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Investigating Balanced Time Perspective in Adults across the Life Span

Nipat Bock Pichayayothin

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JoNell Strough, Ph. D., Chair
Julie Hicks Patrick, Ph.D.
Barry Edelstein, Ph.D.
Natalie J. Shook, Ph.D.
Patricia A. Haught, Ed.D.

Department of Psychology

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ABSTRACT

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The current study investigated balanced time perspective (BTP) in adults across the life span (*N* = 400, 43.3% males). Boniwell and Zimbardo (2004) defined BTP as the flow and flexibility of connecting to the past, living in the present, and looking forward to the future and argued that is an optimal time perspective associated with happiness and well-being. Using Time Attitude Scale (Mello & Worrell, 2012), younger (*M* = 26.09 years), middle-aged (*M* = 46.72 years), and older (*M* = 64.25 years) adults subjective ratings of their positive and negative attitudes towards the past, present, and future were used to identify individuals who had a BTP.

Construct validity of the measure of BTP, Time Attitude Scale (Mello & Worrell, 2012) firstly used in BTP literature, was addressed by examining convergent validity and discriminant validity. The past and future (positive and negative) subscales demonstrated convergent and discriminant validity. However, the present (positive and negative) subscales did not demonstrate convergent validity, as the subscales were weakly correlated with other co-construct measures, (e.g., present hedonistic subscale in Zimbardo Time Perspective Inventory, Zimbardo & Boyd, 1999). Also, the present subscales did not demonstrate discriminant validity as the subscales were strongly correlated with other cross-construct measures (e.g., subjective well-being, Diener, Emmons, Larsen, & Griffin, 1985, *r* = .85 with present positive, and -.83 with present negative subscales). The present time attitude subscales appeared to correspond to subjective well-being.

Since Time Attitude Scale (Mello & Worrell, 2012) was adapted from prior research on adolescents, the current study investigated the measurement invariance of the measure across age groups of young, middle-aged, and older adults. A multi-group analysis indicated that the Time Attitude Scale (Mello & Worrell, 2012) was invariant across age groups at the weak (factor loading) level, suggesting that the Time Attitude Scale could be used in adult across the life span sample. Age differences in time attitude were found in positive and negative attitudes towards the future when each subscale was examined separately. Older adults viewed their future as more negative and less positive, compared to younger and middle-aged adults, in accord with prior research. A cluster analysis using the six (3 time frame—past, present, future x 2 valence—positive, negative) subscales indicated four distinct time attitude profiles: *balanced* (52%), *negative past* (15%), *uncertain* (22%), and *negative* (11%). Age differences were not found in membership in any of the four profiles. Associations between BTP and indicators of positive psychological well-being revealed that BTP was significantly positively related to global well-being, optimism, ego resiliency, and subjective health, but not to decision making outcomes.

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The concept of time is essential to understanding life-span development. Developmental psychologists are interested in time-related constructs, such as changes within an individual over time and differences between individuals over time (Baltes, Reese, & Nesselroade, 1988). All the thoughts and decisions of individuals are embedded in the context of time (Löckenhoff, 2011). Individuals themselves "travel through time" by thinking back to their past and anticipating their future, a concept referred to as mental time travel (Epstude & Peetz, 2012; Tulving, 1985). According to Friedman (2005) and Spreng and Levine (2006), thinking about one's future self cannot take place without referring to one's autobiographical past memories. Thus, reminiscing about the past is a component of future thoughts. For example, a person consults his/her past experiences during the school years to form a decision about his/her future career. The current study aims to understand time attitude and aging by investigating younger, middle-aged, and older adults' subjective evaluations of their past, present, and future time as positive or negative. Specifically, age differences in time attitude and age differences in balanced time perspective are investigated.

Zimbardo and Boyd (1999) and Zimbardo (2002) describe balanced time perspective (BTP) as an individual's flow and flexibility in engaging his/her past, present, and future. Zimbardo (2002) describes a person with BTP as having positive evaluations towards his/her past, present, and future. In Zimbardo's (2002) theoretical framework, he explains that the positive evaluation of the past represents a sense of belonging within a family and/or a community. The positive evaluation of the present reflects a person's view of new and exciting current experiences. And the positive evaluation of the future reflects a person's vision of his/her possible selves and different opportunities. Essentially, the construct of BTP depicts an

integration of positive evaluations of time (i.e., past, present, and future). In addition, according to Boniwell and Zimbardo (2004), BTP is considered an optimal time perspective because it is associated positively with psychological well-being. To examine whether having BTP is optimal, the current study also investigates the relations of BTP and other indicators of positive psychological well-being.

Understanding Balanced Time Perspective

To investigate BTP, the current study considered two dimensions—valence (positive and negative) and time frame (past, present, and future; see Table 1). Understanding individual's combination or "profiles" of time attitudes (i.e., about the past, present, and future) and the valence (i.e., positive and negative) of these attitudes is important. Studies focusing on a single time perspective (e.g., attitude or subjective evaluation of the future) may not adequately account for other aspects of time (i.e., attitude or subjective evaluation of the past, and present), which may in turn be important for understanding individuals' decisions and behaviors. For example, a person may report a high orientation toward future time and this is associated with positive outcomes, such as academic achievement (Adelabu, 2007). The same person may view his/her past and present times negatively, which could also influence outcomes, but less research has considered this. The integrative investigation of positive and negative attitudes towards the past, present, and future is an innovative aspect of the current study.

Age Differences in Balanced Time Perspective

To further understand the construct of BTP, the current study investigates age differences in BTP. Empirical work examining age differences in BTP in adults across the life span is limited. There is only one study investigating age differences in BTP to date (Webster & Ma, 2013) and the results of that study are discussed in the next section. Other previous studies

investigate BTP in relation to psychological well-being within specific age groups including adolescents (Andretta, Worrell, Mello, Dixson, & Baik, 2013), university students (Stolarski, Bitner, & Zimbardo, 2011), younger and middle-aged adults (Boniwell, Osin, Linley, & Ivanchenko, 2010), and older adults (Kazakina, 1999). The current study compares age differences in BTP across younger, middle-aged, and older adult groups.

From a developmental standpoint, an investigation of BTP in adulthood is important because the integrative aspect of BTP (i.e., positive and negative past, present, and future) may provide unique information in relation to age differences in time perspective. One leading developmental theory, socioemotional selectivity theory (Carstensen, Isaacowitz, & Charles, 1999), focuses on the relation of time and aging. The theory maintains that individuals perceive limited future time as they age, and that individuals' perception of limited or expansive time left in life affects their social motivation. According to this theory, people who perceive limited future time tend to narrow their social interactions to increase experience of positive emotions. The assumption of socioemotional selectivity is that as future time perspective is limited, people increase their focus on savoring the moment or the "positive present." This theory has played a major role within the field of life-span psychology; however, it focuses exclusively on the future time.

Information about age differences in the integration of past, present, and future time perspectives as portrayed in the construct of BTP across the adult life span are limited. Only one study to date investigates this (Webster & Ma, 2013). Webster and Ma (2013) investigated BTP in younger (21-39 years), middle-aged (40-59 years), and older adults (60-86 years) and did not find age differences in BTP. The authors conclude that people, regardless of age, can demonstrate BTP. These findings require further investigation because Webster and Ma (2013)

operationalized BTP differently from the theoretical definition of BTP (Boniwell & Zimbardo, 2004). The present positive aspect of BTP was not examined in their study. Specifically, in Webster and Ma's (2013) study, participants who scored above the median on positive past and positive future subscales were categorized as having a BTP. The current study used a Time Attitude Scale (Mello & Worrell, 2012), which assesses subjective evaluations towards all three time frames (i.e., the past, present, and future).

Past, Present, and Future Time Perspective in Adulthood

Although the empirical work on age differences in BTP is limited, studies on time perspective specifically on how people of different ages (i.e., younger versus older adults) think about the past, present, and future are available. In the following section, I review research that has investigated time perspective within groups of younger and older adults.

Time perspective in younger adults. Research suggests that future time perspective, as compared to past, and present time, plays a key role in young adulthood. A longitudinal study of time perspective and identity formation in college students suggested that as individuals reach young adulthood, they tend to orient towards the future. According to research on temporal distance (D' Argembeau, Renaud, & Van der Linden, 2011), perspectives of the future can vary from the near future (e.g., tomorrow, or next week) to the far future (e.g., next year, or in five years). Some research suggests younger adults pay less attention to immediate gratification and present pleasure and instead focus more on making plans for the near and far future (Luyckx, Lens, Smits, & Goossens, 2010). When thinking about their future, younger adults think about the near future more often than the far future (D' Argembeau et al., 2011). Woodman (2011) proposes that individuals think about the near future to fulfill sub goals, such as submitting a class assignment on time and studying for an exam. In turn, they achieve long-term goals, such

as earning an A or getting a positive letter of recommendation, by thinking of the far future. Future-oriented thinking in young adulthood (predominantly college students) is associated with academic goal motivation and achievement (Tabachnick, Miller, & Relyea, 2008), and promptness in research participation (Harber, Zimbardo, & Boyd, 2003). Together, this research suggests that *future* time perspective is a prominent time perspective in young adulthood.

Time perspective in older adults. Research suggests that the past and the present are important to older adults, but there are inconclusive findings regarding which time perspective (i.e., past or present) older adults think about the most. People tend to assume that older adults dwell more on their past and think less about their future. This notion is supported by previous research (e.g., Powers, Wisocki, & Whitbourne, 1992). However, another study with adults older than 75 years of age reports that older adults tend to live more in the present, demonstrating a sense of realism (Lennings, 2000). Differences in measurement approaches may explain the mixed findings. Kazakina (1999) suggests that when a measure of time perspective captures the overall life trend of an older person (e.g., a life-story interview approach), past time seems to be the most prominent time perspective compared to present and future time perspectives. However, when time measures ask older adults to rate their relative orientation on each time frame, older adults seem to place more importance on paying attention to achieving daily tasks, compared to reminiscing about their past or worrying about their future (Lennings, 2000). Kazakina (1999) also adds that older adults are more likely to refer to the past when reporting their negative experiences. Together, this research suggests that the past and the present are important to older adults.

Research also shows that older adults are less likely than younger adults to think about the future (Tonn & Conrad, 2007). When older adults think about the future, they refer to the

future in shorter distances. For example, while young adults tend to think about their future selves in the next ten years, older adults tend to think about their future selves in months or in a few years (Fingerman & Perlmutter, 2001). These findings are consistent with socioemotional selectivity theory (Carstensen et al., 1999), which suggests older adults tend to perceive a limited time horizon. In other words, older adults' future thoughts center closer to the present (Spreng & Levine, 2006).

Age Differences in Time Attitude

Studies investigating age differences and similarities in individuals' time attitudes (positive and negative evaluations of the past, present, and future) are limited. The Time Attitude Scale (Mello & Worrell, 2012) used in the current study was developed originally for adolescent samples. Therefore, the current study is the first to use Mello and Worrell's (2012) Time Attitude Scale in life-span adult sample.

Due to limited research using Mello and Worrell's (2012) Time Attitude Scale in adults, research on age differences in constructs that are conceptually related to the valence dimension of time attitudes are consulted, specifically, research on life satisfaction in the past, the present, and the future. Measures of life satisfaction of individuals' past, present, and future selves (e.g., Gomez, Grob, & Orth, 2013; Kobau, Sniezek, Zack, Lucus, & Burns, 2010; Pavot, Diener, & Suh, 1988) and time attitudes (Mello & Worrell, 2012) appear to be related constructs. Both the Time Attitude Scale and life satisfaction measures ask individuals to subjectively evaluate their past, present, and future. The overlap in these constructs (at least in terms of what the scales seem to measure based on the items) pertains to the issue of construct validity—the extent to which the measure maps onto the construct being studied (Cook & Campbell, 1979)—of the Time Attitude Scale (Mello & Worrell, 2012) and life satisfaction scales. The current study also

examines the construct validity of the Time Attitude Scale (Mello & Worrell, 2012) by examining its overlap with Diener, Emmons, Larsen, and Griffin (1985) Satisfaction with Life Scale.

Time attitudes towards the past. There are inconclusive findings on age differences in time attitude (positive and negative evaluations) towards the *past*. A review of Gomez and colleagues' (2013) study of the perceived trajectory of life satisfaction of individuals' past, present, and future selves suggests *no* age differences in time attitude towards the *past*. In Gomez and colleagues' (2013) study, participants (younger, middle-aged, and older adults) rated their life satisfaction from 1 (completely dissatisfied) to 11 (completely satisfied) when they were/are/will be at age 5, 15, 25, 35, 45, 55, 65, 75, and 85. Adults, regardless of age, rated their life satisfaction in the past lower than their present. Also, their ratings of future life satisfaction tended to be lower than the present. Based on the findings from Gomez and colleagues (2013), time attitude or subjective evaluation of the *past* may not differ across age.

However, Webster and Ma's (2013) study investigating individuals' subjective evaluation towards thinking about the past suggest that age *differences* in time attitude towards the *past actually* may exist. A subset of the older adults who were described as "reminiscers", scored higher than younger and middle-aged adults on positive evaluation of the past (e.g., "thinking about the past gives me a sense of purpose in life"). Based on the findings from Webster and Ma (2013), time attitude or subjective evaluation of the past may differ across age.

It is important to note that the *past positive* subscale used in Webster and Ma's (2013) study was defined differently compared to *past positive* and *past negative* subscales of the Time Attitude Scale (Mello & Worrell, 2012) used in the current study. Mello and Worrell's (2012) *past* subscales assess personal evaluations of life in the past (i.e., good, happy, or sad), whereas

Webster and Ma's (2013) *past positive* subscale assesses personal importance of past reminiscence (e.g., "thinking about when I was younger helps me understand my life story"). To understand the differences and similarities of both constructs, the current study examines construct validity of the Time Attitude Scale (Mello & Worrell, 2012) with Webster's (2011) Balanced Time Perspective Scale.

Time attitude towards the present. Results from a previous study of life satisfaction in the present (Kobau et al., 2010) indicated age differences in time attitudes or subjective evaluations towards the *present*. In Kobau and colleagues' (2010) study, significant age differences were found in subjective well-being of 5,399 adults aged 18-24, 25-44, 45-64, and 65 years and older. However, the mean scores of subjective well-being in each age group were not drastically different (i.e., 3.5, 3.3, 3.3, and 3.6 respectively). The significant effects were due to the large sample size. Based on the findings from Kobau and colleagues (2010), time attitude or subjective evaluation towards the *present* may or may not differ across age.

Time attitude towards the future. A previous study investigating individuals' subjective evaluation towards thinking about the future suggests age differences in time attitudes towards the future (Webster & Ma, 2013). There were no older adults in Webster and Ma's (2013) sample classified in the "futurists" category. Specifically, no older adults in their sample scored above the median in the *future positive* subscale of the Balanced Time Perspective Scale (Webster, 2011). The finding that older adults view the future less positively, compared to younger and middle-aged adults, is in line with the construct of future time perspective (Lang & Carstensen, 2002). According to Lang and Carstensen (2002), older adults score lower than younger adults in future time perspective (i.e., "many opportunities await me in the future"), demonstrating a "limited" future time horizon or perceiving a limited time left in life. Although

Webster and Ma's (2013) and Lang and Carstensen's (2002) studies define and measure future time perspective differently, the age differences in future time perspective seem to be robust, as older adults tend to score lower, compared to younger adults, in measures related to positive evaluations of the *future* (Cate & John, 2007; Coudin & Lima, 2011; Lang & Carstensen, 2002).

Summary. Previous studies on age differences in constructs that are conceptually related to the valence dimension of time attitudes (i.e., life satisfaction) suggest that age differences may be localized to attitudes about the future. In terms of age differences in attitudes about the past and the present, previous research shows mixed findings.

Critical Review of Balanced Time Perspective Measures

Previous researchers investigating BTP (i.e., Boniwell et al., 2010; Stolarski et al., 2011) have used Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) and the Balanced Time Perspective Scale (Webster, 2011). The current study uses a different measure, the Time Attitude Scale (Mello & Worrell, 2012) which is discussed later in the document, and slightly adapts it for use in a life-span sample. The following review explains strengths and weaknesses of different measures and methods used to examine BTP in previous studies.

Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999). The Zimbardo Time Perspective Inventory is comprised of five subscales. Two subscales assess subjective evaluations of the past, i.e., *past positive*, and *past negative*. *Past positive* is defined as an optimistic reminiscence of a person's past (e.g., "It gives me pleasure to think about my past"). *Past negative* refers to unpleasant recollection of a person's past (e.g., "The past has too many unpleasant memories that I prefer not to think about"). Two subscales, *present hedonistic* and *present fatalistic* assess behavioral and psychological orientations towards the present. *Present hedonistic* refers to risk-taking and pleasure seeking in the present moment (e.g., "I take risks to

put excitement in my life" and "I try to live my life as fully as possible, one day at a time"). *Present fatalistic* is defined as helplessness and lack of control in a person's life (e.g., "Fate determines much in my life"). The final subscale assesses behavioral orientation towards the future time. The *future* subscale refers to planning behaviors and resisting immediate temptation to achieve goals (e.g., "When I want to achieve something, I set goals and consider specific means for reaching those goals"). The five subscales have been used to indicate a BTP profile. However, as discussed below, one problem is that the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) demonstrates weak content validity. For this reason, the current study uses an alternative measure, the Time Attitude Scale (Mello & Worrell, 2012) to assess BTP.

Content Validity. It is questionable whether the *present hedonistic* and *future* subscales in the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) accurately represent the theoretical definition of BTP—positive subjective evaluation of one's past, present, and future time (Boniwell & Zimbardo, 2004). Therefore, the current study uses an alternative Time Attitude Scale (Mello & Worrell, 2012) that matches to the theoretical definition of BTP (Boniwell & Zimbardo, 2004).

Content validity of the present hedonistic subscale. Boniwell and Zimbardo (2004) use the *present hedonistic* subscale to measure the *present positive* aspect of time. However, from a conceptual perspective, the subscale may not adequately represent the *present positive* aspect of time attitudes. According to Zimbardo and Boyd's (1999) study, the *present hedonistic* subscale is associated with both positive and negative outcomes. In the short term, a hedonistic orientation toward pleasurable activities may be subjectively rewarding and be associated with positive outcomes. However, this orientation could also be associated with negative consequences such as regret. For example, the *present hedonistic* subscale is associated with positive affect in older

adults (Desmyter & De Raedt, 2012), and to subjective happiness in participants ages 16-83 years (Drake, Duncan, Sutherland, Abernethy, & Henry, 2008). However, the *present hedonistic* subscale is also related to risky sexual behaviors and lack of HIV awareness (Rothspan & Read, 1996), substance use (Keough, Zimbardo, & Boyd, 1999), and self-report of risky driving (Zimbardo, Keough, & Boyd, 1997) in college-student samples. While these behaviors may be subjectively rewarding to the person, they could also lead to negative outcomes. Thus, it is not clear that the *present hedonistic* subscale captures the essential essence of a positive present, raising concerns about the content validity of the subscale. Based on the theoretical definition of Boniwell and Zimbardo (2004), BTP should relate only to positive outcomes.

