

Balanced Time Perspectives and Mindfulness

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Abstract

The individual construction of psychological time is a fundamental key factor of the individual construction of reality. Individual differences among psychological relations to time are a measurable variable, since philosophers and psychologists succeeded in developing the construct of Time Perspective (TP). The question of which TP is the most health-promoting led to the idea of a Balanced Time Perspective (BTP). This study compares the components of the two most important questionnaires measuring BTP, for correlations to Mindfulness and Life Satisfaction. 124 respondents completed the *Zimbardo Time Perspective Inventory* (ZTPI: Zimbardo & Boyd, 1999), the *Balanced Time Perspective Scale* (BTPS: Webster, 2011), the *Five Facet Mindfulness Questionnaire - Short Form* (FFMQ-SF: Bohlmeijer, ten Klooster, Fledderus, Veehof, & Baer, 2011) and the *Satisfaction with Life Scale* (SWLS: Diener, Emmons, Larsen, & Griffin, 1985). Another 33 respondents who recently finished a *Mindfulness-based Stress Reduction* (MBSR) program completed the BTPS, the FFMQ-SF and the SWLS. The scores of the MBSR-condition were compared to a control group. The MBSR- condition did not score significantly higher on the BTPS than the control group. Comparing the ZTPI and the BTPS it turned out that when using the *deviation of a balanced time perspective coefficient* (DBTP) to calculate BTP, a new combination of subscales taken from the ZTPI and the BTPS (replacing the Zimbardo future scale with the Webster future scale) led to higher correlations of BTP with mindfulness and life satisfaction. Correlations between TPs and facets of mindfulness are reported.

1. Introduction

Since the interpretation of a broad range of phenomena related to physical time turned out to be extensively dependent on the conditions of their circumstances, time is announced to be 'relative' (Einstein, 1905). But even before the relativity of time was addressed by physics, its subjective character was emphasized from a psychological viewpoint (James, 1890). According to Kant (1781), time serves from the beginning of one's life as a basic mental category, structuring the phenomena of the world. Its presence is 'a priori', which means it is not a result of experience but the other way around: Our ability to gain experience presupposes our ability to recognize or postulate time. However, experience, in turn, by the means of nurture, enculturation, and personal life background, also influences and shapes our attitudes towards time.

This work, considering the seemingly infinite complexity of the topic, will neither engage in philosophical discussions about the nature of time, nor will it address the cognitive, emotional, social or cultural mechanisms involved in genesis and evolvment of people's different relations to time. Instead, this study entirely focuses on the most recent research done on the constructs of mindfulness, time perspective (TP) and some closely related constructs with the construct of a balanced time perspective (BTP) being the focal point of attention. Lewin (1951) defined TP as 'the totality of the individual's views of psychological future and psychological past existing at a given time.' (p.75, cited in Zimbardo & Boyd, 1999). This definition reflects the continuum-like, intertwined relationship, past, future and present engage in.

Again considering the complexity of (psychological) time, it is not astonishing that a huge corpus of work focusing on one particular aspect of time, concerning either the past, the present or the future, is contrastingly accompanied by very few holistic approaches, applying a multidimensional view on psychological time. There is much work done on the implications of future orientation (e.g., Dickey, 1975; Trommsdorff, Lamm, & Schmidt, 1978; Szpunar, 2010) as well as on the psychological implications of how people reflect on and deal with their past (e.g., Webster & Cappeliez, 1993; Webster, 1998; Cappeliez, O'Rourke, & Chaudhury, 2005; Bryant, Smart, & King, 2005; Webster, Bohlmeijer, & Westerhof, 2010). Nevertheless, holistic approaches, aiming at addressing the three time zones simultaneously are rare. One promising multidimensional approach of operationalizing people's personal relation to time and aiming at pointing out individual differences, has been accomplished by Zimbardo and Boyd (1999). Zimbardo and Boyd developed the *Zimbardo Time Perspective Inventory* (ZTPI), an instrument which allows characterizing and categorizing people on basis of their relation to time, described as TP.

TP, according to Zimbardo and Boyd (1999), measured with the ZTPI, is seen as a 'relatively stable mental framework' that is constituted by the five sub-constructs past negative (PN), past

positive (PP), present hedonistic (PH), present fatalistic (PF) and future (F). PN represents an aversive, pessimistic view on one's past that interprets it as being filled with many unpleasant experiences. PP describes an often sentimental and nostalgic, warm, affectionate, friendly view of the past (Boniwell & Zimbardo, 2004). PH represents an attitude that strives after immediate satisfaction of desires, without caring too much for future consequences. PF is characterized by the belief that one's life is controlled by spiritual or governmental forces (Boniwell & Zimbardo, 2004) and that the future is determined by the means of fate and consequently unaffected by individual actions taken in the present. In contrast to PH, F represents an attitude that aims at accomplishing long-term goals at the expense of enjoying the present too excessively. People differ in their TP, according to their individual composition of the five time frames, with some being more influential on the subject's life than the others. TP is announced to function as a mediator between personality traits and life satisfaction (Zhang, Ryan, & Howell, 2011). Numerous psychological, as well as behavioral implications have been associated to the five time frames.

1.1 The 5 Time Frames of the ZTPI

A hedonistic approach to the present has its advantages and disadvantages. On the one hand a strong present hedonistic (PH) time frame is associated with novelty seeking and creativity (Zimbardo & Boyd, 1999) and maybe also with social connectivity (Zimbardo & Boyd, 2008). On the other hand a hedonistic present approach is associated to risky driving (Zimbardo, Keough, & Boyd, 1997), substance-abuse (e.g. Strathman, Gleicher, Boninger, & Edwards, 1994), chronic homelessness (Epel, Bandura, & Zimbardo, 1999) and a tendency to engage in unsafe sex practices (Rothspan & Read, 1996). Immediate satisfaction of desire without concerning future consequences might be typical for a PH bias.

In contrast to PH, the future (F) time frame correlates with conscientiousness (Zimbardo & Boyd, 1999; Zhang et al., 2011), ego control, hours of studying per week (Zimbardo & Boyd, 1999) and health-promoting behavior such as participation in a breast cancer screening program (Guarino, De Pascalis, & Di Chiacchio, 1999). A possible drawback of a strong future orientation is minimizing the need for social connections and underestimating the worth of 'occasional self indulgence' (Boniwell & Zimbardo, 2004: 169). The F time frame might also be correlated to academic achievement (Zimbardo & Boyd, 1999). It can be assumed that this future scale measures a conscientious, dutiful attitude toward the future, since individuals scoring high on F are 'suppressing the reality of the present for the imagined reality of an idealized future world' (Boniwell & Zimbardo, 2004: 169).

A negative relation to one's past has a negative impact on (psychological) health. Past negative (PN) positively correlates with neuroticism (Zimbardo & Boyd, 1999; Zhang et al., 2011), trait anxiety, aggression and depression (Zimbardo & Boyd, 1999) and negatively with subjective happiness (Zimbardo & Boyd, 1999; Drake, Duncan, Sutherland, Abernethy, & Henry, 2008; Zhang, Howell, & Stolarski, 2012) and life satisfaction (Zhang et al., 2011; Zhang et al., 2012). Individuals with a high PN score tend to be strongly represented in drug rehabilitation programs (Klingeman, 2001), accompanied by people scoring high on PH.

A positive relation to one's past positively correlates with emotional intelligence (Stolarski, Bitner, & Zimbardo, 2011), life satisfaction (Zhang et al., 2011; Zhang et al., 2012), and subjective happiness (Drake et al., 2008; Zhang et al., 2012).

The present fatalistic (PF) time frame correlates positively with depression, anxiety and aggression and negatively with consideration of future consequences (Zimbardo & Boyd, 1999).

1.2 The Present in the ZTPI and Mindfulness

The Zimbardo Time Perspective Inventory (ZTPI) lacks a present related subscale representing characteristics of mindfulness, which is a mental state characterized by increased awareness of inner and outer processes, accompanied by a nonjudgmental and non-reacting way of responding to stimuli (Kabat-Zinn, 1982). Only hedonistic and fatalistic manners of relating to the present are addressed through the ZTPI. This, considering the numerous health supporting implications of mindfulness (Grossmann, Niemann, Schmidt, & Walach, 2004), is a shortcoming, when aiming at defining an optimal health promoting architecture of time perspective (TP). Mindfulness correlates with life satisfaction and self-esteem (e.g. Brown & Ryan, 2003). Furthermore, mindfulness is effective in the treatment of depression, anxiety, psychosis, borderline personality disorder and suicidal behavior (Ivanovski & Mahli, 2007).

