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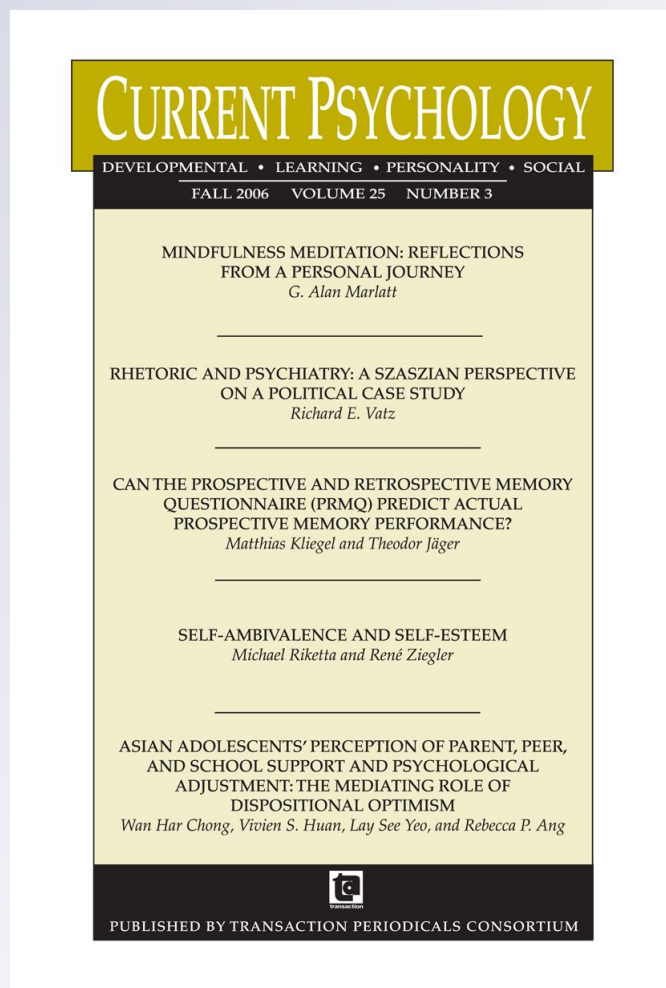
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Time Perspective and Procrastination in the Workplace: An Empirical Investigation

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Abstract In the workplace, procrastination is typically viewed as a sub-optimal behavior that undermines productivity. As a construct, psychologists typically conceptualize procrastination as a stable and enduring personality trait. It has recently been argued that time perspective is also a personality trait, which has an important influence on procrastination behavior (Ferrari and Díaz-Morales, 2007 *Journal of Research in Personality* 41:707–714). Time perspective helps to guide not only employees' judgments and decisions, but also their actions at the individual level. In this study, we examine the extent to which five qualitatively different types of time perspective (defined by Zimbardo and Boyd, 1999 *Journal of Personality and Social Psychology* 77:1271–1288) predict the tendency to procrastinate in the workplace. Participants were 236 managers and executives sampled from seven major information technology and financial organizations in India. Regression analyses revealed that of the five time dimensions, two were significantly positively related to procrastination, whereas two others showed negative relationships. From a basic science perspective, these findings help to extend our theoretical understanding of both time perspective and procrastination. From an applied standpoint, the results suggest an important individual difference dimension that might be considered during the personnel selection process.

Keywords Procrastination · Time perspective · Personality · Temporal orientation · Organizations

R. Gupta · J. Gaur
IFHE University, Hyderabad, India

D. A. Hershey
Oklahoma State University, Stillwater, OK, USA

D. A. Hershey (✉)
Department of Psychology, 116 North Murray Hall, Stillwater, OK 74078, USA
e-mail: douglas.hershey@okstate.edu

In modern organizations, time is a scarce resource. This implies employees who organize their time in an effective manner will be perceived to be of greater value by employers, by virtue of the fact that they make a greater contribution to organizational efficiency. Procrastinators, in contrast, lead to increased employer costs by taking more time than necessary to complete requisite tasks. There has been little in the way of empirical work, however, that has examined the link between procrastination and time orientation in the workplace. This paucity of research seems odd in light of the fact that organizations have much to gain by understanding the extent to which individual difference dimensions (such as time orientation) lead to procrastination practices. The goal of the present study is to investigate employees' procrastination behavior, and determine whether it is predicted on the basis of their dominant temporal orientation.

The introduction below contains a brief review of the literature on procrastination (that is, the dependent variable in this study), followed by a description of a theoretical model of time orientation (the independent variable) formulated by Zimbardo and Boyd (1999). The introduction concludes with a discussion of the specific goals of the present study.

