



Revisiting the structural and nomological validity of the Zimbardo time perspective inventory



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ABSTRACT

In this study, we examined empirical relationships between temporal perspective “biases” measured by the Zimbardo Time Perspective Inventory (ZTPI) and psychological strengths from the domain of positive psychology. The ZTPI factorial structure proposed by Zimbardo and Boyd (1999) ostensibly captures five distinct temporal dimensions. Yet, a perusal of research using the ZTPI suggests that conclusions about its structural validity are premature. We revisited the structural validity of this instrument via confirmatory factor analysis (CFA) of ZTPI scores obtained from a sample of undergraduate and graduate business students ($N = 720$). CFA results produced fit indices short of acceptable thresholds indicating that support for the five-factor structure remains tentative. Although psychometric analyses revealed meaningful links between ZTPI dimensions and measures of vitality, resilience, and hope, findings also suggest that the Past-Positive subscale has questionable reliability. Implications and recommendations for future research on temporal perspective in general and the ZTPI in particular are discussed.

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1. Introduction

Time perspective theory posits that individuals engage in a habitual, largely unconscious partitioning of personal experience into past, present, and future time frames. An important consequence of this process is that judgment, decision-making, and action are affected by the individual's preferences for particular frames (Zimbardo & Boyd, 1999). For example, any emphasis on recollecting one's past, whether aversive or positive, is likely to govern ongoing interpretation of and response to decision situations. By comparison, one would expect a decidedly different interpretation and decision process if the individual is preoccupied with a future replete with means–ends thinking and alternative goal states.

1.1. Structural validity of the Zimbardo time perspective inventory

In support of this theory, a growing body of research demonstrates that temporal preference relates to a variety of attitudes, attributes, and behaviors. For example, Zhang and Howell (2011) observed significant relationships between life satisfaction and both present and future time perspectives, while Drake, Duncan, Sutherland, Abernathy, and Henry (2008) found that an emphasis on the past, whether positive or negative, is linked to self-reported happiness. Studies demonstrating a

link between future orientation and academic achievement (Mello & Worrell, 2006; Shell & Husman, 2001) suggest a favorable influence. However, a bias towards a hedonistic or fatalistic present appears to be associated with tobacco use and alcohol consumption (Daugherty & Brase, 2010). Given the burgeoning literature that encompasses time perspective, effective construct measurement is clearly a priority. Perhaps the most popular measure, the Zimbardo Time Perspective Inventory (ZTPI, Zimbardo & Boyd, 1999) captures time perspective as a multidimensional construct, yielding separate scores for each of five temporal factors: Past-Negative, Past-Positive, Present-Hedonistic, Present-Fatalistic, and Future. This multidimensional attribute is an obvious strength of the measure as it allows one to explore the entire range of time perspective.

Evidence confirming the latent structure of ZTPI scores using U.S. adults is largely confined to Zimbardo and Boyd's (1999) seminal study. Unfortunately, the authors' omission of currently recommended measures of model fit precludes definitive support for structural validity. Subsequent studies addressing the structural validity of the ZTPI have reported poor fit as well as problems with particular scales (e.g., Shipp, Edwards, & Lambert, 2009; Worrell & Mello, 2007). For instance, Worrell and Mellow reported poor fit indices (comparative fit index [CFI] = 0.636) and weak reliability for the Past-Positive scale items ($\alpha = 0.61$) in a sample of 815 American adolescents. Moreover, their post hoc exploratory factor analysis (EFA) yielded both five and six-factor solutions. Similarly, Shipp et al. obtained a CFI of 0.63 and significant cross-loadings for 80% of the items in a sample of U.S. college students.

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Subsequent research with the ZTPI has either ignored its structural shortcomings or avoided the issue by limiting investigations to specific subscales (e.g., Bernstein & Benfield, 2013; Ryack, 2012). Various assessments of structural validity and measurement invariance involving translated versions of the ZTPI have also generated poorly-fitting solutions (e.g., Cretu, 2012; Liniauskaitė & Kairys, 2009; Milfont, Andrade, Belo, & Pessoa, 2008; Mitina & Blinnikova, 2008). In particular, Sircova et al. (2014) describe a multi-sample study involving 24 countries that produced invariance indices conspicuously lower than acceptable thresholds ($CFI = 0.86$). Furthermore, negatively worded items from the Past-Positive scale were either eliminated or rekeyed by the authors. Of course, establishing measurement invariance across different cultures and groups may be premature in the absence of strong initial evidence for the scale's structural validity. In sum, if the ZTPI is to be the instrument of choice in time perspective research, additional evidence is required to support its use.

