temporal focus, which was unrelated to past time attitude and negatively related to current time attitude. Quite possibly, individuals who frequently think of the past may be pushed there by less than positive attitudes toward the present time period. For these individuals, thinking about the past is not necessarily pleasant or unpleasant, but they shift their temporal focus away from the negative perceptions of the present time period.

To this point, we have demonstrated the performance of the TFS measure and examined the relationship between temporal focus and a variety of other concepts. However, our analyses have been based on cross-sectional data that does not address the temporal stability of temporal focus or its outcomes over time. In addition, we have analyzed the temporal focus profile as three independent factors without considering interactions among the factors. In Study 4, we address these limitations with a longitudinal sample of a broad cross-section of adults, using analyses related to the prediction of outcomes and potential interactions among the factors.

Study 4

In Study 4, we sought to extend our results for the TFS in four ways. First, we used a broader sample of working adults to further evaluate the generalizability of our findings concerning the factor structure of the TFS. Second, we examined the stability of the TFS using a repeated measures design. Third, we explored the predictive validity of the TFS, examining how its three-factors relate to job attitudes. These relationships were framed in terms of the assimilation and contrast processes described earlier, such that we examined temporal focus as a moderator of the effects of past and future job characteristics on current job satisfaction, holding current job characteristics constant. Finally, we examined interactions between the three temporal focus factors to determine whether the temporal focus profile was best represented as three separate effects or an interactive profile.

Table 7
Study 3 scale means, standard deviations, correlations, and reliabilities.

	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Past focus	4.27	1.27	(0.91)														
2. Current focus	5.10	0.97	0.09	(0.80)													
3. Future focus	5.53	1.04	0.23**	0.29**	(0.82)												
4. Past temporal depth	6.00	1.65	0.02	−0.10	−0.09	(0.78)											
5. Future temporal depth	6.48	1.98	0.01	0.01	0.13	0.34**	(0.86)										
6. Time attitude past	4.72	1.17	−0.01	0.11	0.06	0.10	0.07	(0.92)									
7. Time attitude present	5.19	1.14	−0.32**	0.35**	0.14	0.03	0.02	0.27**	(0.93)								
8. Time attitude future	5.89	1.03	−0.12	0.14	0.46**	0.05	0.14	0.18*	0.54**	(0.95)							
9. Preferred polychronicity	−0.26	1.08	0.05	−0.13	0.07	0.02	−0.06	−0.08	0.07	0.03	(0.72)						
10. Individual hurriedness	0.42	0.66	0.13	0.18*	0.13	−0.05	0.05	0.03	0.01	0.11	−0.38**	(0.70)					
11. Pacing deadline	3.41	0.85	0.09	0.00	−0.11	0.00	0.00	0.00	−0.11	−0.05	0.06	0.00	(0.74)				
12. Pacing steady	2.78	0.81	−0.13	0.10	0.10	−0.11	0.03	0.04	0.03	−0.05	−0.07	0.06	−0.48**	(0.79)			
13. Pacing U-shaped	2.97	0.72	0.04	−0.04	0.03	−0.07	0.04	0.01	−0.02	−0.01	−0.02	0.09	−0.06	0.12	(0.64)		
14. Positive affectivity	3.56	0.75	−0.06	0.37**	0.33**	−0.01	0.03	0.29**	0.46**	0.32**	0.07	0.14*	−0.13	0.15*	−0.06	(0.90)	
15. Negative affectivity	1.90	0.60	0.38**	−0.12	0.01	−0.01	−0.09	−0.28**	−0.45**	−0.24**	−0.03	0.11	0.14*	−0.04	0.13	−0.18*	(0.85)

Note: $N = 195$. Coefficient alphas are shown along the diagonal in parentheses as measures of reliability.
* $p < .05$.
** $p < .01$.

Method

Sample

We recruited participants from StudyResponse (Stanton & Weiss, 2002), a non-profit organization that connects researchers with individuals willing to receive invitations for online surveys. As of 2005, over 95,000 individuals were registered with the service worldwide. We requested a random sample of 3000 employed US residents, and the StudyResponse office sent potential participants an email invitation with a link to our online survey. Respondents to the Time 1 survey were entered into a drawing for ten $45 gift certificates to an online retailer. Approximately 6 weeks later, StudyResponse sent a follow-up email to the Time 1 respondents with a link to our Time 2 survey. Respondents to the Time 2 survey were entered into a drawing for nine $60 gift certificates to the same online retailer.

A total of 611 individuals responded to the Time 1 survey, yielding a 20.4% response rate. These respondents were 39 years old on average (range 18–77 years), and 60% were female. Approximately 86.6% were Caucasian, 5.1% were African American, 3.9% were Hispanic, 2.9% were Asian Pacific, 2.5% were Native American, and 1.6% belonged to other racial groups. On average, respondents had approximately 19 years of full-time work experience and 5 years of part-time work experience. Respondents represented over 40 different occupations, and most (84.7%) were currently working full-time, with average job tenure of 7.4 years.

Of the 611 Time 1 respondents, 362 completed the Time 2 survey, yielding a 59.2% follow-up rate. Thus, the effective sample size for the analyses was $N = 362$. Compared to individuals who only responded at Time 1, individuals who responded at both Time 1 and Time 2 were similar in every demographic category except gender and race, such that those who responded on both occasions were more likely to be males (33% vs. 44%, $p < .01$) and Caucasians (84.0% vs. 88.8%; $p < .05$).

Measures

Time 1 measures. We assessed temporal focus using the 12-item TFS measure. We also measured four job characteristics, including autonomy, pay, opportunities for advancement, and recognition (Edwards, Cable, Williamson, Lambert, & Shipp, 2006; Lambert, Edwards, & Cable, 2003). Each characteristic was assessed with three items using a 7-point response scale (1 = none at all, 4 = a moderate amount, 7 = a great amount). Sample items include, "Choosing the way my work is done" or "The amount of pay." The items were adapted to measure how much of each characteristic respondents had at their last jobs, have in their current job, and expect at their next jobs. The order of the past, present, and future job question sets was counterbalanced.

Time 2 measures. Approximately 6 weeks after the Time 1 survey, we administered a second survey that included the 12-item TFS and three widely studied job attitudes, including job satisfaction (3 items; Edwards & Rothbard, 1999), affective organizational commitment (6 items; Meyer, Allen, & Smith, 1993), and turnover intent (3 items; adapted from Adams & Beehr, 1998) using a 7-point Likert-type response scale (−3 = strongly disagree; 3 = strongly agree). Sample items for these measures are, "In general, I am satisfied with my job," "I feel a strong sense of belonging to this organization," and "I am planning to leave my job."

Results

Means, standard deviations, and correlations are shown in Table 8. The means and standard deviations for past, current, and future temporal focus were similar at Time 1 and Time 2, providing initial evidence for the temporal stability of the TFS. All measures exhibited sufficient reliability.

Factor structure and temporal stability

To evaluate the factor structure and temporal stability of the TFS, we conducted a CFA with six factors (i.e., past, current, and future factors at Time 1 and Time 2). To account for shared method variance created by administering the same items on two occasions, we allowed the residuals to covary for each TFS item across time (e.g., the residual for item 1 at Time 1 and Time 2; Cole, Ciesla, & Steiger, 2007).

The standardized factor loadings were consistently high for both time periods, with Time 1 loadings ranging from .64 to .90 (median of .80) and the Time 2 loadings ranging from .70 to .90 (median of .81). The within-period factor correlations were similar

Table 8
Study 4 scale means, standard deviations, correlations, and reliabilities.