Content validity of the future subscale. In addition to problems with the *present hedonistic* subscale noted above, the *future* subscale in Zimbardo Time Perspective Inventory captures future *behavioral* aspect of time, instead of the subjective *evaluation* of future time implied in the theoretical definition of BTP (Boniwell & Zimbardo, 2004). Zimbardo and Boyd's (1999) *future* subscale measures coping and time management skills rather than the affective aspects of the future time (Vowinckel, 2012). In Vowinckel's (2012) study examining the relation between BTP and mindfulness, BTP was weakly correlated with mindfulness when the future subscale of Zimbardo Time Perspective Inventory was used along with other past and present subscales to calculate deviation from BTP scores. Information of this scoring approach is discussed in the later section. Vowinckel (2012) conducted another analysis using the future positive subscale of Webster (2001), instead of Zimbardo and Boyd's (1999) future subscale, to calculate deviation from BTP scores. Vowinckel (2012) found that the relation between BTP and mindfulness was stronger when using the *future positive* subscale developed by Webster (2011). In sum, the *future* subscale in Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999)

assesses behavioral aspect of time perspective, whereas other subscales of the same measure (i.e., *past positive, past negative, present hedonistic,* and *present fatalistic*) assess cognitive aspects of time perspective.

Measurement structure. Prior research indicates that the measurement structure of the Zimbardo Time Perspective Inventory is not generalizable across samples. An investigation of the measure in a non-college sample (i.e., professional financial advisors) indicated two unique factors within the Zimbardo and Boyd's (1999) *present hedonistic* subscale, and three unique factors within the *future* subscale (Ryack, 2012). In a Russian college student sample, the two "*past positive*" items loaded instead on the "*past negative*" subscale (Boniwell et al., 2010).

In addition, there have been inconclusive findings regarding Zimbardo and Boyd's (1999) five-factor structure of time perspective in different samples. In a Russian sample, Sircova and Mitina (2008) found eight factors; *past negative,* two types of *past positive,* three types of *future, present hedonistic,* and *present fatalistic* time perspective. Worrell and Mello's (2007) reevaluation of Zimbardo Time Perspective Inventory in 815 academically talented adolescents showed the five-factor structure did not adequately fit the empirical data, and the commonality estimates of each item were relatively low. They suggested a six-factor structure was a better fit to the data. The additional factor involved negative feelings towards the future (i.e., adding a negative valence to the future subscale). A study validating a Swedish version of Zimbardo Time Perspective Inventory (Carelli, Wiberg, & Wiberg, 2011) also suggested including a *future negative* subscale. The current study uses the Time Attitude Scale developed by Mello & Worrell (2012), which includes the *future negative* dimension of time attitude.

Summary. Although the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) has been used widely in the balanced time perspective literature, the measure may not

appropriately represent the theoretical definition of BTP, considering the lack of content validity and variability of the measurement structure. For these reasons, the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) was not used to measure BTP in the current study. However, literature that has used Zimbardo Time Perspective Inventory is reviewed to illuminate issues in scoring BTP.

Issues with scoring BTP. Boniwell and Zimbardo (2004) define BTP as a combination of positive subjective evaluations of the past, the present and the future. Using the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999), a person with BTP is operationalized as having moderate to high scores on *past positive* and *future*, moderate scores on *present hedonistic*, and lower scores on *past negative*, and *present fatalistic* subscales. Stemming from this, previous studies propose three approaches to assess BTP using the five subscales of Zimbardo Time Perspective Inventory: (1) a deviation from BTP (Stolarski et al., 2011), (2) a cut-off-point method (Drake et al., 2008), and (3) a cluster analysis (Boniwell et al., 2010). Each of these is reviewed in the following sections.

Deviation from BTP. Stolarski and colleagues (2011) developed a calculation method to get a deviation from BTP coefficient. Optimal points of each time perspective (i.e., *past positive*, *past negative*, *present hedonistic*, *present fatalistic*, and *future*) gathered from Zimbardo and Boyd's (1999) collective cross-cultural database were used in the calculation in Stolarski and colleagues' (2011) study. Participants with a deviation from BTP coefficients closer to zero were said to have a BTP, whereas participants with deviation from BTP coefficients closer to one were deemed to have an unbalanced time perspective.

Cut-off approach. Drake et al. (2008) operationalized BTP using a cut-off-point approach (i.e., breaking down each time perspective scores into high, moderate, and low, using

33rd and 66th percentile scores). Based on Boniwell and Zimbardo's (2004) assertion that individuals with BTP demonstrate moderate to high scores on *past positive* and *future,* moderate scores on *present hedonistic*, and low scores on *past negative*, and *present fatalistic* subscales, only 13 out of 260 participants (5%) fell into the BTP group (Drake et al., 2008). Given the low number of BTP group membership, individuals who potentially had BTP may have been missed when using the cut-off approach.

Cluster analysis. Cluster analysis has also been used to assess BTP. This approach is claimed to be more effective for categorizing individuals into BTP profile, compared to the cut-off-point approach. Boniwell and colleagues (2010) conducted a cluster analysis and reported that 41 out of 179 participants (23%) were included in the BTP profile (defined as a combination of above-average scores on *past positive* and *future* subscales, and below-average scores on *present hedonistic*, and low scores on *past negative* and *present fatalistic* subscales). Notably, in Boniwell and colleagues' (2010) study, the individuals classified in the BTP profile had below-average scores on the *present hedonistic* subscale. This finding implies that the Zimbardo and Boyd's (1999) *present hedonistic* subscale does not correspond to the *positive present* aspect of BTP that is theorized to be a key component of BTP (Boniwell & Zimbardo, 2004).

Three other distinct profiles were also reported in Boniwell et al.'s (2010) study: *future oriented* (i.e., a combination of high scores on *future*, low scores on *present hedonistic*, above-average scores on *past negative*, and below-average scores on *past positive* and *present fatalistic* subscales), *present oriented* (i.e., a combination of high scores on *present hedonistic*, low scores on *future*, slightly high scores on *present fatalistic*, above-average scores on *past positive*, and below-average scores on *past negative* subscales), and *negative* (i.e., high scores on *past negative* and *present fatalistic*, average scores on *present hedonistic*, and low scores on *future*

and *past positive* subscales). Boniwell et al. (2010) conclude that cluster analysis approach is more appropriate than the cut-off-point approach in operationalizing BTP because the cluster analysis approach includes more participants in BTP profile compared to the cut-off approach. However, simply having more participants in the BTP profile does not necessarily indicate that the cluster analysis approach is superior to the cut-off-point approach. Further analyses investigating the relations between BTP and other indicators comparing between the two scoring approaches would help clarify which approach is more appropriate in operationalizing BTP.

Rationale for using cluster analysis approach. The current study used a cluster analysis approach to operationalize BTP. A study on the relation of BTP and subjective well-being by Zhang, Howell, and Stolarski (2013) compared the three approaches of operationalizing BTP (i.e., deviation from BTP, cut-off-point, and cluster analysis) and all three approaches yielded the same results (Zhang et al., 2013). That is, irrespective of how BTP was operationalized, participants with BTP reported being happier in life compared to those with other time profiles. According to Zhang et al. (2013), the deviation from BTP is a better predictor of subjective well-being because it explains more unique variance in subjective well-being, compared to the cut-off-point and the cluster analysis approaches. However, to use the deviation from BTP approach, optimal points of each subscale taken from previous studies are necessary. Because the current study uses the Time Attitude Scale (Mello & Worrell, 2012) to assess BTP, instead of the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999), and the Time Attitude Scale has not been used before with adults, optimal points of each subscale for calculating deviation from BTP coefficients are not available.

The Balanced Time Perspective Scale (Webster, 2011). Although the Time Attitude Scale (Mello & Worrell, 2012) is used in the current study, it is important to also review

Webster's (2011) Balanced Time Perspective Scale to conceptually understand research in BTP. The Balanced Time Perspective Scale (Webster, 2011) was developed as an alternative to the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) for measuring BTP. The scale contains two subscales; *past* (i.e., positive values towards the past reminiscence) and *future* (i.e., positive values toward thinking of the future). Webster (2011) operationalizes BTP by using a median split approach to categorize participants into four groups; *time restrictive* (below median scores on both *past* and *future* subscales), *futurists* (below median score on *past*, above median score on *future* subscales), *reminiscers* (below median score on *future*, above median score on *past* subscales), and *time expansive* (above median scores on both *past* and *future* subscales). The *time expansive* group represents having a BTP. A preliminary study of the scale showed its potential for measuring BTP. Nevertheless, although the *past* and the *future* subscales of this measure are congruent with the theoretical definition of BTP, the measure does not capture subjective evaluation towards the *present*. Webster (2011) considers the present time a "balancing point for the other two dimensions" (p. 111). However, an individual may report positively about his/her past experiences and his/her future prospects. The same person may have a negative evaluation about his/her current status that Webster's (2011) measure may not capture. Since the subjective evaluation towards the present is not included in Webster's (2011) Balanced Time Perspective Scale, it does not match the theoretical definition of BTP (Boniwell & Zimbardo, 2004) and, thus, was not selected to measure balanced time perspective in the current study.

An Alternative Measure to Balanced Time Perspective: Time Attitude Scale

The current study used the Time Attitude Scale (Mello & Worrell, 2012) to measure BTP. The Time Attitude Scale (Mello & Worrell, 2012), which assesses individuals' positive and

negative evaluations towards their past, present and future, is one of the components of the adolescent time inventory. The other components of the adolescent time inventory, which are not used in the current study, are time meaning (qualitative open-ended questions), time frequency (multiple-choice items), time orientation (circle configurations set of items), and time relation (circle configurations set of items).

Across different samples, the Time Attitude Scale (Mello & Worrell, 2012) is shown to be a valid scale with a robust factor structure. The internal consistency and external validity of Time Attitude Scale are acceptable, in samples of American, German, and New Zealand adolescents (see Mello & Worrell, 2012 for details). Previous studies of the Time Attitude Scale (Mello & Worrell, 2012) indicate a six-factor structure (i.e., subjective evaluation of *past positive, present positive, future positive, past negative, present negative*, and *future negative*). Confirmatory factor analysis of a two-factor model (positive and negative valence), three-factor model (past, present, and future), and six-factor model (two valence x three time frame, see Table 1) indicate that the six-factor model provides the best fit to the empirical data, compared to the other models. Conceptually, the time attitude subscales are in line with theoretical definition of BTP provided by Boniwell and Zimbardo (2004).

Time attitude profiles. Andretta, Worrell, Mello, Dixson, and Baik (2013) conducted a cluster analysis of the six subscales of the Time Attitude Scale (Mello & Worrell, 2012), using a sample of 293 adolescents. They reported five distinct time attitude profiles; *balanced* (29.7%), *pessimists* (16.4%), *positives* (29%), *negatives* (14.7%), and *optimists* (10.2%). According to Andretta and colleagues (2013), the *balanced* profile had above average scores in *past positive*, below average scores in *past negative*, and average scores in *present positive*, *present negative*, *future positive*, and *future negative* subscales. The *positive* profile represented above average

scores on *past positive*, *present positive*, and *future positive* subscales, below average scores on *past negative*, *present negative*, and *future negative* subscales. The labeling of time attitude profiles proposed by Andretta and collegues (2013) did not correspondence with the labeling of the time profiles reported in Boniwell and collegues' (2011) study. Specifically, the *positives* profile, compared to the *balanced* profile, labeled by Andretta and colleagues (2013) seems to be a better match to the theoretical definition of BTP provided by Boniwell and Zimbardo (2004), which is the positive evaluations of the past, the present, and the future. Andretta and colleagues (2013) did not investigate the association of different time profiles and other outcome variables. Therefore, it is difficult to pinpoint which time attitude profile (balanced or positives) identified in their study relate the positive outcomes (e.g., well-being) presumed to be associated with BTP (Boniwell & Zimbardo, 2004).

Construct validity of the Time Attitude Scale. The Time Attitude Scale (Mello & Worrell, 2012) was developed specifically for adolescents. Since the current study used the measure in an adult life span sample, the construct validity—the extent to which the measure maps onto the construct being studied (Cook & Campbell, 1979)—of the Time Attitude Scale is addressed by examining the association of the subscales of the Time Attitude Scale and other constructs. Specifically, to address the convergent validity—the extent to which measures of theoretically-related constructs are empirically associated with one another (Campbell & Fiske, 1959)—I examined the relations of the Time Attitude Scale (Mello & Worrell, 2012) to other established time-related measures (i.e., future time perspective, Lemaster et al., 2012, adapted from Cate & John, 2007; Carstensen & Lang, 1996; Zimbardo Time Perspective Inventory, Zimbardo & Boyd, 1999; and Balance Time Perspective Scale, Webster, 2011). To address discriminant validity—the extent to which measures of theoretically *unrelated* constructs are

empirically not associated or weakly associated with one another (Campbell & Fiske, 1959)—the relations of Mello and Worrell's (2012) Time Attitude Scale and other measures (e.g., resistance to change, Oreg, 2003; positive and negative affect schedule, Watson, Clark, & Tellegen, 1988; and revised life orientation test, i.e., optimism, Scheier, Carver, & Bridges, 1994) are also examined. In addition, the extent to which younger, middle-aged, and older adult participants interpreted the scale the same way (i.e., measurement invariance) was examined.

Balanced Time Perspective and Its Associations to Indicators of Positive Psychological Well-being

The current study aims to contribute to a better understanding of BTP as a construct. Boniwell and Zimbardo (2004) maintain that BTP is an "optimal" time perspective. Based on previous literature, people who have BTP, compared to those who do not, score higher on subjective well-being (Boniwell et al., 2010; Drake et al., 2008; Gao, 2011; Webster, 2011), self-actualization (Boniwell et al., 2010), happiness (Webster & Ma, 2013), and mindfulness (Drake et al., 2008). In attempt to replicate these findings, the current study investigated the association of BTP and subjective well-being, using the alternative measure Mello and Worrell's (2012) Time Attitude Scale.

Indicators of positive psychological well-being. To address whether BTP is an optimal time perspective, the current study investigates associations of BTP and other measures indicating positive psychological well-being, which have not been studied before in the BTP literature (i.e., optimism, Scheier, Carver, & Bridges, 1994; ego resiliency—the ability to adapt towards different environments— Letzring, Block, & Funder, 2005; subjective health, Lawton, Moss, Fucomer, & Kleban, 1982; and positive decision-making outcomes, Bruine de Bruin, Parker, & Fischhoff, 2007).

These indicators of positive psychological well-being were selected based on their conceptual relations to subjective well-being. Previous literature has documented an association between optimism, flexibility, and well-being. Specifically, Hanssen, Vancleef, Vlaeyen, Hayes, Schouten, and Peters (2014) reported that the flexible goal adjustment mediates the relation between optimism and well-being. Based on the Hanssen and colleagues' (2014) findings, optimism (Scheier et al., 1994) and ego resiliency (Letzring et al., 2005) are included as the indicators of positive psychological well-being. Subjective health (Lawton et al., 1982) is included as one of the indicators because it is considered a domain-specific measure of subjective well-being (Staudinger, Fleeson, & Baltes, 1999).

In addition, a previous study of Pethtel (2012) reports that adults who have regrets towards their life decisions tend to report negative well-being. Based on Pethtel's (2012) findings, outcome of decisions may play a role in how people subjectively evaluate their past, present, and future. Thus, decision-making outcomes (Bruine de Bruin et al., 2007) are included as one of the indicators of positive psychological well-being. If BTP is an optimal time perspective as proposed by Boniwell and Zimbardo (2004), participants who have BTP are anticipated to score higher, than those who do not, on optimism (Scheier et al., 1994), ego resiliency (Letzring et al., 2005), subjective health (Lawton et al., 1982), and positive decision-making outcomes (Bruine de Bruin et al., 2007).

Statement of the Problem

Balanced time perspective (BTP) refers to an individual's tendency to reminisce positively about the past, live in the present, and anticipate a bright future (Boniwell & Zimbardo, 2004). It is proposed as an "optimal" time perspective. Instead of focusing on a particular time frame (i.e., the past, or present, or future) to guide decisions and behaviors, a

person with a BTP adaptively employs combinations of the positive time perspectives (i.e., *past positive*, *present positive*, and *future positive*).

Although BTP has been of theoretical interest for many years, only a small number of studies have empirically examined the construct. A few attempts have been made to develop BTP measures; however, previous measures of BTP measures focus exclusively on a certain timeframe, or a certain age group, or a certain valence (see Boniwell et al., 2010; Drake et al., 2008; Stolarski et al., 2011; Webster, 2011). The current study used the Time Attitude Scale (Mello & Worrell, 2012) to measure BTP. Using this measure is expected to capture individuals' subjective positive and negative evaluations of their past, present, and the future, to better match the theoretical definition of BTP given by Boniwell and Zimbardo (2004), compared to other measures.

The Time Attitude Scale (Mello & Worrell, 2012) has not been used to identify individuals who have BTP before; therefore, the current study focuses on establishing the construct validity—the extent to which the measure maps onto the construct being studied (Cook & Campbell, 1979)—of the Time Attitude Scale (Mello & Worrell, 2012). Specifically, convergent validity—the extent to which measures of theoretically-related constructs are empirically associated with one another (Campbell & Fiske, 1959)—and discriminant validity—the extent to which measures of theoretically *unrelated* constructs are empirically not associated or weakly associated with one another (Campbell & Fiske, 1959)—are examined.

Since the Time Attitude Scale (Mello & Worrell, 2012) is developed specifically for adolescents, another aim of the current study is to investigate measurement invariance of Mello and Worrell's (2012) Time Attitude Scale to ensure that the construct of the measure is similar across younger (19-32 years), middle-aged (40-55 years), and older (60-82 years) adult

participants. Then younger, middle-aged, and older adults' positive and negative time attitudes towards the past, present, and future are investigated to understand age differences in time attitudes (Mello & Worrell, 2012).

Another aim of the current study is to investigate whether there are age differences when the positive time attitudes towards the past, present, and future are integrated into a BTP profile. A cluster analysis was conducted using the six subscales (i.e., positive or negative past or present or future) of Mello and Worrell's (2012) Time Attitude Scale to identify a BTP profile, and to determine whether other time attitude profiles emerged. Age differences in BTP profile membership were then examined.

Lastly, this study aims to address the notion maintained by Boniwell and Zimbardo (2004) that BTP is an "optimal" time perspective, associating positively with well-being. The relation between BTP and well-being has been the focus among the BTP researchers. All findings from the previous research have been in agreement that individuals with BTP tend to report higher scores on measures of subjective well-being (Boniwell et al., 2010; Drake et al., 2008; Webster, 2011). The current study examines the relation between BTP and well-being to replicate the previous findings.

In addition, the current study explores the relations between BTP and other indicators of positive psychological well-being, that is, optimism (Scheier et al., 1994), ego resiliency (Letzring et al., 2005), subjective health (Lawton et al., 1982), and positive decision-making outcomes (Bruine de Bruin et al., 2007). If BTP is truly an "optimal" time perspective, it should associate positively with these indicators of positive psychological well-being.

Research Questions and Hypotheses

Research Question 1: Does the Time Attitude Scale (Mello & Worrell, 2012) demonstrate

measurement invariance across different age groups?

Hypothesis 1. The measurement structure of BTP using Mello and Worrell's (2012) Time Attitude Scale will be invariant among younger, middle-aged, and older adult samples.

Research Question 2: Are there age differences in time attitudes?

Hypothesis 2. Age differences will be localized to positive and negative attitudes about the future. This prediction is derived from Carstensen's (1995) socioemotional selectivity theory. Positive and negative attitudes about the past, and the present are expected to be similar across age groups.

Research Question 3: Are there age differences in BTP?

Hypothesis 3. BTP will be similar across age groups. This is guided by Webster and Ma's (2013) findings.

Research Question 4: Is BTP an optimal time perspective?

Hypothesis 4. BTP will be associated with indicators of positive psychological well-being, including greater subjective well-being, optimism, ego resiliency, subjective health, and decision-making outcomes.

Method

Participants

Participants were a convenience sample of 400 adults (43.3% males). Participants were from three age groups, younger (19 to 32 years, M = 26.09, N = 141, 43.3% males), middle-aged (40 to 55 years, M = 46.72, N = 129, 46.5% males), and older adults (60 to 82 years, M = 64.25, N = 130, 48.5% males). About half of the participants (45.5%) were married, and 30.5% of the participants were never married. Other participants (24%) were divorced, living together, and widowed/widower (see Table 2).