Baer, Smith, Hopkins, Krietemeyer and Toney (2006) developed the five-faceted construct of mindfulness that contains the facets of non-judging of inner experience, non-reactivity to inner experience, observing, describing and acting with awareness. These skills indicate a high state of consciousness that is characterized by an increased awareness of inner and outer processes, while remaining self-determined and not being driven by positive or negative sensations.

Since firstly, mindfulness is often referred to as the 'feeling of being fully present and alive in the moment' (e.g., Bishop, Lau, Shapiro, Carlson, & Anderson, 2004) and secondly it has been linked to many health related aspects of life, we argue that mindfulness is the most appropriate variable for measuring (the healthiness of) the individual relation to the present, and therefore it should be more strongly represented in the measurement of TP.

1.3 Negative Past Perspective and the Relevance of Mindfulness

There is some evidence that the brain has a build-in predisposition to develop a 'negativity-bias' which supports the emergence of automatically activated schemes supporting avoidance-based behavior (Vaish, Grossman, & Woodward, 2008). Negative experiences influence the implicit affective memory, neurologically manifested through a stable, enduring association between the stimulus and the negative experienced emotional reaction to it, made by the amygdala (Ledoux, 1998). Fear triggering faces are more likely to be recognized than happy or neutral faces due to them being processed very rapidly by the amygdala (Yang, Zald, & Blake, 2007). The amygdala still gets activated, accompanied by skin conductance responses, when the fear triggering faces are represented subliminal (Williams, Liddell, Kemp, Bryant, Maeres et al., 2006). Facing these findings, it can be assumed that some (subconscious) mechanisms the brain works with, can abet a development, which makes a negatively biased past perspective more likely to occur, while positive experiences have a weaker impact on implicit memory structures. In a marriage for example, though a sociological not a neurological context, five positive interactions are assumed to be required to compensate for one negative interaction (Gottman, 1993; Gottman, 1994).

Mindfulness functions as an important variable in overcoming this build-in tendency to develop a negatively biased past perspective, since mindfulness is a state of awareness which gives 'freedom of reflexive conditioning and delusion' (Shapiro & Carlson, 2009). The construct of mindfulness contains five facets: observing, describing, acting with awareness, non-judging of inner experience and non-reactivity to inner experience (Baer et al., 2008).

Applying these skills successfully, one can reduce the power of the first automatically generated negative emotional reaction to a stimulus by being able to observe it, describe it, not judge it and not react to it. (Non-) reacting to a (negative) stimulus in this manner, relativizes its relevance. Other more positive possible interpretations of and reactions to the stimulus can come to consciousness and one can intentionally shift the focus onto as more positive experienced aspects.

In other words: prevalent negativity supporting patterns of automatic cognitions can become conscious, and be counteracted through an increase in mindfulness. Albeit, the causal direction of the relatedness, if existing, remains unclear, mindfulness correlates significantly with a negative past perspective (Drake et al., 2008).

1.4 The Present, Mindfulness and a Balanced Time Perspective

The present is the central point of lifetime, or as Schopenhauer puts it: 'The present alone is true and actual; it is the only time which possesses full reality, and our existence lies in it exclusively' (1890: 19). One can mentally be in one's past or project oneself into an anticipated, desired or feared

future. However, the present is also always present at the same time (see also Webster, 2011). This omnipresence of the present time zone somehow makes it the most relevant factor when describing someone's time perspective (TP). However, the relation to the present is in turn affected by the current kind of thinking and feeling about the past and the future, since these cognitions and emotions are 'framing' the present.

Zimbardo introduces the concept of a *balanced time perspective* (BTP) and states that 'in an optimally balanced time perspective, the past, present and future components blend and flexibly engage, depending on a situation's demands and our needs and values' (Zimbardo, 2002: 62). An essential key factor for succeeding in developing a BTP is thus the skill to flexibly switch one's focus from one time perspective to another according to the demands of the moment. It is predicted that mindfulness leads to improvement of sustained attention and switching flexibility of attention (Bishop et al., 2004; De Kleine, Van de Lubbe, Blom, Schreurs, & Bohlmeijer, in prep.). The ability to switch mindsets, such as being dominated by a certain timeframe, seems to rely mandatorily on the sub activities, summed up by the five facets of mindfulness: observing, describing, acting with awareness, non-judging of inner experience and non-reactivity to inner experience, since these abilities provide the "space' between one's perception and response' (Bishop et al., 2004: 9), and the information about the situation, necessary for the next step, the 'reflectively (as opposed to reflexively)' (Bishop et al., 2004: 9) evaluation of the demands of the moment.

Hence, we conclude that an instrument measuring BTP should simultaneously address the construct of mindfulness and the relations to past and future.

1.5 Measuring Balanced Time Perspective

A balanced time perspective (BTP) is announced to be the most salubrious time perspective (TP) (Boniwell & Zimbardo, 2004). According to Boniwell and Zimbardo (2004), a person with a BTP is characterized by being medium present hedonistic, medium future-focused, low present fatalistic, as well as high at the past positive and low at the past negative time frame. Operationalizing high, medium and low scores, Drake et al. (2008) categorized respondents' scores as close as possible to the 33rd and 66th percentiles, providing the three categories of low, medium and high scores. Subsequently, by applying a cut-off approach, respondents were labeled as having a BTP or not having a BTP. Drake et al. (2008) found that people with a BTP scored higher on subjective happiness ($t(12) = 5.04, p = .001$) and mindfulness ($t(12) = 2.63, p = .011$), compared to respondents who could not be labeled as having a BTP. A problem with this approach is that only very few people achieve a BTP (Drake et al., 2008; Zhang et al., 2012). Boniwell, Osin, Linley and Ivanchenko (2010) suggested a hierarchical cluster analysis approach for distinguishing people

holding a BTP from people who do not. A main problem with this approach is that comparing samples is difficult, if possible at all (Zhang et al., 2012). Stolarski, Bitner and Zimbardo (2011) suggested the use of a *Deviation Balanced Time Perspective coefficient* (DBTP), which measures the distance between an individual's TP and the by Zimbardo and Boyd (2008) suggested ideal scores on the five subscales. A theoretically ideal score on the *Zimbardo time perspective inventory* (ZTPI) that would perfectly match the suggested ideal scores would result in a DBTP score of 0. Accordingly, instead of categorizing respondents as balanced or unbalanced, the DBTP score indicates the 'unbalancedness' of a respondent. The DBTP is announced to have a higher predictive validity than the other approaches, it is easy to calculate, and it leads to better comparability between samples (Zhang et al., 2012). Applying this approach, Stolarski et al. (2011) found BTP to be associated with emotional intelligence.

Webster (2011) argued that the concept of BTP is younger than the ZTPI and consequently the ZTPI was not designed to measure it. He introduced the *Balanced Time Perspective Scale* (BTPS) and had some good arguments for some advantages the BTPS has over the ZTPI, concerning social desirability biased answer patterns, scale reliability and affect-relatedness of the items.

He also argued that the present should play a merely implicit role: The BTPS contains 28 items, with half of them reflecting on the past and the others on the future. However, every item of the BTPS has an implicit affective present component. Thus the present on the one hand is the most strongly addressed time zone in the BTPS, since it plays an implicit role in every item. On the other hand it is the least addressed time zone because it lacks an own scale for which reason it is not measured. Webster suggested operationalizing BTP by having high scores on the two subscales of the BTPS. He distinguished 4 categories of respondents: *Reminiscers*, which scores are above the median on the past scale and below the median on the future scale, *Futurists*, scoring above the median on the future scale and below the median on the past scale, *time restrictives*, scoring below the median on both scales, and *time expansives*, scoring above the median on both subscales. The *time expansive* category is the BTP category. When Webster compared the BTPS with the ZTPI (2011) he did not take the present scales of the ZTPI into account. By leaving out the present scales, the BTPS and the ZTPI were not tested on their differences in 'labeling' respondents as balanced or not balanced.

Webster's BTP, defined as a 'frequent and equal tendency to think about both one's past and future in positive ways' (2011), can be described as having a positive relation to one's past and future, in the present. Though the BTPS has no present scale, due to the present component of every item, we expect both subscales to correlate positively with mindfulness.

2. Purpose

The entire field of *time psychology* is very young. The concept of a balanced time perspective (BTP) is difficult to define, and though it is still in the process of being defined, there are as of now at least two competing questionnaires to measure it. Obviously time perspective (TP) is related to individual behavior, cognitions and emotions, and hence, severely affecting quality of life. However, many aspects concerning the structure of the concept of a BTP, and the possibilities regarding the purposeful redesigning of individuals' TPs, aiming at improving quality of life, remain widely unexplored.