	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Time 1																							
1. Past focus	4.44	1.23	(.90)																				
2. Current focus	5.18	0.95	.09	(.83)																			
3. Future focus	4.97	1.18	.42**	.48**	(.89)																		
4. Past autonomy	4.48	1.62	.01	.12*	.04	(.93)																	
5. Past opportunities	3.77	1.57	.01	.16**	.11*	.59**	(.88)																
6. Past pay	4.06	1.48	.05	.18**	.09	.58**	.66**	(.95)															
7. Past recognition	4.16	1.60	.06	.17**	.09	.62**	.69**	.69**	(.95)														
8. Current autonomy	5.24	1.41	−.12*	.23**	.07	.36**	.26**	.17**	.22**	(.93)													
9. Current opportunities	4.14	1.60	−.10	.23**	.13*	.21**	.44**	.18**	.23**	.50**	(.91)												
10. Current pay	4.47	1.46	−.07	.20**	.07	.21**	.29**	.30**	.26**	.46**	.58**	(.95)											
11. Current recognition	4.58	1.57	−.08	.22**	.13*	.23**	.29**	.31**	.38**	.60**	.61**	.58**	(.97)										
12. Future autonomy	5.36	1.17	−.01	.28**	.18**	.37**	.21**	.16**	.14**	.47**	.24**	.32**	.28**	(.91)									
13. Future opportunities	5.01	1.25	.01	.26**	.32**	.23**	.36**	.15**	.20**	.28**	.41**	.27**	.29**	.57**	(.89)								
14. Future pay	5.28	1.23	.04	.22**	.23**	.24**	.21**	.21**	.19**	.28**	.20**	.42**	.27**	.65**	.67**	(.94)							
15. Future recognition	5.07	1.23	.07	.27**	.29**	.27**	.29**	.22**	.27**	.30**	.30**	.31**	.38**	.61**	.76**	.65**	(.94)						
Time 2																							
16. Past focus	4.29	1.22	.73**	−.02	.28**	−.02	−.03	.00	.04	−.12*	−.10	−.06	−.08	−.08	.00	.00	.03	(.92)					
17. Current focus	5.26	0.94	−.03	.66**	.31**	.07	.15**	.12*	.11*	.19**	.20**	.16**	.20**	.24**	.28**	.22**	.24**	−.02	(.83)				
18. Future focus	4.99	1.15	.33**	.34**	.72**	.02	.11*	.12*	.08	.03	.11*	.06	.10	.18**	.29**	.21**	.23**	.33**	.46**	(.90)			
19. Job satisfaction	0.90	1.46	−.17**	.19**	.03	.21**	.17**	.10	.12*	.48**	.43**	.40**	.48**	.29**	.19**	.16**	.17**	−.14*	.30**	.05	(.93)		
20. Turnover intent	−0.59	1.86	.22**	−.09	.09	−.13*	−.05	−.01	−.02	−.36**	−.33**	−.29**	−.34**	−.17**	−.09	−.05	−.08	.23**	−.14**	.08	−.67**	(.94)	
21. Organizational commitment	0.41	1.56	−.05	.17**	.08	.19**	.25**	.12*	.18**	.42**	.46**	.35**	.44**	.23**	.25**	.15**	.23**	−.02	.27**	.08	.79**	−.60**	(.89)

Note: N's range from 359 to 362, due to small amounts of missing data. Coefficient alphas are shown along the diagonal in parentheses as measures of reliability.
* $p < .05$.
** $p < .01$.

to the previous results in that future focus was positively correlated with past and current focus in Time 1 ($f = .47$ and $f = .55$, respectively; $p < .01$) and Time 2 ($f = .35$ and $f = .50$, respectively; $p < .01$), whereas past and current focus were unrelated in both time periods.

Regarding model fit, the chi-square was significant ($\chi^2 = 632.86$; $p < .01$). However, the RMSEA was .072, and its 90% confidence interval included the .060 criterion. In addition, the CFI was .97, exceeding the recommended threshold of .95. Over half of the items produced significant modification indices for cross-loadings, and 42% of the standardized residuals were significant, but the significant cross-loadings and residuals were predominantly within the same time period rather than across time periods.

To test the temporal stability of the TFS, we first examined the test-retest correlations between the scales over time. The values were relatively large for all three scales (past = .73; current = .66; future = .72), although the correlation between current focus at Time 1 and Time 2 was slightly lower than the past and future correlations. These values are comparable to test-retest correlations across similar time lags for other temporal focus measures (e.g., ZTPI, Zimbardo & Boyd, 1999) and other individual differences (e.g., PA and NA, Vaidya, Gray, Haig, & Watson, 2002; Watson & Walker, 1996; locus of control, Rotter, 1966; private self-consciousness, Grant, Franklin, & Langford, 2002). In addition, factor correlations were consistently high among the repeated factors. The factor correlation between Time 1 and Time 2 was .77 for past temporal focus, .71 for current temporal focus, and .78 for future temporal focus, suggesting over 50% shared variance between the factors over time. To test whether these factor correlations differed from unity, we ran a second CFA with three-factors that represented past, current, and future focus indicated by both Time 1 and Time 2 items and performed a chi-square difference test. The six factor model was a significantly better fit to the data than the three-factor model ($\Delta\chi^2 = 907.38$; $\Delta df = 12$). This result suggests that, although the repeated factors were highly correlated and the within time period factor correlations were similar to our previous samples, the latent factors were not identical between Time 1 and Time 2.

Predictive validity

We reasoned that temporal focus would moderate the effects of past and future job characteristics on current attitudes because focusing on the past and future is likely to make recollections and forecasts more salient. As shown in Table 9, we found several significant interactions for temporal focus. We plotted these interactions using temporal focus scores one standard deviation above and below the mean, as shown in Figs. 1–3. For job satisfaction, we found significant interactions between future temporal focus and future autonomy, opportunities, and recognition. As shown in Fig. 1, when future focus was high, current job satisfaction was positively related to the anticipated levels of autonomy, recognition, and opportunity for advancement, whereas the opposite was true when future focus was low. For organizational commitment, we found a significant interaction between future temporal focus and future autonomy. As shown in Fig. 2, organizational commitment was positively related to anticipated autonomy when future focus was high, whereas the opposite relationship was found when future focus was low. Thus, for satisfaction and organizational commitment, after controlling for the effects of current job characteristics, highly future-focused individuals experienced an assimilation effect, whereas low future-focused individuals experienced a contrast effect (Elster & Loewenstein, 1992; Loewenstein, 1988; Tversky & Griffin, 1991).

For turnover intent, we found significant interactions between past temporal focus and past autonomy, pay, opportunities, and recognition. As shown in Fig. 3, when past focus was high, turnover intent was positively related to past levels of all four job characteristics. In contrast, when past focus was low, turnover intent was negatively related to past autonomy and pay and unrelated to past recognition and opportunity for advancement. Thus, controlling for current job characteristics, past-focused individuals experienced a contrast effect, such that higher levels of past job characteristics were associated with increased intent to seek a new job (Elster & Loewenstein, 1992; Tversky & Griffin, 1991). Those with a low past focus experienced an assimilation effect only for past autonomy and pay, such that greater amounts of autonomy and pay for a previous job was associated with greater intentions to stay in the current job.

Finally, we tested interactions among the temporal focus factors to determine if the outcome of focusing on one time period depended upon the focus on the other two time periods. None of these interaction terms were significant ($p > .05$), which suggests that temporal focus profile is best represented by three main effects of past, current, and future focus.

Discussion

In our final sample, we used longitudinal data from a broad sample of working adults to test the generalizability, temporal stability, and predictive validity of the TFS. In a broad sample of working adults, we replicated the factor structure of the earlier studies, which supports the TFS as a sound measure of temporal focus across a wide array of individuals. Regarding temporal stability, although the factor structure was not identical between Time 1 and Time 2, the test-retest and repeated factor correlations were high, and scale means and standard deviations were similar across time. Thus, we concluded that temporal focus was relatively stable over time. In addition, we found no significant interactions among the factors, which suggests that the temporal focus profile is best considered as three main effects of past, current, and future temporal focus.

Using this three dimensional profile of temporal focus, we demonstrated initial evidence of the predictive validity of the TFS by finding that temporal focus influenced the degree to which past and future job characteristics influenced current job attitudes. For example, individuals who focused on the future were more satisfied and committed with their current jobs when they thought about characteristics of their future jobs, regardless of the level of the current job characteristics, whereas individuals who focused less on the future had the opposite experience. This result reflects an assimilation effect for future-focused individuals (Elster & Loewenstein, 1992; Loewenstein, 1988; Tversky & Griffin, 1991), in which positive experiences in the future are currently satisfying. We also found that individuals who focused on the past reported greater turnover intentions at their current jobs when they thought about characteristics of their last jobs. This result reflects a contrast effect for past-focused individuals, in which thinking about positive experiences in the past worsens the current experience.

Given that we found assimilation effects for those high in future focus but contrast effects for those low in past focus, and given our previous results regarding the affective tone of temporal focus, we conjectured that temporal focus might relate to the level of job characteristics that individuals perceive, influencing how they interpret the past or future. To explore this possibility, we conducted supplemental analyses in which we regressed the four job characteristics on past, present, and future temporal focus. The results of these analyses are reported in Table 10. We found that individuals high in current temporal focus perceived

Table 9
Study 4 – regressing job attitudes on temporal focus and job characteristics.