Eighty-three percent of the participants were Caucasian, which is consistent with the census data for the population of West Virginia (93.8%), but is higher than the US census data (77.7%; U.S. Census Bureau, 2014). Only 7 percent of participants were African American, which is higher than the census data for the population of West Virginia (3.6%), but is lower than the US census data (13.2%; U.S. Census Bureau, 2014). About 45 percent of the participants were full-time workers. Only 50 participants (12.5%) were fully retired. More participants had earned a bachelor's degree (35.5%), compared to only having some college (20%), a master's degree (15.5%), or others (29%). See Table 2 for more details.

Two hundred and ninety-nine participants (52.5% males) were recruited via Amazon Mechanical Turk (MTurk) and completed the survey online via Survey Monkey, an online survey administrator site (93 younger adults, 103 middle-aged adults, and 103 older adults, see Table 2). MTurk is a marketplace for on-line tasks, which "workers" complete (e.g., text-product matching, research studies, and rating sentence similarity) using their own computer in their own time. The "workers" receive payments for their work deposited into their Amazon Payment accounts.

The title of the "work" used to recruit the participants was "Need Adults 18-32 years (or 40-55 years, or 60 years and older) for a research study about time." Data collection via Amazon Mechanical Turk is relatively new to researchers. However, research suggests that it increases accessibility, diversity, and stability of the subject pool (Johnson & Borden, 2012; Mason & Suri, 2012). Participants received $2 compensation for their response to the survey.

One hundred and one participants (26.7% males) were recruited via advertisement and personal referrals (48 younger adults, 26 middle-aged adults, and 27 older adults). These participants are referred to in the current study as social and community participants. These

participants learned about the current study from recruitment ads with a hyperlink to the electronic survey (via SurveyMonkey) on a social network website (i.e., Facebook). The advertisement was re-posted by friends and friends of friends. Participants also learned about the study by recruitment posters placed on bulletin boards at West Virginia University and in community centers in Fairmont, West Virginia; these posters included the researcher's contact information. Participants who showed an interest in participating the study received an email with the link to the survey or a paper survey hand-delivered to them or mailed to their home addresses. Most of the social and community participants (82%) completed their surveys online via Survey Monkey. Twenty participants completed a paper version of the survey (2 younger adults, 6 middle-aged adults, and 12 older adults). The social and community participants received $10 compensation for their response to the survey online. A $10 check was sent to their mailing address. After completing the survey, participants provided their mailing addresses via a separate link to maintain confidentiality. This is to ensure that there was no connection between personal information and survey responses.

Sample Characteristics and Methods of Recruitment

Demographic data of MTurk and social and community participants showed (in Table 2) that the distribution of sample characteristics were both different and similar across the two recruitment methods, using χ^2 test. Pertaining to differences in age ($p < .05$) and gender ($p < .01$), the Mturk data were evenly distributed across age groups and gender, whereas social and community data had more younger adults than middle-aged and older adults, and more females than males. In terms of the differences in employment status ($p < .01$), MTurk data had more participants who worked full-time, who were partially retired, and who were unemployed and fewer participants who were fully retired, compared to social and community data. Regarding

differences in education ($p < .01$), more participants from MTurk had Associate's and Bachelor's degrees, compared to social and community participants. More social and community participants had Master's degrees, compared to participants from MTurk. In terms of differences in financial difficulty using one-way ANOVA, social and community participants reported *less* financial difficulty compared to the MTurk participants ($p < .002$). In terms of similarities, both data from MTurk and social and community participants were evenly distributed in marital status, race, and ethnicity.

Procedure

An informational cover letter was presented to participants. All participants agreed to proceed and then were asked to provide responses to a "time of your life" questionnaire. The questionnaire consisted of measures assessing time perspective, decision-making outcomes, optimism, ego resiliency, and subjective well-being. The order of the measures were as follows; Time Attitude Scale (Worrell & Mello, 2009), Satisfaction with Life Scale (Diener et al., 1985), Positive and Negative Affect Schedule (Watson et al., 1988), Balanced Time Perspective Scale (Webster, 2011), Revised Life-Orientation Test (Scheier et al., 1994), Future Time Perspective: Focusing on Opportunities and Limitations (Lemaster et al., 2012, adapted from Cate & John, 2007; Carstensen & Lang, 1996), Ego Resiliency Scale (Letzring et al., 2005), Resistance to Change Scale (Oreg, 2003), Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999), Decision Outcomes Inventory (Bruine de Bruin et al., 2007), and demographic questions. On average, the MTurk participants took 43 minutes to complete the survey (younger adults = 57 minutes, middle-aged adults = 40 minutes, and older adults = 33 minutes). The social and community sample spent about 41 minutes to complete the survey (younger adults = 36 minutes, middle-aged adults = 44 minutes, and older adults = 45 minutes).

The majority of the participants completed the questionnaire online. Screening questions were included in the online survey to detect participants who were not paying full attention to the survey (see Table 3 for the list of screening questions used in the current study). MTurk participants were also asked to complete several questions about their age, birthday, and birth year. This was to ensure that the participants provided consistent information pertaining to age. Those who did not complete the survey or provided the inconsistent or no responses to more than 3 screening questions were excluded from the study (10.5%, 47 participants). Upon completion of the questionnaire, participants were thanked for partaking in the study and received compensation.

Measures

Demographics. Participants were asked to complete personal questions related to gender, age, ethnicity, race, marital status, employment status, educational status, and financial difficulty. An additional time-related open-ended question "how many more years do you expect to live?" (i.e., years to live) was included.

Time Attitude. The Time Attitude Scale (Mello & Worrell, 2012) was used to measure time attitudes. The scale was a revision of Mello and Worrell's (2012) Adolescent Time Attitude Scale. Specifically, item #10 measuring *future negative*, the original statement "I don't think I will amount to much when I grow up" was revised to "I don't think I will amount to much in the future." The scale consists of 30 items and six subscales examining participants' positive and negative views toward their past, present, and future. There were five items in each subscale. Participants were asked to rate from 1 (totally disagree) to 5 (totally agree) the degree to which they agreed with each statement. Examples of items from each subscale were "Thinking about my future excites me", *future positive*, "My past is full of happy memories", *past positive*,

"Overall, I feel happy with my life right now", *present positive*, "I doubt I will make something of myself", *future negative*. "I have unpleasant thoughts about my past", *past negative*, and "My current life worries me" in *present negative* (see appendix A for the scale items). Average scores were computed for each subscale (see Table 4 for the mean scores). The range of the scores for each subscale was from 1 to 5. Cronbach's alpha coefficients of the subscales were future positive (.93), past positive (.91), present positive (.95), future negative (.88), past negative (.91), and present negative (.91).

Well-being was measured by the Satisfaction with Life scale (Diener et al., 1985). The 5-item scale measures the extent to which an individual feels content with his/her life. Participants were asked to give a response from 1 (strongly disagree) to 7 (strongly agree) to statements such as "In most ways my life is close to my ideal" and "If I could live my life over, I would change almost nothing" (see Appendix B). Average scores were computed (see Table 4). The range of the scores was 1 to 7. The Cronbach's alpha coefficient of the measure was .93.

Optimism. The revised Life Orientation Test (Scheier et al., 1994) was used to measure dispositional optimism. Within 10 items, 4 items were filler items (e.g., "It's easy for me to relax"). Three items were worded positively (e.g., "In uncertain times, I usually expect the best"). And three items were worded negatively (e.g., "If something can go wrong for me, it will"). See Appendix C for all the items. Participants were asked to rate the extent to which they agreed with each item from 0 (strongly disagree) to 4 (strongly agree). Filler items were not calculated. Optimism scores were derived from the average scores of the positive and the reversed negative items (see Table 4). The range of the scores was 0 to 4. The Cronbach's alpha coefficient of the measure was .87.

Decision Outcomes. The Decision Outcomes Inventory (DOI; Bruine de Bruin et al.,

2007) was used in the current study. The DOI measures individuals' experience with negative outcomes of decisions in life. The scale consists of a list of neutral decision-making experiences (e.g., rented a movie, taken a trip by airplane) and negative outcomes that may result from these experiences (e.g., rented a movie and returned the movie without watching, taken a trip by airplane and missed a flight). The DOI was scored according to the procedure developed by Bruine de Bruin and colleagues (2007). Participants earned points for reporting a neutral experience without reporting a relevant negative outcome of that experience. For instance, a participant earned *one* point when reporting an experience of "been married" and no experience of "been divorced." A participant earned *zero* points when reporting that they "had sex" and had "been diagnosed with an STI." The severity of decision outcomes varies from low (e.g., bought new clothes or shoes you never wore) to high (e.g., been in jail). Severity of outcomes was weighted using the proportion of participants in the sample who *did not* experience the outcomes. Decision-outcome scores were calculated by the average of weighted outcomes and then subtracting the weighted outcomes from zero (see Table 4). Higher scores represented better decision-making outcomes as indexed by avoiding poor decision outcomes. Scores in the current study ranged from -0.72 to 0.00. See Appendix D for the Decision Outcomes Inventory.

Ego resiliency. The current study used the Ego Resiliency Scale (Letzring et al., 2005), to assess participants' adaptability and flexibility towards situations occurring in their lives. The participants rated the extent to which they agreed with 14 statements on a scale ranging from 1 (disagree very strongly) to 4 (agree very strongly). Examples of the statements are "I enjoy dealing with new and usual situations" and "I like to take different paths to familiar places" (see Appendix E). Average scores from the 14 items were computed (see Table 4). The scores ranged from 1.14 to 4.00. The Cronbach's alpha coefficient of the measure was .84.

Subjective health. The Self-Rated Health measure (Lawton et al., 1982) was used in the current study. Participants gave responses to 4 questions related to their health, such as "Is your health now better, about the same, or not as good as it was 3 years ago?" and "Do your health problems stand in the way of your doing the things you want to do?" See Appendix F for the scale items. Three questions had the rating scale from 1 to 3 (i.e., not as good to better than 3 years ago, a great deal to no health problems). One question had the rating scale from 1 to 4 (i.e., poor to excellent). Subjective health scores were derived from the sum of the 4 questions (see Table 4). The range of the scores was from 4 to 13, the Cronbach's alpha coefficient for the measure was .79.

Time-related measures were included in the current study to investigate the construct validity of the Time Attitude Scale (Mello & Worrell, 2012).

Future time perspective. The Future Time Perspective Scale (Lemaster et al., 2012; adapted from Cate & John, 2007; Carstensen & Lang, 1996) was used in the current study. The Future Time Perspective Scale measures individuals' perception of time left in life (i.e., focus on opportunities and focus on limitations). Initially, the Future Time Perspective Scale is conceptualized as one-factor structure scale which lower scores demonstrate limited future time perspective, whereas higher scores demonstrate expansive future time perspective (Carstensen & Lang, 1996). Cate and John (2007) suggest that a future time perspective model of two-factor structure (i.e., focus on opportunities and focus on limitations) fit better to the empirical data. The original 10-item FTP scale developed by Carstensen and Lang (1996) has 7 items relative to focus on opportunities (e.g., "my future seems infinite to me") and 3 items relative to focus on limitations (e.g., "I have the sense that time is running out"). The revised 12-item future time perspective scale used in the current study added two items relative to focus on limitations (e.g.,

"I feel the importance of time passing"), making 7 items relative to focus on opportunities and 5 items relative to focus on limitations. Participants indicated their agreement with the items from 1 (very untrue) to 7 (very true). Average scores from each subscale were computed (see Table 4). Cronbach's alpha coefficients of the subscales were .93 (focus on opportunities) and .84 (focus on limitations).

Zimbardo Time Perspective Inventory. The current study used Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) to assess orientations, attitudes, and behavioral tendencies in relation to time. The participants rated the extent to which they agreed with 56 statements on a scale ranging from 1 (very untrue) to 5 (very true). The measure consists of six subscales, *past negative* "I've made mistake in the past that I wish I could undo", *past positive* "I get nostalgic about my childhood", *present fatalistic* "It doesn't make sense to worry about the future, since there is nothing that I can do about it anyway", *present hedonistic* "I take risks to put excitement in my life", and *future* "I am able to resist temptations when I know that there is work to be done". Average scores for each subscale were computed (see Table 4). The range of the scores was from 1 to 5, the Cronbach's alpha coefficient for each subscale were .82 (*past negative),* .86 (*past positive),* .78 (*present fatalistic),* .82 (*present hedonistic),* and .77 (*future).*

Balanced Time Perspective Scale. Another time-related measure used in the current study was the Balanced Time Perspective Scale (Webster, 2011). The measure consists of *past* and *future* subscales that assesses individuals' orientations of thinking about the *past* "Tapping into my past is a source of comfort to me" and the *future* "Creating a positive future is something I often think about". Participants rated their agreement to 28 statements from 1 (Strongly Disagree) to 6 (Strongly Agree). Average scores from each subscale were computed (see Table 4). The range of the scores was from 1 to 6. The Cronbach's alpha coefficients for *past* and

future subscales were .95 and .97 respectively.

Additional measures were included in the current study to investigate the construct validity of the Time Attitude Scale (Mello & Worrell, 2012).

Resistance to change. The current study included Resistance to Change scale (Oreg, 2003) to assess individuals' tendencies to be in opposition to changes, for example, "I generally consider change to be a negative thing" and "When I am informed of a change of plans, I tense up a bit." Participants indicate the degree to which they agree to 17 statements from 1 (Strongly Disagree) to 6 (Strongly Agree). The scores were derived from the average scores of the positive and the reversed negative items (see Table 4). The range of the mean scores was from 1.69 to 5.56. The Cronbach's alpha coefficient was .90.

Positive and negative affect. Positive and Negative Affect Schedule (Watson et al., 1988) was used to assess participants' positive and negative mood at the time taking the survey. The measure consists of 10 positive emotional states and 10 negative emotional states. Participants were asked to indicate their feelings from 1 (very slightly or not at all) to 5 (extremely). The examples of the items were "interested", "excited", "upset", and "nervous". The ranges of the scores were from 2 to 50 for positive affect and from 9 to 40 for negative affect. The positive and negative affect scores were derived from the sum of 10 items of each subscale (see Table 4). The Cronbach's alpha coefficients were .91 for both positive and negative subscales.

Results

Key variables used to address research questions and hypotheses in the current study were six variables in the Time Attitude Scale (Mello & Worrell, 2012); *past positive, present positive, future positive, past negative, present negative,* and *future negative*, subjective well-

being (Diener et al., 1985), optimism (Scheier et al., 1994), decision-making outcomes (Bruine de Bruin et al., 2007), and subjective health (Lawton et al., 1982).

Time-related variables were included to examine the construct validity of Mello and Worrell's (2012) Time Attitude Scale: future time perspective; focusing on opportunities and focus on limitations (Lemaster et al., 2012, adapted from Cate & John, 2007; Carstensen & Lang, 1996), Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999), and the Balanced Time Perspective Scale (Webster, 2011). Other variables also used to examine the construct validity of Mello and Worrell's (2012) Time Attitude Scale were positive and negative affect (Watson et al., 1988), resistance to change (Oreg, 2003), and ego resiliency (Letzring et al., 2005).

Preliminary Analyses

Missing data and violations of assumptions. None of the data corresponding to the key variables were missing. For the subjective health and years to live variables, data were missing for less than 5% of the sample, which was considered to be negligible (Tabachnick & Fidell, 2013).

There were no univariate outliers in the key variables. According to Tabachnick and Fidell (2013), cases with z-scores on each variable over |3.3| are potential outliners. The z-scores on most variables were less than |3.3|. A few outliers were found in the variables, namely, *years to live*, *decision-making outcomes*, *negative affect*, and *ego resiliency*. Data analyses with and without outliers revealed similar results; therefore, results for data including outliers were reported in the current study.

In terms of normality of the data, skewness and kurtosis were examined. The key variables (i.e., all six variables in the Time Attitude Scale, future time perspective *focusing on opportunities*, *subjective well-being*, and *optimism*) had significant negative and positive

skewness. Based on criteria suggested by Tabachnick and Fidell (2013), the z-skewness scores of these variables were higher than |3.2|, indicating issues with skewness (see Table 5). Different approaches to data transformation were used depending on the severity of skewness (Tabachnick & Fidell, 2013). Square root transformations were made for variables with moderate skew (e.g., *past positive*, *present positive*, *subjective well-being*, *future time perspective; focusing in opportunities*, *optimism*, and *subjective health*) and log 10 transformations were made to variables with high skew (i.e., *future positive*, *future negative*, *past negative*, and *present negative*). The *decision-making outcomes* and *negative affect* variables were extremely skewed (z-skewness = -13.34, and 13.11, respectively), suggesting that the sample was comprised of people who had experienced relatively few negative decision outcomes and were relatively low on negative affect. An inverse transformation was made to these extremely skewed variables, as suggest by Tabachnick and Fidell (2013). Although the normality of the data was improved, the transformed data remained relatively skewed. Data analyses with and without data transformation revealed similar results; therefore, results for non-transformed data were reported in the current study.

Gender differences. Multivariate analysis of variance was performed using gender as an independent variable and all the variables (e.g., time-related variables, subjective well-being, and decision making outcomes) as the dependent variables. There were no significant gender differences. See Table 5 presenting the average scores of all the variables by gender.

Method of recruitment. Preliminary analyses were conducted to explore differences between participants from the two recruitment methods (i.e, MTurk participants and social and community participants) in all the variables in the current study. Table 4 presents mean scores of all the variables by recruitment methods. Participants from both recruitment approaches scored

relatively equal on most variables investigated in the current study, with a few exceptions. MTurk participants, compared to social and community participants, scored significantly lower on the *future positive* and *present positive* subscales in Mello and Worrell's (2012) Time Attitude Scale, and subjective well-being. Note that these significant results need to be interpreted with caution due to homogeneity issues. In addition, the social and community participants scored higher on negative affect, compared to the MTurk participants (see Table 4).

Correlations among key variables and chronological age. Table 6 shows the correlations among variables. Chronological age was strongly negatively correlated with the number of additional years participants expected to live (r = -.71, p < .01), with older participants reporting they expected to live fewer years. There was a weak negative correlation between chronological age and subjective health (r = -.11, p < .05), with older participants rating poorer health. Subjective well-being, optimism, and ego resiliency were not significantly associated with chronological age.

For the time-related variables, age was moderately correlated with future time perspective focusing on opportunities (r = -.31, p < .01) and was weakly correlated with future time perspective focusing on limitations (r = .29, p < .01). The younger participants viewed future time as having more opportunities, whereas the older participants viewed future time as having more limitations (see Table 6 for correlations among chronological age and time-related variables).

Correlations among time attitude variables. Among the six variables in the Time Attitude Scale (Mello & Worrell, 2012) that resulted from crossing two dimensions of valence (positive, negative) with three time dimensions (past, present and future, presented in Table 1), all of the variables were significantly correlated with one another (r = |.88| to |.33|, p < .01). See

Table 6 for the correlations among the six time attitude variables.

Construct validity of Time Attitude Scale. Construct validity—the extent to which the measures maps onto the construct being studied (Cook & Campbell, 1979)— of the Time Attitude Scale (Mello & Worrell, 2012) was examined by analyzing how the six subscales (i.e., *past positive, present positive, future positive, past negative, present negative,* and *future negative*) were correlated to criterion measures. Two aspects of construct validity were measured; convergent validity—the extent to which measures of theoretically-related constructs were empirically associated with one another (Campbell & Fiske, 1959)—and discriminant validity—the extent to which measures of theoretically *unrelated* constructs were empirically not associated or weakly associated with one another (Campbell & Fiske, 1959).