Mindfulness is a strong correlate of many health-related aspects of life and simultaneously it describes a healthy relation to the present. Therefore, combining mindfulness with the field of TP seems overdue. The subscales of the Balanced Time Perspective Scale (BTPS) and the Zimbardo time perspective inventory (ZTPI) will be compared with regard to their correlations to life satisfaction and mindfulness. We expect that Webster past and Webster future will correlate positively with life satisfaction (Webster, 2011) and due to the present relatedness of the items we further expect both scales to be positively correlated with mindfulness. We expect the same for the Zimbardo past positive (PP) time frame. We expect past negative (PN) and present fatalistic (PF) to be negatively correlated with life satisfaction (Zhang et al., 2011; Zhang et al., 2012) and mindfulness (Drake et al., 2008). The Zimbardo future scale (F) measures coping styles and time management rather than an affectionate relation to one's future, as the Webster future scale does (Webster, 2011). We therefore assume the Zimbardo future scale to be weaker, if at all, correlated with life satisfaction and mindfulness than the Webster future scale. We expect present hedonistic (PH) to be positively correlated with life satisfaction. Drake et al. (2008) found PH to be slightly negatively correlated with mindfulness. However, because the PH as well as the mindfulness scale measure present related attitudes, a positive correlation is possible as well. Furthermore, we expect positive correlations between the PP and the Webster past scale, as well as between the F and the Webster future scale (Webster, 2011). We assume BTP to correlate positively with life satisfaction and mindfulness. The concept of BTP remains unclear regarding its definition, as well as its measurement. When, due to their health promoting character, mindfulness and life satisfaction are considered mandatory implications of a BTP, they can function as a criterion for balancedness.

Since the labeling of people as balanced or unbalanced remains quite arbitrary, the present study aims at addressing degrees of balancedness, instead of comparing two categories of balanced and unbalanced people. Consequently, the DBTP technique will be used for measuring BTP with the ZTPI.

We assume mindfulness to be crucial for developing and maintaining a BTP. Albeit, the strength of the connection and the possibly existing causal direction between mindfulness and (balanced) time perspective remains widely unknown, we assume that an increase in mindfulness in one population will possibly be accompanied by improved relations to the past and the future. Therefore Webster past and Webster future scores of students who completed a *Mindfulness based Stress Reduction* (MBSR) training recently, will be compared to Webster past and Webster future scores of a control group.

2.1 Research questions

- (1) Are higher mindfulness scores, generated by a *Mindfulness based Stress Reduction* training (MBSR), associated to higher scores on the past and/or the future scale of the *Balanced Time Perspective Scale* (BTPS) compared to a control group?
- (2) How are the relations between the subscales of the ZTPI and the BTPS to life satisfaction and mindfulness (can previous findings be confirmed)?
- (3) Is there an alternative composition of the 7 time frames (PP, PN, PH, PF, F, Webster Past and Webster Future) which leads to stronger correlations of the *deviant of a balanced time perspective* (DBTP) with life satisfaction and mindfulness?

3. Method

3.1 Participants

Sixty-seven women and 57 men ranging in age from 19 to 43 ($M = 24.3$, $SD = 3.43$) completed an online version of the *Zimbardo Time Perspective Inventory* (ZTPI), the *Balanced Time Perspective Scale* (BTPS), the *Five-facet Mindfulness Questionnaire* (FFMQ-SF) and the *Satisfaction with Life Scale* (SWLS). Fifty-six respondents were native Dutch speakers and 65 were native German speakers. The participants were students from the *University of Twente* ($n = 100$), the art academy *AKI* ($n = 17$) and the university college *Saxion* ($n = 7$), which all are located in the Dutch city of Enschede. No reward was granted for completing the online questionnaire. Participants were recruited through opportunity and snowball sampling. Additionally 33 psychology students, 29 women and 5 men, ranging in age between 20 and 34 ($M = 23.74$, $SD = 3.27$), who recently finished an eight-week *Mindfulness based Stress Reduction* (MBSR) training program, and who had no prior experience with meditation, completed a pen and paper version of the BTPS, the FFMQ-SF and the SWLS. To compare the scores of the students who participated in the MBSR program, a control

group was taken from the main sample. The control group (n=34) was constituted by respondents who are studying psychology for at least one and a half years, had no or very little prior experience with meditation and would or maybe would participate in a meditation workshop which is given for free. Participants in the treatment group were also given nominal study credits, which makes the inclusion of 15 participants to the control group who answered with 'maybe' more justifiable.

3.2 Measures

Zimbardo Time Perspective Inventory. The ZTPI (Zimbardo & Boyd, 1999) is a 56-item scale which is constituted by the five subscales of past positive (PP), past negative (PN), present hedonistic (PH), present fatalistic (PF) and future (F). Individuals rate on a five-point Likert scale how strongly each statement applies to them (1= very untrue of me, 5 = very true of me). Items are '*It gives me pleasure to think about my past*' (PP), '*Painful past experiences keep being replayed in my mind*' (PN), '*It is more important for me to enjoy life's journey than to focus only on the destination*' (PH), '*My life path is controlled by forces I cannot influence*' (PF) and '*I believe that a person's day should be planned ahead each morning*' (F). The ZTPI was the product of a continued development over years and it has shown reliability and validity (Zimbardo & Boyd, 1999). Cronbach's alpha in this study was .85 for PP, .79 for PN, .82 for PH, .67 for PF, and .76 for F (n=124).

Balanced Time Perspective Scale. The BTPS (Webster, 2011) consists of 28 items, 14 addressing the past and 14 addressing the future. It has been suggested as an alternative instrument for measuring a balanced time perspective (BTP). The respondents rate on a six-point scale how true each statement is to them. Every item connects the addressed time zone (past or future) to the present. Examples of items are '*Reminiscing about my past gives me a sense of purpose in life*', '*Remembering happier times from my past helps energize me in the present*', concerning the past and '*I enjoy thinking about where I'll be a few years from now*' and '*Achieving future dreams is something that motivates me now*' concerning the future. Respondents can be categorized into 4 categories (*Reminiscers*, above the median on the past scale and below the median on the future scale, *Futurists*, above the median on the future scale and below the median on the past scale, *time restrictives*, below the median on both scales, and *time expansives*, the BTP category, above the median on both subscales.) The BTPS showed favorable psychometric qualities (Webster, 2011). Cronbach's alpha in this study was .91 for the past scale and .92 for the future scale (n=124).

Five Facet Mindfulness Questionnaire – Short form. The FFMQ-SF (Bohlmeijer, ten Klooster, Fledderus, Veehof, & Baer, 2011) is the short form of the FFMQ (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). It measures five facets of mindfulness: observing, describing, acting with awareness, non-judging of inner experience and non-reactivity to inner experience. Examples of items are *‘I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow’* (observe), *‘I’m good at finding words to describe my feelings’* (describe), *‘I find myself doing things without paying attention’* (reverse-coded) (acting with awareness), *‘I disapprove of myself when I have illogical ideas’* (reverse-coded) (non-judging of inner experience), *‘When I have distressing thoughts or images, I just notice them and let them go’* (non-reactivity to inner experience). The FFMQ is rated on a 5-point scale with answer options ranging from ‘1 = never or very rarely true’ to ‘5 = very often or always true’. Construct validity and internal consistency of the FFMQ are convincing (Baer et al., 2006) and the five-factor structure was repeatedly confirmed (e.g., Baer, Smith, Lykins, Button, Krietemeyer, & Sauer, 2008; Fernandez, Wood, Stein, & Rossi, 2010). Recently, the excellent psychometric properties could also be shown for the Dutch version of the FFMQ, the FFMQ-NL (Bruin, Topper, Muskens, Bögels, & Kamphuis, 2012). The FFMQ-SF shows the same five-factor structure as the whole FFMQ, slightly lower alpha coefficients for the subscales describing, non-judging and acting with awareness and slightly higher alpha coefficients for observing and non-reactivity to inner experience (Bohlmeijer et al., 2011). Furthermore, Bohlmeijer et al. (2011) reported that the FFMQ-SF showed intercorrelations between subscales and correlations with the constructs of acceptance, openness, neuroticism, anxiety, depression and positive mental health that were almost identical to those of the whole FFMQ. Cronbach’s alpha in this study was .80 for the overall scale, .83 for the describe subscale, .68 for the non-reactivity subscale, .82 for the non-judging subscale, .79 for the observe subscale and .80 for the acting with awareness subscale (n=124).

Satisfaction with Life Scale. The SWLS (Diener, Emmons, Larsen, & Griffin, 1985) is an instrument for the overall assessment of life satisfaction. It contains 5 items and in this study it was rated on a 5-point scale. Examples of items are *‘In most ways my life is close to my ideal’* and *‘I am satisfied with my life’*. The SWLS is widely used and its reliability and validity were often confirmed (e.g., Pavot, Diener, Colvin, & Sandvik, 1991; Pavot & Diener, 1993; Neto, 1993; Shevlin, Brundsen, & Miles, 1998). Cronbach’s alpha in this study was .84 (n=124).