Procrastination in the Workplace

Procrastination is often defined as postponing, delaying, or putting off work or action that would ideally be carried out in the present (Steel, 2007). The word itself is derived from Latin, in which *pro* means forward and *cras* suggests tomorrow (Bauman, 1999). Procrastination typically has a negative connotation attached to it. People who are procrastinators are often viewed as bad, harmful or foolish in nature (Van Eerde, 2003). Individuals who see themselves as procrastinators often wish to reduce it, by setting realistic goals and deadlines in order to complete tasks in a reasonable time frame (Ariely and Wertenbroch, 2002). Procrastination is also typically viewed as being volitional in nature—that is, it involves the voluntary choice of one behavior or task over other competing options.

In the workplace, procrastinators may differentially focus their energy on short-term objectives, often at the expense of accomplishing key long-range tasks. Ideally, employees should strive to balance personal energies in such a way that they maximize productivity and reduce inefficiency in such a way as to maximize corporate resources (Pollay, 1970). Unfortunately, procrastinators often leave themselves too little time for careful consideration, leading to sub-optimal work performance. In fact, the relationship between procrastination and individual performance suggests those who are highly prone to defer tasks perform poorly overall (Ariely and Wertenbroch, 2002; Dewitte and Lens, 2000; Van Eerde, 2003; Ferrari and Tice, 2000). Procrastination can indeed affect both organizational and individual productivity, which makes it important to understand the factors that influence it.

In terms of a theoretical framework, three major dimensions have been shown to influence procrastination. These dimensions include intrapersonal factors, situational factors, and task characteristics. In terms of the first dimension, one's personality characteristics (the focus of the present investigation) have been shown to influence workplace procrastination (Loneragan and Maher, 2000). In fact, neuroticism is

positively related to procrastination behavior, whereas conscientiousness and procrastination are inversely related (Steel, 2007). Situational factors have also been shown to be a determinant of procrastination behavior (Loneragan and Maher, 2000). For example, an employee may not typically be a procrastinator, but due to ill health or a family problem one might not be able to perform a task in a timely fashion. A third factor that leads to workplace procrastination is when employees are confronted with tasks in which they are either likely to fail (Lay, 1990; Van Eerde, 2003) or tasks that have open-ended deadlines (Ferrari, 1992). In terms of the former, an employee might delay critical sales-related tasks when the supervisor has set a seemingly impossible goal. An example of the latter would involve procrastinating on a task in which the deadline has not been clearly set.

Empirical work has shown that trait procrastinators tend to be less efficient and committed when it comes to job search behaviors (Lay and Brokenshire, 1997), and in academic contexts they have lower levels of self-efficacy for self-regulated learning (Tan, et al., 2008). Furthermore, white-collar workers and professional employees tend to demonstrate higher levels of procrastination than blue-collar workers and unskilled employees (Hammer and Ferrari, 2003). It has also been found that the willingness to engage in job enrichment practices is negatively related to procrastination (Loneragan and Maher, 2000). Finally, from a psychological perspective, procrastinators tend to be more agitated, dejected, anxious and miserable in the long term (Herweg and Muller, 2011; Lay, 1994; Tice and Baumeister, 1997), they are prone to low self-esteem and boredom (Ferrari, 2000), and they have been shown to lack impulse control (Van Eerde, 2003). Next, we turn our attention to the construct that will serve as the independent variable in the present investigation—time perspective.

Time Perspective

Time perspective is a theoretical construct that allows us to understand human behavior by explaining it in terms of a stable and enduring personality trait. In thinking through the relationship between time orientation and behavior, it is explicitly acknowledged that our actions are guided not only by future expectations, but also by past experiences (Lennings and Burns, 1998; Zimbardo and Boyd, 1999).

Time perspective has been actively explored and described in a variety of different ways by authors stretching back over the past six decades. Among psychologists, particularly influential thoughts on the topic can be traced back to the writings of Lewin (1951), who viewed time perspective as emerging as a function of one's social background and motivational pressures. Nuttin and colleagues viewed one's orientation to time as having a strong cognitive basis that is related to one's hopes, goals, and plans (Nuttin, 1984; Nuttin and Lens, 1985). Lennings and Burns (1998) describe time perspective as "a multidimensional construct related to the ability of individuals to anticipate future events and reflect on the past" (p. 629). The notion of temporal extension, which Lennings and Burns suggest is central to conceptions of time perspective, defines events as being bidirectional (that is, either past or future) and either distant or proximate in nature. Along similar lines, Zimbardo and Boyd (1999) define time perspective as "a fundamental dimension in the construction of

psychological time, [which] emerges from cognitive processes partitioning human experience into past, present, and future temporal frames” (p. 1271). The work of these latter two theorists suggests one’s personality-based orientation to time serves to determine not only one’s thought processes, but also one’s attitudes and behavioral predispositions.