	Autonomy	Pay	Opportunities	Recognition
DV = Job Satisfaction				
Constant	4.87**	4.88**	4.90**	4.90**
Past job characteristic	0.02	−0.02	−0.03	−0.06
Current job characteristic	0.42**	0.36**	0.37**	0.45**
Future job characteristic	0.09	−0.03	0.02	−0.03
Past focus	−0.14*	−0.18**	−0.15*	−0.13*
Current focus	0.16†	0.26**	0.19*	0.20*
Future focus	−0.03	−0.02	−0.07	−0.06
TFSP*past job characteristic	−0.01	−0.03	−0.06	−0.01
TFSC*current job characteristic	0.10†	0.10*	0.08†	0.08†
TFSF*future job characteristic	0.10**	0.06	0.09*	0.08†
Interactions ΔR^2	2.3%	1.7%	1.9%	1.9%
Total R^2	28.5%	21.6%	24.1%	28.8%
DV = Organizational Commitment				
Constant	4.39**	4.40**	4.42**	4.42**
Past job characteristic	0.03	0.02	0.05	0.00
Current job characteristic	0.42**	0.33**	0.40**	0.41**
Future job characteristic	0.03	−0.02	0.08	0.07
Past focus	−0.01	−0.06	0.00	−0.01
Current focus	0.12	0.20*	0.11	0.12
Future focus	0.01	0.02	−0.06	−0.04
TFSP*past job characteristic	−0.02	−0.02	−0.02	0.00
TFSC*current job characteristic	0.07	0.11*	0.08	0.04
TFSF*future job characteristic	0.11*	0.01	0.06	0.05
Interactions ΔR^2	1.6%	1.2%	1.1%	0.5%
Total R^2	19.8%	14.5%	23.9%	21.5%
DV = Turnover Intent				
Constant	3.44**	3.41**	3.40**	3.39**
Past job characteristic	−0.01	0.07†	0.12†	0.12†
Current job characteristic	−0.43**	−0.38**	−0.45**	−0.46**
Future job characteristic	−0.02	0.11	0.01	0.05
Past focus	0.22**	0.27**	0.23**	0.22**
Current focus	−0.15	−0.25†	−0.20*	−0.21†
Future focus	0.16	0.11	0.18†	0.19†
TFSP*past job characteristic	0.10*	0.13**	0.12**	0.10**
TFSC*current job characteristic	−0.06	−0.12†	−0.07†	−0.03
TFSF*future job characteristic	−0.10	0.02	−0.06	−0.05
Interactions ΔR^2	1.8%	2.5%	2.2%	1.4%
Total R^2	18.6%	16.6%	19.2%	19.0%

Note: All variables were centered to facilitate interpretation of interactions.
† $p < .10$.
* $p < .05$.
** $p < .01$.

greater amounts of job characteristics at their past, current, and future jobs, perhaps demonstrating a positive bias in cognitions about work over time. Individuals high in past focus perceived lower amounts of all four current characteristics, perhaps demonstrating a negative bias toward current experiences (consistent with Study 3), but little bias when reporting perceptions of the period in which they focused the most: the past. Lastly, individuals high in future focus only perceived greater amounts of these characteristics as they looked into the future, suggesting that if a bias exists for this dimension of temporal focus, it is only forward-looking.

Given these results, we suggest that future-focused assimilation may be due to inflated perceptions that future-focused individuals hold about future job characteristics. Focusing on the future may draw one's attention to the perception of higher levels of job characteristics, increasing current satisfaction because anticipating such positive experiences is vicariously satisfying in the current moment. But different relationships emerge for past-focused individuals in that thinking more about the past increased their turnover intentions, likely as a result of the decreased perceptions of the current job. That is, because past-focused individuals perceive lower amounts of current job characteristics, the more they think about being better off in the past, the worse the present job appears by comparison.

These interactions are critical for understanding how temporal focus operates. In essence, we found that temporal focus demonstrates which individuals are paying attention to different pieces of information, and temporal focus predicts how positively they evaluate each dimension of their jobs over time. Past information was important for past-focused individuals and future information was important for future-focused individuals, yet their perceptions of the positivity of these job characteristics over time differed, confirming the biases we found in our earlier studies.

These findings speak to existing research and suggest that the inclusion of temporal focus could clarify existing conclusions. For example, prior research suggests that turnover intent positively relates to past pay (Bartol & Martin, 1998). However, as the results of Study 4 demonstrate, the impact of past pay on turnover intent depends upon the degree to which employees think about the past. Additionally, we found that future-focused individuals were especially sensitive to the expected nature of a future job. Existing re-

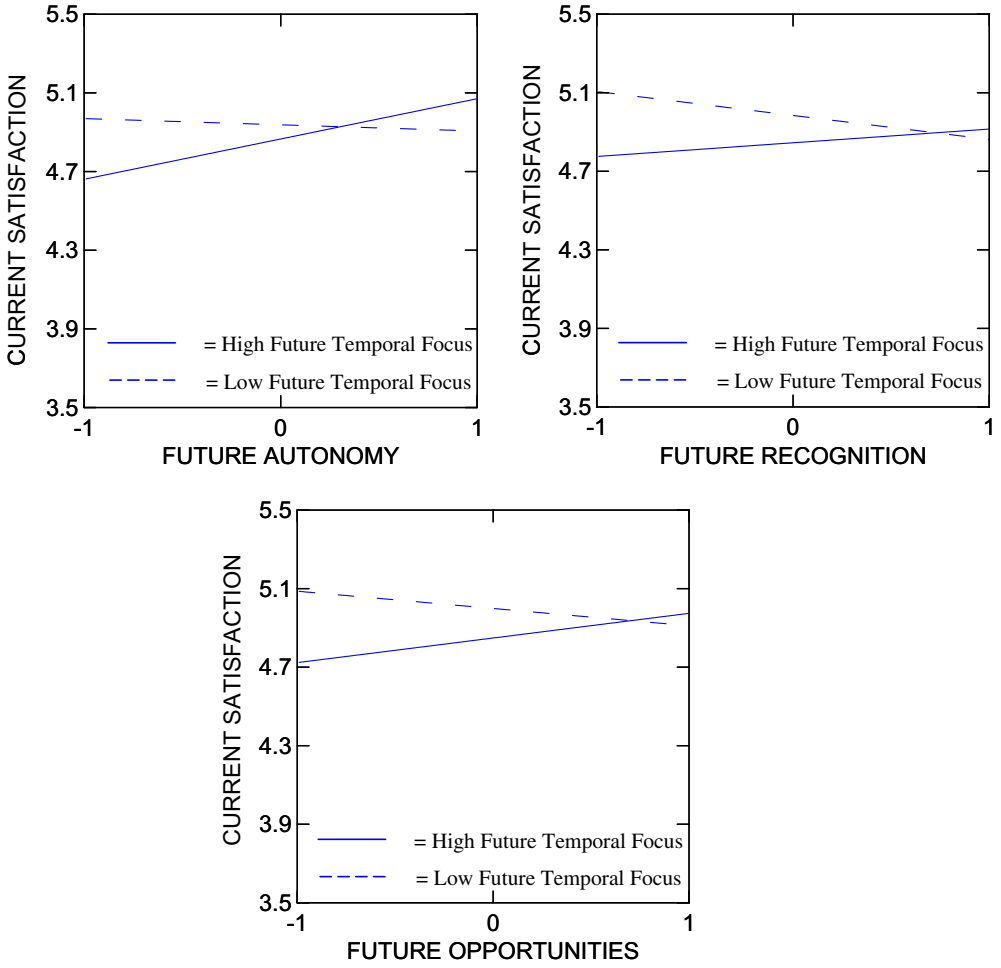

Fig. 1. Interactions between future temporal focus and future autonomy, opportunities, and recognition predicting current satisfaction.

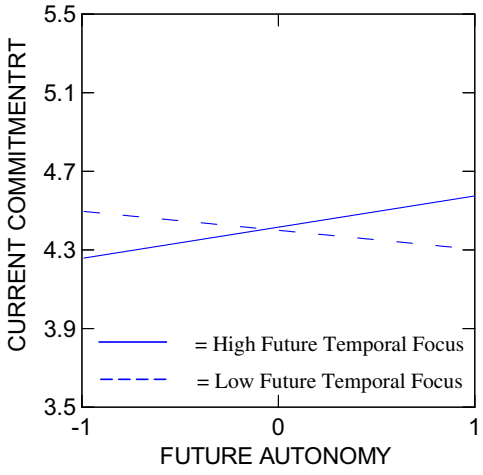

Fig. 2. Interaction between future temporal focus and future autonomy predicting current commitment.

search often focuses on the effects of individuals' expectations at a current job (e.g., Sutton & Griffin, 2004), whereas our research shows that the *next* job an individual anticipates also may influence current outcomes when the individual is future-focused. Thus, temporal focus is a critical moderating influence on individual judgments and perceptions.

General discussion

Because research on temporal issues points to temporal focus as an important construct for organizational behavior, the conceptualization and measurement of the construct are critical for future research. Thus, our two overarching goals for this paper were to clarify the conception of temporal focus and to develop a new measure of temporal focus. First, drawing from an integrative review of research on temporal issues and focus of attention, we articulated a definition of temporal focus as the degree to which people focus their attention on the past, present, and future periods of their lives. This definition clarifies the meaning of the temporal focus construct and distinguishes it from other temporal constructs, such as temporal perspective, temporal orientation, and temporal depth.