All instruments were presented in Dutch (see appendix for the Dutch version of the ZTPI used in this study). Besides for information about age, gender, religion, native language and university,

participants were asked the following questions: ‘*How much experience do you have with meditation?*’ (7 possible answers ranging from ‘1 = *no experience at all*’ to ‘7 = *I meditate (almost) every day*’) and ‘*Would you be interested in participating in a professional meditation workshop if it would be offered for free?*’ (possible answers were ‘yes’, ‘no’ and ‘maybe’). Participants were informed that the whole online questionnaire (N=123) would take about 15 to 25 minutes to complete.

4. Data Analysis

Independent t-tests were conducted to compare the global categories male/female and Dutch/German.

- (1) Are higher mindfulness scores, generated by a *Mindfulness based Stress Reduction* training (MBSR), associated to higher scores on the past and/or the future scale of the *Balanced Time Perspective Scale* (BTPS) compared to a control group?

An ANOVA was carried out to test for differences between the 3 conditions (MBSR group, control group and main sample) regarding TP, life satisfaction and mindfulness scores. To compare BTPS, mindfulness and life satisfaction scores between the MBSR condition and the control group, an independent samples t-test was conducted. A chi-square test of independence was done to see the distributions of Webster category membership among conditions.

- (2) How are the relations between the subscales of the ZTPI and the BTPS to life satisfaction and mindfulness (can previous findings be confirmed)?

Pearson correlations were used to calculate correlations between TP subscales, life satisfaction, mindfulness, mindfulness subscales and DBTP’s. ANOVAs were used for examining the effect of Webster category membership on life satisfaction, mindfulness and DBTP. Regression analysis was utilized to predict life satisfaction, mindfulness and mindfulness subscales with the 7 time frames (PN, PP, PH, PF, F, Webster Past and Webster Future). An independent samples t-test was carried out to compare time expansives (balanced) with reminiscers, futurists and time restrictives (unbalanced), with respect to their scores on life satisfaction, mindfulness, DBTP and time frames.

- (3) Is there an alternative composition of the 7 time frames (PP, PN, PH, PF, F, Webster Past and Webster Future) which leads to stronger correlations of the *deviant of a balanced time perspective* (DBTP) with life satisfaction and mindfulness?

The DBTP, indicating the distance to a balanced time perspective, is calculated with the following formula:

$$DBTP = \frac{1}{\sqrt{(oPN - ePN)^2 + (oPP - ePP)^2 + (oPF - ePF)^2 + (oPH - ePH)^2 + (oF - eF)^2}}$$

According to Zimbardo and Boyd (2008), Stolarski et al. (2011) and Zhang et al. (2012) defined optimal scores as 1.95 (PN), 4.6 (PP), 1.5 (PF), 3.9 (PH) and 4 (F). The empirical scores are subtracted from the ideal scores. To replace F (Zimbardo Future) with WF (Webster Future), the following formula was used:

$$DBTPWF = \frac{1}{\sqrt{(oPN - ePN)^2 + (oPP - ePP)^2 + (oPF - ePF)^2 + (oPH - ePH)^2 + (5 - WF/14 - 1/6 * (WF/14))^2}}$$

The Webster future scale (WF) contains 14 items. To calculate the mean score, the total score was divided by 14. One sixth was subtracted from the WF deviant to correct for the difference in answer options between the BTPS, which is a 6-point scale, and the ZTPI, which is a 5-point scale. Without this correction the Webster future scale would have been more strongly represented in the DBTPWF than the 4 other time frames (past negative, past positive, present fatalistic and present hedonistic). The optimal mean score for the WF scale was set to 5, which is the highest possible mean score after correction for the difference in answer options between the BTPS and the ZTPI.

5. Results

5.1 Descriptive findings

An independent samples t-test was conducted to examine differences between men and women. Women scored higher on past positive (PP), $t(122) = 3.798, p < .001$, as well as on future (F), $t(122) = 3.452, p = .001$, and Webster past, $t(122) = 2.047, p = .043$. Women also had a significantly lower DBTP, $t(122) = -3.192, p = .002$. An independent samples t-test was carried out to compare native Dutch speakers with native German speakers. Native Dutch speakers scored significantly lower on past negative (PN), $t(119) = -2.917, p = .004$, as well as higher on Webster future $t(119) = 2.482, p$

= .014, and higher on non-reactivity to inner experience, $t(119) = 2.225, p = .028$, compared to native German speakers. There were no other significant differences between these categories.

5.2 (1) Are higher mindfulness scores, generated by a *Mindfulness based Stress Reduction* training (MBSR), associated to higher scores on the past and/or the future scale of the *Balanced Time Perspective Scale* (BTPS) compared to a control group?

5.2.1 TP and Mindfulness Differences among Conditions

There were no significant differences between conditions regarding TP and life satisfaction. Table 1 gives the means and standard deviations of time frame, life satisfaction and mindfulness scores for the 3 conditions. Only for mindfulness the main effect of condition was significant, $F(2, 154) = 5.591, p = .005$. Post hoc tests (Bonferroni) indicated that the MBSR condition ($M = 86.55, SD = 9.06$) scored significantly higher on the FFMQ-SF than the control group ($M = 78.65, SD = 9.64, p = .003$). However, the MBSR condition did not score significantly higher on mindfulness than the main sample ($M = 82.06, SD = 9.95$). This might be due to the lower mindfulness scores of the university students ($M = 79.86, SD = 9.43$), compared to those of the university college students ($M = 84, 86, SD = 5.87, ns$) and the art academy students ($M = 87.00, SD = 12.01, p = .017$), since university college and art academy students were only involved in the main sample.

Table 1

Means and Standard Deviations of Time Frames, Life Satisfaction, Mindfulness and DBTP Scores for the 3 Conditions

	Group	M	LS	PP	PN	PH	PF	F	WP	WF	DBTP
Mean	1	86.6	19.2						55.7	63.9	
	2	78.7	18.1	3.6	3.0	3.5	2.6	3.4	56	60.2	2.3
	3	82.1	18.2	3.6	2.8	3.6	2.7	3.4	54.8	63.6	2.2
SD	1	9.1	3.4						7.71	9.3	
	2	9.6	3.7	0.7	0.7	0.5	0.6	0.4	10.9	10.6	0.7
	3	10.0	3.9	0.7	0.7	0.6	0.6	0.6	12.9	11.6	0.7

NOTE: Group 1 = MBSR-group (n=33); Group 2 = control group (n=34); Group 3 = main sample without control group (n=90).

5.2.2 MBSR and the BTPS

There were no significant differences between the BTPS scores of the students who participated at the MBSR program (n=33) and the control group (n=34). An independent-samples t-test was conducted to compare Webster past (WP), Webster future (WF), life satisfaction and mindfulness scores between the treatment- and the non-treatment group. Neither for WP, $t(59.601) = -.119, p = .906$, nor for WF, $t(65) = 1.541, p = .128$, there was a significant difference between conditions. The difference for life satisfaction, $t(65) = 1.236, p = .221$, was not significant either. The only significant differences between the groups were found for mindfulness, $t(65) = 3.453, p < .001$, the observe-subscale, $t(65) = 2.026, p = .002$, the describe-subscale, $t(54.267) = 2.226, p = .001$, the non-judging-subscale, $t(65) = 3.34, p < .001$, and the non-reacting-subscale, $t(65) = 2.291, p = .001$. The difference between groups for the acting-with-awareness-subscale was not significant, $t(54.858) = 0.666, p = .254$. Thus, higher mindfulness scores were not associated to higher scores on the past or the future scale of the BTPS. A chi-square test of independence was performed to examine the relation between conditions and Webster categories. There were no significant relations between these categories, $\chi^2(6, N=157) = 10.155, p = .118$. Table 2 gives the distribution of Webster category membership over conditions.

Table 2
Distribution of Webster Category Membership over Conditions

	Reminiscers	Futurists	Time-Expansive	Time-Restrictive
MBSR	6 (18,2%)	6 (18,2%)	12 (36,4%)	9 (27,3%)
Control	11 (32,4%)	3 (8,8%)	5 (14,7%)	15 (44,1%)
Main	13 (14,4%)	13 (14,4%)	31 (34,4%)	33 (36,7%)

NOTE: N=157.

5.3 (2) How are the relations between the subscales of the ZTPI and the BTPS to life satisfaction and mindfulness (can previous findings be confirmed)?

5.3.1 Relations between the Time Frames of Zimbardo and Webster

As expected the highest correlation between the Webster past scale and the ZTPI, was its correlation to the past positive (PP) subscale ($r = .491, p < .001$). As can be seen in Table 3, the highest correlation between the Webster future scale with the ZTPI, was its correlation with the future (F) scale ($r = .303, p < .01$). However, the Webster past scale correlated slightly stronger to F than the Webster future scale.