The way an employee conceptualizes and experiences time is affected by a variety of factors including one’s genetic predisposition, the environment, the existing situational context, and individual difference dimensions (such as one’s elemental personality traits) (Hershey and Mowen, 2000; Lee and Liebenau, 1999). Unfortunately, it has been difficult for researchers to come to consensus as to how many dimensions of temporal orientation actually exist, due to differences in the many ways the construct has been conceptualized and measured. In terms of the former, cognitive theorists have viewed time perspective as a perceptual dimension that shapes an individual’s view of the world, affecting one’s goals, decisions, and plans (Nuttin, 1984). Personality theorists, in contrast, see time orientation as a trait that has a more distal influence on behavior (Mowen, 2000). From a personality perspective, time orientation underlies (that is, is antecedent to) a variety of cognitive and behavioral constructs. In terms of the latter (that is, the way it has been measured), time perspective has been assessed in a variety of different ways. It has been assessed using projective techniques (Wohlford, 1966), via multiple-item scales embedded in questionnaires (Hershey and Mowen, 2000; Strathman et al. 1994), as the degree of temporal extension associated with motivationally interesting objects and objectives (Nuttin, 1984), and it has even been measured in the form of a timeline when considering the temporal orientation of organizations (Rappaport, 1990). In this study we conceptualize time perspective as a personality trait, and measure it using a multiple-item self-report scale.

Zimbardo’s Five-Factor Model One particularly influential theoretical model of time perspective has been advanced by Zimbardo and colleagues (D’Alessio et al. 2003; Zimbardo and Boyd, 1999; Zimbardo et al. 1997). The highly cited Zimbardo and Boyd (1999) framework posits the existence of five independent time-based personality dimensions, two of which are anchored in the past (past positive; past negative), two that are anchored in the present (present hedonistic; present fatalistic), and one that is linked to the future (future orientation). A description of these five dimensions and their dominant characteristics is shown in Table 1. Across a number of investigations, Zimbardo and others (Díaz-Morales et al. 2008; Ferrari and Díaz-Morales, 2007; Holman and Zimbardo 2009; Milfont et al. 2008; Petkoska and Earl, 2009; Zimbardo and Boyd, 1999) evaluated the psychometric properties of a 56-item measure of time perspective, which to present has been administered to thousands of individuals.

Other researchers have empirically tested various shortened or extended forms of the set of Zimbardo’s Time Perspective Inventory (ZTPI) items, but such attempts have resulted in factor structures that are often times configurally dissimilar to the Zimbardo and Boyd model. In work that preceded the development of the Zimbardo and Boyd (1999) five-factor model, studies by Zimbardo et al. (1997) and Keough et al. (1999) both resulted in the identification of two factor models. D’Alessio et al. (2003) found a three factor solution using 22 of the original 56 items. In a two study

Table 1 Five time perspective dimensions as posited by Zimbardo and colleagues

Past-Positive Orientation	These individuals construct their view of the past as glowing, positive, and nostalgic. Past-positive individuals tend to exhibit high levels of self-esteem and happiness, and they tend to have a healthy outlook on life. This orientation is generally thought of as the opposite of the past-negative orientation.
Past-Negative Orientation	These individuals tend to have a pessimistic, negative, or aversive attitude toward the past. It is associated with feelings of depression, anxiety, low self-esteem, self-reported unhappiness and aggression.
Present-Hedonistic Orientation	These individuals are oriented toward enjoyment, pleasure, and excitement in the present. They do not believe in making sacrifices in the present for rewards that may be earned in the future. They show a low preference for consistency, low levels of impulse control, and they often search for novelty in their lives by engaging in sensation seeking activities.
Present-Fatalistic Orientation	These individuals believe that the future is predestined; that is, it cannot be changed on the basis of our actions. They believe fate plays a major role in determining our experiences, thus, they rarely tend to think far beyond the present. Moreover, they tend to score high on measures of depression, anxiety and aggression.
Future Orientation	These individuals actively plan for and strive to meet future goals. They see themselves as achievers. Individuals with this orientation tend to be conscientiousness, have a preference for consistency, and they are reward dependent. Future oriented individuals generally avoid novelty, sensation seeking, aggression, impulsivity, and risk taking, as such behaviors are antithetical to future success.

paper published in 2009, Crockett, Weinman, Hankins and Marteau used a reduced set of items to test two and three factor time perspective configurations. Carelli et al. (2011) added a set of future negative items to the 56 ZTPI items in order to identify a six factor configuration. Another investigation by Stolarski et al. (2011) found evidence for a five-factor configuration using a 54 item set. Not only have different studies led to different conclusions regarding the number of orientations that exist, but a close inspection of the loadings in the above studies reveal items sometimes load on an unexpected factor (for example, when a past positive item loads on a future orientation factor), which calls into question the face validity of such solutions.