We predicted and found that temporal focus was an important predictor of what information people attend to and how they perceive this information (i.e., upward or downward bias). We found that past-focused individuals tended to be more negative as past focus was positively related to neuroticism and negative affectivity, and negatively related to life satisfaction, optimism, current time attitude, and perceptions of current job characteristics. In addition, turnover intent depended upon the level of past focus as highly past-focused individuals reacted differently to past trajectories of job characteristics as compared to those who focused less on the past. Conversely, current-focused and future-focused individuals tended to be more positive overall as current and fu-

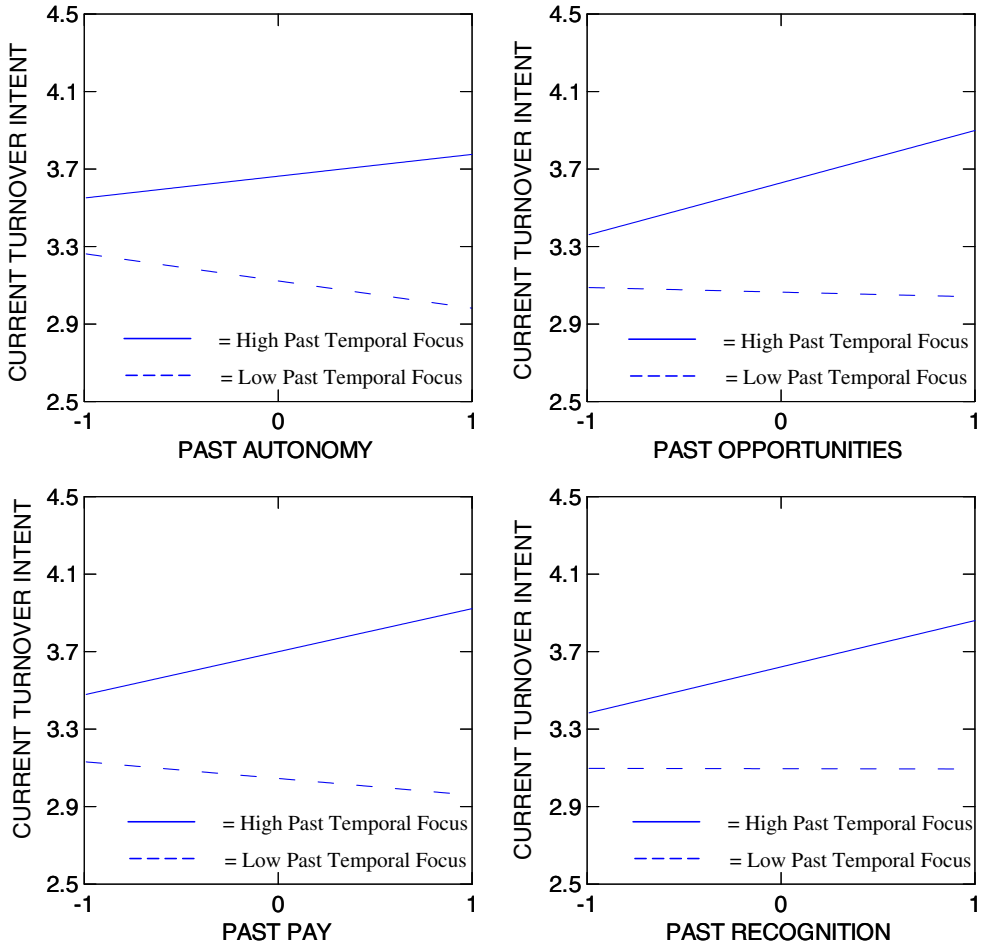

Fig. 3. Interactions between past temporal focus and past autonomy, opportunities, pay, and recognition predicting current turnover intent.

Table 10
Study 4 post-hoc analyses – regressing perceptions of past, current, and future jobs on temporal focus.

DV = Past Job Characteristics	Past autonomy	Past opportunities	Past pay	Past recognition
Constant	3.45**	2.39**	2.46**	2.44**
Past focus	0.01	−0.04	0.05	0.07
Current focus	0.23*	0.23*	0.28**	0.29**
Future focus	−0.04	0.07	−0.01	−0.02
R^2	1.5%	2.8%	3.3%	3.2%
DV = Current Job Characteristics	Current autonomy	Current opportunities	Current pay	Current recognition
Constant	4.11**	2.69**	3.30**	3.15**
Past focus	−0.17*	−0.21**	−0.11†	−0.18*
Current focus	0.34**	0.32**	0.30**	0.30**
Future focus	0.02	0.14	0.03	0.14
R^2	7.0%	7.3%	4.6%	6.4%
DV = Future Job Characteristics	Future autonomy	Future opportunities	Future pay	Future recognition
Constant	3.62**	3.08**	3.62**	2.93**
Past Focus	−0.06	−0.13*	−0.05	−0.04
Current focus	0.30**	0.15*	0.17*	0.22**
Future focus	0.10	0.35**	0.20**	0.23**
R^2	8.4%	13.1%	7.1%	10.6%

† $p < .10$.
* $p < .05$.
** $p < .01$.

ture focus were positively related to life satisfaction, optimism, conscientiousness, and positive affectivity. In addition, current-focused individuals had more positive attitudes toward the present, and higher perceptions of past, present, and future job characteristics, whereas future-focused individuals had higher perceptions of future job characteristics and more positive attitudes toward the future. We also found that job satisfaction and commitment depended upon the level of future focus as highly future-focused

individuals reacted differently to future trajectories of job characteristics as compared to those who focused less on the future.

A second purpose of our paper was to advocate the use of a new measure, the TFS, to overcome methodological challenges that resulted from the confusion surrounding the temporal focus construct. Across four studies, we demonstrated that conceptualizing and measuring temporal focus as three periods of cognitive focus (i.e., past, current, and future) generalized across a range of individuals. We found similar factor structures in studies that included a wide range of ages (i.e., 18–77) and differences in employment status (e.g., student vs. working adult), educational levels, and occupations. In support of our logic regarding temporal focus as a profile, we found modest positive relationships between past, present, and future focus, indicating that focusing on one time period does not preclude focusing on other time periods. This was confirmed in Study 1 where we examined the variety of temporal focus profiles, including individuals who focused on one, two, or three time periods, or individuals who were atemporal and focused very little on time. Finally, our results demonstrated that the temporal focus dimensions were differentially related to personality, attitudes, and other temporal variables, and that the dimensions of temporal focus were stable over time. Thus, results from the present studies suggest the TFS may be a valid and useful measure of temporal focus.

Research implications

A primary implication of our findings is that any concept that explicitly or implicitly relates to time may be subject to the influence of temporal focus. This issue is critical, given that focusing on different time frames can substantially alter how individuals interpret situations and events at any point in time.

Finding that temporal focus influences what information is relevant for different individuals has implications for numerous research streams. We demonstrate the potential role of temporal focus in three areas of current organizational behavior research: motivation, psychological contracts, and organizational change. First, motivation research suggests that specific, difficult goals lead to higher levels of performance, and that feedback is critical for helping individuals to reach their goals (Locke & Latham, 2002). However, temporal focus may interact with goals in predicting performance such that this relationship is stronger when individuals focus on the future. Given that goals are explicitly future oriented, individuals with a low future focus may not focus their cognitive attention on a goal as strongly as individuals with a high future focus. This may explain why conscientiousness consistently leads to higher levels of performance (Barrick & Mount, 1991), given that conscientiousness was moderately related to future temporal focus in Study 2. Individuals who are future-focused may be more planful and more influenced by goals that refer to future levels of performance. In addition, the feedback component of goal-setting theory is explicitly past- and current-focused, drawing individuals' attention to how their past performance up to the present compares with their previous goals. As a result, feedback may interact with temporal focus such that feedback is a stronger predictor of performance when individuals hold a higher past focus and a higher current focus. Thus, the effects of goal-setting on performance may differ depending upon one's temporal focus profile. That is, although any individual may be motivated, future-focused individuals may be more influenced by goals whereas past- and current-focused individuals may be more influenced by feedback. As a result, individuals who are hypertemporal (i.e., a strong focus on the past, present, and future), may be the most motivated due to the influence of both goals and feedback, whereas individuals who are atemporal (i.e., a weak focus on the past, present, or future) may be the least motivated given their lack of focus on any time period.