Table 3

Internal Consistency and Correlations for Life Satisfaction, Mindfulness and Time Frames

	α	LS	M	PP	PN	PH	PF	F	WP
LS	.84	-							
M	.80	.45***	-						
PP	.85	.36***	.14	-					
PN	.79	-.45***	-.49***	-.32***	-				
PH	.82	.49***	.31***	.15	-.15	-			
PF	.67	-.06	-.21*	.18*	.23*	.18*	-		
F	.76	-.10	-.14	.27**	.20*	-.37***	-.32***	-	
WP	.91	.31**	.22*	.49***	-.02	.07	-.02	.33***	-
WF	.92	.35***	.36***	.26**	-.11	.18*	-.23*	.30**	.59***

NOTE: * $p < .05$. ** $p < .01$. *** $p < .001$; LS = Life Satisfaction; M = Mindfulness. The internal consistency was questionable for PF, acceptable for F and PN, good for mindfulness, PH, life satisfaction and PP, and excellent for Webster past (WP) and Webster future (WF) ($n=124$).

5.3.2 Relations between Webster Categories and Zimbardo Time Frames

Table 4 gives means and standard deviations for time frames, life satisfaction, mindfulness and DBTP scores in the 4 Webster categories. An ANOVA indicated a significant effect of Webster category membership for past positive (PP), $F(3, 120) = 8.7, p < .001$; future (F), $F(3, 120) = 4.736, p = .004$; and the DBTP, $F(3, 120) = 6.495, p < .001$. Post hoc tests (Bonferroni) demonstrated that the time expansive category ($M = 3.87, SD = 0.67$) scored significantly higher on PP than the time restrictive category ($M = 3.29, SD = 0.75, p = .001$). The reminiscers category ($M = 4.01, SD = 0.56$) also scored significantly higher on PP than the time restrictive category ($p < .001$). The time expansive ($M = 3.50, SD = 0.50, p = .012$) and the futurists category ($M = 3.54, SD = 0.70, p = .05$) scored significantly higher on the F scale than the time restrictives ($M = 3.15, SD = 0.50$). Reminiscers ($M = 1.91, SD = 0.52, p = .018$) and time expansives ($M = 2.0, SD = 0.61, p = .003$) had a significant lower DBTP than time restrictives ($M = 2.51, SD = 0.68$).

Table 4

Means and Standard Deviations of Time Frames, Life Satisfaction, Mindfulness and DBTP Scores for Webster Categories

	Group	M	LS	PP	PN	PH	PF	F	WP	WF	DBTP
Mean	1	81.1	18.6	4.0	2.7	3.6	2.7	3.5	62.4	58.8	1.9
	2	83.3	19.2	3.6	2.8	3.5	2.4	3.5	48.4	71.1	2.2
	3	86.6	19.9	3.9	2.8	3.7	2.6	3.5	67.1	73.7	2.0
	4	78.8	16.8	3.3	2.9	3.4	2.7	3.2	44.8	53.5	2.5
SD	1	7.7	3.5	0.6	0.6	0.4	0.5	0.4	5.1	4.7	0.5
	2	9.9	3.8	0.8	0.9	0.6	0.7	0.7	5.3	4.7	0.8
	3	9.7	3.0	0.7	0.5	0.5	0.6	0.5	7.0	5.5	0.6
	4	10.1	3.9	0.6	0.8	0.5	0.5	0.5	9.0	9.3	0.7

NOTE: Group 1 = Reminiscers (n=24); Group 2 = Futurists (n=16); Group 3 = Time Expansives (n=36); Group 4 = Time Restrictives (n=48). (N=124).

5.3.3 The 7 time frames and life satisfaction

Significant correlations between life satisfaction and time frame were found for PP ($r = .385, p < .001$), PN ($r = -.452, p < .001$), PH ($r = .490, p < .001$), Webster Past ($r = .306, p < .01$) and Webster Future ($r = .246, p < .001$). As can be seen in Table 3, future (F) and present fatalistic (PF) had no significant correlations to life satisfaction (F, $r = -.098, ns$; PF, $r = -.061, ns$). All 7 timeframes were tested on their strength to predict life satisfaction. Using the enter method a significant model emerged, $F(7, 116) = 15.105, p < .001$. Adjusted R square = .445. All variables are shown in Table 5.

Table 5

Significant predictors of Life Satisfaction

	B	SE B	Beta
PP	.677	.483	.126
PN	-1.873	.470	-.328***
PH	2.867	.581	.392***
PF	-.220	.535	-.032
F	-.095	.674	-.013
WP	.046	.030	.148
WF	.039	.031	.115

NOTE: *** $p < .001$. PP = Past positive; PN = Past negative; PH = Present hedonistic; PF = Present fatalistic; F = Future; WP = Webster past; WF = Webster future.

5.3.4 Balanced Time Perspective and Life Satisfaction

Both measurements of BTP were related to life satisfaction. Using the ZTPI, the DBTP, measuring the distance to a BTP, correlated significantly with life satisfaction ($r = -.449, p < .001$). Using the BTPS, the main effect of category membership was significant, $F(3, 153) = 7.149, p < .001$. Post hoc tests (Bonferroni) demonstrated that the time expansive category ($M = 19.85, SD = 3.00$) scored significantly higher on the SWLS than the time restrictive category ($M = 16.77, SD = 3.86, p < .001$). Also, the futurists category ($M = 19.23, SD = 3.83$) scored significantly higher than the time restrictive category ($p < .05$). The reminiscers category ($M = 18.57, SD = 3.48$) did not score significantly higher or lower on life satisfaction than another category.

5.3.5 The 7 Time Frames and Mindfulness

As can be seen in Table 3, significant correlations between mindfulness and time frame were found for PN ($r = -.491, p < .001$), PH ($r = .311, p < .001$), PF ($r = -.210, p < .05$), Webster Past ($r = .218, p < .05$) and Webster Future ($r = .364, p < .001$). PP and F were not significantly correlated to mindfulness (PP, $r = .143, ns$; F, $r = -.135, ns$). All 7 timeframes were tested on their strength to predict mindfulness. Using the enter method a significant model emerged, $F(7, 116) = 11.419, p < .001$. Adjusted R square = .372. All variables are shown in Table 6.

Table 6
Significant predictors of Mindfulness

	B	SE B	Beta
PP	-1.808	1.335	-.129
PN	-6.329	1.299	-.426***
PH	3.784	1.606	.199*
PF	-2.198	1.480	-.125
F	-1.883	1.863	-.100
WP	.129	.082	.160
WF	.194	.085	.221*

NOTE: * $p < .05$. *** $p < .001$. PP = Past positive; PN = Past negative; PH = Present hedonistic; PF = Present fatalistic; F = Future; WP = Webster past; WF = Webster future.

5.3.6 Time Perspectives and the 5 Mindfulness Subscales

Correlations between time frames and mindfulness subscales can be seen in Table 7. PN was negatively correlated to 4 of 5 mindfulness subscales. The strongest connection between mindfulness and PN was the correlation between PN and the non-judging-scale ($r = -.609, p < .001$). Accounting for 37 percent of the variance, judging oneself and a negative evaluation of the

past seem to be strongly interconnected activities, though the direction of causality, if existing, is unclear. Though most of the time frames' significant correlations to mindfulness are either only positive (WF, PH, WP) or negative (PF, PN), the F time frame has a more ambiguous relation to mindfulness. It correlates negatively with the non-judging subscale ($r = -.340, p < .001$) and positively with the acting with awareness subscale ($r = .213, p < .05$).

Table 7
Correlations between Mindfulness Subscales and Time Frames

	NJ	O	D	AWA	NR
PP	.02	.12	.16	.13	-.01
PN	-.61***	.00	-.19*	-.29**	-.23*
PH	.23*	.28**	.23**	.01	.15
PF	-.20*	.14	-.19*	-.25**	-.05
F	-.34***	-.04	-.08	.21*	-.09
WP	-.07	.17	.18*	.15	.23*
WF	.11	.20*	.34***	.16	.26**

NOTE: * $p < .05$. ** $p < .01$. *** $p < .001$. NJ = Non-judging of inner experience; O = Observe; D = Describe; AWA = Acting with awareness; NR = Non-reactivity to inner experience. PP = Past positive; PN = Past negative; PH = Present hedonistic; PF = Present fatalistic; F = Future; WP = Webster past; WF = Webster future.

All 7 timeframes were tested on their strength to predict the non-judging facet of mindfulness. Using the enter method a significant model emerged, $F(7, 116) = 14.605, p < .001$. Adjusted R square = .436. All variables are shown in Table 8. Accounting for 44 percent of the variance time perspectives function as a reasonable predictor of how strongly people tend to judge their inner experience. The models for the other facets of mindfulness were weaker and therefore are not reported here.