It is important to note that any one individual is not guided by just one of the five time orientations, but rather, each of us has a greater or lesser amount of each of the five individual dimensions (Zimbardo and Boyd, 1999). This unique combination of perspectives, some of which in any one individual are more dominant than others, is how each person can be said to have a relatively unique time orientation. It has been argued that this ‘composite’ orientation is critical to the way in which individuals perceive workplace tasks and manage their time (Boniwell and Zimbardo, 2003).

When individuals are heavily anchored in any one temporal perspective, it has been argued they will have a ‘cognitive temporal bias’ stemming from that orientation (Zimbardo and Boyd, 1999). If anchored in any of these orientations for an extended period of time, then the normative characteristics (described in Table 1) become part of their basic personality structure, and their behavioral responses and daily routines become predictable. It is worth noting each temporal perspective has its own benefits

when applied to specific situations. But that said, a dominant orientation can become problematic when an individual becomes heavily anchored in a single perspective across all situations and contexts. Next, we turn our attention to a description of the characteristics and goals of the present investigation.

Present Investigation

As stated above, the purpose of this investigation was to assess the five time perspectives identified by Zimbardo and Boyd (1999) in relation to procrastination. In doing so, we sought to use a (more efficient) shortened version of the ZTPI. However, the existing short forms of the measure cited above seemed inadequate given their failure to arrive at five separate, discriminable dimensions. Therefore, a set of 15 items from the ZTPI were strategically selected that were deemed to be representative of *all five factors*. If the putative five-factor structure can successfully be identified with this reduced set of items, then our plan is to assess the extent to which the five dimensions predict workplace procrastination. This will be accomplished through the use of multiple regression techniques, in which individuals' procrastination scores are regressed on scores from the five different time perspective subscales. Expected relationships between each of the five predictors and the criterion are outlined below.

Zimbardo and Boyd (1999) found those with a past-positive orientation tend to be happy and agreeable individuals who lead busy lives and have high levels of energy. According to Steel (2007), procrastinators are characteristically rebellious, hostile, disagreeable, and dissatisfied with the course of their lives. Based on these observations we deduce individuals with high scores on the past-positive dimension will tend to exhibit low procrastination scores (Hypothesis 1).

Zimbardo and Boyd (1999) have demonstrated those with a dominant past-negative time orientation tend to be prone to anxiety, depression, and exhibit higher than average levels of emotional instability. Steel (2007; see also Spada, Hiou and Nikcevic, 2006) found procrastinators tend to be prone to anxiety and depression. Task evasiveness and emotional instability have also been empirically shown to be a source of procrastination (Dewitte and Schouwenburg, 2002; Milgram and Tenne, 2000; Steel, 2007). On this basis we hypothesize individuals with high scores on the past-negative dimension will exhibit high procrastination scores (Hypothesis 2).

Zimbardo and Boyd (1999) report present-hedonistic individuals seek pleasure and enjoyment, have high levels of energy, and they lack emotional stability. Steel (2007) found procrastinators tend to be sensation seekers, focusing on pleasure in the moment as opposed to the completion of tasks that fail to provide high levels of sensation or pleasure. Consistent with these findings, in a study that examined both hedonic tendencies and procrastination, Dewitte and Schouwenburg (2002) found procrastinators were lacking in emotional stability and exhibited high levels of energy. On this basis, we predict individuals with high scores on the present-hedonistic dimension will exhibit high levels of procrastination (Hypothesis 3).

Findings from Zimbardo and Boyd (1999) suggest present-fatalistic individuals exhibit low levels of conscientiousness (associated with task evasiveness), depression, and higher than average levels of emotional instability. Task evasiveness and

emotional instability have also been found to be linked to procrastination (Dewitte and Schouwenburg, 2002; Milgram and Tenne, 2000; Steel, 2007). Moreover, procrastinators typically experience anxiety, depression, and worry (Spada et al., 2006). On this basis we posit individuals with high scores on the present-fatalistic dimension will tend to exhibit high procrastination scores (Hypothesis 4).

Work by Zimbardo and Boyd (1999) has demonstrated future-oriented individuals exhibit not only high levels of conscientiousness and energy, but they are also reward dependent, which leads them to carefully plan and organize their work activities. Although procrastinators are aware of the consequences of failing to complete tasks, they lack impulse control, persistence, work discipline, time management skills, and the ability to work methodically (Dewitte and Schouwenburg, 2002; Van Eerde, 2003; Milgram and Tenne, 2000; Steel, 2007). Thus, we anticipate individuals with high scores on the future orientation dimension will tend to exhibit lower procrastination scores (Hypothesis 5).