Convergent validity. To address convergent validity, the associations of the six variables from the Time Attitude Scale (Mello & Worrell, 2012) and other time-related measures were examined. To demonstrate convergent validity of each variable in the Time Attitude Scale, a variable representing the same time frame and same valence (i.e., co-construct variable) was anticipated to correlate with a large effect size, for example, the *past positive* time attitude should be highly correlated with the Zimbardo and Boyd's *past positive* subscale. Effect sizes of the correlation coefficients reported in the current study were based on Cohen's (1988) criteria, that is, small $r > .10$, medium $r > .30$, and large $r > .50$.

I analyzed how the six subscales (i.e., *past positive, present positive, future positive, past negative, present negative,* and *future negative*) of Mello and Worrell's (2012) Time Attitude Scale were correlated with other time-related measures. The time-related measures were future time perspective: focusing on opportunities and limitations (Lemaster et al., 2012, adapted from Cate & John, 2007; Carstensen & Lang, 1996), Zimbardo Time Perspective Inventory (Zimbardo

& Boyd, 1999), and Balanced Time Perspective Scale (Webster, 2011).

Overall, as showed in Table 6, all the six subscales of Mello and Worrell's (2012) Time Attitude Scale were significantly associated with all other time-related subscales (r = |.88| , p < .01 to |.11|, p < .05). Below, convergent validity of the Mello and Worrell's (2012) *future positive* and *future negative* subscales are reported, followed by the *past positive* and *past negative* subscales, and the *present positive* and *present negative* subscales.

Convergent validity of the future subscales. The *future positive* and *future negative* subscales in the Time Attitude Scale (Mello & Worrell, 2012) demonstrated convergent validity as the *future positive* and *future negative* scores were highly correlated with scores from the *future* subscales of other time-related measures. As presented in Table 6, scores from Mello and Worrell's (2012) *future positive* subscale were strongly correlated with future time perspective *focusing on opportunities* (r = .80, p < .01; Lemaster et al., 2012, adapted from Cate & John, 2007; Carstensen & Lang, 1996). Scores from *future negative* subscale were strongly correlated with future time perspective *focusing on limitation* (r = -.70, p < .01; Lemaster et al., 2012, adapted from Cate & John, 2007; Carstensen & Lang, 1996). In addition, scores from Mello and Worrell's (2012) *future positive* subscale were strongly correlated with the *future* subscale in the Webster's (2011) Balanced Time Perspective Scale (r = .88, p < .01).

Notably, scores from Mello and Worrell's (2012) *future positive* subscale were significantly correlated with scores from Zimbardo and Boyd's (1999) *future* subscale; however, the magnitude of the correlation was small (r = .14, p < .05). The weak association was anticipated because Zimbardo and Boyd's (1999) *future* subscale assesses planning behaviors, whereas Mello and Worrell's (2012) *future positive* subscale assesses people's subjective evaluation of their future.

Convergent validity of the past subscales. The *past positive* and *past negative* subscales of the Time Attitude Scale (Mello & Worrell, 2012) also demonstrated convergent validity as the *past positive* and *past negative* scores were highly correlated with scores from past subscales of other time-related measures. As presented in Table 6, scores from Mello and Worrell's (2012) *past positive* subscale were strongly correlated with the *past positive* subscale in Zimbardo and Boyd's (1999) Zimbardo Time Perspective Inventory ($r = .77$, $p < .01$) and the *past* subscale in Webster's (2011) balanced time perspective scale ($r = .60$, $p < .05$). Scores from Mello and Worrell's (2012) *past negative* subscale were highly correlated with the Zimbardo and Boyd's (1999) *past negative* subscale ($r = .66$, $p < .05$).

Convergent validity of the present subscales. The *present positive* and *present negative* subscales in the Time Attitude Scale (Mello & Worrell, 2012) demonstrated *low* convergent validity as the *present positive* and *present negative* scores had low correlations with scores from present subscales of Zimbardo and Boyd's (1999) Zimbardo Time Perspective Inventory. As presented in Table 6, scores from Mello and Worrell's (2012) *present positive* subscale were significantly but moderately correlated with the Zimbardo and Boyd's (1999) *present hedonistic* subscale ($r = .32$, $p < .05$). Scores from Mello and Worrell's (2012) *present negative* subscale were significantly but weakly correlated with the Zimbardo and Boyd's (1999) *present fatalistic* subscale ($r = .24$, $p < .05$), suggesting that these present subscales did not assess the present time the same way.

Summary. In summary, the past and future subscales (i.e., *past positive, present positive, future positive, past negative, present negative,* and *future negative*) of Mello and Worrell's (2012) Time Attitude Scale showed convergent validity as each subscale representing a specific time frame (e.g., the past) was significantly correlated with the subscales of the criterion

measures representing the same time frame (e.g., the past). However, the present subscales of Mello and Worrell's (2012) Time Attitude Scale showed low convergent validity, as the variables were only weakly associated with the criterion measures related to the present.

Discriminant validity. To address discriminant validity, the associations of the six variables in the Time Attitude Scale (Mello & Worrell, 2012) and other variables not related to time were examined. To demonstrate discriminant validity, each variable in the Time Attitude Scale was anticipated to not correlate or correlate with a small effect size (i.e., $p < .10$; Cohen, 1988) with other variables *not* related to time (i.e., cross-construct variables). For example, *past negative* time attitude should not be or should have a low correlation with resistance to change.

All the six subscales in Mello and Worrell's (2012) Time Attitude Scale were significantly associated with most of the criterion measures ($r = |.88|$, $p < .01$ to $|.11|$, $p < .05$), this, I examined discriminant validity using a guideline from Campbell and Fiske (1959). According to Campbell and Fiske (1959), to demonstrate discriminant validity, correlation coefficients of cross-construct variables should be lower, compared to correlation coefficients of convergent constructs. Subscales of Mello and Worrell's (2012) Time Attitude Scale (i.e., *past positive, present positive, future positive, past negative, present negative,* and *future negative*) were analyzed to examine how they correlated with the criterion measures, both time-related and not time-related. The criterion measures were future time perspective: focusing on opportunities and limitations (Lemaster et al., 2012, adapted from Cate & John, 2007; Carstensen & Lang, 1996), Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999), and Balanced Time Perspective Scale (Webster, 2011), Satisfaction with Life Scale (i.e., subjective well-being, Diener et al., 1985), Revised Life-Orientation Test (i.e., optimism, Scheier et al., 1994), Ego Resiliency Scale (Letzring et al., 2005), subjective health (Lawton et al., 1982), Decision

Outcomes Inventory (Bruine de Bruin et al., 2007), Positive and Negative Affect Schedule (Watson et al., 1988), and resistance to change scale (Oreg, 2003). Below, discriminant validity of the Mello and Worrell's (2012) *future positive* and *future negative* subscales are reported, followed by the *past positive* and *past negative* subscales, and the *present positive* and *present negative* subscales.

Discriminant validity of the future subscales. The *future positive* and *future negative* subscales in the Time Attitude Scale (Mello & Worrell, 2012) demonstrated *some* discriminant validity. Most of correlation coefficients of scores from Mello and Worrell's (2012) *future* subscales (i.e., positive and negative) and scores from subscales of other criterion measures were *lower* compared to those correlation coefficients among convergent variables related to the future. For example, as presented in Table 6, scores from Mello and Worrell's (2012) *future positive* subscale were moderately correlated with scores from Zimbardo and Boyd's (1999) *present hedonistic* subscale ($r = .34$, $p < .01$). Scores from Mello and Worrell's (2012) *future negative* subscale were moderately correlated with scores from Zimbardo and Boyd's (1999) *past positive* subscale ($r = -.38$, $p < .01$).

In addition, as presented in Table 7, scores from Mello and Worrell's (2012) *future positive* subscale were weakly correlated with scores from Oreg's (2003) resistance to change ($r = -.24$, $p < .01$). The direction of the correlations indicated that people who viewed their future in a more positive light were less likely to resist change. These examples of cross-construct correlations were lower than the correlations among the convergent variables related to future, such as the association between Mello and Worrell's (2012) *future positive* subscale and the *future* subscale from the Webster's (2011) balanced time perspective scale ($r = .88$, $p < .01$, $z = -22.83$ to -13.75, $p < .001$, two-tailed).

However, some correlation coefficients of scores from the Mello and Worrell's (2012) *future* subscales (i.e., positive and negative) and scores from subscales of other criterion measures were comparable to those correlation coefficients among convergent variables related to the future, indicating a weak discriminant validity (see Table 7 for correlations among Mello and Worrell's (2012) time attitude subscales and the criterion variables not related to time). For example, scores from Mello and Worrell's (2012) *future positive* subscale were strongly correlated with Diener and colleagues' (1985) subjective well-being scores (r = .65, p < .01). The direction of the correlations indicated that people who viewed their future in a more positive light also rated their subjective well-being higher. Scores from Mello and Worrell's (2012) *future negative* subscale were strongly correlated with Scheier and colleagues' (1994) optimism scores (r = -.63, p < .01), indicating that people who viewed their future in a more negative light rated their optimism lower (z = -8.94 to -8.46, p < .001, two-tailed).

Discriminant validity of the past subscales. The *past positive* and *past negative* subscales of the Time Attitude Scale (Mello & Worrell, 2012) demonstrated *some* discriminant validity as most of correlation coefficients of scores from the Mello and Worrell's (2012) *past* subscales (i.e., positive and negative) and scores from subscales of other criterion measures were *lower* compared to those correlation coefficients among convergent variables related to the past. For example, as shown in Table 6, scores from Mello and Worrell's (2012) *past positive* subscale were weakly correlated with scores from Zimbardo and Boyd's (1999) *present fatalistic* subscale (r = -.12, p < .01). Scores from Mello and Worrell's (2012) *past negative* subscale were weakly correlated with scores from future time perspective *focusing on limitation* (r = .27, p < .01; Lemaster et al., 2012, adapted from Cate & John, 2007; Carstensen & Lang, 1996).

Regarding the associations between Mello and Worrell's (2012) *past* subscales and other

criterion measures not related to time, as presented in Table 7, scores from Mello and Worrell's (2012) *past positive* subscale were weakly correlated with positive affect scores ($r = .26$, $p < .01$). The direction of the correlations indicated that people who viewed their past in a more positive light also reported having a positive mood. In addition, scores from Mello and Worrell's (2012) *past negative* subscale were weakly correlated with scores from decision-making outcomes ($r = -.11$, $p < .01$). The direction of the correlations indicated that people who viewed their past in a more negative light reported having poor decision-making outcomes. These cross-construct correlations were lower than the correlations among the convergent variables related to the past, such as the association between Mello and Worrell's (2012) *past positive* subscale and the Zimbardo and Boyd's (1999) *past positive* subscale ($r = .77$, $p < .01$, $z = -12.82$ to -10.47, $p < .001$, two-tailed).

Notably, some correlation coefficients of scores from Mello and Worrell's (2012) *past* subscales (i.e., positive and negative) and scores from subscales of other criterion measures were comparable to those correlation coefficients among convergent variables related to the past indicating weak discriminant validity. For example, as presented in Table 7, scores from Mello and Worrell's (2012) *past positive* subscale were moderately correlated with Diener and colleagues' (1985) subjective well-being scores ($r = .46$, $p < .01$). The direction of the correlations indicated that people who viewed their past in a more positive light also rated their subjective well-being higher. Moreover, scores from Mello and Worrell's (2012) *past negative* subscale were strongly correlated with Scheier and colleagues' (1994) optimism scores ($r = -.53$, $p < .01$), indicating that people who viewed their past in a more negative light were less optimistic, $z = -7.37$ to -6.06, $p < .001$, two-tailed).

Discriminant validity of the present subscales. The *present positive* and *present*

negative subscales in the Time Attitude Scale (Mello & Worrell, 2012) *did not* demonstrate discriminant validity as most of correlation coefficients of scores from Mello and Worrell's (2012) *present* subscales (i.e., positive and negative) and scores from subscales of other criterion measures were *relatively equal* or *higher* compared to those correlation coefficients among convergent variables related to the present. For example, as shown in Table 6, scores from Mello and Worrell's (2012) *present positive* subscale were strongly correlated with scores from the *future* subscale in the Webster's (2011) balanced time perspective scale ($r = .60$, $p < .01$). Scores from Mello and Worrell's (2012) *present negative* subscale were strongly correlated with scores from Zimbardo and Boyd's (1999) *past negative* subscale ($r = .58$, $p < .01$).

As presented in Table 7, scores from Mello and Worrell's (2012) *present positive* subscale were strongly correlated with scores from the *optimism* scale (Scheier et al., 1994; $r = .60$, $p < .01$). The direction of the correlations indicated that people who viewed their present in a more positive light also rated their optimism higher. In addition, scores from Mello and Worrell's (2012) *present negative* subscale were moderately correlated with ego resiliency scores (Letzring et al., 2005; $r = -.46$, $p < .01$). The direction of the correlations indicated that people who viewed their past in a more negative light rated their ego resiliency lower. Demonstrating a lack of discriminant validity, the cross-construct correlation coefficients were *higher* than the correlation coefficients among the convergent variables related to the present, such as the association between scores on Mello and Worrell's (2012) *present positive* subscale and scores on Zimbardo and Boyd's (1999) *present hedonistic* subscale ($r = .32$, $p < .01$, $z = 2.33$ to 5.09, $p < .001$, two-tailed).).

Importantly, Mello and Worrell's (2012) *present positive* and *present negative* subscales were unique from *present hedonistic* and *present fatalistic* subscales from Zimbardo and Boyd's

(1999) as the associations among these four subscales were weak. Instead, scores on the Mello and Worrell's (2012) *present positive* and *present negative* subscales were strongly correlated with Diener and colleagues' (1985) subjective well-being scores (r = .85 and -.83 respectively, p < .01). The direction of the correlations indicated that people who viewed their present in a more positive light also rate their subjective well-being higher, whereas those who viewed the present in a negative light rate their subjective well-being lower. The strong associations among Mello and Worrell's (2012) *present* subscales and subjective well-being (Diener et al., 1985) suggest that Mello and Worrell's (2012) *present positive and present negative* subscales could potentially be another measures of subjective well-being pertaining to the present.

Summary. In summary, the *past and future* subscales of Mello and Worrell's (2012) Time Attitude Scale demonstrated *some* discriminant validity as most of the correlation coefficients among Mello and Worrell's (2012) *past and future* subscales and the cross-construct scales were lower than the correlation coefficients between the Mello and Worrell's (2012) *past and future* subscales and the convergent scales (i.e., scales measuring past and future). However, the present subscale of Mello and Worrell's (2012) time attitude scale did not demonstrate discriminant validity as the correlation coefficients between Mello and Worrell's (2012) *present* subscales and the cross-construct scales were higher than the correlation coefficients among the *present* subscales and the convergent scales (i.e., scales measuring present).

Notably, scores of the six subscales (i.e., *past positive, present positive, future positive, past negative, present negative*, and *future negative*) of Mello and Worrell's (2012) Time Attitude Scale were strongly correlated with Diener and colleagues' (1985) subjective well-being scores (r = |.85| to |.46|, p < .01, see Table 7), suggesting that Mello and Worrell's (2012) Time Attitude Scale may be a measure of temporal-specific subjective well-being.

Measurement Invariance of the Time Attitude Scale

Hypothesis 1— The factor structure of the Time Attitude Scale will be invariant across age groups. The first research question was whether the factor structure of the Time Attitude Scale (Mello & Worrell, 2012) was invariant across samples of different age group, i.e., younger, middle-aged, and older adults.

To address the research question, multi-group analyses using structural equation modeling was conducted (specifying *time attitude* as a latent variable and *past positive, present positive, future positive, past negative, present negative,* and *future negative* as the indicators, depicted in *Figure 1*). Three measurement models for younger, middle-aged, and older adults were examined simultaneously. Following the multi-group analysis guidelines from Byrne (2010), I initially established a baseline model, which consisted of model specifications that fit for all age groups. The initial baseline model did not fit adequately to the data. The baseline model was then modified based on modification indices, along with careful conceptual considerations. Depicted in *Figure 1,* the modified baseline model added three error covariance parameters (i.e., *future positive-future negative, future positive-present positive,* and *past positive-past negative*). The baseline multi-group model had good fit to the data (CMIN = 2.61, RMSEA = .06, CFI = .98).

Next, in multiple group analyses, the model parameters were constrained to be equal across groups to address whether parameters of the time attitude model were similar or different across younger, middle-age, and older adult groups. Three levels of model specification, *weak, strong, and strict,* were applied to the models for each age group. The weak model constrained all factor loadings to be equal. The strong model constrained all factor loadings and intercepts (of the latent variable across groups) to be equal. And the strict model constrained all factor

loadings, intercepts (of the latent variable across groups), and residuals to be equal (Little, 2013).

Model comparison statistics indicated that the models did not differ significantly across age groups at the weak level (χ^2 difference $p = .14$). In other words, constraining factor loadings to be equal across age groups did not affect the fit of the models. Factor loadings of each indicator for the three age groups were relatively similar, suggesting that across age, participants understood and interpreted Mello and Worrell's (2012) Time Attitude Scale in the same manner.

As shown in Table 8, when examining maximum likelihood estimates of the models in different age groups, all factor regression weights significantly loaded onto the time attitude latent variables ($p \leq .001$), for instance, *future positive* in younger adults = .70, middle-aged adults = .68, and older adults = .72, and *past negative* in younger adults = -.61, middle-aged adults = -.49, and older adults = -.58 (see Table 8).

Notably, the multi-group model, however, differed at the strong and strict levels suggesting that intercepts and residuals of Mello and Worrell's (2012) Time Attitude Scale were not comparable across different age groups. This could be problematic. Wu, Li, and Zumbo (2007) point out that measurement invariance of all weak, strong, and strict levels is required to eliminate measurement biases between groups and to ensure that a measure is meaningful across groups. However, researchers in multi-group analyses agree that the weak level measurement invariance is an essential first step to establish measurement invariance in a scale across groups (Meredith & Teresi, 2006; Schmitt & Kuljanin, 2008; Vandenberg & Lance, 2000). Thus, multi-group analysis provides initial support that Mello and Worrell's (2012) Time Attitude Scale is invariant across age groups.

In sum, the results from multi-group analysis using structural equation modeling supported Hypothesis 1 that the factor structure of Mello and Worrell's (2012) Time Attitude

Scale was invariant across age groups. The findings demonstrated that the Time Attitude Scale (Mello & Worrell, 2012) used in the current study did not differ across age groups, at least at the weak (factor loading) level of invariance.

Age Differences in Time Attitude

Multivariate analysis of variance (MANOVA) was conducted to address Research Question 2: Are there age differences in time attitudes?

Hypothesis 2—Age differences will be localized to attitudes about the future time. A multivariate analysis of variance was conducted using age group, i.e., younger, middle-aged, and older adults, as the independent variable. The six time attitude variables (Mello & Worrell, 2012), i.e., *past positive, present positive, future positive, past negative, present negative,* and *future negative,* were the dependent variables.

The results were similar when using the transformed data and excluding the univariate outliers (compared to the results from the non-transformed data and including all the cases). The results reported here are from the non-transformed data. In accord with the hypothesis, there were age differences in *future positive* ($F(2, 397) = 7.05$, $p = .001$. $\eta^2_p = .03$) and *future negative* ($F(2, 397) = 9.00$, $p = < .01$. $\eta^2_p = .04$) variables. Pair-wise comparison revealed that older adults' ($M = 3.57$, $SD = .08$) scores on the *future positive* subscale were significantly lower than scores of younger adults ($M = 3.96$, $SD = .07$; $p = .001$), but were not significantly lower than those of middle-aged adults ($M = 3.81$, $SD = .08$; $p = .09$). For scores on the *future negative* subscale, older adults ($M = 2.38$, $SD = .07$) reported significantly higher scores than middle-aged adults ($M = 2.06$, $SD = .07$; $p = .01$) and younger adults ($M = 1.96$, $SD = .07$; $p < .01$). There were no significant age differences in *past positive, present positive, past negative,* and *present negative* time attitudes (see Table 9). The results were in line with Hypothesis 2 that age

differences would be localized to attitudes about future time.