Table 8

Significant predictors of the Non-Judging Mindfulness Subscale

	B	SE B	Beta
PP	-.713	.515	-.125
PN	-3.287	.501	-.543***
PH	.615	.620	.080
PF	-.994	.571	-.139
F	-1.865	.719	-.244*
WP	-.002	.032	-.006
WF	.038	.033	.108

NOTE: * $p < .05$. *** $p < .001$. PP = Past positive; PN = Past negative; PH = Present hedonistic; PF = Present fatalistic; F = Future; WP = Webster past; WF = Webster future.

5.3.7 Balanced Time Perspective and Mindfulness

Both measurements of BTP were related to mindfulness. Using the ZTPI, the DBTP correlated significantly with mindfulness ($r = -.315, p < .001$). Using the BTPS, the main effect of category membership was significant, $F(3, 153) = 6.032, p = .001$. Post hoc tests (Bonferroni) demonstrated that the time expansive category ($M = 86.60, SD = 9.68$) scored significantly higher on the FFMQ-SF than the time restrictive category ($M = 78.81, SD = 10.13, p < .001$).

5.3.8 Balanced Time Perspective (Webster)

An independent samples t-test was conducted to compare ‘balanced’ participants (time expansives) with ‘unbalanced’ participants (reminiscers, futurists and time restrictives). Significant differences between groups were found for mindfulness, $t(155) = 3.765, p < .001$, life satisfaction, $t(114.46) = 3.675, p < .001$, and PP, $t(122) = 2.388, p = .018$. Furthermore, differences were significant for DBTP, $t(122) = -2.244, p = .027$, and experience with meditation, $t(46.77) = 2.446, p = .018$.

5.4 (3) Is there an alternative composition of the 7 time frames (PP, PN, PH, PF, F, Webster Past and Webster Future) which leads to stronger correlations of the DBTP with life satisfaction and mindfulness?

5.4.1 DBTP

The deviant of a balanced time perspective (DBTP), measuring the distance to a balanced time perspective (BTP), correlated significantly with life satisfaction ($r = -.449, p < .001$) and mindfulness ($r = -.315, p < .001$). The Zimbardo past positive scale (PP) correlated slightly stronger

to life satisfaction than the Webster past scale (WP). Thus if PP would be replaced by WP, the DBTP would slightly weaker correlate to life satisfaction though stronger to mindfulness. However, when the Zimbardo future scale (F) was replaced by the Webster future scale (WF), both correlations became stronger. DBTP using WF instead of F correlated higher with life satisfaction ($r = -.540, p < .001$) and mindfulness ($r = -.455, p < .001$) than the usual DBTP using the F scale. The increase in life satisfaction and mindfulness is not only due to the correlations between these constructs with WF, but also because including WF and excluding F, both increases the impact of PH on the DBTP. The DBTP using WF instead of F (DBTPWF) correlates significantly to PH ($r = -.224, p < .05$), while the usual DBTP using F does not significantly correlate to PH ($r = -.107, p = .237$). This might be due to the negative correlation between F and PH ($r = -.374, p < .001$), which in this sample was even stronger than the correlation between PP and PN ($r = -.317, p < .001$), while the correlation between WF and PH is positive ($r = .182, p < .05$). Hence, when replacing F by WF, the DBTP not only correlates stronger to life satisfaction and mindfulness, additionally, the PH time frame gains more impact on the DBTP. See Table 9 for correlations between the DBTP and the DBTPWF with the seven time frames, mindfulness and life satisfaction. The DBTPWF might be a stronger predictor for life satisfaction and mindfulness than the DBTP. Simultaneously the DBTPWF strengthens the present zone in two ways: by increasing the impact of PH and by increasing the impact of mindfulness through the correlation between mindfulness and WF ($r = .364, p < .001$).

Table 9

Correlations of the DBTPs with Life Satisfaction, Mindfulness and the Time Frames

	M	LS	PP	PN	PH	PF	F	WP	WF
DBTP	-.32***	-.45***	-.74***	.57***	-.11	.52***	-.34***	-.40***	-.32***
DBTPWF	-.46***	-.54***	-.66***	.58***	-.22*	.48***	-.24**	-.51***	-.68***

NOTE: * $p < .05$. ** $p < .01$. *** $p < .001$; M = Mindfulness; LS = Life Satisfaction. DBTP = Deviant of a Balanced Time Perspective (containing PP, PN, PH, PF and F); DBTPWF = altered DBTP (containing PP, PN, PH, PF and WF).

6. Discussion

The field of time perspective addresses individual differences in attitudes toward psychological past, future and present. However, the field of mindfulness which can be described as the psychology of the present is as of now strongly underrepresented in the field of time perspective. The main purpose of the present study was to examine the relations between time perspectives and (facets of) mindfulness and by this bringing these two deeply related fields more closely together.

On theoretical level the main questions were (1) Is the relation between mindfulness and time perspectives so strong that by intervention increased mindfulness is accompanied by improved relations to the past and the future and (2) How are the correlations between time perspectives and facets of mindfulness, which are acting with awareness, observing, describing, non-judging of inner experience and non-reactivity to inner experience. On practical level the main question was (3) Is there, based on the findings for question (2) another possible composition of time perspective scales that could be used when measuring an ideal, healthy or balanced time perspective, aiming at including the concept of mindfulness to a higher degree. The pool of considered time perspective scales was conducted by the subscales of the *Zimbardo Time Perspective Inventory* (ZTPI: Zimbardo & Boyd, 1999) and the *Balanced Time Perspective Scale* (BTPS: Webster, 2011). Furthermore, participants completed the *Five-facet Mindfulness Questionnaire – Short Form* (FFMQ-SF: Bohlmeijer, ten Klooster, Fledderus, Veehof, & Baer, 2011) and the *Satisfaction with Life Scale* (SWLS: Diener, Emmons, Larsen, & Griffin, 1985).

- (1) Are higher mindfulness scores, generated by a *Mindfulness based Stress Reduction* training (MBSR), associated to higher scores on the past and/or the future scales of the *Balanced Time Perspective Scale* (BTPS) compared to a control group?

The students that recently finished a mindfulness training did not report to engage in positive thinking about the past or the future more often than a control group. One possible explanation for this is that mindfulness is not directly linked to positive thinking regarding one's past and future. However, mindfulness is a collection of skills that can take a long time to further develop, improve and master. Further work is necessary to show if, in the long run, steady progress in mindfulness will help people to develop better relations not only to the present, but to the past and the future as well. Since, our existence lies in the present exclusively (Schopenhauer, 1890) and all thinking concerning the past and the future can only be accomplished in the present (Webster, 2011), we still assume that maintaining a mindful attitude helps people to get rid of stressful thoughts that are attached to memories and expectation addressing the past and the future.

- (2) How are the relations between the subscales of the ZTPI and the BTPS to life satisfaction and mindfulness (can previous findings be confirmed)?

Regarding the correlations between time frames and life satisfaction, for the past negative time frame the results of Zhang et al. (2012) could be replicated. Also the correlation between the past

positive (PP) time frame and life satisfaction replicates the findings of Zhang et al. (2012). The findings of Zhang et al. (2012) regarding the correlations between future (F) and life satisfaction, as well as the correlations between present fatalistic (PF) and life satisfaction could not be replicated with the present sample. F and PF were not significantly correlated with mindfulness in the present study. Also the strong correlation between the present hedonistic (PH) time frame and life satisfaction is not consistent with the results of Zhang et al. (2012) who found very weak correlations. Reasons for the differences between these findings may be due to cultural differences between the samples and the relatively small sample size of the present study. Furthermore it is possible that the Dutch version of the ZTPI used in this study, especially the PH subscale, may trigger more positive associations due to differences in connotation structures that are language inherent.

A negative view on one's past is strongly connected to low mindfulness. This finding replicates the results of Drake et al. (2008) and deepens them by adding information about relations between a negative perception of the past and facets of mindfulness. Non-judging of inner experience, which is a facet of mindfulness is the strongest link between mindfulness and a negative evaluation of one's past. Though it is unclear if judging oneself leads to a negative perception of one's past or the other way around, this link represents a connection between a mental activity and the representation of memories. Besides, this finding is an example for the strongly intertwined relationship of two time zones, namely the present and the past. A positive view on one's past measured with the past positive scale of the ZTPI was positively, but not significantly correlated with mindfulness. Drake et al. (2008) found a significant correlation between the ZTPI past positive perspective and mindfulness. That in the present study this correlation was not significant may be due to the smaller sample size compared to Drake et al. (2008). The past scale of the BTPS was significantly correlated to mindfulness. The past scale of the BTPS measures the propensity to think about one's past in positive ways and get positively inspired or motivated by these thoughts in the present, while the past positive scale of the ZTPI measures a general positive evaluation of one's past, that might be accompanied by an attachment to tradition. The past scale of the BTPS might measure the ability to use the past as a source of motivation for positive thinking in the present, while the past positive scale of the ZTPI measures a positive relation to one's past that probably emerges at the expense of an unprepossessed attitude towards an ever fluctuating present. This might be explanatory for the stronger connection between the past scale of the BTPS and mindfulness, compared to the past positive scale of the ZTPI.