Method

Participants and Sampling

A total of 236 employees (141 males; 95 females) from seven major information technology and financial firms in India participated in this study. Each respondent self-identified as being either a manager or executive in their organization, which was one of the inclusionary criteria for the investigation. The mean age of respondents was 28.14 years (range 21–58; $SD=7.95$).

The primary sampling approach involved sending targeted emails that contained the questionnaire to managers and executives whose names appeared on the rolls of a database maintained by a large Indian business school. Secondary sampling involved solicitations posted on two social networking sites: Google-talk and Facebook. Individuals who responded via this latter approach completed the questionnaire after accessing it through a secure, web-based link. The fact that some respondents were solicited using a social networking medium meant it was not possible to calculate a valid overall response rate for the study using traditional methods.

Scales and Measures

Measure of Procrastination Lay's (1986) workplace procrastination measure is used as the dependent measure in this investigation. It is designed to assess delays in required workplace projects and decisions, often resulting in task-related pressure and stress. Often, this involves dedicating attention to more minor projects and tasks, as opposed to addressing the major task(s) at hand. The Lay scale contains 20 self-referent statements (for example, "I don't get things done on time") that are answered using a 5-point Likert-type response format (1=*extremely uncharacteristic of me*; 5=*extremely characteristic of me*). The total score for the measure is typically computed to be the mean of the full set of items. Each of the items in Lay's measure of workplace procrastination is shown in Table 2.

Table 2 Items and Factor Loadings for the Measure of Procrastination

Item	Factor Loading
I usually don't return phone calls.	0.40
I usually buy even an essential item at the last minute.	0.49
I don't get things done on time.	0.62
I am not very good at meeting deadlines.	0.64
A letter I write may sit for days before I mail it.	0.62
I often find myself performing tasks that I had intended to do days before.	0.61
Even with jobs that require little else except sitting down and doing them, I find they seldom get done for days.	0.66
I read emails several times without starting work on them or deciding what I am going to do with them.	0.48
I sit down to start a high-priority task, and almost immediately get off to make a cup of coffee.	0.61
When travelling, I usually have to rush in preparing to arrive at the airport or station at the appropriate time.	0.50
In preparing for some deadline, I often waste time by doing other things.	0.68
I spend, not only less time on a project, but less adequate time, even though I am aware of consequences.	0.56
I often have a task finished sooner than necessary.	0.34
I feel tension or discomfort during the decision making process.	0.35
I usually accomplish all the things I plan to do in a day.	0.30
I am often unprepared for the meetings or the like because	0.68
I am continually saying "I will do it tomorrow".	0.69

In terms of psychometric evaluation, across three different studies Lay (1986) found the scale to have a reasonable degree of internal consistency and good predictive validity. Since its inception, other researchers have found the scale to have a single factor structure, acceptable temporal stability, and predictive validity (Ferrari, 1992; Ferrari and Emmons, 1995; Ferrari et al. 2005; Ferrari and Tice, 2000; Flett et al. 1992; Kusyszyn, 1990; Lay, 1987; Lay, 1988; Van Eerde, 2003).

Measure of Time Perspective In order to arrive at a brief and efficient version of the ZTPI, the five dimensions of time perspective were assessed using a set of 15 items drawn from the original Zimbardo and Boyd (1999) 56-item measure. Like the Zimbardo and Boyd measure, all questions were answered using a 5-point Likert-type response format (1=*strongly disagree*; 5=*strongly agree*). The 15 items were selected in order to achieve a representative sample of statements from all five Zimbardo and Boyd subscales. This was accomplished by choosing three statements to represent each of the five perspectives. Each item selected: (i) had a high factor loading in the original Zimbardo and Boyd study, (ii) had a high degree of face validity, and (iii) was deemed to be culturally appropriate for members of an Indian sample. A complete list of items used in this study is shown in Table 3. Scores from these statements were used to calculate means for each of the five hypothesized

Table 3 Items and Factor Loadings for the Five Time Perspective Subscales

Items	Factor Loadings				
	Past Positive	Past Negative	Present Hedonistic	Present Fatalistic	Future Oriented
It gives me pleasure to think about my past.	0.52				
On balance, there much more good to recall than bad in my past.	0.70				
Happy memories of good times spring readily to mind.	0.70				
I think about the bad things that have happened to me in the past.		0.35			
It's hard for me to forget unpleasant images of my youth.		0.74			
I have made mistakes in the past that I wish I could undo.		0.79			
I try to live my life as fully as possible.			0.58		
I take risks to put excitement in my life.			0.55		
I do things impulsively.			0.68		
It doesn't make sense to worry about the future, since there is nothing that I can do about it anyway.				0.58	
My life path is controlled by forces I cannot influence.				0.70	
You can't really plan for the future because things change so much.				0.54	
I believe that a person's day should be planned ahead each morning.					0.56
Meeting tomorrow's deadlines and doing other necessary work comes before tonight's play.					0.77
I complete projects on time by making steady progress.					0.75

orientations: past-positive, past-negative, present hedonistic, present-fatalistic, and future. Information regarding the factor structure of the brief index is provided below.