Person-Centered Approach to Balanced Time Perspective

Cluster analysis was conducted to determine whether subscale scores of Mello and Worrell's (2012) Time Attitude Scale (i.e., *past positive, present positive, future positive, past negative, present negative,* and *future negative*) clustered together to form distinct time attitude profiles.

To identify groups of individuals with different time attitude profiles, two procedures were conducted. First, Ward's hierarchical agglomerative approach for cluster analysis was conducted to identify number of profiles using squared Euclidean distance coefficients. Cases whose squared Euclidean distance coefficients were close together were grouped in to the same profiles. Based on a dendrogram presented in *Figure 2*, four distinct profiles were indicated. Second, K-Mean clustering approach was conducted specifying the number of profiles derived from the Ward's hierarchical agglomerative approach. Cases with the mean scores close to the center means of a particular profile were grouped in to that profile. The analysis took six iterations to derive stable center means and to indicate number of cases in each profile. I labeled these profiles as *balanced, uncertain, negative,* and *negative past*, based on a review of the center mean scores of each profile (depicted in *Figure 3*). I labeled the *balanced* and *negative* to mirror the time profiles reported in Boniwell and colleagues' (2010) study.

As presented in Table 10, participants in the *balanced* profile (N = 208, 52%) had higher scores on *past positive, present positive, future positive,* and had lower scores on *past negative, present negative,* and *future negative* subscales in Mello and Worrell's (2012) Time Attitude Scale. The balanced profile in the current study was consistent with the theoretical definition of balanced time perspective (Boniwell & Zimbardo, 2004).

Participants in the non-balanced time attitude profiles, i.e., *uncertain*, and *negative past*, reported lower scores on the *past, present,* and *future positive* subscales in Mello and Worrell's (2012) Time Attitude Scale. Specifically, as shown in Table 10, individuals in the *uncertain* profile (N = 90, 22.5%) had lower scores on *past positive* and *future positive* subscales, average to high scores on *past positive*, *past negative*, *present negative*, and *future negative* subscales. Individuals in the *negative* profile (N = 43, 10.75%) had higher scores on the *past, present,* and *future negative* subscales. Lastly, participants in the *negative past* profile (N = 59, 14.75%) had lower scores on the *past positive* subscale and average to high scores on the other positive and negative time attitude subscales (see Table 10 and *Figure 3*).

Exploratory analyses of membership of balanced time perspective using different measures. Over and above the research questions asked in the current study, to examine group memberships of balanced time perspective using three different measures in the same adult sample (N = 400), in Appendix G, I reported group memberships of the balanced time attitude profile derived from three different time-related measures, i.e., Time Attitude Scale (Mello & Worrell, 2012), Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999), and Balanced Time Perspective Scale (Webster, 2011). Age differences in membership of balanced time perspective profile were addressed next.

Age Differences in Membership of Balanced Time Perspective Profile

Hypothesis 3—Balanced time perspective will be similar across age groups. Chi-square analysis was conducted to examine the association between two categorical variables: age group (i.e., younger, middle-aged, and older adults) and time attitude profiles (i.e., *balanced* and non-balanced; *negative, uncertain,* and *negative past*). In line with Hypothesis 3, there was no statistically significant association between age group and belonging to the balanced time

perspective cluster, $\chi^2(2) = 3.13$, $p = .21$. Specifically, of 208 participants who belonged to the balanced time attitude profile, participants were equally likely to be older adults ($N = 73$, 35.1%) middle-aged adults ($N = 59$, 28.4%) and younger adults ($N = 76$, 36.5%). See *Figure 4* presenting percentages of group membership of balanced and non-balanced time attitude profiles by age group.

Is Balanced Time Perspective an Optimal Time Perspective?

Hypothesis 4—Balanced time perspective will be associated with indicators of positive psychological well-being, including greater subjective well-being, optimism, ego resiliency, subjective health, and decision-making outcomes. A multivariate analysis of variance (MANOVA) was conducted using time attitude profile (i.e., *balanced*, *uncertain*, *negative*, and *negative past)* as an independent variable and subjective well-being, optimism, ego resiliency, subjective health, and decision-making outcomes as the dependent variables ($N = 394$).

Testing MANOVA assumptions. In testing assumptions of MANOVA, cell size, and covariance matrices were unequal (Box's M = 10050.64, $p < .001$), which could increase the possibility of Type I error. To address these issues, a more stringent multivariate statistic of Pillai's Trace, instead of Wilks' Lambda, was used (as recommended by Tabachnick & Fidell, 2013), and a stringent confidence level, .001, was specified in the multivariate analysis. There were unequal error variances in subjective health, Levene's F (3,390) = 9.85, $p < .001$, and decision-making outcomes, Levene's F (3,390) = 3.12, $p = .03$ variables.

Demonstrating multivariate outliers, two cases had Mahalanobis distance scores higher than a critical value of 20.52 (χ^2 at $p = .001$, $DF = 5$). A multivariate analysis *with* the outlier cases yield similar results compared to an analysis *without* the outlier cases. Therefore, results

reported in the following were based on the data including all the cases.

In addition, as reported earlier, most variables were skewed. To address the non-normality issue of the data, I conducted a multivariate analysis using transformed variables, and compared the results to an analysis using non-transformed variables. Results from both analyses were comparable. Therefore, the following results are based on non-transformed data.

The multivariate result of time attitude profile was significant (Pillai's Trace = .66, $F(15, 1164) = 21.93$, $p < .001$, $\eta^2_p = .22$, power = 1.00), indicating that there were differences in scores of indicators of positive psychological well-being between individuals in different time attitude profiles.

The univariate *F* test showed that significant differences between different time attitude profiles were found for *subjective well-being*, $F(3, 390) = 177.00$, $p < .001$, $\eta^2_p = .58$, power = 1.00, *optimism*, $F(3, 390) = 88.84$, $p < .001$, $\eta^2_p = .41$, power = 1.00, *ego resiliency*, $F(3, 390) = 37.63$, $p < .001$, $\eta^2_p = .22$, power = 1.00, and *subjective health*, $F(3, 390) = 21.81$, $p < .001$, $\eta^2_p = .14$, power = 1.00. However, the univeriate *F* test of time attitude profile on decision-making outcomes was *not* significant ($p = .07$), indicating participants in different time attitude profiles were similar in the extent to which they experienced positive and negative decision-making outcomes. No further analysis was conducted with decision-making outcomes.

Post hoc analyses were then conducted for subjective well-being, optimism, ego resiliency, and subjective health. The results of time attitude profile differences in each indicator of positive psychological well-being were reported below.

Subjective well-being. The post hoc analysis using Bonferroni tests demonstrated that adults in the *balanced* time attitude profile ($M = 5.51$, $SD = .07$) had higher scores on subjective well-being compared to those with *uncertain* ($M = 3.63$, $SD = .11$; $p < .001$), *negative* ($M = 2.02$,

SD = .16; $p < .001$), and *negative past* (*M* = 4.42, *SD* = .13; $p < .001$) time attitude profiles (see Table 11). The results were in line with the Hypothesis 4 and replicated the previous findings (e.g., Boniwell et al., 2010) that individuals with the balanced time perspective report greater subjective well-being.

Optimism. The post hoc analysis using Bonferroni tests demonstrated that participants in the *balanced* time profile (*M* = 2.92, *SD* = .05) scored significantly higher on optimism compared to those in the *uncertain* (*M* = 2.09, *SD* = .07; $p < .001$), *negative* (*M* = 1.26, *SD* = .10; $p < .001$), and *negative past* (*M* = 2.43, *SD* = .09; $p < .001$) profiles (see Table 11). The results were in line with the Hypothesis 4.

Ego resiliency. For ego resiliency, the pattern of mean differences among the four time profiles was similar to the differences for subjective well-being and optimism. As presented in Table 11, the post hoc analysis using Bonferroni tests showed that participants in the *balanced* time profile (*M* = 3.18, *SD* = .03) scored significantly higher on ego resiliency compared to those in the *uncertain* (*M* = 2.82, *SD* = .04; $p < .001$), *negative* (*M* = 2.55, *SD* = .06; $p < .001$), and *negative past* (*M* = 2.90, *SD* = .05; $p < .001$) profiles, supporting the Hypothesis 4.

Subjective health. Lastly, for subjective health, the pattern of mean differences between the four time attitude profiles was similar to the differences for other indicators of psychological well-being (reported previously). Due to the issue with unequal error variances in subjective health, a post hoc analysis using the Games-Howell test was conducted. Participants in the *balanced* time profile (*M* = 10.39, *SD* = .14) scored significantly higher on subjective health compared to those in the *uncertain* (*M* = 9.20, *SD* = .21; $p < .001$), *negative* (*M* = 7.95, *SD* = .30; $p < .001$), and *negative past* (*M* = 9.51, *SD* = .25; $p = .02$) profiles (See Table 11). The results were consistent with Hypothesis 4.

Summary. Overall, individuals with a *balanced* time perspective compared to those in other profiles of time perspective reported significantly higher scores on subjective well-being, optimism, ego resiliency, and subjective health. In contrast to predictions, decision-making outcomes were relatively similar for adults across all the time attitude profiles.

Discussion

The current study investigates balanced time perspective in a life-span adult sample. Balanced time perspective, introduced by Boniwell and Zimbardo (2003), highlights time perspective as a multidimensional construct. That is, instead of focusing on individuals' subjective evaluation of one single time (i.e., future), profiles can be created derived from individuals' evaluations of the past, present, and future together. Boniwell and Zimbardo (2003) posit that balanced time perspective reflects having a combination of positive perspectives of the past, present, and future. Also, they assert that balanced time perspective was an "optimal" time perspective reflecting individuals' adaptability and flexibility. In the current study, a profile corresponding to the idea of a balanced time perspective was identified, and its relations to age and aspects of well-being were investigated. Findings from the current study help further understand balanced time perspective as a construct. This study addresses whether balanced time perspective differs across age groups, and whether it is "optimal" by investigating its relations to indicators of psychological well-being over and above the global measure of subjective well-being. In addition, the current study attempts to use a different measure of balanced time perspective, the Time Attitude Scale (Mello & Worrell, 2012), that matches the theoretical definition of the construct.

An Alternative Measure to Assess Balanced Time Perspective

One objective of the current study was to use an alternative measure, the Time Attitude

Scale (Mello & Worrell, 2012), to identify individuals with balanced time perspective, instead of using the Zimbardo Time Perspective inventory (Zimbardo & Boyd, 1999) used in previous research. The advantage of using Mello and Worrell's (2012) Time Attitude Scale is that it uniformly assesses individuals' positive and negative evaluations of their past, present, and future. In contrast, the Zimbardo Time Perspective inventory (Zimbardo & Boyd, 1999) captures only some facets of time, including future-oriented *behaviors*, preferences for sensation seeking and enjoying living in the present (hedonistic subscale), perceived lack of control of life in the present (fatalistic subscale), and evaluations of the past. Below, I discuss construct validity of the Time Attitude Scale (Mello & Worrell, 2012), and its relation to other measures of time.

Convergent validity. The subscales of the *past* and the *future* time attitudes (Mello & Worrell, 2012) demonstrate adequate convergent validity. That is, the time attitude subscale corresponding to a given time frame (i.e., past, or future) and valence (i.e., positive or negative) are highly correlated with other time-related measures of similar time frames and valence. Specifically, the *future positive* time attitude subscale (Mello & Worrell, 2012) is, as anticipated, highly related to the *future* (*positive*) subscale in Webster's (2011) Balanced Time Perspective Scale (r = .88). The *future positive* time attitude subscale is also highly correlated with future time perspective *focusing on opportunities* (Lemaster et al., 2012, adapted from Carstensen & Lang, 1996; Cate & John, 2007, r = .80).

Regarding the *past positive* subscale, as anticipated, Mello and Worrell's (2012) *past positive* time attitude is associated with the *past positive* subscale in Zimbardo Time Perspective inventory (Zimbardo & Boyd, 1999; r = .77) and with Webster's (2011) *past (positive)* subscale in the Balanced Time Perspective Scale (r = .60).

However, Mello and Worrell's (2012) Time Attitude Scale, specifically the subscales of

the *present* demonstrate weak convergent validity. The *present positive* subscale in Mello and Worrell's (2012) Time Attitude Measure is positively correlated with the *present hedonistic* subscale in the Zimbardo Time Perspective inventory (Zimbardo & Boyd, 1999; r = .32). Although the two measures are significantly correlated, the association is not strong because the two measures assess different aspects of the present. The Zimbardo and Boyd's *present hedonistic* subscale captures fun-loving and "live for today" individual characteristic (e.g., "I believe that getting together with one's friends to party is one of life's important pleasures", "I do things impulsively", and "Ideally, I would live each day as if it were my last"), whereas Mello and Worrell's (2012) *present positive* subscale assesses individuals' subjective evaluation of their present time (e.g., "I am happy with my current life", and "Overall, I feel happy about what I am doing right now").

Importantly, Mello and Worrell's (2012) *future positive* subscale is *not* similar to the future subscale in Zimbardo Time Perspective inventory (Zimbardo & Boyd, 1999; r = .14). This may reflect that the future subscale in Zimbardo Time Perspective inventory captures *behavioral* aspects of future time (e.g., "I believe that a person's day should be planned ahead each morning", "It upsets me to be late for appointments" and "I make lists of things to do"), as proposed by Vowinckel (2012), whereas the *future positive* time attitude subscale asks participants to evaluate their future time (e.g., "I Look forward to my future", "My future makes me smile", and "I am excited about my future"). These findings suggest that the time measures assessing the same time frame are not always highly associated. In addition, a measure assessing future *behaviors* is different from a measure assessing attitudes towards the future.

Discriminant validity. The subscales of the *past* and the *future* time attitudes (Mello & Worrell, 2012) demonstrate adequate discriminant validity, as the subscales are not highly

correlated with other cross-construct measures. However, the subscales of the *present* time attitudes (Mello & Worrell, 2012) demonstrate weak discriminant validity as the subscales are highly correlated with other cross-construct measures (Campbell & Fiske, 1959). The strong associations indicating an issue with discriminant validity are discussed below.

Mello and Worrell's (2012) Time Attitude Scale and other measures. Notably, the *present positive* and *present negative* time attitude subscales (Mello & Worrell, 2012) are highly correlated with subjective well-being (r = .85, and -.83, respectively) measured by Satisfaction with Life Scale (Diener et al., 1985). Results from the current study indicate the two constructs of positive present time attitude and subjective well-being seem to overlap almost completely, calling into question the construct validity of Mello and Worrell's (2012) *present positive* and *present negative* subscales. Instead of capturing time attitudes per se, these subscales appear to correspond to subjective well-being (Diener et al. 1985).

Evaluating the Time Attitude Scale. The weak discriminant validity of the subscales of the *present* time attitudes (Mello & Worrell, 2012) indicated by their strong associations with subjective well-being (Diener et al., 1985) raises an important question whether the Time Attitude Scale (Mello & Worrell, 2012) is an appropriate measure of balanced time perspective. I maintain that the Time Attitude Scale (Mello & Worrell, 2012) can be used to measure balanced time perspective, since the measure matches the theoretical definition of balanced time perspective (Boniwell & Zimbardo, 2004). However, future research has to be aware of the moderate to strong associations among the time attitude subscales and the global measure of subjective well-being (Diener et al., 1985). Investigating the relations of balanced time perspective and subjective well-being using the Time Attitude Scale (Mello & Worrell, 2012), therefore, does not contribute to further understanding balanced time perspective as a construct.

Future research using the Time Attitude Scale (Mello & Worrell, 2012) needs to focus on associations of balanced time perspective and other indicators that are not global subjective well-being (Diener et al., 1985).

Measurement Invariance across Age

The Time Attitude Scale (Worrell & Mello, 2012) was developed specifically for adolescents. The current study is one of the few studies that uses the measure with adults across the life span. Therefore, Research Question 1 is whether the time attitude measure is invariant across age. In accord with Hypothesis 1, based on multi-group analysis using structural equation modeling, factor loadings of the six subscales are comparable across participants of different age groups. This supports factorial invariance by age at the *weak* (i.e., factor loading) level of invariance, but not found at the *strong* (i.e., structural variance) or *strict* (i.e., residuals) levels. According to Little (2013), the weak level of invariance is "a relatively easy test to pass" (p. 142). However, Meredith and Teresi (2006) point out that a weak level of measurement invariance suffices when group and individual differences in the construct under investigation are expected. In the current study, based on the previous findings of age differences in positive and negative attitudes towards the future (e.g., Lang & Carstensen, 2002), differences between younger, middle-aged, and older adults' attitudes towards the future are anticipated. In addition, in practice, most studies in multi-group analysis, reviewed by Vandenberg and Lance (2000), reported only a weak level of measurement invariance to support the measurement invariance across groups. Less than half of the studies reviewed by Vandenberg and Lance (2000) reported strong and strict measurement invariance to support their multi-group analysis, suggesting that the strong and strict levels of invariance are not easy to establish in practice. Thus, the current study provides some evidence to suggest that participants across age groups (younger, middle-

aged, and older adults) seem to interpret the measure the same way, supporting Hypothesis 1 and suggesting that the Time Attitude Scale (Worrell & Mello, 2012) used in the current study can be used to capture time attitudes in adulthood.

Age Differences in Time Attitude

Research Question 2; *Are there age differences in time attitudes?* addresses whether positive and negative attitudes towards the past, present, and future differ when each is examined as a separate variable. The answer is yes and no, depending on the type of time perspective examined. In line with Hypothesis 2, age differences will be localized to attitudes about the future, age differences were found when participants' evaluation of their future time were assessed. Older adults report higher future negative and lower future positive compared to the middle-aged and younger adults. These findings are in accordance with socioemotional selectivity theory of aging proposed by Carstensen, Isaacowitz, and Charles (1999). This theory suggests that with a perception of limited time left in life (typically associated with older age), people tend to envision their future time as having fewer opportunities and more limitations. Therefore, they are less likely to seek new relationships, but instead cherish quality time with a small circle of friends and family members to maximize their positive emotions. When studying positive and negative attitudes about the future without considering other time perspectives (i.e., past and present), the age differences found using Mello and Worrell's (2012) Time Attitude Scale are consistent with prior work in time perspective of the future.

As anticipated in Hypothesis 2, age differences were not found in positive and negative evaluation of past and present times (using Mello and Worrell's Time Attitude Scale). The findings may reflect that individuals' views of their past and present times depend on life experiences, regardless of how old they are. For example, any person, young or old, can have a

negative view about the past.

Person-Centered Approach to Balanced Time Perspective

The current study uses cluster analysis of individuals' scores on the six subscales (i.e., *past positive*, *present positive*, *future positive*, *past negative*, *present negative,* and *future negative*) of the Time Attitude Scale (Worrell & Mello, 2012) to investigate time attitude profiles. Four time attitude profiles, *balanced, negative, uncertain,* and *negative past* are identified. As anticipated, the balanced profile is comprised of high scores on all three positive time attitudes and low scores on the negative time attitudes (past, present, and future; see *Figure 3*). The majority of the participants (52%) are members of the *balanced* profile, followed by the *uncertain* profile (22%), *negative past* profile (15%), and *negative* profile (11%).