Using another research stream as an example, psychological contracts are composed of perceived promises relative to actual inducements and contributions (e.g., Rousseau & Parks, 1992). Although promises are future oriented at the time they are made (Rousseau, 1989), psychological contracts operate when the actual amount is compared to what was (previously) promised. As such, promises are implicitly in the past and therefore, psychological contracts may be more meaningful for individuals with a higher past focus. This is an interesting possibility given that past-focused individuals may be more negative overall. If past focus interacts with the promised element of a psychological contract, it may explain why broken psychological contracts are strongly related to perceptions of violation, dissatisfaction, and propensity to leave (Robinson & Rousseau, 1994). Quite possibly, these negative reactions may surface primarily for past-focused individuals. In contrast, individuals who are less past-focused may either not hold psychological contracts (i.e., no comparison of actual experiences to promises; Lambert et al., 2003) or may form different types of psychological contracts with revised perceptions of current or future promises (Robinson, Kraatz, & Rousseau, 1994) depending upon their levels of current and future focus. These implications suggest that temporal focus may clarify and integrate some of the findings of research on psychological contracts.

As a final example, research on organizational change suggests that employee commitment to a change is essential in obtaining successful change efforts (Herscovitch & Meyer, 2002). Yet, the desire for organizational change and the strength of commitment to a change may depend upon employees' temporal focus profiles. Individuals with a high past temporal focus and low future focus may be less likely to desire change by keeping their focus on past events and refusing to see reasons for change. Conversely, individuals with a high future focus may embrace changes as the motivation to change to a future state coincides with their tendency to focus on what is yet to come. In addition, the three types of commitment to a change (affective, normative, and continuance), may operate differently depending upon temporal focus. Normative commitment to a change is the perceived obligation to support the change, which may be based on socialization experiences and group norms (Meyer & Allen, 1991; Meyer et al., 1993). Individuals high in current and future focus may be more likely to perceive normative commitment given their tendencies toward being more extraverted and conscientious, which may lead to greater connection to the firm through the relationships one holds and the perception of what one "ought" to do. Continuance commitment to a change refers to the recognition that not supporting the change will incur costs of accumulated benefits or investments in the organization in the past (Herscovitch & Meyer, 2002). Thus, individuals high in past and future focus may be more likely to have continuance commitment to a change as they must simultaneously perceive their past investments in the firm and their future payoff if the change is supported. Finally, affective commitment to a change is the support for a change because of the belief in the inherent benefits the change will bring (Herscovitch & Meyer, 2002). As a result, individuals high in future focus may be most affectively committed to a change because they are able to see the results of the future change and keep their attention on this desired end goal. As is evident, individuals who experience organizational change may have different motivations for desiring and supporting a change depending upon what time periods on which they focus their attention. Thus, the approach to gaining organizational commitment to a change differs depending upon one's temporal focus profile.

Although we have identified just three examples of how temporal focus may influence existing research topics, there are certainly other topics that introduce temporal elements for which temporal

focus should be relevant. For example, emerging research on person-environment fit suggests that past and future fit have been understudied but are relevant for current outcomes (e.g., Kristof-Brown & Jansen, 2007; Shipp, 2006); research on stress, coping, and work-family balance suggests that past stressors have cumulative and reciprocal effects (e.g., Edwards, 1992; Fuller et al., 2003); and research on learning and adaptability suggests that past performance and self-efficacy (a belief about one's current and future abilities), are important predictors of performance as individuals are able to reflect upon and analyze the past event to learn how to improve current and future performance (e.g., Kozlowski et al., 2001; Tesluk & Jacobs, 1998). As we have suggested, any research that explicitly or implicitly introduces temporal elements is likely impacted by individuals' temporal focus profiles.

In addition, it is worth noting that some individuals are not affected by explicit or implicit temporal information. For the 10% of the individuals in Study 1 who were atemporal, goal-setting and feedback may not lead to higher levels of performance, perceptions of past promises in a psychological contract may be irrelevant, and commitment to a change may be less meaningful given that past investments and future benefits are not a focus. Obviously, the atemporal individuals will be an interesting group for further study to determine if they have lower response tendencies compared to their peers or if they are truly atemporal in their focus.

Finally, although we examined temporal focus at the individual level, temporal focus also is important for teams and organizations. We see two pertinent issues: team composition and multi-level temporal focus. First, teams composed of individuals with purely heterogeneous temporal focus profiles (e.g., a past-focused individual, a current-focused individual, and a future-focused individual) may have potentially greater misunderstandings and conflict because team members will find different types of information relevant and they will value different behaviors (e.g., planning versus risk-taking; Waller et al., 2001). Yet, heterogeneity of temporal focus profiles may provide a greater view of the team's work within the larger external environment that provides these temporal cues (Gibson, Waller, Carpenter, & Conte, 2007). We suggest that complementary temporal focus profiles may enhance performance by drawing attention to more complete information, particularly as teams grow over time and realize benefits of the deep-level diversity (Harrison et al., 2002). In addition, to enhance the benefits of this diversity while minimizing interpersonal conflict, we propose that temporal focus profiles that overlap on at least one dimension will provide team members with opportunities for commonality while also offering diversity (e.g., a team composed of a past/current individual, a current/future individual, and a past/future individual). Given the variety of different temporal focus profiles we uncovered, there are likely to be numerous permutations of team composition for future research opportunities.

Second, in addition to individual temporal focus profiles we have examined, jobs, groups, and organizations can have dominant temporal focus profiles (McGrath & Rotchford, 1983), which suggests that the TFS could be adapted to measure these higher level concepts. In addition, the presence of a group or organizational level temporal focus profile suggests that individuals might be drawn into work contexts in which the prevailing temporal focus profile is similar to their own (Schneider, Goldstein, & Smith, 1995), offering opportunities to examine the fit of an individual's temporal profile relative to the job, group, or organization. If an individual's temporal focus profile is not compatible with that of the group or organization, conflicts and misunderstandings could arise, leading to dissatisfaction, decreased performance, and turnover (Bluedorn & Denhardt, 1988; Waller et al., 2001). On the other hand, a dominant temporal focus on one time period within a group or organization could undermine performance, as when individuals make decisions by giving undue weight to current information to the exclusion of past information (Brockner, 1992; Staw, Sandelands, & Dutton, 1981). Thus, the availability of the TFS can simulate temporal research that addresses cross-level issues and congruence effects.

Practical implications

Our findings suggest that temporal focus may be important for organizational attitudes, motivation, and performance. For example, individuals who are high in current focus will likely be most satisfied and committed to organizations. Perhaps such individuals are more responsive to changes managers make in the current job situation, as opposed to past-focused individuals who could belabor past circumstances. Individuals who are also high in future focus may be desirable to companies given their tendencies to be conscientious and hold an internal locus of control. However, the level of future focus that managers might find beneficial depends upon the future expectancies their employees perceive. If future jobs offer improvements in job characteristics, individuals high in future focus will be more satisfied as compared to those low in future focus, because those high in future focus may currently savor the future.

Temporal focus may also be an important factor for performance given the cognitive emphasis on certain time frames over others. For instance, current- and future-focused individuals could be well suited to jobs that entail strategic planning, moving the organization from its current position to a desired future position. In contrast, past-focused individuals might be more appropriate for jobs that involve tracking the previous performance of the organization. In addition, an employee's temporal focus may be key in deciding how to frame discussions about performance. For example, a past-focused employee may be more interested in how performance has changed from the past, whereas a future-focused employee may be more interested in how current performance will lead to future opportunities and rewards. Those individuals who focus on all three time periods may require a more holistic view of their performance that spans past performance, current performance, and future expectations. Tailoring conversations and decisions based on temporal focus considerations could garner support from employees and achieve greater levels of understanding, motivation, and commitment.

Limitations

The present studies have several limitations. First, the samples used in Studies 2 and 3 were primarily undergraduate students, which could have constrained personal, intellectual, or demographic characteristics in relation to society in general. Previous research shows that younger individuals tend to be more focused on the present, and college students in particular tend to be focused on future goals (Zimbardo & Boyd, 1999). These concerns are lessened by the fact that most participants in Study 3 were working adults who were completing their education part-time, and that our findings generalized across four samples consisting of individuals from a variety of life and career stages.

A second limitation is that our data consisted of self-reports, and three of our studies were conducted using a cross-sectional design. However, self-report measures were appropriate due to the psychological nature of the constructs we assessed (Schmitt, 1994). Foremost among these constructs was temporal focus itself, which involves thinking about the past, present, and future. These thoughts are best described by the person who experiences them, as opposed to an outside observer. The cross-sectional nature of Studies 1, 2, and 3 might have inflated the relationships among our measures, and to address this issue, we raised the

standards by which we calibrated effect sizes (Cohen, 1992). Cross-sectional designs also weaken causal inferences for these studies, but the bulk of our analyses concerned associations among constructs without making claims about causal direction. In addition, we used Study 4 to address some of these issues with longitudinal data to test the temporal stability and predictive validity of the TFS.