The future scale of the ZTPI was not significantly correlated with the overall construct of mindfulness. This result replicates the findings of Drake et al. (2008). However, when not perceived as an entity but divided into its facets, it seems that the overall construct of mindfulness contains aspects that correlate positively with the Zimbardo future scale while others correlate negatively with it. The future scale of the ZTPI measures an attitude toward the future which strives after accomplishing goals, getting work done on time and fulfilling one's responsibilities. It seems that this conscientious kind of relation to one's future is associated to acting with awareness and judging of inner experience. In contrast to the future scale of the ZTPI, the future scale of the BTPS does not significantly correlate with the mindfulness subscales non-judging of inner experience and acting with awareness, but it is associated to the skill of observing one's environment consciously, to non-reactivity to inner experience and to the skill of describing one's thoughts, emotions and other inner processes, even when being in stressful situations. Especially the mindfulness facet describing is associated to positive mental health (Bohlmeijer et al., 2011). According to Bohlmeijer et al. (2011) acting with awareness and non-judging of inner experience have quite similar negative correlations with neuroticism, anxiety and depression and a positive correlation with positive mental health. Thus when compared on their relations to facets of mindfulness, the advantage the future scale of the ZTPI has over the future scale of the BTPS, which is its positive association to acting with awareness can probably not really display its positive implications for mental health, since these are counteracted by a tendency to judge one's inner experience.

A fatalistic attitude (toward the present), which is characterized by a lack of belief in one's own ability to influence the conditions of one's environment and life circumstances, is negatively associated to mindfulness. This finding replicates the results of Drake et al. (2008). It negatively correlated to non-judging of inner experience, describing and acting with awareness. These findings are consistent with the characterization of a fatalistic attitude, since, when all processes a person is involved in, are determined by forces that are exclusively located outside of the individual, inner experiences that are inconsistent with the tide of events are likely to be judged by the individual and might be interpreted as disturbing its functioning. Hence, there is also no need to become skilled in describing these inner processes that are experienced as distracting and hindering. Alike, when all acting of the fatalistic individual is perceived as not leading to noticeable consequences, it seems unnecessary to act with much awareness. Like the past negative scale, the present fatalistic scale has only negative relations to mindfulness and therefore remains an exclusively unhealthy time perspective. However, the correlation with the mindfulness facet observing might be positive.

Though, most of the present results are quite comparable to the findings of Drake et al. (2008), the positive correlation of a hedonistic perspective on the present with mindfulness stands in

contradiction to the results of Drake et al. (2008), who found a negative correlation. Consequently, this correlation remains questionable and might be sample dependent. These contrary results may be due to differences in demographic variables of the participants such as age, life background or nationality. The present study only recruited students, while Drake et al. (2008) recruited participants from a broader range of life background and age (16 to 83). Probably the correlation between the present hedonistic time frame and mindfulness differs, depending on the current age of the measured subject. Cultural differences may also play a role. In the Scottish sample of Drake et al. (2008) the past negative and the present fatalistic time perspective were the strongest, while in the present study, respondents scored higher on past positive, present hedonistic and future than on past negative and present fatalistic. It might also be possible that the Dutch translation used in the present study triggers positive connotations that do not occur in the English version. In the present study the present hedonistic time perspective positively correlated with the mindfulness facets non-judging of inner experience, observing and describing. A strong present hedonistic time perspective is characterized by striving after immediate satisfaction of desires without concerning future consequences. Facing this definition, it is not surprising that the present hedonistic time perspective, in contrast to the future perspective of the ZTPI, positively correlates with non-judging of inner experience. Furthermore it seems plausible that a person trained in enjoying the present has developed some skills in consciously observing it. A person with a hedonistic attitude toward the present, aiming at feeling well in the present moment, might also pay relatively high attention to his or her inner processes, which could be associated to the ability of describing them.

In terms of concurrent validity, as expected, the highest correlation of the past scale of the BTPS with the ZTPI was its correlation to the past positive scale of the ZTPI. The highest correlation of the future scale of the BTPS with the ZTPI was its correlation to the future scale of the ZTPI. However, the future scale of the BTPS did not correlate higher with the future scale of the ZTPI than the past scale of the BTPS. One could point out that the past scale of the BTPS and the future scale of the ZTPI are supplementing each other, representing an attitude, which strives after accomplishing personal successes in an anticipated future, with the result that a past will be created that functions as a source of motivation and identity. However, the same might be true for the relation between the past and the future scale of the BTPS, which showed the highest intercorrelation of all time perspectives.

- (3) Is there an alternative composition of the 7 time frames (PP, PN, PH, PF, F, Webster Past and Webster Future) which leads to stronger correlations of the *deviant of a balanced time perspective* (DBTP) with life satisfaction and mindfulness?

Characterizing the concept of a balanced time perspective (BTP), Zimbardo states that ‘in an optimally balanced time perspective, the past, present and future components blend and flexibly engage, depending on a situation’s demands and our needs and values’ (Zimbardo, 2002: 62). We assume that mindfulness and the skills summed up by the five facets observing, describing, non-judging of inner experience, non-reactivity to inner experience and acting with awareness, provide the abilities that are necessary to develop a state of consciousness, that helps people to detect the situational demands and to voluntarily switch one’s focus among past, present and future, based on conscious knowledge about the situation and one’s own needs and values, leading to a highly self-determined manner of (re)acting in the moment. The most popular manner of measuring BTP is based on using the full ZTPI (Zimbardo & Boyd, 1999) that contains the subscales present hedonistic, present fatalistic, past negative, past positive and future. The BTPS (Webster, 2011) contains an alternative past (positive) and an alternative future scale. Both of them showed validity and excellent scale score reliability (Webster, 2011), as well as higher correlations with (facets of) mindfulness than the past positive scale and the future scale of the ZTPI in the present study. The past scale of the BTPS was more strongly connected to (facets of) mindfulness than the past positive scale of the ZTPI. However, it did not correlate more strongly with life satisfaction than the past positive scale of the ZTPI. The future scale of the BTPS was more strongly connected to (facets of) mindfulness, as well as to life satisfaction than the future scale of the ZTPI. For this reason we chose to just replace the future scale of the ZTPI by the future scale of the BTPS. The *deviant of a balanced time perspective* (DBTP) measures the distance between one’s time perspective and a balanced time perspective (BTP). Thus a negative correlation of the DBTP with another construct indicates a positive correlation of BTP with that construct. The DBTP, using the full ZTPI, as expected, correlated negatively with mindfulness and life satisfaction. However when the future scale of the ZTPI was replaced by the future scale of the BTPS, both correlations became stronger. We therefore conclude that, when measuring BTP, replacing the ZTPI future scale by the BTPS future scale is a first step when aiming at strengthening the role that mindfulness plays in the field of (balanced) time perspective.

Since the character of this study is explorative, it has to be investigated if the correlations between the altered DBTP and correlates of well-being remain stronger than the correlations between the unaltered DBTP and correlates of well-being, within other samples. Possibly, future studies will find weaker increases in correlations to life satisfaction and mindfulness when replacing the Zimbardo future scale with the Webster future scale, since in the present sample, the present hedonistic time frame (which gains more impact on the DBTP when the Zimbardo future scale is

removed) seems to have an extraordinarily high correlation with life satisfaction compared to Zhang et al. (2011) and Zhang et al. (2012), as well as extraordinarily good relations to mindfulness, compared to Drake et al. (2008).

One could have the impression that we argue for a complete replacement of the future scale of the ZTPI. In fact that is not the case. The two future scales can supplement each other when respondents complete both of them. Since the future scale of the BTPS measures the healthiness of an affectionate relation with one's future, the ZTPI future scale measures how conscientiously one behaves when aiming at accomplishing future goals. A high score on the ZTPI future scale combined with a low score on the BTPS future scale might indicate an unhealthy relation to the future that is based on a devious attitude and a reward dependence that cannot really become satisfied. However, when both scores are high, one can assume that that result indicates a positive, affectionate relation to the future, which is accompanied by the time management skills that are necessary to fulfill one's high expectations regarding the future.