Pertaining to individuals in the non-balanced time profiles, individuals in the *uncertain* profile had high scores in present and future negative subscales, moderate scores on past positive and past negative subscales, and low scores on present and future positive subscales. People in this profile did not see their present and future positively. They also had neutral views of their past. This is possibly because they think the present and future are unclear, and their past is neither good nor bad.

Based on the cluster solutions in the current study, individuals who were identified as having *negative past* time perspective had high scores on present positive and past negative subscales, moderate scores on future positive, future negative, and present negative subscales, and low scores on past positive subscale. Individuals in this time profile reported having adverse experiences in the past but feel hopeful with today.

Lastly, individuals in the *negative* profile had high scores on past, present, and future negative subscales, and low scores on past, present, future positive subscales. People in this

negative profile had the complete opposite attitudes towards their past, present, and future time, compared to people in the balanced profile.

Age Differences in Membership of Balanced Time Attitude Profile

Research Question 3 is whether membership in the balanced time attitude profile is similar across younger, middle-aged, and older adults. As predicted in Hypothesis 3, balanced time perspective group membership is similar across age groups. Older adults were just as likely as middle-aged and younger adults to be in the balanced time profile. They were also equally likely to be in the non-balanced time profile (i.e., membership of *uncertain*, *negative*, and *negative past* profile combined).

Age differences are *not* found when attitudes towards the past, present, and future are integrated to form time attitude profiles. Studying profiles of time attitudes provides a different way of understanding age differences and time attitudes, compared to individually examining age differences in attitudes about each time frame. Specifically, findings for Research Question 2 indicate that age differences are localized to attitudes about the future time, older adults view their future as less positive and more negative, compared to younger adults. However, the results from Research Question 3 indicate that individuals of all ages (including older adults) can have a balanced time perspective.

Is Having Balanced Time Perspective Optimal?

The final objective of the current study is to address Boniwell and Zimbardo's (2004) proposal that balanced time perspective is an optimal time perspective. If the balanced time perspective is truly optimal as claimed, it would be expected to be associated with indicators of positive psychological well-being, including greater subjective well-being, optimism, ego resiliency, subjective health, and decision-making outcomes (Hypothesis 4). Most of the results

are in line with Hypothesis 4. Individuals in the balanced time attitude profile, compared to those in other time attitude profiles, score higher on subjective well-being, optimism, ego resiliency, and subjective health. However, individuals across different time attitude profiles score relatively equal in decision-making outcomes.

Subjective well-being. Replicating previous literature (Boniwell et al., 2010; Drake et al., 2008; Gao, 2011; Webster, 2011; Webster & Ma, 2013), individuals in the balanced time attitude profile report higher subjective well-being scores compared to other profiles. One issue in the current study is that the subscales of the Time Attitude Scale (Mello & Worrell, 2012), used to identify balanced time perspective in the current study, are highly correlated with the Satisfaction with Life Scale (Diener et al., 1985). Specifically, the *present positive* and *present negative* subscales are highly correlated with the subjective well-being measure ($r > |.83|$). This association between subjective well-being and present time attitude is consistent with Pavot and colleagues' (1998) study, which examined satisfaction with life towards the past, present, and future time using the Temporal Satisfaction with Life Scale developed by the authors. Participants in Pavot and colleagues' (1998) study were asked to complete a temporal satisfaction with life scale and a general 5-item Satisfaction with Life Scale (Diener et al., 1985). In that study there was a strong correlation ($r = .95$) between the *satisfaction with life in the present* subscale and Diener and colleagues' (1985) Satisfaction with Life Scale. Pavot and colleagues (1998) conclude that when participants respond to satisfaction with life scale (Diener et al., 1985), they tend to refer to their life in the present. The findings in the current study are consistent with this idea.

Notably, since the subjective well-being and the six subscales in Time Attitude Scale are moderately to highly correlated ($r = |.85|$ to $|.46|$, $p < .01$), the significantly greater subjective

well-being scores in individuals who have balanced time perspective, compared to others in different time profiles, are expected. This highlights the commonality issue of subjective well-being and time attitude constructs. Due to the significant associations between the subscales of the two constructs, those who have high scores on subjective well-being are expected to also have high scores on positive attitudes of the past, present, and future.

Indicators of positive psychological well-being. The association of balanced time perspective and subjective well-being have been studied extensively in previous literature, the current study goes beyond this to explore associations of balanced time perspective and other indicators of positive psychological well-being. The findings support Boniwell and Zimbardo's (2004) proposition that balanced time perspective is optimal. Balanced time perspective is not only associated with subjective well-being, but also optimism, ego resiliency, and subjective health.

Optimism. The significant association between having a balanced time perspective optimism is reasonable because people with optimistic characteristics tend to evaluate their past, present and future in a positive light. The moderate correlation between these two constructs (r = |.63| to |.39|, $p < .01$) suggests that the two constructs overlap. Both constructs measure positive attitudes. In addition, optimistic individuals tend to have a positive view about their present and future (e.g., "overall, I expect more good things to happen to me than bad").

Ego resiliency. The findings for ego resiliency—individuals' adaptability and flexibility in situations occurring in their lives (Letzring et al., 2005)—conforms to the theoretical definition of balanced time perspective. Individuals with a balanced time profile are posited to not be bound to one single time perspective but instead to be flexible (Boniwell & Zimbardo, 2004). For example, an individual with balanced time perspective uses his/her positive views of

the past to connect to her family and friends, positive views of the present to cherish the moment and tackle the day, and positive views of the future to set and attain life goals. The association between positive time attitudes and ego resiliency is also found in college students in Hong Kong (Mak, Ng, & Wong, 2011). Students who had greater resiliency reported positive views about themselves, the world, and the future and showed higher scores in life satisfaction compared to those who did not.

Subjective health. In line with Hypothesis 4, individuals in the balanced time attitude profile rate their health as better compared to others in *negative*, *uncertain*, and *negative past* time attitude profiles. Subjective health is a domain-specific measure of well-being (Staudinger et al., 1999). The self-rated health (Lawton et al., 1982) used in the current study assesses subjective health in the present. One item assesses subjective health now compared to three years ago, implying stability or instability of health rating across time. The significant findings of balanced time perspective and subjective health suggest that individuals who view their health as relatively better or stable also have positive attitudes of their past, present, and future.

Decision-making outcomes. In contrast to Hypothesis 4, individuals in different time profiles reported relatively equal scores of decision-making outcomes. To my knowledge, the current study is the only study that attempts to understand the association between balanced time perspective and decision-making outcomes. The Decision Outcomes Inventory (Bruine de Bruin et al., 2007) used in the current study has not been used and validated by many other studies. In the current study, the non-significant association between time attitude profiles and decision-making outcomes may reflect that few participants have experienced the negative decision-making outcomes listed in the inventory such that restriction of range is an issue.

Time attitude profiles and indicators of positive psychological well-being. In addition

to the findings that individuals with a balanced time attitude profile scored higher on subjective well-being, optimism, ego resiliency, and subjective health, scores of individuals in other "non-balanced" time profiles demonstrate significantly different patterns of positive psychological outcomes. Specifically, individuals in *negative past* profile have the second highest scores, individuals in the *uncertain* profile score the second lowest, whereas individuals in *negative* profile score the lowest on subjective well-being, optimism, ego resiliency, and subjective health.

Those with a *negative past* time attitude profile had high scores on *past negative* and *present positive*, and moderate scores on *present negative*, *future positive*, and *future negative* subscales. These individuals in the *negative past* profile view their pasts as negative, but believe the present is more positive. They may think that their psychological well-beings will eventually work in their favors.

The people who have *uncertain* time attitude profile have the second lowest scores on subjective well-being, optimism, ego resiliency, and subjective health, compared to the three other time attitude profiles. They have high scores on *present negative* and *future negative*, and moderate scores on the *past positive* and *past negative* subscales. Based on these scores, individuals in this *uncertain* profile may be skeptical about their present and future and their views about the pasts are neither good nor bad.

Lastly, those with the lowest scores on indicators of positive psychological well-being were individuals who have a *negative* time attitude profile, defined as having low scores on *positive* subscales, and high scores on the *negative* subscales. Individuals in the *negative* time attitude profile seem to be pessimistic about their lives in the past, present, and future. Those who have negative views of their past, present, and future, and fail to view their times in a more positive light seem to have the worse psychological well-being outcomes, compared to those

who at least have a positive attitude at some point in time.

Limitations

The key limitations of current study are the use of self-report data, online survey, and the cross-sectional design. First, the information gained from the current study is solely self- report, which can be susceptible to socially desirability responses (Paulhus, 1984). Future studies may address this issue by having participants complete a measure that captures the tendency to self-present in a social desirable manner (e.g., Balanced Inventory of Desirable Responding, Paulhus, 1988; Marlowe-Crowne Social Desirability Scale, Crowne & Marlowe, 1960). As in a study of the Balanced Time Perspective Scale, Webster (2011) reported no significant correlation between the impression management scale used to measure social desirability and the *past* and the *future* subscales of the balanced time perspective scale. The current study had no way to check whether the participants gave socially desirable responses. However, if participants rated past, present, and future as positive because positive is seen as more socially desirable, this may explain the findings that over 50% of the participants were included in the balanced time attitude profile.

Second, most of the data of the current study were collected online, and thus features of the environment in which surveys were completed may have differed, including factors such as noise, light, font size, room temperature, and time of day or night. In addition, without a researcher administering the survey, participants could access multiple web pages (e.g., social networking cites) while taking the survey or more than one person could have worked on a single survey. Attempts were made to check and detect low-quality data, these attempts included asking screening questions (e.g., click “a little” here and click “untrue” here) and repeatedly asking for personal information (i.e., age, and date of birth) throughout the survey. However,

when using online data collection, researchers have limited ways to control these potential issues. Importantly, in the current study, data were collected using both in-person and online approaches and the results derived from both approaches were comparable. However, only five percent of the sample completed the paper survey. Future studies may systematically collect the data with equal samples for both in-person and online approaches. That way, the researcher can more confidently compare results derived from both approaches.

Lastly, the cross-sectional study design cannot identify change or stability of the construct of balanced time perspective. The current study only collected the data at a single time point. Therefore, it cannot address potential cohort differences (Baltes, Reese, & Nesselroade, 1988). Longitudinal studies investigating balanced time perspective at more than two time points would provide information about changes in time attitudes within a person across time and differences of the trajectories between individuals (Baltes et al., 1988; Hofer, Thorvaldsson, & Piccinin, 2012). Longitudinal data would allow researchers to address whether there are any contextual factors that could potentially affect the balanced time perspective. There may be life events, such as a loss of a significant person, or historical events, such as political issues, war, and economic crisis, that can affect how individuals subjectively evaluate their present and future. The current study attempted to address this by collecting the information about participants' life experiences and their evaluations of each event experienced using Life Experience Survey (Sarason, Johnson, & Siegel, 1978). However, due to the complexity of the survey, data were incomplete. In a longitudinal study, an individual may rate his/her past, present, and future positively at time 1 demonstrating having a balanced time perspective. However, at a later time, after experiencing negative life events, the person may rate positively on the past, but negatively on present and future, demonstrating having an uncertain time

perspective. A longitudinal study of balanced time perspective would help researchers to understand change or stability of the construct of balanced time perspective.

Future directions

Measuring balanced time perspective. The construct of balanced time perspective is still in its infancy. More research on the measurement of balanced time perspective should be conducted. The current study introduced an alternative measure, the Time Attitude Scale (Mello & Worrell, 2012), to identify individuals with a balanced time perspective. Future studies are required to validate Mello and Worrell's (2012) Time Attitude Scale in comparison to other measures used to assess balanced time perspective (i.e., Balanced Time Perspective scale, Webster, 2011; Zimbardo Time Perspective Inventory, Zimbardo & Boyd, 1999). The future studies may also compute deviation to balanced time perspective scores (Stolarski et al., 2011) with Mello and Worrell's (2012) Time Attitude Scale, which would make the balanced time perspective an interval scale, instead of a nominal scale. The continuous measurement of balanced time perspective would allow researchers to use advanced statistical approaches (Stevens, 1971), such as structural equation modelling to investigate balanced time perspective and its correlates.

Balanced time perspective and well-being. In addition, researchers need to further examine commonality of balanced time perspective and subjective well-being, as many subscales of the time-related measures examined in the current study (i.e., Time Attitude Scale, Mello & Worrell, 2012; Balanced Time Perspective Scale, Webster, 2011; Zimbardo Time Perspective Inventory, Zimbardo & Boyd, 1999) are moderately to highly correlated with subjective well-being (r = |.43| - |.85|). Future research would help enlighten whether the measures of balanced time perspective might essentially measure subjective well-being.

Present time perspective. Philosophically, measuring the present time is not possible (i.e., thinking about "now" is essentially thinking about the past, as time never stops moving forward, Webster, 2011). For this reason, Webster (2011) does not measure the *present* in his Balanced Time Perspective Scale. However, measuring the present time is required for measuring balanced time perspective. The construct of mindfulness may be a way to represent present time perspective. This is, instead of focusing on time attitudes or subjective evaluations towards the present, which is closely related to well-being, future research may examine the construct of *active concentration on the present* (Sobol-Kwapinska, 2009), which is defined as focusing on "here and now."

Beyond well-being. The association between having a balanced time perspective and well-being is well documented in this study and others. However, research on balanced time perspective, other time profiles, and other variables is limited. More studies are needed to understand aspects of balanced time perspective beyond the association with well-being. For example, future research may investigate the associations of balanced time perspective and domain-specific decision-making such as financial decision outcomes (e.g., credit card debt, Joireman, Kees, & Sprott, 2010; and retirement plans, Hershfiled, Goldstein, Sharpe, Fox, Yeykelis, Carstensen, & Bailenson, 2011). Researchers may also investigate the relations of balanced time perspective and behavioral indicators such as time management (Boniwell, 2005) and positive health practices (Thompson & Fitzpatrick, 2008).

Behavioral aspect of time perspective. Lastly, the current study only investigates cognitive (i.e., time attitude) and affective (i.e., positive and negative evaluation) aspects of time perspective. Future studies investigating balanced time perspective could benefit from taking behavioral aspects of time into account, such as family connections (Bell & Bell, 2009), leisure

time use (Bittman & Wajcman, 2000), and planning behaviors (Lynch, Netemeyer, Spiller, & Zammit, 2010).

Implications

An important message gained from the current study is the usefulness of a profile approach of time perspective to take into account individual differences in more than one single time perspective simultaneously. For example, much previous research on adult development and aging has focused only on future time perspective. Using a profile approach helps researchers identify groups of individuals with different combinations of time perspectives (i.e., *balanced, negative past, uncertain,* and *negative* time attitude profiles) and how these profiles related to other indicators of positive psychological well-being.

Typically in future time perspective studies, a strong age effect has been found with older adults tending to report their future time as more limited (e.g., Lang & Carstensen, 2002). Age differences, however, are not found when using the profile approach. The profile approach offers a different aspect of understanding the association of time perspective and aging.

According to Boniwell (2005), balanced time perspective can be used in coaching and clinical settings. Practitioners can guide individuals to have balanced time perspective by focusing flexibly towards their past, present, and future, and not focusing solely on one single time. For example, a practitioner may guide a person who mainly focuses on the future time (i.e., working hard towards the promotion) to become more aware of the present time (i.e., spending time with the loved ones, or going on a trip), and the past time (i.e., talking to old friends, or going to a family reunion). Based on the results in the previous study of the association between balanced time perspective and well-being (Boniwell et al., 2010; Drake et al., 2008; Gao, 2011; Webster, 2011; Webster & Ma, 2013), which is in line with the results in current study, coaching

individuals to have balanced time perspective would improve people's well-being.

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Table 1

Two Dimensions of Balanced Time Perspective

Time Frame	Valence	
	Positive	Negative
Past	Past Positive	Past Negative
Present	Present Positive	Present Negative
Future	Future Positive	Future Negative

Table 2

Demographic Information by Recruitment Methods

Variables	MTurk		Referrals		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Age*						
Younger adults	93	31.10	48	47.50	141	35.30
Middle-aged adults	103	34.40	26	25.70	129	32.30
Older adults	103	34.40	27	26.70	130	32.50
Total	299	74.75	101	25.25	400	100.00
Gender**						
Male	157	52.50	27	26.70	184	46.00
Female	142	47.50	74	73.30	216	54.00
Total	299	74.75	101	25.25	400	100.00
Marital status						
Never married	89	29.80	33	32.70	122	30.50
Married	136	45.50	46	45.50	182	45.50
Living together	31	10.40	7	6.90	38	9.50
Widowed/Widower	10	3.30	2	2.00	12	3.00
Divorced	33	11.00	13	12.90	46	11.50
Total	299	74.75	101	25.25	400	100.00
Race						
Caucasian	241	80.60	91	90.10	332	83.00
African-American	24	8.00	4	4.00	28	7.00
Asian	16	5.40	3	3.00	19	4.80
American Indian	4	1.30	-	-	4	1.00
Native Hawaiian	1	0.30	-	-	1	0.30
Biracial/multi-racial	5	1.70	1	1.00	6	1.50
Other	2	0.70	-	-	2	0.50
Prefer not to answer	6	2.00	1	1.00	7	1.80
Total	299	74.94	100	25.06	399	100.00
Ethnicity						
Hispanic or Latino	19	6.40	1	1.00	20	5.00
Not Hispanic/Latino	273	91.30	88	87.10	361	90.30
Prefer not to answer	7	2.30	4	4.00	11	2.80
Total	299	76.28	93	23.72	392	100.00
Employment**						
Full time	140	46.80	39	38.60	179	44.80
Part time	55	18.40	17	16.80	72	18.00
Partially retired	28	9.40	5	5.00	33	8.30
Fully retired	31	10.40	19	18.80	50	12.50
Unemployed	45	15.10	9	8.90	54	13.50
Other	-	-	10	9.90	10	2.50
Total	299	75.13	99	24.87	398	100.00

Continued next page

Variables	MTurk		Referrals		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Education**						
Not high school	2	0.70	1	1.00	3	0.80
High school/GED	38	12.70	14	13.90	52	13.00
Some college	60	20.10	20	19.80	80	20.00
Associate's degree	41	13.70	4	4.00	45	11.30
Bachelor's degree	116	38.80	26	25.70	142	35.50
Master's degree	33	11.00	29	28.70	62	15.50
Doctoral degree	9	3.00	6	5.90	15	3.80
Total	299	74.94	100	25.06	399	100.00

Note. $^{**}p < .01$, $^{*}p < .05$ significant differences between recruitment methods. Younger adults aged 19 to 32 years, $M = 26.09$. Middle-aged adults aged 40 to 55 years, $M = 47.62$. Older adults aged 60 to 82 years, $M = 64.25$.

Table 3

Screening Questions in Time of Your Life Questionnaire

Question	Place in the survey
1. What is your Mechanical Turk ID*	After the cover letter
2. How old are you (in years, e.g., 41)?	After #1
3. Click “A Little” here	Among PANAS items
4. What is your birth year? (Enter 4-digit birth year, e.g., 1981)*	After PANAS
5. What is your date of birth? (MM/DD/YYYY)*	After ego resiliency
6. Click “Disagree” here	Among RC items
7. Click the number “8” below.	After years to live
8. How old are you (in years, e.g., 41)?*	After #7
9. Click “Untrue” here	Among ZTPI items
10. Click “Yes” here	Among DOI items
11. What is your date of birth? (MM/DD/YYYY)*	After DOI
12. What is your birth year? (Enter 4-digit birth year, e.g., 1981)*	After #11
13. What is your Mechanical Turk ID*	After #12

Note. * For MTurk participants only. PANAS = Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). RC = Resistance to Change (Oreg, 2003). ZTPI = Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999). DOI = Decision Outcomes Inventory (Bruine de Bruin, Parker, & Fischhoff, 2007).