In addition to the measures of procrastination and time perspective, two demographic indicators were measured. These indicators were self-reported chronological age and sex (males=0; females=1).

Results

Once data entry procedures had been completed, frequency distributions were generated and descriptive statistics were computed for each item and each aggregate variable. Variables were inspected to ensure their distributional characteristics were appropriate, and to ensure there were no outliers, excessive skew, or unreasonable

levels of kurtosis that would violate the assumptions of parametric-level statistics. No such deviations from normality were found. As the data were collected using an online interface, and thus, all responses were mandatory, there were no missing values that required imputation.

The remainder of the results is divided into two sections. The first describes the results of factor analyses for the two key measures in the study, and the second section contains the results of the multiple regression analysis designed to predict procrastination levels on the basis of time perspective.

Psychometric Evaluation of Procrastination and Time Perspective

Measure of Procrastination A confirmatory factor analysis of Lay's (1986) workplace procrastination measure was calculated using principal components analysis. This analysis assumed a unitary factor structure for the scale, and as such, only a single factor was requested. The analysis revealed a KMO value of 0.87, with 27 percent of the variance having been extracted. Three items were found to have loadings of less than 0.30 and were therefore excluded from further consideration. The mean factor loading for the resulting 17 items was .54, and the mean item-total correlation was respectable at .54.

Mean scores for the procrastination measure failed to reveal an effect of sex (t [234] = -0.28, *ns*). However, procrastination was found to be negatively correlated with age (r = -0.19, p < .01), with older respondents being less likely to procrastinate than younger individuals.

Measure of Time Perspective A factor analysis using principal components analysis with varimax rotation was carried out on the 15 time perspective items. Consistent with the dimensionality of the ZTPI, five factors were specified to be extracted on an a priori basis. The results revealed five factors with eigenvalues greater than one that together accounted for 52 percent of the variance in the model. Inspection of a scree plot confirmed the existence of five distinct factors. The KMO value for the analysis was above threshold at 0.64. None of the loadings were found to be lower than 0.35. Factor loadings for each of the five dimensions are shown in Table 3. No appreciable cross-loadings were observed. The mean factor loadings for each of the five dimensions were as follows: past positive = 0.64, past negative = 0.63, present hedonistic = 0.60, present fatalistic = 0.61, and future = 0.71. Computations also revealed the mean item-total correlation for each of these five dimensions were as follows: .61, .69, .70, .67, and .71, respectively.

Further descriptive analyses of the time perspective dimensions revealed appreciable differences across means, with the lowest mean rating being found for the present fatalistic dimension and the largest mean score for the past negative dimension (see Table 4).

Furthermore, relational analyses of the time orientation dimensions (see Table 4), in combination with the findings from the factor analysis, suggest the five factors were fairly independent of one another, with intercorrelations ranging from a low Pearson r value of -0.01 (future and past-positive) to a high r value of 0.32 (present hedonistic and past positive). Finally, sex differences were explored for each of the time orientation dimensions. Of the five dimensions, two revealed a reliable sex

Table 4 Mean Scores and Intercorrelations for the Five Time Orientation Dimensions (Pearson r values)

Variable	1	2	3	4	5
1. Past Positive	—				
2. Past Negative	-.09	—			
3. Present Hedonistic	.32	-.02	—		
4. Present Fatalistic	.07	-.11	.26	—	
5. Future	-.01	.26	-.06	-.07	—
Mean	3.24	3.89	3.55	2.51	3.74
(SD)	0.70	0.71	0.78	0.79	.73

effect. On the present fatalistic dimension males' scores ($M=2.70$; $SD=0.81$) were significantly higher than females' scores ($M=2.25$; $SD=0.69$), $t(234)=4.39$, $p<.01$. And on the present hedonistic dimension males' scores ($M=3.63$; $SD=0.76$) were significantly higher than females' scores ($M=3.43$; $SD=0.81$), $t(234)=1.93$, $p<.05$. None of the five time perspective dimensions were found to be correlated with age.