Future research

We recommend that future research address questions we uncovered in our four studies. For example, although we reasoned that past, current, and future temporal focus should be relatively independent, allowing individuals to focus on more than one time period, we found significant bivariate correlations among some of the factors. In all four studies, current and future focus were positively correlated, ranging from .29 to .48. In three of the studies, future focus was also positively correlated with past focus, ranging from .23 to .42. Given that future focus was related to both past and current focus, we suggest that future research continue to examine the origin of these effects. For example, individuals who focus on the future inherently consider the most abstract time period because the future is unknown. Therefore, future focus may relate to need for cognition (Cacioppo & Petty, 1982), suggesting that individuals who prefer to think in general may be more likely to focus on multiple time periods.

Future research may also continue to probe the stability of temporal focus by using designs that cover longer time intervals and span different situations. We also suspect that measuring temporal focus with more specific temporal referents could increase the independence of the factors. In its current form, the TFS asks how often individuals generally thought about past, present, and future. However, individuals might be less likely to simultaneously consider all three periods at a moment in time. For instance, asking individuals how often they have thought about the past, present, and future "within the last hour" or "at this moment" might uncover negative correlations among the factors, reflecting a focus on one time period over the other two. This result would parallel findings from the PANAS (Watson et al., 1988), in which PA and NA are independent when assessed as general tendencies but become negatively related when assessed in reference to a single moment. Initial evidence from recent research with the TFS suggests that individuals' momentary (i.e., state) and general future focus correlate at .25 (Foo, Uy, & Baron, in press), reflecting substantially different constructs.

In addition, physiological measurements focused on the brain such as neuroimaging (e.g., functional magnetic resonance imaging, fMRI) or electroencephalography (EEG) may uncover the exact process by which temporal focus operates. Initial evidence suggests that thinking about the past and future activates different portions of the brain (Abraham, Schubotz, & von Cramon, 2008). Thus, physiological measures may uncover the biological basis for the development and maintenance of a stable temporal focus profile, and the exact process by which individuals are able to switch their focus among the three time periods.

We also recommend that future research examine the causal direction of the relationships between temporal focus and time attitude. We predicted that these variables would be unrelated, but we found small to moderate correlations that could not be explained by dispositional response tendencies or the shared variance among the TFS factors. These findings raise some intriguing questions. For example, do people bias their time attitudes toward the periods on which they tend to focus? Alternately, do people think about time periods that they evaluate more positively? These questions are worth pursuing in future research.

Conclusion

As research continues to incorporate temporal issues, the role of temporal focus will become increasingly critical to address how individuals think about time. This article has developed the temporal focus construct and derived a new measure, the TFS, which exhibits important advantages over existing measures. We recommend that future research consider the importance of temporal issues and incorporate temporal focus into the armament of constructs that affect phenomena relevant to individuals, groups, and organizations.

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References

Abraham, A., Schubotz, R. I., & von Cramon, D. Y. (2008). Thinking about the future versus the past in personal and non-personal contexts. *Brain Research, 1233*, 106–119.

Adams, G. A., & Beehr, T. A. (1998). Turnover and retirement: A comparison of their similarities and differences. *Personnel Psychology, 51*(3), 643–655.

Albert, S. (1977). Temporal comparison theory. *Psychological Review, 84*(6), 485–503.

Ancona, D. G., Goodman, P. S., Lawrence, B. S., & Tushman, M. L. (2001a). Time: A new research lens. *Academy of Management Review, 26*, 645–663.

Ancona, D. G., Okhuysen, G. A., & Perlow, L. (2001b). Taking time to integrate temporal research. *Academy of Management Review, 26*(4), 512–529.

Aronowitz, T., & Morrison-Beedy, D. (2004). Comparison of the maternal role in resilience among impoverished and non-impoverished early adolescent African American girls. *Adolescent & Family Health, 3*, 155–163.

Aronowitz, T., Rennells, R. E., & Todd, E. (2005). Heterosocial behaviors in early adolescent African American girls: The role of mother–daughter relationships. *Journal of Family Nursing, 11*, 122–139.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52*, 1–26.

Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job performance. A meta-analysis. *Personnel Psychology, 44*, 1–26.

Bartol, K. M., & Martin, D. C. (1998). Applicant referent information at hiring interview and subsequent turnover among part-time workers. *Journal of Vocational Behavior, 53*(3), 334–352.

Bass, B. M., Cascio, W. F., & O'Connor, E. J. (1974). Magnitude estimations of expressions of frequency and amount. *Journal of Applied Psychology, 59*, 313–320.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*, 238–246.

Bentler, P. M. (1995). *EQS structural equations program manual*. Encino, CA: Multivariate Software.

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88*, 588–606.

Bird, B. (1988). Implementing entrepreneurial ideas: The case for intention. *Academy of Management Review, 13*(3), 442–453.

Blount, S., & Janicik, G. A. (2001). When plans change: Examining how people evaluate timing changes in work organizations. *Academy of Management Review, 26*, 566–585.

Bluedorn, A. C. (2002). *The human organization of time: Temporal realities and experience*. Stanford, Calif.: Stanford Business Books.

Bluedorn, A. C., & Denhardt, R. B. (1988). Time and organizations. *Journal of Management, 14*, 299–320.

Bluedorn, A. C., Kalliath, T. J., Strube, M. J., & Martin, G. D. (1999). Polychronicity and the inventory of polychronic values (IPV): The development of an instrument to measure a fundamental dimension of organizational culture. *Journal of Managerial Psychology, 14*(3/4), 205–230.

Bluedorn, A. C., & Martin, G. (2008). The time frames of entrepreneurs. *Journal of Business Venturing, 23*(1), 1–20.

Brockner, J. (1992). The escalation of commitment to a failing course of action: Toward theoretical progress. *Academy of Management Review, 17*, 39–61.

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology, 42*(1), 116–131.

Carstensen, L. L. (2006). The influence of a sense of time on human development. *Science, 312*, 1913–1915.

Carstensen, L. L., Isaacowitz, D. M., & Charles, S. T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist, 54*(3), 165–181.