Table 4

Average Scores of All the Variables by Recruitment Methods

Variables	Mean (*SD*)			MIN	MAX	α
	MTurk	Social/Community	Total			
Future+*!	3.66(0.91)	4.14(0.66)	3.78(0.87)	1.00	5.00	.93
Past+	3.62(0.92)	3.77(0.80)	3.66(0.89)	1.00	5.00	.91
Present+*!	3.54(0.97)	3.98(0.71)	3.65(0.93)	1.00	5.00	.95
Future-*!	2.23(0.88)	1.84(0.74)	2.13(0.86)	1.00	5.00	.88
Past-	2.46(0.98)	2.21(0.85)	2.39(0.95)	1.00	5.00	.91
Present-*!	2.63(1.02)	2.27(0.80)	2.53(0.98)	1.00	5.00	.91
Years to Live	38.66(21.75)	43.71(23.41)	39.92(22.26)	2	130	NA
Health	9.74(2.10)	9.69(2.09)	9.73(2.10)	4.00	13.00	.79
Well-being*!	4.42(1.62)	4.96(1.17)	4.55(1.54)	1.00	7.00	.93
Optimism	2.47(0.88)	2.51(0.76)	2.48(0.85)	0.00	4.00	.87
Decision	-0.13(0.09)	-0.14(0.08)	-0.13(0.09)	-0.72	0.00	.84
Ego	2.97(0.47)	3.02(0.42)	2.99(0.45)	1.14	4.00	.84
Resist	3.53(0.78)	3.34(0.74)	3.48(0.77)	1.69	5.56	.90
+Affect	30.46(8.76)	32.87(8.80)	31.07(8.82)	2.00	50.00	.91
- Affect *	13.94(6.30)	16.58(5.94)	14.61(6.31)	9.00	40.00	.91
Opportunities	4.62(1.48)	4.92(1.25)	4.70(1.43)	1.00	7.00	.93
Limitations	4.29(1.40)	3.97(1.30)	4.21(1.38)	1.00	7.00	.84
Z_Past-	3.10(0.70)	3.03(0.68)	3.08(0.70)	1.20	5.00	.82
Z_Hedonistic	3.17(0.55)	3.31(0.50)	3.21(0.54)	1.40	4.80	.82
Z_Future	3.61(0.49)	3.59(0.53)	3.61(0.50)	1.92	5.00	.77
Z_Past+	3.54(0.78)	3.72(0.63)	3.59(0.75)	1.11	5.00	.86
Z_Fatalistic	2.56(0.68)	2.39(0.54)	2.52(0.65)	1.00	4.22	.78
BTPS_Past	4.07(1.05)	4.18(0.86)	4.10(1.01)	1.00	6.00	.95
BTPS_Future	4.35(1.12)	4.68(0.88)	4.43(1.07)	1.00	6.00	.97
Bills*	2.94(0.98)	3.40(0.87)	3.05(.97)	1.00	4.00	NA

Note. *significant differences between recruitment methods at $p < .002$. !Homogeneity of variance was found, thus the significant results must be interpreted with cautions. Variables in the Time Attitude Scale (Mello & Worrell, 2012); Future+ = future positive, Past+ = past positive, Present+ = present positive, Future- = future negative, Past- = past negative, and Present- = present negative. Decision = decision making outcomes. Ego = ego resiliency. Resist = resistance to change. Future time perspective variable; Opportunities = future time perspective focusing on opportunities, and Limitation = future time perspective focusing on limitations. Variables in Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999); Z_Past- = past negative, Z_Hedonistic = present hedonistic, Z_Future = future, Z_Past+ = past positive, Z_Fatalistic = present fatalistic. Variables in the Balanced time Perspective Scale (Webster, 2011); BTPS_Past = past, and BTPS_Future = future. Bills = difficulty paying bills. NA = single-item variable therefore Cronbach's Alpha was not reported.

Table 5

Average Scores of All the Variables by Gender

Variables	Mean and (*SD*)		Skewness	Kurtosis	*N*
	Males	Females			
Future+	3.78(0.86)	3.79(0.89)	-0.86	0.37	400
Past+	3.74(0.84)	3.60(0.92)	-0.79	0.23	400
Present+	3.66(0.92)	3.65(0.93)	-0.79	-0.02	400
Future-	2.13(0.82)	2.13(0.90)	0.67	-0.17	400
Past-	2.34(0.93)	2.44(0.96)	0.56	-0.36	400
Present-	2.50(0.99)	2.56(0.97)	0.50	-0.54	400
Years to Live	40.91(23.25)	39.29(21.36)	0.66	0.25	397
Health	9.89(2.14)	9.61(2.05)	-0.68	-0.08	394
Well-being	4.59(1.55)	4.55(1.51)	-0.51	-0.45	400
Optimism	2.54(0.82)	2.44(0.87)	-0.50	-0.01	400
Decision	-0.14(0.10)	-0.13(0.08)	-1.63	5.35	400
Ego	2.97(0.44)	3.01(0.47)	-0.29	0.78	400
Resist	3.49(0.76)	3.46(0.78)	0.21	-0.05	400
+Affect	31.08(8.68)	31.04(8.87)	-0.28	-0.23	400
-Affect	14.25(6.45)	14.82(6.18)	1.60	2.05	400
Opportunities	4.74(1.36)	4.64(1.48)	-0.58	-0.21	400
Limitations	4.19(1.39)	4.25(1.38)	-0.09	-0.46	400
Z_Past-	3.05(0.70)	3.11(0.69)	0.08	-0.29	400
Z_Hedonistic	3.21(0.53)	3.21(0.55)	-0.16	0.38	400
Z_Future	3.57(0.52)	3.64(0.46)	0.15	0.05	400
Z_Past+	3.56(0.71)	3.61(0.77)	-0.67	0.29	400
Z_Fatalistic	2.54(0.68)	2.50(0.63)	0.03	-0.50	400
BTPS_Past	4.12(0.94)	4.08(1.03)	-0.59	0.24	400
BTPS_Future	4.44(1.00)	4.42(1.12)	-0.87	0.34	400

Note. No gender differences. Variables in Time Attitude Scale (Mello & Worrell, 2012); Future+ = future positive, Past+ = past positive, Present+ = present positive, Future- = future negative, Past- = past negative, and Present- = present negative. Decision = decision making outcomes. Ego = ego resiliency. Resist = resistance to change. Future time perspective variable; Opportunities = future time perspective focusing on opportunities, and Limitation = future time perspective focusing on limitations. Variables in Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999); Z_Past- = past negative, Z_Hedonistic = present hedonistic, Z_Future = future, Z_Past+ = past positive, Z_Fatalistic = present fatalistic. Variables in the Balanced Time Perspective Scale (Webster, 2011); BTPS_Past = past, and BTPS_Future = future. *SE* Skewness = 0.12. *SE* Kurtosis = 0.24 for all the variables.

Table 6

Correlations among the Variables in the Time Attitude Scale and Other Time-Related Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Age	-																
2. Future+	-.18**	-															
3. Past+	-.02	.39**	-														
4. Present+	.04	.69**	.39**	-													
5. Future-	.20**	-.81**	-.33**	-.57**	-												
6. Past-	.04	-.48**	-.76**	-.48**	.51**	-											
7. Present-	-.05	-.65**	-.39**	-.88**	.62**	.54**	-										
8. Opportunities	-.31**	.80**	.35**	.55**	-.70**	-.40**	-.54**	-									
9. Limitations	.29**	-.52**	-.16**	-.35**	.51**	.27**	.39**	-.62**	-								
10. Years to Live	-.71**	.33**	.11*	.17**	-.30**	-.13**	-.15**	.42**	-.39**	-							
11. Z_Past-	.00	-.43**	-.44**	-.50**	.47**	.66**	.58**	-.40**	.41**	-.13**	-						
12. Z_Hedonistic	-.05	.34**	.17**	.32**	-.22**	-.11*	-.24**	.30**	-.09	.15**	.01	-					
13. Z_Future	-.01	.14**	.17**	.14**	-.23**	-.19**	-.17**	.17**	-.03	-.05	-.16**	-.30**	-				
14. Z_Past+	-.01	.38**	.77**	.36**	-.38**	-.68**	-.36**	.35**	-.15**	.11*	-.40**	.18**	.22**	-			
15. Z_Fatalistic	.05	-.24**	-.12*	-.15**	.41**	.26**	.24**	-.26**	.25**	-.04	.44**	.29**	-.41**	-.12*	-		
16. BTPS_Past	.02	.52**	.60**	.48**	-.46**	-.57**	-.45**	.45**	-.10*	.07	-.32**	.30**	.20**	.71**	-.06	-	
17. BTPS_Future	-.27**	.88**	.37**	.60**	-.78**	-.43**	-.57**	.85**	-.47**	.35**	-.36**	.32**	.23**	.41**	-.29**	.58**	-

Note. * $p < .05$. ** $p < .01$. $N = 400$. Variables in Time Attitude Scale (Mello & Worrell, 2012); Future+ = future positive, Past+ = past positive, Present+ = present positive, Future- = future negative, Past- = past negative, and Present- = present negative. Future time perspective variable; Opportunities = future time perspective focusing on opportunities, and Limitation = future time perspective focusing on limitations. Variables in Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999); Z_Past- = past negative, Z_Hedonistic = present hedonistic, Z_Future = future, Z_Past+ = past positive, Z_Fatalistic = present fatalistic. Variables in the Balanced Time Perspective Scale (Webster, 2011); BTPS_Past = past, and BTPS_Future = future.

Table 7

Correlations among the Variables in the Time Attitude Scale and Other Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age	-															
2. Future+	-.18**	-														
3. Past+	-.02	.39**	-													
4. Present+	.04	.69**	.39**	-												
5. Future-	.20**	-.81**	-.33**	-.57**	-											
6. Past-	.04	-.48**	-.76**	-.48**	.51**	-										
7. Present-	-.05	-.65**	-.39**	-.88**	.62**	.54**	-									
8. Years to Live	-.71**	.33**	.11*	.17**	-.30**	-.13**	-.15**	-								
9. Health	-.11*	.42**	.22**	.38**	-.36**	-.25**	-.40**	.27**	-							
10. Well-being	.04	.65**	.46**	.85**	-.54**	-.54**	-.83**	.19**	.40**	-						
11. Optimism	.09	.61**	.39**	.60**	-.63**	-.53**	-.63**	.11*	.34**	.61**	-					
12. Decision	.23**	-.09	.02	-.00	-.02	-.11*	-.09	-.25**	.05	.01	.06	-				
13. Ego	.00	.51**	.36**	.46**	-.52**	-.39**	-.46**	.15**	.27**	.44**	.51**	.01	-			
14. Resist	-.01	-.24**	-.14**	-.17**	.27**	.21**	.21**	-.05	-.13*	-.19**	-.30**	-.01	-.49**	-		
15. +Affect	.13**	.50**	.26**	.49**	-.43**	-.35**	-.50**	.07	.29**	.49**	.41**	-.03	.44**	-.23**	-	
16. -Affect	-.12*	-.23**	-.23**	-.31**	.37**	.32**	.37**	.03	-.15**	-.27**	-.43**	-.28**	-.32**	.09	-.06	-

Note. * $p < .05$. ** $p < .01$. $N = 400$. Variables in Time Attitude Scale (Mello & Worrell, 2012); Future+ = future positive, Past+ = past positive, Present+ = present positive, Future- = future negative, Past- = past negative, and Present- = present negative. Decision = decision making outcomes. Ego = ego resiliency. Resist = resistance to change.

Table 8

Factor Regression Weights in Time Attitude Model by Age Group

Indicators	Younger Adults	Middle-Aged Adults	Older Adults
Future Positive	.70	.68	.72
Past Positive	.48	.29	.45
Present Positive	.91	.91	.88
Future Negative	-.67	-.63	-.74
Past Negative	-.61	-.49	-.58
Present Negative	-.97	-.99	-.97

Note. All factor regression weights significantly loaded onto the time attitude latent variables ($p \leq .001$). Derived from structural equation modeling using IBM AMOS 21.

Table 9

Average Scores of the Time Attitude Variables by Age Group

Variable/Age Group	Score			MANOVA			
	N	*M*	*SD*	*df*	*F*	*P*	η^2_p
Past Positive							
Younger	141	3.73	.08	2, 397	2.56	.08	.01
Middle-Aged	129	3.51	.08	2, 397			
Older	130	3.73	.08	2, 397			
Present Positive							
Younger	141	3.65	.08	2, 397	2.34	.10	.01
Middle-Aged	129	3.52	.08	2, 397			
Older	130	3.77	.08	2, 397			
Future Positive							
Younger	141	3.96*	.07	2, 397	7.05	< .01	.03
Middle-Aged	129	3.81	.08	2, 397			
Older	130	3.57	.08	2, 397			
Past Negative	141	2.34	.08		0.48	.62	.00
Younger	129	2.45	.08	2, 397			
Middle-Aged	130	2.39	.08	2, 397			
Older				2, 397			
Present Negative							
Younger	141	2.26	.08	2, 397	2.06	.13	.01
Middle-Aged	129	2.65	.09	2, 397			
Older	130	2.41	.09	2, 397			
Future Negative							
Younger	141	1.96*	.07	2, 397	9.00	< .01	.04
Middle-Aged	129	2.06*	.07	2, 397			
Older	130	2.38	.07	2, 397			

Note. * = significantly differed from the older adult group at $p < .05$.

Table 10

Time Attitude Clusters

Clusters	High	Average	Low
1. Balanced, *N* = 208 (52.00%)	Past Positive Present Positive Future Positive	-	Past Negative Present Negative Future Negative
2. Uncertain, *N* = 90 (22.50%)	Present Negative Future Negative	Past Positive Past Negative	Present Positive Future Positive
3. Negative, *N* = 43 (10.75%)	Past Negative Present Negative Future Negative	-	Past Positive Present Positive Future Positive
4. Negative Past, *N* = 59 (14.75%)	Past Negative Present Positive	Present Negative Future Positive Future Negative	Past Positive

Note. Clusters derived from Time Attitude Scale (Mello & Worrell, 2012). *N* = 400.

Table 11

Average Scores of the Subjective Well-Being, Optimism, Ego Resiliency, and Subjective Health Variables by Time Attitude Profile

Variables	Profile	Score			MANOVA		
		N	*M*	*SE*	F^a	*P*	η^2_p
Subjective well-being	Balanced	208	5.51	.07	177.00	< .01	.58
	Uncertain	90	3.63**	.11			
	Negative	43	2.02**	.16			
	Negative Past	59	4.42**	.13			
Optimism	Balanced	208	2.92	.05	88.84	< .01	.41
	Uncertain	90	2.09**	.07			
	Negative	43	1.26**	.10			
	Negative Past	59	2.43**	.09			
Ego resiliency	Balanced	208	3.18	.03	37.63	< .01	.22
	Uncertain	90	2.82**	.04			
	Negative	43	2.55**	.06			
	Negative Past	59	2.90**	.05			
Subjective health	Balanced	208	10.39	.14	21.81	< .01	.14
	Uncertain	90	9.20**	.21			
	Negative	43	7.95**	.30			
	Negative Past	59	9.51*	.25			
Decision-making outcomes	Balanced	208	-0.12	.01	2.43	.07	.02
	Uncertain	90	-0.15	.01			
	Negative	43	-0.12	.01			
	Negative Past	59	-0.15	.01			

Note. ** = significantly differed from the balanced profile at $p < .01$. * = significantly differed from the balanced profile at $p < .05$. [a] degrees of freedom for all tests = (3, 390).

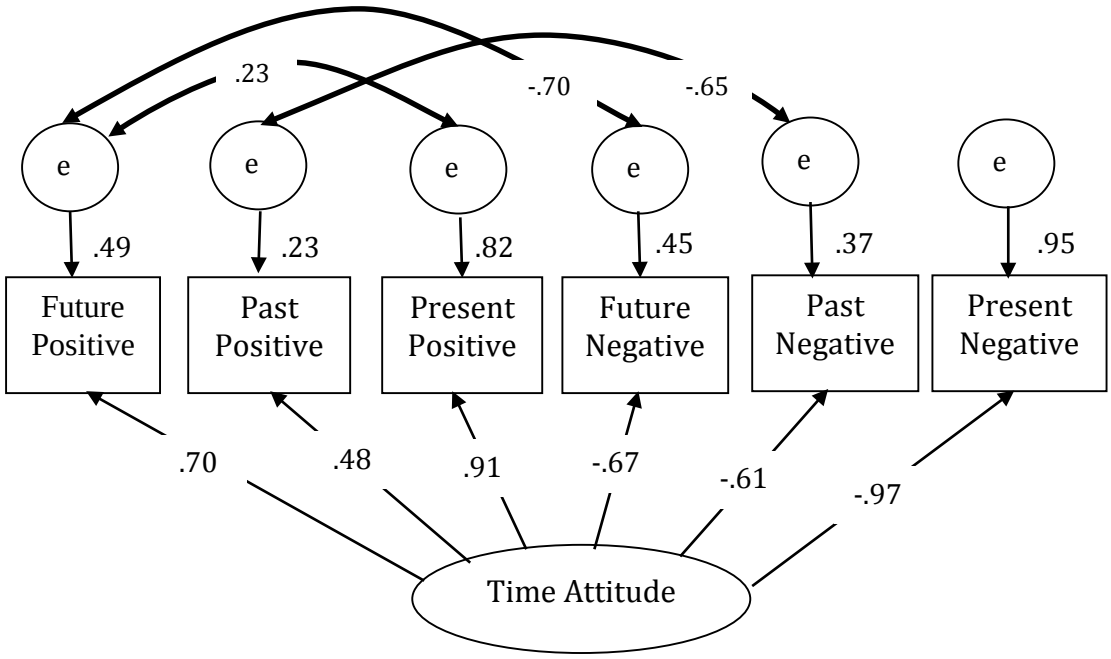


Figure 1. Measurement model of time attitudes.

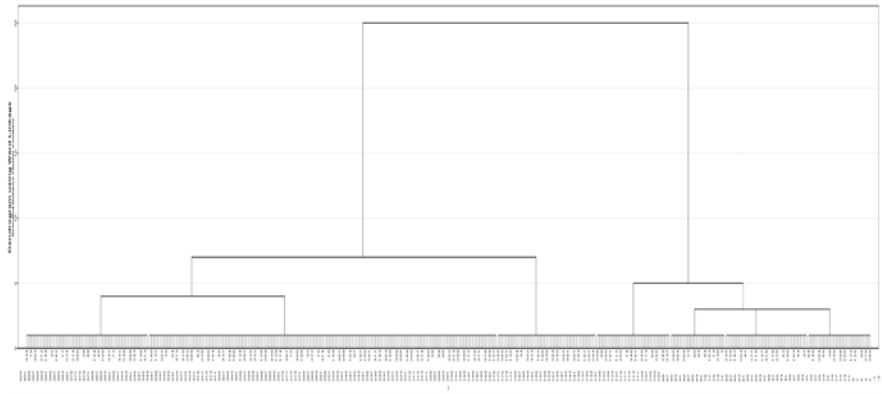


Figure 2. Dendrogram depicting the four distinct time attitude profiles.