As a further analytic step, we sought to determine whether some time orientation dimensions were more prominently represented among respondents than others. Toward that end, for each respondent, the dimension with the largest mean score was identified as the dominant orientation. In this analysis, cases were eliminated from consideration if there was no apparent dominant alternative—that is, those in which there were equivalently high scores in two or more dimensions. This yielded 169 dominant cases (71.6 %) in which individuals were anchored in one of the five time perspectives. The remaining 67 cases revealed at least one tie among the five means (28.4 %). The past negative dimension was found to have the largest number of dominant cases—68 out of a possible 169—or 40.2 % of respondents. The next largest category was among those with a dominant future orientation (56 cases), which accounted for 33.1 % of classified respondents. Present hedonists accounted for 17.7 % of dominant cases (30 respondents), and past positive and present fatalistic respondents together accounted for the remaining 8.9 % of cases.

Predicting Procrastination using Time Perspective

As it was possible to identify a meaningful five-factor structure for the time perspective construct. Therefore, a multiple regression analysis was conducted in which individuals' five mean time orientation scores served as predictors and procrastination values were the criterion. The overall regression model was found to be significant, $F(5, 230)=11.41$, $p<0.01$, with 18 % of the variance accounted for in the dependent measure. Four of the five explanatory variables (past-positive, past-negative, present-fatalistic and future orientation) were found to be statistically significant at 0.01 level (see Table 5). As seen in the table, procrastination was inversely related to future orientation, thereby supporting H5. Moreover, procrastination scores were positively related to a present-fatalistic orientation, thereby supporting H4. Two of the five orientations (past-positive and past-negative) were found

Table 5 Multiple Regression Analysis of Time Perspective Predicting Procrastination

Predictor	Standardized Beta	Standard Error	<i>b</i> Coeff.	p-value
Past Positive	0.16	0.06	0.14	.01
Past Negative	-0.21	0.05	-0.18	.01
Present Hedonistic	-0.06	0.05	-0.04	<i>ns</i>
Present Fatalistic	0.24	0.04	0.19	.01
Future Time Perspective	-0.17	0.05	-0.15	.01

Adjusted $R^2 = .18$

to be significantly related to procrastination scores, however, the valence of the beta weight was in the opposite direction of what had been predicted in H1 and H2. Only one time perspective dimension—present-hedonistic (H3)—failed to reach the critical threshold.

Discussion

The chief empirical objective of the present study was to determine whether the five Zimbardo and Boyd (1999) time perspective dimensions were predictive of procrastination behavior. The results provided positive empirical support for this objective. In fact, scores on four of the five dimensions were predictive of self-reported procrastination in the workplace. At a broad theoretical level, these findings contribute to the extant literature that examines the intrapersonal determinants of procrastination.

As seen among the results, future orientation was shown to have a negative relationship with procrastination scores. This is not particularly surprising due to the high levels of conscientiousness and energy displayed by those who differentially focus on the attainment of long-range goals (Hershey and Mowen, 2000; Löckenhoff et al. 2009; Robinson et al. 2010). The other hypothesized relationship shown to receive empirical support was for those who held a present-fatalistic orientation. This effect was hypothesized on the basis of the fact that present-fatalistic individuals have a tendency to exhibit traits representative of neuroticism (Ferrari and Díaz-Morales, 2007). Specifically, present-fatalistic individuals tend to exhibit higher than average levels of anxiety, depression, and emotional instability, all of which have been linked to a tendency to delay important day-to-day tasks (Steel, 2007).

Both the past-negative and past-positive orientations were shown to be significantly related to procrastination scores. However, their beta weights revealed valences were in the non-hypothesized direction. This is indeed a curious and unanticipated finding that runs counter to what has been found in previous studies. Ferrari and Díaz-Morales (2007) found levels of past positive and past negative time orientation were unrelated to avoidant procrastination tendencies. Moreover, Díaz-Morales et al. (2008) found avoidant procrastination was positively associated with a past negative orientation (that is, individuals with a past negative orientation tended to postpone), but procrastination levels were unrelated to past-positive orientation

scores. Taken together, these equivocal findings suggest the need for future research that examines not only the relationships between time orientation and procrastination, but also the personality and cognitive mechanisms that underlie these associations. Until that point in time, tentative explanations between a past-positive orientation and procrastination, or a past-negative orientation and procrastination, would be both speculative and premature.

The one dimension not shown to be related to procrastination scores was the present-hedonistic orientation, which was hypothesized to be positively linked to procrastination. The lack of a statistical relationship in this case can perhaps be explained by the fact that these individuals tend to be optimistic extraverts who are outgoing, energetic, and impulsive (Steel, 2007). Although it was posited present-hedonistic individuals would procrastinate on the basis of their lack of long-range focus, it is not inconceivable their high levels of spontaneity (Dewitte and Schouwenburg, 2002) served to offset the tendency to postpone important tasks.