1.2. Time perspective and psychological strengths

Since the onset of research on subjective well-being (SWB), scholars have attempted to identify personal attributes or psychological strengths that relate to happiness and life satisfaction. For example, resilience, the ability to cope with adversity, is a personal resource that has been shown to promote life satisfaction (Cohn, Fredrickson, Brown, & Mikels, 2009), while character strengths such as hope and vitality are acknowledged as the foundation for a happy and healthy life (Park, Peterson, & Seligman, 2004). As noted previously, time perspective scholars have demonstrated that the manner in which individuals recall, experience, or anticipate circumstances in life also accounts for significant variance in life satisfaction and happiness. Thus, while empirical research shows that time perspective and psychological strengths relate to SWB, the interrelations among these antecedents are less well understood. Within the context of time perspective, the psychological strengths of resilience, vitality, and hope merit special attention. The import of resilience stems from its role in inoculating individuals from negative experiences in the past as well as the present (Cohn et al., 2009). With respect to character strengths, we note that Park et al. (2004) demonstrated that vitality (zest) and hope had the most substantial relationships with life satisfaction among the 24 strengths they identified.

Enhanced as well as diminished levels of resilience, vitality, and hope are likely to accompany any disproportionate emphasis on particular time frames. First, prior research suggests that positive emotions increase life satisfaction by building resilience (Cohn et al., 2009). Accordingly, personal bias towards a joyful or contented past should predict the emergence of resilience. Second, vitality is defined as a positive feeling of energy and aliveness (Ryan & Frederick, 1997). Given that a Present-Hedonistic bias is characterized by a desire for immediate gratification and excitement, this time perspective is especially likely to give rise to heightened vitality. Third, Snyder et al. (1996) define hope as goal-directed thinking such that individuals believe that they can produce routes to desired goals (pathways thinking) and they will have the motivation to use those routes (agency thinking). Goal-directed behavior connects individuals to future outcomes, and any sense of effective agency emerges from prior successes or failures. In as much as a future orientation stresses planning and personal achievement and one's view of the past can emphasize negative or positive features that relate to a sense of agency, we anticipate that hope will have one or more connections with Future, Past-Positive, and Past-Negative perspective. In sum, the links among time perspective and psychological strengths are untested relationships. Hence, the inclusion of psychological strengths into time perspective research has the potential to enhance understanding of the nomological network of the construct.

1.3. The present study

Previous empirical work using the ZTPI reveals inconsistent findings with respect to the latent structure of the measure. Still, ongoing investigations linking time perspective to a sizeable number of attitudes and attributes including SWB attest to the fecundity of the construct. Accordingly, the aims of this study are to: (a) reexamine the latent structure and psychometric properties of ZTPI scores and (b) extend the nomological validity of time perspective by examining interrelationships with psychological strengths commonly linked to SWB.

1.4. Analytic strategy

To achieve these aims, we analyze responses to the ZTPI using CFA to assess whether the factor structure from our sample is consistent with the five-factor structure reported by Zimbardo and Boyd (1999). Our examination includes an assessment of ZTPI items and subscale scores (i.e., descriptive statistics and internal consistency). Finally, we investigate the contribution of the five temporal factors to differences in vitality, resilience, and hope.

2. Method

2.1. Participants and procedure

The sample consisted of 748 graduate and undergraduate business students attending two large state universities in the southwestern United States. Twenty-eight subjects (3.7%) were eliminated due to missing data. This resulted in a final sample of 720 subjects (360 women, 360 men) who ranged in age from 18 to 70 years ($M = 35$, $SD = 5$). The ethnic composition was Caucasian ($n = 414$; 57.5%), Asian ($n = 93$; 12.9%), Black or African American ($n = 92$; 12.8%), Hispanic or Latino ($n = 86$; 11.9%) and Other ($n = 35$; 4.9%). Participants voluntarily completed the ZTPI, a large set of established scales, and demographic items presented as an online survey.

2.2. Measures

2.2.1. ZTPI

The ZTPI (Zimbardo & Boyd, 1999) is a 56-item self-report measure consisting of five subscales: Past-Negative, Past-Positive, Present-Hedonistic, Present-Fatalistic, and Future. Participants respond to questions using a 5-point Likert scale with anchors ranging from '1' (*very uncharacteristic*) and '5' (*very characteristic*). Zimbardo and Boyd reported internal consistency estimates for the five subscales that ranged from 0.74 to 0.82.

2.2.2. Vitality

Ryan and Frederick's (1997) measure of vitality uses seven Likert scale items (e.g., "I nearly always feel alert and awake") anchored by *not at all true* (1) and *very true* (7). The internal consistency estimate derived from the present sample was 0.84.

2.2.3. Resilience

Smith et al. (2008) developed the Brief Resilience Scale (BRS) to measure individual differences in the ability to bounce back or recover from stress. The six-item scale consists of Likert scale items (e.g., "I tend to bounce back quickly after hard times") anchored by *strongly disagree* (1) and *strongly agree* (7). Cronbach's alpha estimate from the current sample was 0.79.

2.2.4. State hope scale (SHS)

Snyder et al. (1996) developed the six-item SHS to assess the individual's perceived capacity to sustain action and reach goals. Participants respond to the items using an 8-point Likert scale (1 = *definitely*

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