Carver, C. S., & Scheier, M. F. (1982). Control theory: A useful conceptual framework for personality-social, clinical, and health psychology. *Psychological Bulletin, 92*, 111–135.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155–159.
Cole, D. A., Ciesla, J. A., & Steiger, J. H. (2007). The insidious effects of failing to include design-driven correlated residuals in latent variable covariance structure analysis. *Psychological Methods, 12*, 381–398.
Conte, J. M., Mathieu, J., & Landy, F. J. (1998). The nomological and predictive validity of time urgency. *Journal of Organizational Behavior, 19*, 1–13.
Costa, P. T., Jr., & McCrae, R. R. (1985). *The NEO personality inventory manual*. Odessa, FL: Psychological Assessment Resources.
Costa, P. T., & McCrae, R. R. (1992). Four ways five factors are basic. *Personality and Individual Differences, 13*, 653–665.
Cottle, T. J. (1976). *Perceiving time: A psychological investigation with men and women*. New York: Wiley.
Das, T. K. (1987). Strategic planning and individual temporal orientation. *Strategic Management Journal, 8*(2), 203–209.
de Volder, M. (1979). Time orientation: A review. *Psychologica Belgica, 19*(1), 61–79.
Diener, E., Emmons, R. A., Larsen, RJ., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71–75.
Edwards, J. R. (1992). A cybernetic theory of stress, coping, and well-being in organizations. *Academy of Management Review, 17*(2), 238–274.
Edwards, J. R. (2003). Construct validation in organizational behavior research. In J. Greenberg (Ed.), *Organizational behavior: The state of the science* (pp. 327–371). Mahwah, NJ: Erlbaum.
Edwards, J. R., Baglioni, J. A., & Cooper, C. (1990). Examining the relationships among self-report measures of the Type A behavior pattern: The effects of dimensionality, measurement error, and differences in underlying constructs. *Journal of Applied Psychology, 75*(4), 440–454.
Edwards, J. R., Cable, D. M., Williamson, I. O., Lambert, L. S., & Shipp, A. J. (2006). The phenomenology of fit: Linking the person and environment to the subjective experience of person-environment fit. *Journal of Applied Psychology, 91*(4), 802–827.
Edwards, J. R., & Rothbard, N. P. (1999). Work and family stress and well-being: An examination of person-environment fit in the work and family domains. *Organizational Behavior and Human Decision Processes, 77*(2), 85–129.
Elster, J., & Loewenstein, G. (1992). Utility from memory and anticipation. In J. Elster & G. Loewenstein (Eds.), *Choice over time* (pp. 213–234). New York, NY: Russell Sage Foundation.
Enders, C. K. (2001). The impact of nonnormality on full information maximum-likelihood estimation for structural equation models with missing data. *Psychological Methods, 6*, 352–370.
Enders, C. K., & Bandalos, D. L. (2001). The relative performance of full information maximum likelihood estimation for missing data in structural equation models. *Structural Equation Modeling, 8*, 430–457.
Floyd, M., Garfield, A., & LaSota, M. T. (2005). Anxiety sensitivity and worry. *Personality and Individual Differences, 38*, 1223–1229.
Foo, M., Uy, M. A., & Baron, R. A. (in press). How do feelings influence effort? An empirical study of entrepreneurs' affect and venture effort. *Journal of Applied Psychology*.
Francis Smythe, J. A., & Robertson, I. T. (2003). The importance of time congruity in the organisation. *Applied Psychology: An International Review, 52*(2), 298–321.
Fried, Y., & Slowik, L. H. (2004). Enriching goal-setting theory with time: An integrated approach. *Academy of Management Review, 29*, 404–422.
Fuller, J. A., Stanton, J. M., Fisher, G. G., Spitzmuller, C., Russell, S. S., & Smith, P. C. (2003). A lengthy look at the daily grind: Time series analysis of events, mood, stress, and satisfaction. *Journal of Applied Psychology, 88*(6), 1019–1033.
Fung, H. H., & Carstensen, L. L. (2004). Motivational changes in response to blocked goals and foreshortened time: Testing alternatives to socioemotional selectivity theory. *Psychology and Aging, 19*(1), 68–78.
Gardner, D. G., Dunham, R. B., Cummings, L. L., & Pierce, J. L. (1987). Employee focus of attention and reactions to organizational change. *Journal of Applied Behavioral Science, 23*(3), 351–370.
Gardner, D. G., Dunham, R. B., Cummings, L. L., & Pierce, J. L. (1989). Focus of attention at work: Construct definition and empirical validation. *Journal of Occupational Psychology, 62*, 61–77.
George, J. M., & Jones, G. R. (2000). The role of time in theory and theory building. *Journal of Management, 26*, 657–684.
Gersick, C. J. (1988). Time and transition in work teams: Toward a new model of group development. *Academy of Management Journal, 31*, 9–41.
Gevers, J. M. P., Mohammed, S., Baytalskaya, N., & Beeftink, F. (2008). The development and validation of a pacing preference scale. Paper presented at the sixty-seventh annual meeting of the Academy of Management, Anaheim, CA.
Gevers, J. M. P., Rutte, C. G., & van Eerde, W. (2006). Meeting deadlines in work groups: Implicit and explicit mechanisms. *Applied Psychology: An International Review, 55*(1), 52–72.
Gibson, C., Waller, M. J., Carpenter, M., & Conte, J. M. (2007). Antecedents, consequences, and moderators of time perspective heterogeneity for knowledge management in MNO teams. *Journal of Organizational Behavior, 28*, 1005–1034.
Gilovich, T., & Medvec, V. H. (1995). The experience of regret: What, when, and why. *Psychological Review, 102*, 379–395.
Gjesme, T. (1979). Future time orientation as a function of achievement motives, ability, delay of gratification, and sex. *The Journal of Psychology, 101*, 173–188.
Grant, A. M., Franklin, J., & Langford, P. (2002). The self-reflection and insight scale: A new measure of private self-consciousness. *Social Behavior and Personality, 30*(8), 821–835.
Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review, 9*, 193–206.
Harber, K. D., Zimbardo, P. G., & Boyd, J. N. (2003). Participant self-selection biases as a function of individual differences in time perspective. *Basic and Applied Social Psychology, 25*, 255–264.
Harrison, D. A., & McLaughlin, M. E. (1996). Structural properties and psychometric qualities of self-reports: Field tests of connections derived from cognitive theory. *Journal of Management, 22*, 313–338.
Harrison, D. A., Price, K. H., Gavin, J. H., & Florey, A. T. (2002). Time, teams, and task performance. Changing effects of surface- and deep-level diversity on group functioning. *Academy of Management Journal, 45*, 1029–1045.
Hecht, T. D., & Allen, N. J. (2005). Exploring links between polychronicity and well-being from the perspective of person-job fit: Does it matter if you prefer to only do one thing at a time? *Organizational Behavior and Human Decision Processes, 98*, 155–178.
Herscovitch, L., & Meyer, J. P. (2002). Commitment to organizational change: Extension of a three-component model. *Journal of Applied Psychology, 87*(3), 474–487.
Holak, S. L., & Havlena, W. J. (1998). Feelings, fantasies, and memories: An examination of the emotional components of nostalgia. *Journal of Business Research, 42*, 217–226.
Holman, E. A., & Silver, R. C. (1998). Getting "stuck" in the past: Temporal orientation and coping with trauma. *Journal of Personality and Social Psychology, 74*(5), 1146–1163.
Holman, E. A., & Silver, R. C. (2005). Future-oriented thinking and adjustment in the nationwide longitudinal study following the September 11th terrorist attacks. *Motivation and Emotion, 29*(4), 389–410.
Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55.
Jackson, D. N. (1994). *Jackson personality inventory – Revised*. Port Huron, MI: Sigma Assessment Systems, Inc.
Jackson, D. N., Hourany, L., & Vidmar, N. J. (1972). A four-dimensional interpretation of risk taking. *Journal of Personality, 40*, 483–501.
Jansen, K. J., & Kristof-Brown, A. L. (2005). Marching to the beat of a different drummer: Examining the impact of pacing congruence. *Organizational Behavior and Human Decision Process, 97*, 93–105.
Ji, L. J., Guo, T., Zhang, Z., & Messervey, D. (2009). Looking into the past: Cultural differences in perception and representation of past information. *Journal of Personality and Social Psychology, 96*(4), 761–769.
Jöreskog, K., & Sörbom, D. (2003). *LISREL 8.54*. Scientific Software International, Inc..
Ko, G., & Gentry, J. W. (1991). The development of time orientation measures for use in cross-cultural research. *Advances in Consumer Research, 18*, 135–142.
Kozlowski, S. W. J., Gully, S. M., Brown, K. G., Salas, E., Smith, E. M., & Nason, E. R. (2001). Effects of training goals and goal orientation traits on multidimensional training outcomes and performance adaptability. *Organizational Behavior and Human Decision Processes, 85*(1), 1–31.
Kristof-Brown, A. L., & Jansen, K. J. (2007). Issues of person-organization fit. In C. Ostroff & T. A. Judge (Eds.), *Perspectives on organizational fit* (pp. 123–153). New York: Lawrence Erlbaum Associates.
Labianca, G., Moon, H., & Watt, I. (2005). When is an hour not 60 minutes? Deadlines, temporal schemata, and individual and task group performance. *Academy of Management Journal, 48*, 677–694.
Lambert, L. S., Edwards, J. R., & Cable, D. M. (2003). Breach and fulfillment of the psychological contract: A comparison of traditional and expanded views. *Personnel Psychology, 56*(4), 895–934.
Landy, F. J., Rastegary, H., Thayer, J., & Colvin, C. (1991). Time urgency: The construct and its measurement. *Journal of Applied Psychology, 76*(5), 644–657.
Lang, F. R., & Carstensen, L. L. (2002). Time counts: Future time perspective, goals, and social relationships. *Psychology and Aging, 17*(1), 125–139.
Levenson, H. (1973). Multidimensional locus of control in psychiatric patients. *Journal of Consulting and Clinical Psychology, 41*, 397–404.
Lewin, K. (1951). In D. Cartwright (Ed.), *Field theory in social science; Selected theoretical papers*. New York: Harper & Row.
Locke, E. A. (1969). What is job satisfaction? *Organizational Behavior and Human Performance, 4*, 309–336.
Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist, 57*(9), 705–717.
Loewenstein, G. F. (1988). Frames of mind in intertemporal choice. *Management Science, 34*(2), 200–214.
Lord, R. G., Brown, D. J., & Freiberg, S. J. (1999). Understanding the dynamics of leadership: The role of follower self-concepts in the leader/follower relationship. *Organizational Behavior and Human Decision Processes, 78*, 167–203.
Mainemelis, C. (2001). When the muse takes it all: A model for the experience of timelessness in organizations. *Academy of Management Review, 26*, 548–565.
Mannix, E. A., Tinsley, C. H., & Bazerman, M. (1995). Negotiating over time: Impediments to integrative solutions. *Organizational Behavior and Human Decision Processes, 62*, 241–251.
March, J. G., & Olsen, J. P. (1979). *Ambiguity and choice in organizations* (2nd ed.). Bergen: Universitetsforlaget.
Markman, K. D., & McMullen, M. N. (2003). A reflection and evaluation model of comparative thinking. *Personality and Social Psychology Review, 7*(3), 244–267.
Marsh, H. W., Hau, K. T., & Wen, Z. (2004). In search of golden rules: Comment on hypothesis-testing approaches to setting cutoff values for fit indexes and