Moving beyond the relationship between time orientation and procrastination, one other interesting result that emerged involved the unequal distribution of time orientations across respondents. Specifically, some 40 % of respondents who were deemed to have a dominant perspective were classified as past negative. It is counterintuitive to think so many members of the sample would gravitate toward this one orientation. Although we would be hesitant to argue there should be an equal representation of individuals across perspectives, the fact that one time dimension captured nearly half of the sample seems surprising. This is a particularly illuminating result in light of the fact that other time orientation studies using variants of the ZTPI have failed to report the overwhelming existence of a single dominant perspective. In future investigations, it would be interesting to explore the extent to which the dominance of a past negative orientation generalizes to individuals outside the fields of finance and information technology, and to a broader sample of Indian respondents. It would also be intriguing to test the cross-cultural generalizability of this dominance pattern among individuals who reside in other parts of the world (Zimbardo and Boyd, 1999).

Another theoretical implication of the present work involves consideration of those individuals who failed to reveal a dominant time orientation. In terms of incidence rates, these respondents represented some 28 % of the sample. It is interesting to speculate as to whether or not those who failed to display one of the five orientations could be considered to have a balanced orientation. Zimbardo and colleagues (Bonniwell and Zimbardo, 2003; Zimbardo and Boyd, 1999) advanced the notion of balance when it comes to time orientations, and others have taken steps in the direction of measurement and classification. In terms of the former, Webster (2011) has developed a scale to tap temporal balance. In terms of the latter, Drake et al. (2008) have described ways in which existing measures can be put to use in order to differentially classify balanced individuals from those who display a singular temporal bias. It remains to be seen, however, whether the work performance of those with a balanced profile are in some ways superior to those anchored in a particular dimension.

In the introduction it was argued that procrastination could stem from one of three different sources: intrapersonal factors, the situational context, and task characteristics. The focus of this investigation is clearly on the role of the former—specifically, one's orientation to time. But it is interesting to speculate to what extent these three

different determinants of procrastination might *interact* with one another in order to influence behavior. For instance, under what situational circumstances would an ordinarily task-oriented individual become prone to procrastinate? Or alternatively, how could the characteristics of a task be redefined in such a way as to motivate a trait procrastinator to carry out the task in a timely manner? Unfortunately, our theoretical understanding of procrastination precludes intuitively straightforward answers to these questions. It would be beneficial if future studies would address interactions between these three precursors of procrastination.

Applied Implications

One important applied implication of this work has to do with the prospect of altering the time perspective of individuals who are predisposed to procrastinate. And although both time perspective and procrastination are generally viewed as stable personality predispositions (Mowen, 2000), neither of the two are fundamentally immutable. One particularly forward-thinking approach to training would involve reshaping or “balancing” individuals’ time perspectives (Boniwell and Zimbardo, 2003) to be more action oriented. Interventions that seek to target those with negative workplace behavior patterns could perhaps go a long way toward facilitating the successful completion of tasks (Mayfield et al. 1997).

As an alternative to remediating those with procrastination problems, human resource professionals might consider the benefits of pre-employment screening of applicants for executive and managerial positions (Schmitt and Borman, 1993; Roberts and Hogan, 2001). Specifically, the results of this study suggest that in the hiring context one may want to avoid the selection of individuals who are anchored in either a past-positive or present-fatalistic perspective, as these workers would likely be prone to procrastinate. Alternatively, managers may choose to favor those individuals with a future orientation, as they would be likely to have high levels of conscientiousness, energy, and adaptive reward dependence.

One limitation of the present study includes the fact that correlational data were used to assess the relationships between time perspective dimensions and procrastination. Perhaps future investigations could use experimental approaches to more closely examine the extent to which time perspective constrains procrastination behaviors. A second limitation involves the use of self-report measures to assess the two primary constructs. An alternative approach would involve using behaviorally-anchored measures (cf., Schwab et al. 1975; Schmitt et al. 1990; Kingstorm and Bass, 1981) to tap both time perspective and procrastination. One other potential drawback of this investigation is that individuals were sampled from only two service sectors. As suggested above, future studies would ideally be carried out to examine the time perspective and procrastination tendencies of individuals working in other sectors, to determine the generalizability of the present findings.

In sum, from a basic research perspective, the findings from this study extend our theoretical understanding of time perspective and link it to a significant psycho-behavioral construct—procrastination. Still lacking, however, is work that *explains* the mechanisms that underlie the link between time orientation and procrastination. From an applied perspective, these findings have important implications for human resource professionals who seek to employ individuals that are likely to be effective

at managing their time efficiently when in the workplace. One particularly fruitful avenue of applied future research could involve studies that analyze the relationship between time orientation and individual differences in job commitment, person-organization fit, job satisfaction, and motivation. Research in this vein could ultimately serve to broaden our understanding of strategies that would enhance employee productivity.

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