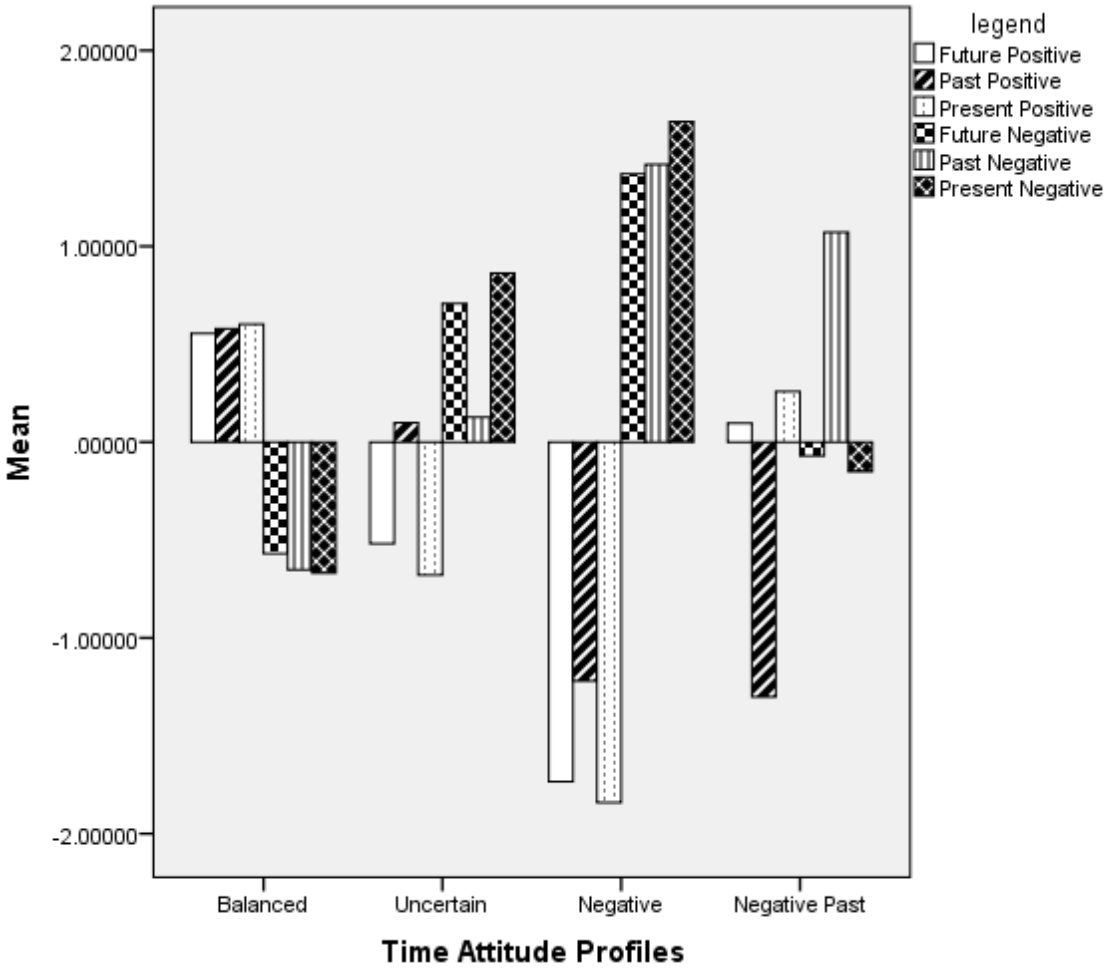


Figure 3. Time attitude profiles derived from standardized scores of six time attitude subscales.

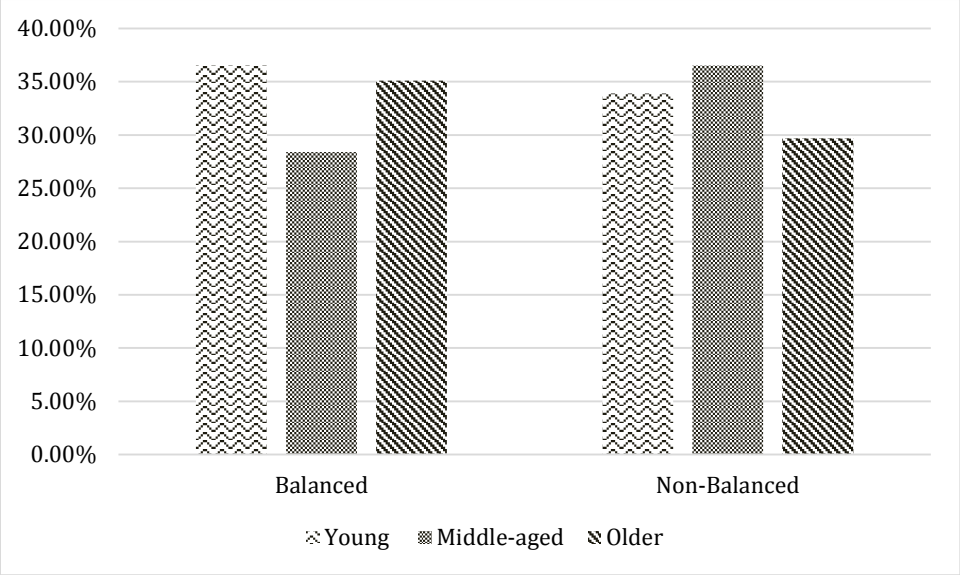


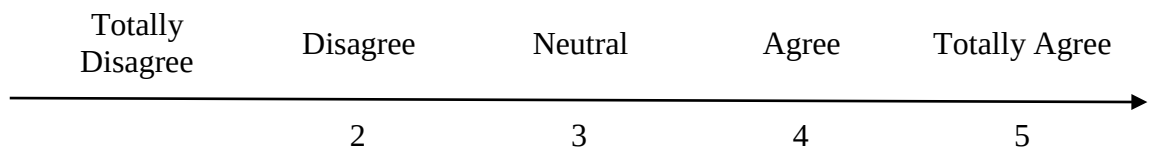
Figure 4. Percentages of group membership of balanced and non-balanced time attitude profiles by age group.

Appendix A

Time Attitude Scale

(Adapted from Mello & Worrell, 2012)

Instruction: Select one response for each statement. Please use the scale from 1 (totally disagree) to 5 (totally agree) to indicate your agreement with each statement.



Statement	Totally Disagree	Disagree	Neutral	Agree	Totally Agree
	1	2	3	4	5
1. I Look forward to my future.	1	2	3	4	5
2. I am not satisfied with my life right now.	1	2	3	4	5
3. I have very happy memories of my childhood.	1	2	3	4	5
4. I doubt I will make something of myself.	1	2	3	4	5
5. I am happy with my current life.	1	2	3	4	5
6. My past is a time in my life that I would like to forget.	1	2	3	4	5
7. My future makes me happy.	1	2	3	4	5
8. I have negative feelings about my current situation.	1	2	3	4	5
9. I have good memories about growing up.	1	2	3	4	5
10. I don't think I will amount much in the future.	1	2	3	4	5
11. I am pleased with the present.	1	2	3	4	5
12. I am not satisfied with my past.	1	2	3	4	5
13. My future makes me smile.	1	2	3	4	5
14. I am content with the present.	1	2	3	4	5
15. My past makes me sad.	1	2	3	4	5
16. Thinking about my future makes me sad.	1	2	3	4	5
17. Overall, I feel happy about what I am doing right now.	1	2	3	4	5
18. I wish that I did not have the past that I had.	1	2	3	4	5
19. I am excited about my future.	1	2	3	4	5
20. I am not satisfied with my present.	1	2	3	4	5

Statement	Totally Disagree	Disagree	Neutral	Agree	Totally Agree
	1	2	3	4	5
21. I have happy thoughts about my past.	1	2	3	4	5
22. I don't like to think about my future.	1	2	3	4	5
23. I am not happy with my present life.	1	2	3	4	5
24. I like to think about my past because it was such a happy time for me.	1	2	3	4	5
25. Thinking ahead is pointless.	1	2	3	4	5
26. Overall, I feel happy with my life right now.	1	2	3	4	5
27. I have unpleasant thoughts about my past.	1	2	3	4	5
28. Thinking about my future excites me.	1	2	3	4	5
29. My current life worries me.	1	2	3	4	5
30. My past is full of happy memories.	1	2	3	4	5

Note. *Past Positive* items: 3, 9, 21, 24, and 30, *Past Negative* items: 6, 12, 15, 18, and 27, *Present Positive* items: 5, 11, 14, 17, and 26, *Present Negative* items: 2, 8, 20, 23, and 29, *Future Positive* items: 1, 7, 13, 19, and 28, and *Future Negative* items: 4, 10, 16, 22, and 25

Appendix B

Satisfaction with Life Scale

(Diener, Emmons, Larsen, & Griffin, 1985)

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

1. In most ways my life is close to my ideal.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

2. The conditions of my life are excellent.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

3. I am satisfied with my life.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

4. So far I have gotten the important things I want in life.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

5. If I could live my life over, I would change almost nothing.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

Appendix C

Revised Life Orientation Test
(Scheier, Carver, & Bridges, 1994)

Please answer the following questions about yourself by indicating the extent of your agreement using the scale from 0 (Strongly Disagree) to 4 (Strongly Agree).

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
0	1	2	3	4

Be as honest as you can throughout, and try not to let your responses to one question influence your response to other questions. There are no right or wrong answers.

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	0	1	2	3	4
1. In uncertain times, I usually expect the best.	0	1	2	3	4
2. It's easy for me to relax.	0	1	2	3	4
3. If something can go wrong for me, it will.	0	1	2	3	4
4. I'm always optimistic about my future.	0	1	2	3	4
5. I enjoy my friend a lot.	0	1	2	3	4
6. It's important for me to keep busy.	0	1	2	3	4
7. I hardly ever expect things to go my way.	0	1	2	3	4
8. I don't get upset too easily.	0	1	2	3	4
9. I rarely count on good things happening to me.	0	1	2	3	4
10. Overall, I expect more good things to happen to me than bad.	0	1	2	3	4

Appendix D

The Decision Outcomes Inventory

(Bruine de Bruin, Parker, & Fischhoff, 2007)

The following questions ask whether different events have happened to you in the last 10 years. Please indicate "yes" or "no" for each.

In the last 10 years, have you ever…

1 a __Yes __No Rented a movie
b__Yes __No Returned a movie you rented without having watched it at all

2 a__Yes __No Bought new clothes or shoes
b__Yes __No Bought new clothes or shoes you never wore

3 a__Yes __No Gone shopping for food or groceries
b__Yes __No Threw out food or groceries you had bought, because they went bad

4 a__Yes __No Done your own laundry
b__Yes __No Ruined your clothes because you didn't follow the laundry instructions on the label

5 a__Yes __No Been enrolled in any kind of school
b__Yes __No Been suspended from school for at least one day for any reason

6 a__Yes __No Had any kind of job
b__Yes __No Quit a job after a week

7 a__Yes __No Had a driver's license
b__Yes __No Had your driver's license taken away from you by the police

8 a__Yes __No Driven a car
b__Yes __No Been accused of causing a car accident while driving
c__Yes __No Gotten more than 5 parking tickets
d__Yes __No Gotten more than 5 speeding tickets
e__Yes __No Gotten lost or gone the wrong way for more than 10 minutes while driving
f__Yes __No Locked your keys in the car

9 a__Yes __No Bought any kind of car
b__Yes __No Had to spend at least $500 to fix a car you had owned for less than half a year

10 a__Yes __No Taken a trip by airplane
b__Yes __No Missed a flight

11 a__Yes __No Taken the train or the bus
b__Yes __No Taken the wrong train or bus

12 a__Yes __No Had any form of ID (driver's license, passport, birth certificate)
b__Yes __No Had your ID replaced because you lost it

13 a__Yes __No Lived in a rented apartment or other rental property
b__Yes __No Been kicked out of an apartment or rental property before the lease ran out

14 a__Yes __No Carried a key to your home
b__Yes __No Had the key to your home replaced because you lost it
c__Yes __No Locked yourself out of your home

15 a__Yes __No Been responsible for electricity, cable, gas or water payments
b__Yes __No Had your electricity, cable, gas or water shut off because you didn't pay on time

16 a__Yes __No Been responsible for a mortgage or loan
b__Yes __No Foreclosed a mortgage or loan

17 a__Yes __No Been responsible for rent or mortgage payments
b__Yes __No Paid a rent or mortgage payment at least 2 weeks too late

18 a__Yes __No Used checks
b__Yes __No Had a check bounce

19 a__Yes __No Had a credit card
b__Yes __No Had more than $5000 in credit card debt

20 a__Yes __No Invested in the stock market
b__Yes __No Lost more than $1000 on a stock-market investment

21 a__Yes __No Been to a bar, restaurant, or hotel
b__Yes __No Been kicked out of a bar, restaurant, or hotel by someone who works there

22 a__Yes __No Loaned more than $50 to someone
b__Yes __No Loaned more than $50 to someone and never got it back

23 a__Yes __No Had a romantic relationship that lasted for at least 1 year
b__Yes __No Cheated on your romantic partner of 1 year by having sex with someone else

24 a__Yes __No Been married
b__Yes __No Been divorced

25 a__Yes __No Had sex
b__Yes __No Been diagnosed with an STD
c__Yes __No Had an unplanned pregnancy (or got someone pregnant, unplanned)

26 a__Yes __No Had sex with a condom
b__Yes __No Had a condom break, tear, or slip off

27 a__Yes __No Had an alcoholic drink
b__Yes __No Consumed so much alcohol you vomited
c__Yes __No Received a DUI for drunk driving

28 a__Yes __No Been out in the sun
b__Yes __No Got blisters from sun burn

29 a__Yes __No Been in a jail cell overnight for any reason

30 a__Yes __No Been in a public fight or screaming argument

31 a__Yes __No Declared bankruptcy
32 a__Yes __No Forgotten a birthday of someone close to you and did not realize until the next day or later.
33 a__Yes __No Been diagnosed with type 2 diabetes
34 a__Yes __No Broke a bone because you fell, slipped, or misstepped

Appendix E

Ego Resiliency Scale
(Letzring, Block, & Funder, 2005)

Please answer the following questions about yourself by indicating the extent of your agreement using the scale of 1 (Disagree Very Strongly) to 4 (Agree Very Strongly).

Disagree Very Strongly	Neutral	Agree	Agree Very Strongly
1	2	3	4

Statement	Disagree Very Strongly → Agree Very Strongly			
	1	2	3	4
1. I am generous with my friends.	1	2	3	4
2. I quickly get over and recover from being startled.	1	2	3	4
3. I enjoy dealing with new and usual situations.	1	2	3	4
4. I usually succeed in making a favorable impression on people.	1	2	3	4
5. I enjoy trying new foods I have never tasted before.	1	2	3	4
6. I am regarded as a very energetic person.	1	2	3	4
7. I like to take different paths to familiar places.	1	2	3	4
8. I am more curious than most people.	1	2	3	4
9. Most of the people I meet are likeable.	1	2	3	4
10. I usually think carefully about something before acting.	1	2	3	4
11. I like to do new and different things.	1	2	3	4
12. My daily life is full of things that keep me interested.	1	2	3	4
13. I would be willing to describe myself as a pretty “strong” personality.	1	2	3	4
14. I get over my anger at someone reasonably quickly.	1	2	3	4

Appendix F

Self-Rated Health

(Lawton, Moss, Fucomer, & Kleban, 1982)

1. How would you rate your overall health at the present time?

☐ Excellent ☐ Fair
☐ Good ☐ Poor

2. Is your health now better, about the same, or not as good as it was **3** years ago?

☐ Better ☐ The same ☐ Not as good

3. Do your health problems stand in the way of your doing the things you want to do?

☐ None ☐ A little ☐ A great deal

4. Compared with most other people your age, would you say your health is _____.

☐ Better ☐ The same ☐ Not as good

Appendix G

Group Membership of Balanced Time Perspective: Comparison of Three Different Measures

I compared percentages of group memberships derived from three time-related measures, Time Attitude Scale (Mello & Worrell, 2012), Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999), and Balanced Time Perspective Scale (Webster, 2011). First, I reported group membership results of each measure. Then I compared the group membership results between the three measures using the same sample of 400 life-span adults.

Time Attitude Scale. The current study used an alternative measure, Time Attitude Scale (Mello & Worrell, 2012), to identify individuals with balanced time perspective (N = 400). The measure had 6 subscales, past positive, present positive, future positive, past negative, present negative, and future negative. Guided by the theoretical definition of balanced time perspective proposed by Boniwell and Zimbardo (2012), individuals with balanced time perspective (using Mello and Worrell's Time Attitude Scale) were defined as having high scores on past, present, and future positive subscales, and low scores on past, present, and future negative subscales.

In the current study, a cluster analysis of individuals' scores on the six subscales of Time Attitude Scale (Mello & Worrell, 2012) revealed four time attitude profiles with percentage of group memberships in the parentheses, *balanced* (52%; high past, present, & future positives, low past, present, & future negatives), *negative past* (15%; high past negative and present positive, moderate present negative, present positive and negative, low past positive), *uncertain* (22%; high present and future negatives, moderate past positive and negative, low present and future positives), and *negative* (11%; high past, present, & future negatives, low past, present, and future positives).

Zimbardo Time Perspective Inventory. Researchers have primarily used individuals' scores of five subscales of Zimbardo Time Perspective Inventory (past positive, past negative, present hedonistic, present fatalistic, and future) to identify individuals with balanced time perspective. According to Boniwell and colleagues (2012), balanced time perspective (using Zimbardo Time Perspective Inventory) was defined as having high scores on past positive, and future subscales, moderate scores on present hedonistic, and low scores on past negative and present fatalistic subscales.

Four time attitude profiles were derived from individuals' scores on the five subscales of Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) using a cluster analysis with the sample in the current study (N = 400). The profiles with percentages of group memberships were *balanced* (26.5%; high past positive & future, moderate present hedonistic, low present fatalistic, and past negative), *negative past* (15%; high past negative, moderate future & present fatalistic, low present hedonistic & past positive), *present-oriented* (32.5%; past positive & present hedonistic, moderate present fatalistic, past negative & future) and *negative* (26%; high past negative & present fatalistic, moderate present hedonistic & past positive, low future).

Balanced Time Perspective Scale. This measure of balanced time perspective was proposed by Webster (2011). The measure was composed of two subscales measuring the preferences of thinking about the *past* and about the *future*. Individuals with balanced time perspective (using Balanced Time Perspective Scale) was defined as having above median scores on both past and future subscales.

In the current study, I used median split method to identify individuals' with above and below median scores of past and future subscales, indicating four time attitude profiles. The profiles with percentages of group memberships were time expansive (i.e., balanced; 37%; high past & future), futurists (15%; high future, low past), reminiscers (14%; high past, low future), and time restrictive (34%; low past & future).

Comparison of balanced time perspective group memberships. Of all 400 participants, more participants (52%, $N = 208$) were identified as having balanced time perspective when using Mello and Worrell's (2012) Time Attitude Scale, compared to when using Zimbardo and Boyd's (1999) Zimbardo Time Perspective Inventory (26.5%, $N = 106$), and Webster's (2011) Balanced Time Perspective Scale (37%, $N = 148$)

Among 208 participants who had balanced time perspective using Mello and Worrell's (2012) Time Attitude Scale, 85 (40.9%) of them were in the balanced profile using Zimbardo Time Perspective Inventory, and 121 (58.2%) of them ($N = 208$) were in the balanced profile using Webster's (2011) Balanced Time Perspective Scale.

Notably, 97 (46.6%) of participants ($N = 208$) in the balanced profile derived from Time Attitude Scale (Mello & Worrell, 2012) were in the present-oriented profile using Zimbardo Time Perspective Inventory. When using Zimbardo and Boyd's measure to identify time profiles, more participants were identified as having present-oriented time perspective (32.5%, $N = 130$), compared to as having balanced time perspective (26.5%, $N = 106$).

Summary. The current study identified participants with balanced time perspective comparing three different time-related measures, Time Attitude scale (Mello & Worrell, 2012), Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999), and Balanced Time Perspective Scale (Webster, 2011) in the sample of 400 adults. More members were classified in the balanced profile when using Mello and Worrell's (2012) Time Attitude Scale, compared to the other two measures.