dangers in overgeneralizing Hu and Bentler's (1999) findings. *Structural Equation Modeling, 11*, 320–341.
McGrath, J. E., & Rotchford, N. L. (1983). Time and behavior in organizations. *Research in Organizational Behavior, 5*, 57–101.
McGrath, J. E., & Tschan, F. (2004). Time and the research process. In J. E. McGrath & F. Tschan (Eds.), *Temporal matters in social psychology: Examining the role of time in the lives of groups and individuals* (pp. 141–154). Washington, DC: American Psychological Association.
Meyer, J. P., & Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review, 1*, 61–89.
Meyer, J., Allen, N., & Smith, C. (1993). Commitment to organizations and occupations: Extension and test of a three-component conceptualization. *Journal of Applied Psychology, 78*(4), 538–551.
Mitchell, T. R., & James, L. R. (2001). Building better theory, time and the specification of when things happen. *Academy of Management Review, 26*, 530–547.
Mosakowski, E., & Earley, P. C. (2000). A selective review of time assumptions in strategy research. *Academy of Management Review, 25*, 796–812.
Mohammed, S., & Harrison, D.A. (2007). Diversity in temporal portfolios: Understanding how time-based individual differences can affect team performance. Paper presented at the sixty-sixth annual meeting of the Academy of Management, Philadelphia, PA.
Murray, H. A. (1938). *Explorations in personality: A clinical and experimental study of fifty men of college age*. New York London etc.: Oxford University Press.
Newman, D. A. (2003). Longitudinal modeling with randomly and systematically missing data: A simulation of ad hoc, maximum likelihood, and multiple imputation techniques. *Organizational Research Methods, 6*, 328–362.
Nunnally, J. C. (1978). *Psychometric theory*. New York: McGraw-Hill.
Nuttin, J. (1985). *Future time perspective and motivation*. Leuven, Belgium: Leuven University Press and Lawrence Erlbaum Associates.
Presson, P. K., Clark, S. C., & Benassi, V. A. (1997). The Levenson locus of control scales: Confirmatory factor analyses and evaluation. *Social Behavior and Personality, 25*, 93–104.
Rappaport, H. (1990). *Marking time*. New York, NY, US: Simon & Schuster.
Robinson, S. L., Kraatz, M. S., & Rousseau, D. M. (1994). Changing obligations and the psychological contract: A longitudinal study. *Academy of Management Journal, 37*(1), 137–152.
Robinson, S. L., & Rousseau, D. M. (1994). Violating the psychological contract: Not the exception but the norm. *Journal of Organizational Behavior, 15*, 245–259.
Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied, 80*(1), 1–28.
Rousseau, D. M. (1989). Psychological and implied contracts in organizations. *Employee Responsibilities and Rights Journal, 2*, 121–139.
Rousseau, D. M., & Parks, J. M. (1992). The contracts of individuals and organizations. *Research in Organizational Behavior, 15*, 1–43.
Rubin, D. B. (1976). Inference and missing data. *Biometricka, 63*, 581–592.
Sanna, L. J., Stocker, S. L., & Clarke, J. A. (2003). Rumination, imagination, and personality: Specters of the past and future in the present. In E. C. Chang & L. J. Sanna (Eds.), *Virtue, vice, and personality: The complexity of behavior* (pp. 105–124). Washington, DC, US: American Psychological Association.
Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the life orientation test. *Journal of Personality and Social Psychology, 67*, 1063–1078.
Schmitt, N. (1994). Method bias: The importance of theory and measurement. *Journal of Organizational Behavior, 15*, 393–398.
Schneider, B., Goldstein, H., & Smith, D. B. (1995). The ASA framework: An update. *Personnel Psychology, 48*, 747–773.
Seijts, G. H. (1998). The importance of future time perspective in theories of work motivation. *The Journal of Psychology, 132*(2), 154–168.
Shipp, A. J. (2006). The moving window of fit: Extending person-environment fit research with time. Unpublished doctoral dissertation, University of North Carolina.
Slocombe, T. E., & Bluedorn, A. C. (1999). Organizational behavior implications of the congruence between preferred polychronicity and experienced work-unit polychronicity. *Journal of Organizational Behavior, 20*, 75–99.
Spector, P. E. (1997). *Job satisfaction: Application assessment, causes, and consequences*. Thousand Oaks, CA: Sage.
Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S. T., et al. (1991). The will and the ways: Development and validation of an individual-differences measure of hope. *Journal of Personality and Social Psychology, 60*, 570–585.
Stanton, J. M., & Weiss, E. M. (2002). *Online panels for social science research: An introduction to the Study Response project* (Technical report no. 13001; www.studyresponse.com). Syracuse, NY: Syracuse University School of Information Studies.
Staw, B. M., Sandelands, L. E., & Dutton, J. E. (1981). Threat-rigidity effects in organizational behavior: A multilevel analysis. *Administrative Science Quarterly, 26*, 501–524.
Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research, 25*, 173–180.
Stewart, R. A. C. (1976). An experimental form of the Stewart personality inventory: A simplified-format measure of major personality dimensions. *Perceptual and Motor Skills, 43*, 813–814.
Stewart, W. H., Jr., & Roth, P. L. (2001). Risk propensity differences between entrepreneurs and managers: A meta-analytic review. *Journal of Applied Psychology, 86*(1), 145–153.
Strathman, A., Gleicher, F., Boninger, D. S., & Edwards, C. S. (1994). The consideration of future consequences: Weighing immediate and distant outcomes of behavior. *Journal of Personality and Social Psychology, 66*(4), 742–752.
Sutton, G., & Griffin, M. A. (2004). Integrating expectations, experiences, and psychological contract violations: A longitudinal study of new professionals. *Journal of Occupational and Organizational Psychology, 77*(4), 493–514.
Tellegen, A. (1985). Structures of mood and personality and their relevance to assessing anxiety, with an emphasis on self-report. In A. H. Tuma & J. D. Maser (Eds.), *Anxiety and the anxiety disorders* (pp. 681–706). Hillsdale, NJ: Erlbaum.
Tesluk, P. E., & Jacobs, R. R. (1998). Toward an integrated model of work experience. *Personnel Psychology, 51*(2), 321–355.
Trommsdorff, G. (1983). Future orientation and socialization. *International Journal of Psychology, 18*, 381–406.
Tversky, A., & Griffin, D. (1991). Endowment and contrast in judgments of well-being. In F. Strack, M. Argyle, & N. Schwarz (Eds.), *Subjective well-being: An interdisciplinary perspective* (pp. 101–118). Oxford: Pergamon Press.
Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika, 38*, 1–10.
Vaidya, J. G., Gray, E. K., Haig, J., & Watson, D. (2002). On the temporal stability of personality: Evidence for differential stability and the role of life experiences. *Journal of Personality and Social Psychology, 83*(6), 1469–1484.
Van Calster, K., Lens, W., & Nuttin, J. (1987). Affective attitude toward the personal future: Impact on motivation in high school boys. *American Journal of Psychology, 100*, 1–13.
Van de Ven, A. H., & Poole, M. S. (2005). Alternative approaches for studying organizational change. *Organization Studies, 26*, 1377–1404.
Waller, M. J., Conte, J. M., Gibson, C. B., & Carpenter, M. A. (2001). The effect of individual perceptions of deadlines on team performance. *Academy of Management Review, 26*, 586–600.
Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin, 96*(3), 465–490.
Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063–1070.
Watson, D., & Walker, L. M. (1996). The long-term stability and predictive validity of trait measures of affect. *Journal of Personality and Social Psychology, 70*(3), 567–577.
Wayment, H. A., & Aronson, B. (2002). Risky sexual behavior in American White college women: The role of sex guilt and sexual abuse. *Journal of Health Psychology, 7*, 723–733.
Weick, K. E. (1979). *The social psychology of organizing* (2nd ed.). New York: McGraw-Hill.
Wheeler, M. A., Stuss, D. T., & Tulving, E. (1997). Toward a theory of episodic memory: The frontal lobes and autonoetic consciousness. *Psychological Bulletin, 121*(3), 331–354.
Wilson, A. E., & Ross, M. (2003). The identity function of autobiographical memory: Time is on our side. *Memory, 11*(2), 137–149.
Zaheer, S., Albert, S., & Zaheer, A. (1999). Time scales and organizational theory. *Academy of Management Review, 24*, 725–741.
Zaleski, Z. (1996). Future anxiety: Concept measurement and preliminary research. *Personality and Individual Differences, 21*, 165–174.
Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual-differences metric. *Journal of Personality and Social Psychology, 77*, 1271–1288.
Zimbardo, P. G., Keough, K. A., & Boyd, J. N. (1997). Present time perspective as a predictor of risky driving. *Personality and Individual Differences, 23*, 1007–1023.
Zuckerman, M. (1994). *Behavioral expressions and biosocial bases of sensation seeking*. New York: Cambridge University Press.