6.7 Strengths and Limitations

The present study is the first one which compares the whole ZTPI to the BTPS and as far as we know the second study examining the relations between time perspectives and mindfulness. The sample size was quite small. Probably some correlations that were not significant will become significant in a greater sample. For example this could be the case for the correlation between the past positive scale of the ZTPI with mindfulness and for the correlation of the present fatalistic perspective with the mindfulness facet observing. Since the character of this study is explorative, it has to be investigated if the correlations between the altered DBTP and correlates of well-being remain stronger than the correlations between the unaltered DBTP and correlates of well-being, within a larger sample. Possibly, future studies will find weaker increases in correlations to life satisfaction and mindfulness when replacing the Zimbardo future scale with the Webster future scale, since, in the present sample, the present hedonistic time frame (which gains more impact on the DBTP when the Zimbardo future scale is removed) seems to have an extraordinarily high correlation with life satisfaction compared to Zhang et al. (2011) and Zhang et al. (2012), as well as extraordinarily good relations to mindfulness, compared to Drake et al. (2008). The decision to set the assumed ideal value for the future scale of the BTPS to the highest value possible was not based on earlier research. Possibly a slightly less high value would be more appropriate. Another drawback is that the MBSR group did not complete the ZTPI. Since these subjects were participants in another study (De Kleine, Van de Lubbe, Blom, Schreurs, & Bohlmeijer, in prep.), which was already in progress, under ethical considerations it was difficult to give these people a huge

additional amount of items, which they did not expect to be given, when signing up for participation.

Furthermore, it is important to give respondents clear instructions about how to fill in time perspective questionnaires. One respondent in the present study stated that he has recently experienced a life- and personality changing event and therefore was not sure which perspective he should choose when rating the items, his present perspective or the perspective that mostly determined the present conditions of his life. Furthermore, some students of the art academy criticized that a person who frequently reflects on what he or she does, can easily give any possible answer to some of the TP items, while still answering honestly, simply determined by the arbitrary choice of where he or she puts the social reference point. Some respondents reported that the time one takes to reflect upon an item can influence the answer and therefore respondents have to receive clear instructions about how fast one should rate the items.

6.8 Future

In the beginning Zimbardo and Boyd included a 'present-holistic' (which actually equals mindfulness) subscale, but rejected it due to lack of intercultural validity (Zimbardo & Boyd, 2008), which reflects the difficulties of designing a valid instrument for measuring mindfulness across cultures (Christopher, Christopher, & Charoensuk, 2009). Thus combining TP with mindfulness is not a new idea but reaches back to the times of the development of the ZTPI. We argue that mindfulness is a crucial key variable when it comes to the question of how to reshape one's time perspective aiming at improving subjective well-being (see also Drake et al., 2008). Since our relations to the past and the future are constructs made by us in the present, their construction is an enduring process open to goal directed intervention. Mindfulness is a state of increased awareness for inner and outer processes and is characterized by a reflective not reflexive manner of responding to stimuli. Therefore, we assume mindfulness to be crucial to detect one's own time perspectives, to understand them and to feel their consequences on one's personal life, not only once by seeing the results of a questionnaire, but over and over again in the very moment, when a time frame bias shows its impact on one's everyday life. Further studies are necessary to investigate long term effects of mindfulness trainings on time perspectives.

Qualitative case studies are necessary to get deeper insight into the mechanisms of time perspectives and the interactions between particular time frames. Another question is how philosophical beliefs about time and afterlife time, the time zone, which Boyd and Zimbardo (1997) refer to as the transcendental future, manifest themselves in everyday life. Time perspective differences and similarities between genders, religions, nations, cultures and subcultures should be

explored as a matter of the enhancement of intercontextual comprehension and communication. In this study native Dutch speakers scored higher on positive thinking toward the future, while native German speakers scored higher on a negative perspective toward the past. Additionally native Dutch speakers scored higher on the mindfulness facet non-reactivity to inner experience, though they did not report to have more experience with meditation. Further studies are necessary to investigate whether these findings are repeatable. The character of the present study was explorative and its generalizability should be treated with caution. However, time perspective and mindfulness are deeply related fields that can inspire and further develop each other to a high degree. Time perspective based therapy methods and mindfulness based therapy methods can merge and by this broaden and further develop the practical applications of (positive) time psychology.

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Appendix

Dutch version of the ZTPI:

1. Ik vind gezellig bij elkaar komen met vrienden één van de leukste dingen in het leven.
2. Vertrouwde plaatsen, geluiden en geuren uit mijn kinderjaren brengen een stroom van mooie herinneringen bij me naar boven.
3. Het noodlot bepaalt veel in mijn leven.
4. Ik denk vaak aan wat ik anders had moeten doen in mijn leven.
5. Mijn beslissingen worden meestal beïnvloed door mensen en dingen rondom mij.
6. Het is het beste om elke ochtend de dag goed te plannen.
7. Ik denk met plezier aan mijn verleden.
8. Ik doe dingen impulsief.
9. Ik maak me geen zorgen als dingen niet op tijd af zijn.
10. Als ik iets wil bereiken, stel ik eerst doelen en bedenk specifieke manieren om deze doelen te bereiken.
11. Over het algemeen heb ik meer goede dan slechte herinneringen aan mijn verleden.
12. Ik vergeet vaak volledig de tijd als ik naar mijn favoriete muziek luister.
13. Het is belangrijker om op tijd het werk dat de volgende dag gereed moet zijn, en andere noodzakelijke taken, af te maken dan om 's avonds te ontspannen.
14. Omdat dingen gaan, zoals ze gaan, maakt het niet echt uit wat ik doe.
15. Ik geniet van verhalen over de goede oude tijd.
16. Pijnlijke ervaringen uit het verleden blijven zich in mijn hoofd afspelen.
17. Ik probeer alles uit het leven te halen, van dag tot dag.
18. Ik raak van streek als ik te laat ben op afspraken.
19. Idealiter zou ik elke dag leven alsof het mijn laatste was.
20. Gelukkige herinneringen aan goede tijden komen makkelijk bij me op.
21. Ik kom op tijd mijn verplichtingen na aan vrienden en belangrijke mensen.
22. Ik heb vroeger mijn portie misbruik en afwijzing wel gehad.
23. Ik neem beslissingen op het moment zelf.
24. Ik neem liever elke dag zoals die komt in plaats van hem helemaal te plannen.
25. Het verleden heeft teveel onaangename herinneringen waar ik er liever niet aan denk.
26. Het is belangrijk spanning te creëren in mijn leven.
27. Ik heb in het verleden fouten gemaakt die ik graag ongedaan zou maken.
28. Ik vind het belangrijker te genieten van waar je mee bezig bent, dan op tijd met je werk klaar te zijn.
29. Ik word nostalgisch als ik aan mijn kinderjaren denk.
30. Ik overweeg de kosten en baten voor ik een beslissing neem.
31. Risico's nemen zorgt ervoor dat mijn leven niet saai wordt .
32. Ik vind het belangrijker om van mijn levensreis te genieten dan me enkel op de eindbestemming te richten.
33. De zaken verlopen zelden zoals ik had verwacht.
34. Ik vind het moeilijk om onplezierige beelden uit mijn jeugd te vergeten.
35. Ik haal minder vreugde uit datgene wat ik doe, als ik aan doelen, uitkomsten en resultaten moet denken.
36. Zelfs wanneer ik geniet van het moment, vergelijk ik de dingen met soortgelijke ervaringen uit het verleden.
37. Je kunt niet echt plannen maken voor de toekomst omdat de dingen zoveel veranderen.
38. Mijn levenspad wordt beheerst door krachten waar ik geen invloed op heb.
39. Het heeft geen zin me zorgen te maken over de toekomst , omdat ik er toch niets aan kan doen.
40. Ik maak projecten op tijd af door stap voor stap vooruitgang te boeken.
41. Ik merk dat ik afhaak als familieleden praten over hoe het vroeger was.
42. Ik neem risico's om opwinding in mijn leven te creëren.
43. Ik maak lijstjes van wat ik nog moet doen.
44. Vaak volg ik meer mijn hart dan mijn verstand.
45. Ik kan verleidingen weerstaan als ik weet dat er nog werk te doen is.
46. Ik laat mezelf gaan in de opwinding van het moment .
47. Het leven van vandaag is te ingewikkeld; ik heb liever het meer eenvoudige leven van vroeger.
48. Ik heb liever spontane vrienden dan voorspelbare vrienden.
49. Ik hou van familierituelen en tradities die zich regelmatig herhalen.

50. Ik denk aan de slechte dingen die me in het verleden zijn overkomen.
51. Ik blijf werken aan moeilijke, oninteressante taken als deze me helpen vooruit te komen in het leven.
52. Vandaag genieten van mijn loon, is beter dan te sparen voor de zekerheid van morgen.
53. Vertrouwen op geluk loont vaak meer dan hard werken.
54. Ik denk aan de goede dingen die ik ben misgelopen in mijn leven.
55. Ik hou van passie in mijn intieme relaties.
56. Er is altijd genoeg tijd om mijn werk in te halen.